

Manual No. '09 • KX-SM-125 updated March 11, 2010

SERVICE MANUAL

INVERTER DRIVEN MULTI-INDOOR UNIT CLIMATE CONTROL SYSTEM

Alternative refrigerant R410A use models

(OUTDOOR UNIT)

KX6 series (Heat pump type)

FDC224KXE6, 280KXE6, 335KXE6

(INDOOR UNIT) -KX6 series-

| FDT28KXE6A 36KXE6A 45KXE6A 56KXE6A 71KXE6A 90KXE6A 112KXE6A 140KXE6A 160KXE6A | FDTC22KXE6A 28KXE6A 36KXE6A 45KXE6A 56KXE6A | FDTW28KXE6 45KXE6 56KXE6 71KXE6 90KXE6 112KXE6 140KXE6 | FDTS45KXE6 71KXE6 | FDTQ22KXE6 28KXE6 36KXE6 | FDU71KXE6 90KXE6 112KXE6 140KXE6 224KXE6 280KXE6 |
|---|---|--|---|--------------------------------|---|
| FDUM22KXE6 28KXE6 36KXE6 45KXE6 56KXE6 71KXE6 90KXE6 112KXE6 140KXE6 | FDQS22KXE6 28KXE6 36KXE6 45KXE6 56KXE6 | FDK22KXE6 28KXE6 36KXE6 45KXE6 56KXE6 71KXE6 | FDE36KXE6A 45KXE6A 56KXE6A 71KXE6A 112KXE6A 140KXE6A | FDFL28KXE6 45KXE6 71KXE6 | FDFU28KXE6 45KXE6 56KXE6 71KXE6 |

FDUH22KXE6 28KXE6 36KXE6

| Note: |
|--|
| Regarding the Duct Connected-High static Pressure-type Outdoor Air Processing Unit |
| Series FDU500~1800FKXE6, refer to the DATA BOOK No.'08 • KX-DB-122 |

MITSUBISHI HEAVY INDUSTRIES, LTD.

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1. OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER 1.1 Wired remote controller (Option parts)

The figure below shows the remote controller with the cover opened. Note that all the items that may be displayed in the liquid crystal display area are shown in the figure for the sake of explanation.

Characters displayed with dots in the liquid crystal display area are abbreviated.

Pull the cover downward to open it.



* All displays are described in the liguid crystal display for explanation.

Installation of remote control

- DO NOT install it on the following places in order to avoid malfunction.
- (1) Places exposed to direct sunlight (4) Hot surface or cold surface enough to generate condensation
 - (5) Places exposed to oil mist or steam directly
- (2) Places near heat devices (3) High humidity places
- (6) Uneven surface

1.2 Operation control function by the indoor controller

(1) Operations of functional items during cooling/heating

| Operation | Coc | oling | | | | | |
|---------------------------|------------------|-------------------|-------------------------|------------------|-------------------|------------------------|--|
| Functional item | Thermostat ON | Thermostat OFF | Fan | Thermostat ON | Thermostat OFF | Hot start (Defrost) | Dehumidify |
| Compressor | 0 | × | × | 0 | × | 0 | O/X |
| 4-way valve | × | × | × | 0 | 0 | O(×) | × |
| Outdoor fan | 0 | × | × | 0 | × | O(×) | O/X |
| Indoor fan | 0 | 0 | 0 | O/× | O/× | O/× | O/× |
| Louver motor | | O/× | | O/× | O/× | O/× | O/X |
| Drain pump ⁽⁴⁾ | 0 | × ⁽²⁾ | \times ⁽²⁾ | | $O/\times^{(2)}$ | | Thermostat ON: O Thermostat OFF: X ⁽²⁾ |

Note (1) \bigcirc : Operation \times : Stop \bigcirc/\times : Turned ON/OFF by the control other than the room temperature control.

(2) ON during the drain motor delay control

(3) Drain pump ON setting may be selected by the indoor unit function setting of the wired remote controller.

(2) Dehumidifying operation

(a) When the humidity sensor is not provided (Models other than FDT Series)

return air thermistor [ThI-A (by the remote controller when the remote control sensor is enabled)] controls the indoor temperature environment simultaneously.

- Operation is started in the cooling mode. When the difference between the return air thermistor and the setting temperature is 2°C or less, the indoor unit fan tap is brought down by one tap. That tap is retained for 3 minutes after changing the indoor fan tap.
- 2) If the suction air temperature exceeds the setting temperature 3°C or more during defrosting operation, the indoor fan tap is raised by one tap. That tap is retained for 3 minutes after changing the indoor fan tap.
- 3) If the thermostat OFF is established during the above control, the indoor fan tap at the thermostat ON is retained so far as the thermostat is turned OFF.
- 4) After stopping the cooling operation, the indoor unit continues to run at Lo for 15 seconds.
- When the humidity sensor is provided (FDT Series only) [Optional]
- Operation starts in the cooling mode, and the target relative humidity is determined based on the setting temperature. If the humidity detected by the humidity sensor becomes lower than the target relative humidity, the indoor unit fan tap is retained.
- 2) Anything other than 1) above is same as the item (a) above.

(3) Timer operation

(b)

(a) Timer

Set the duration of time from the present to the time to turn off the air-conditioner.

It can be selected from 10 steps in the range from "OFF 1 hour later" to "OFF 10 hours later". After the clock timer setting, the remaining time is displayed with progress of time in the unit of hour.

- (b) OFF timer
 - Time to turn OFF the air-conditioner can be set in the unit of 10 minutes.
- (c) ON timer
- Time to turn ON the air-conditioner can be set. Indoor temperature can be set simultaneously.
- (d) Weekly timer

Timer operation (ON timer, OFF timer) can be set up to 4 times a day for each weekday.

(e) Timer operations which can be set in combination

| | Timer | OFF timer | ON timer | Weekly timer |
|--------------|-------|-----------|----------|--------------|
| Timer | | × | 0 | × |
| OFF timer | × | | 0 | × |
| ON timer | 0 | 0 | | × |
| Weekly timer | × | × | × | |

Note (1) \bigcirc : Allowed \times : Not

(4) Remote controller display during the operation stop

- (a) "Centralized control ON" is displayed always on the LCD under the "Center/Remote" and "Center" modes during the operation stop (Power ON). This is not displayed under the "Remote" mode.
- (b) If this display is not shown under the "Center/Remote" mode, check if the indoor unit power switch is turned on or not.

(5) Hot start (Prevention of cold draft during heating)

At the startup of heating operation, at resetting the thermostat, during defrosting operation and at returning to heating, the indoor fan is controlled by the indoor heat exchanger temperature (detected with Thi-R) to prevent the cold draft.



Note (1) Heating preparation is displayed during the hot start (when the compressor is operating and the indoor fan does not provide the set airflow volume).

(6) Hot keep

Hot keep control is performed at the start of the defrost control.

- (a) Control
 - 1) When the indoor heat exchanger temperature (detected with Thi-R1 or R2) drops to 35°C or lower, indoor fan is changed to the lower tap at each setting.
 - 2) During the hot keep operation, the louver horizontal control signal is transmitted.
- (b) Ending condition

When the indoor fan is at the lower tap at each setting, it returns to the set airflow volume as the indoor heat exchanger temperature rises to 45°C or higher.

(7) Fan control during the heating thermostat OFF

When the heating thermostat is turned OFF, the setting of the fan control is selectable with using the indoor function of wired remote controller [Heating fan control].

(a) Low speed (Factory default)

If the indoor heat exchanger temperature drops 35°C or lower with the heating thermostat OFF, the indoor fan operate at the lower speed tap at each setting.

(b) Set airflow volume

Even if the indoor heat exchanger temperature drops 35°C or lower with the heating thermostat OFF, the indoor fan continues to run at the set airflow volume.

(c) Intermittent operation

If the indoor heat exchanger temperature drops 35°C or lower with the heating thermostat OFF, the indoor fan operates at the lower speed tap at each setting and, when the indoor heater exchanger temperature drops 25°C or lower, the indoor fan stops for 5 minutes. Then the fan runs at the slow speed tap for 2 minutes, and the judgment is made by the thermostat.

(d) Stop

If the indoor heat exchanger temperature drops 35°C or lower with the heating thermostat OFF, the indoor fan is turned OFF. The same applies also when the remote controller sensor is effective.

(8) Filter sign

As the operation time (when ON/OFF switch is at ON) accumulates to 180 hours (1), "Filter cleaning" is displayed on the remote controller. (This is also displayed when the unit is in trouble and under the centralized control, regardless of ON/OFF) Note (1) Time setting for the filter sign can be made as shown below using the indoor function of wired remote controller "Filter sign setting". (It is set at 1 at the shipping from factory.)

| Filter Sign Setting | Function |
|---------------------|--|
| Setting 1 | Setting time: 180 hrs (Factory default) |
| Setting 2 | Setting time: 600 hrs |
| Setting 3 | Setting time: 1,000 hrs |
| Setting 4 | Setting time: 1,000 hrs (Unit stop) ⁽²⁾ |

(2) After the setting time has elapsed, the "Filter cleaning" is displayed and, after operating for 24 hours further (counted also during the stop), the unit stops.

(9) Auto swing control [Applicable model: FDT, FDTC, FDTW FDTS, FDTQ (Excepted duct panel model) and FDE]

- (a) Louver control
 - (i) Press the [Louver] button to operate the swing louver when the air conditioner is operating.
 - "Auto wind direction" is displayed for 3 seconds and then the swing louver moves up and down continuously.
 - (ii) To fix the swing louver at a position, press one time the [Louver] button while the swing louver is moving so that four stop positions are displayed one after another per second.

When a desired stop position is displayed, press the [Louver] button again. The display stops, changes to show the "Louver stop" for 5 seconds and then the swing louver stops.

(iii) Louver operation at the power on

The louver swings one time automatically (without operating the remote controller) at the power on.

This allows inputting the louver motor (LM) position, which is necessary for the microcomputer to recognize the louver position.

- Note (1) If you press the Louver button, the swing motion is displayed on the louver position LCD for 10 second. The display changes to the "Auto wind direction" display 3 seconds later.
- (b) Automatic louver level setting during heating

While hot start operation and heating thermostat OFF operation, the louver keeps the level position (In order to prevent the cold draft) whether the auto swing switch is operated or not (auto swing or louver stop), The louver position display LCD continues to show the display which has been shown before entering this control.

(c) Louver-free stop control

When the louver-free stop has been selected with the indoor function of wired remote controller "Louver control setting", the louver motor stops when it receives the stop signal from the remote controller. If the auto swing signal is received from the remote controller, the auto swing will start from the position where it was before the stop.

Note (1) When the indoor function of wired remote controller "Louver control setting" has been switched, switch also the remote control function "Louver control setting" in the same way.

(10) Compressor inching prevention control

(a) 3-minutes timer

When the compressor has been stopped by the thermostat, remote controller operation switch or anomalous condition, its restart will be inhibited for 3 minutes. However, the 3-minute timer is invalidated at the power on.

- (b) 3-minutes forced operation timer
 - Compressor will not stop for 3 minutes after the compressor ON. However, it stops immediately when the thermostat is turned OFF by the stop command by means of the ON/OFF switch or the change of operation mode.
 - If the thermostat is turned OFF during the forced compressor operation in heating mode, the louver position (with the auto swing) is returned to the level position.

Note (1) The compressor stops when it has entered the protective control.

(11) Drain motor (DM) control [Applicable type: FDT, FDTC, FDTW, FDTS, FDTQ, FDUM, FDQS and FDU90~140]

Drain motor (DM) start operation at the same time when compressor ON at cooling and dehumidifying mode and (a) keeps operating for 5 minutes after operation stop, the anomalous stop, thermostat OFF and switching from cooling or dehumidifying operation to fan or heating operation.

| | I | | | | | |
|----------------|----------|---------|---------------|---------|--|--|
| | Stop (1) | Cooling | Dehumidifying | Fan (2) | Heating | Note (1) Including the stop from cooling, dehumidifying, |
| Compressor ON | | | Cont | trol A | fan and heating operation and the anomalous stop (2) Including the "Fan" operation according to the | |
| Compressor OFF | | Con | trol B | | | mismatch of operation modes. |

(i) Control A

> If the float switch detects any anomalous draining condition, the unit stops with the anomalous stop (displays E9) 1) and the drain pump starts.

- The drain motor keeps operating while the float switch is detecting the anomalous condition. 2)
- (ii) Control B

If the float switch detects any anomalous drain condition, the drain motor is turned ON for 5 minutes, and at 10 seconds after the drain motor OFF it checks the float switch. If it is normal, the unit is stopped under the normal condition or, if there is any anomalous condition, E9 is displayed and the drain motor is turned ON. (The ON condition is maintained during the drain detection.)

- (b) Drain motor (DM) interlock control
 - Start conditions (i)

Depending on the function setting of the remote controller, the drain motor is turned ON under either one of the following conditions.

- 1) During heating operation (Both the thermostat ON/OFF)
- During heating operation (Both the thermostat ON/OFF) + Fan operation 2)
- 3) Fan operation
- (ii) Stop conditions

The drain motor is turned OFF 5 minutes after the stop of operations 1) to 3) above.

(12) Operation check/drain pump test run operation mode

- (a) If the power is turned on when the dip switch (SW7-1) on the indoor PCB is ON state, it enters the mode of operation check/drain pump test run. It is ineffective (prohibited) to change the switch after turning power on.
- (b) When the communication with the remote controller has been established within 60 seconds after turning power on by the dip switch (SW7-1) ON, it enters the operation check mode. Unless the remote controller communication is established, it enters the drain pump test run mode.

Note (1) To select the drain pump test run mode, disconnect the remote control connector (CNB) on the indoor PCB to shut down the remote controller communication

(c) Operation check mode

There is no communication with the outdoor unit but it allows performing operation in respective modes by operating the remote controller.

(d) Drain pump test run mode

> When the drain pump test run is established, only the drain pump operates, and during operation the protective functions by the microcomputer of indoor unit become ineffective.

(13) Indoor heat exchanger anti-frost (anti-frost control)

Thermostat OFF control

1) Thermostat is turned OFF depending on the temperature detected with the heat exchanger sensor (Thi-R1, R2) during "Cooling" and "Dehumidifying" operations.



- For 4 minutes after the thermostat ON, the forced thermostat OFF control for the anti-frost protection is not effective. 2)
 - When temperatures detected by the heat exchanger sensors Thi-R1 and R2 are higher than the anti-frost protection a) temperature at 4 minutes after the thermostat ON, the detection starts from the state of thermostat ON.
- 3) If the temperature detected with the heat exchanger sensor ThI-R1 or R2 has stayed below the anti-frost protection temperature (-0.5°C) continuously for 5 minutes after 4 minutes of the thermostat ON operation, then the thermostat is turned OFF forcibly.

The thermostat will be turned ON if temperatures detected by Thi-Ra and R2 picked up in the thermostat ON range.

"Anti-frost" signal is sent to the outdoor unit. 4)

(14) Anomalous fan motor (FDT and FDK only)

Fan motor will be stopped with displaying "E16", if it has detected the revolutions of 200 rpm or less continuously for 30 seconds at a rate of 4 times within 60 minutes, after starting the motor.

(15) High ceiling control [Applicable type: FDT, FDTC, FDTW, FDTS and FDE]

When the indoor unit is installed at a high ceiling, the airflow volume mode control can be changed with the indoor function of wired remote controller "High ceiling setting".

| Setting | Standard (Shipping) | High Ceiling 1 | High Ceiling 2 |
|---------------------------|---------------------|----------------|----------------|
| Remote controller setting | Hi Me Lo | Hi Me Lo | Hi Me Lo |
| Fan speed | Hi Me Lo | UHi1 Hi Me | UHi2 Hi Me |

Note (1) It is set at Standard at the shipping from factory

(2) At the hot start, heating thermostat OFF, or other, the indoor fan operate at the slow speed tap at each setting,

(16) Hot start

Indoor fan motor control is performed at the start of heating operation.

- (a) When the temperature detected with the indoor heat exchanger thermistor (Thi-R1 or Thi-R2) drops 35°C or lower, it control the fan with AC motor: Lo and DC motor: ULo.
- (b) When the heat exchanger thermistor detects 45°C or higher with the fan running at Lo/ULo, it returns to the set airflow volume.



Heat exchanger thermistor temp. (ThI-R1 or R2)

(c) On the indoor unit of which the thermostat has been turned OFF during heating operation, the fan is turned OFF if the heat exchanger thermistor temperature (Thi-R1 or Thi-R2) drops 25°C or lower.

(17) Detection room temperature compensation during heating

With the standard specification, the compressor is turned ON/OFF based on the setting temperature of thermostat. However, when the thermostat OFF is likely to occur earlier because the unit is installed in a condition that warm air tends to accumulate near the ceiling, the setting can be changed by using the indoor function of wired remote controller "Heating room temperature compensation". Since the compressor is turned ON/OF at one of the setting temperature at +3, +2 or $+1^{\circ}$ C, the feeling of heating can be improved. However, the upper limit of setting temperature is 30°C.



(18) Return air temperature compensation

This is the function to compensate a difference between the detected temperature of the Return air thermistor and the measured temperature after installation of unit.

- (a) It is adjustable in the unit of 0.5°C by using the indoor function of wired remote controller "Return air thermistor compensation".
 - +1.0°C, +1.5°C and +2.0°C • -1.0°C, -1.5°C and -2.0°C
- (b) Since the compensated temperature is transmitted to the remote controller and the outdoor unit, it is controlled with the compensated temperature.

Note (1) Compensation of detection temperature is effective for the indoor unit sensor only.

(19) External control (Remote display)/Remote operation

Always connect the wired remote controller. Otherwise, you cannot perform the remote operation.

- (a) Output for external control (remote display) (Optional remote RUN/STOP monitor kit can be utilized.) Following output connectors (CNT) are provided on the indoor control PCB. Connect the remote RUN/STOP monitor kit and pick up respective dry contact signal.
 - Operation output: Outputs DC12V relay drive signal during operation.

- Heating output: Outputs DC12V relay drive signal during heating operation.
- Compressor ON output: Outputs DC12V relay drive signal when the compressor is operating.
- Error output: When any anomalous condition occurs, it outputs DC12V relay drive signal.

(b) Remote operation input

Remote operation inputs (switch input, timer input) connectors (CnT) are provided on the indoor control PCB.

- However, the remote operation by the CnT is not effective when "Center mode" is selected with the air-conditioner.
- (i) At the shipping from factory [Indoor function of wired remote controller "External input selector" is set at the level input.]
 - Startup at the input signal to CnT OFF \rightarrow ON [Edge input] ... Air-conditioner ON
 - Stop at the input signal to CnT ON \rightarrow OFF [Edge input] ... Air-conditioner OFF



(ii) When the setting is changed to the pulse input at site using the indoor unit function of wired remote controller "External input selector"

It becomes effective only when the input signal to CnT is changed OFF \rightarrow ON and the air-conditioner operation [ON/ OFF] is inverted.



(c) Processing of emergency stop signal

This emergency stop signal is used to stop all indoor unis connected to the same outdoor unit in emergency.

- 1) The emergency stop control becomes effective if the emergency stop control setting is changed to "Valid" from the wired controller.
- If the emergency stop [E-63] signal is received from outdoor unit, it is transmitted to the remote controller and makes stop.

(d) Fresh air processing operation input

- 1) If indoor unit controller receive fresh air processing operation signal (*1) or fresh air processing stop signal from remote controller, it output ON signal or OFF signal from CnD connector respectively.
 - *1. Operation switch ON at interlock setting and ventilation switch ON at non-interlock setting.
- 2) Output relay is DC12V option and maximum relay load is LY2F (OMRON).
- 3) In case of interlock setting, if either of indoor units connected to one remote controller is in the state of anomalous stop, the fresh air processing unit connected to that indoor unit cannot be operated. Other processing units connected to the indoor units operating normally can be operate.

In case of non-interlock setting, processing unit can start ventilation even though the connected indoor unit is in anomalous stop.

0: OFF, 1: ON

- 4) In case of interlock setting if indoor unit stops, processing unit also stop.
- 5) In case of interlock setting if indoor unit stops with anomalous stop, processing unit also stop.
- 6) If indoor unit is started or stopped from center console, processing unit can start or stop in case of interlock setting, but it keep stopping in case of non-interlock setting.
- 7) Interlock or non-interlock can be set only on the remote controller.

(20) Dip switch function

Model capacity selection with SW6

| Model | P22 | P28 | P36 | P45 | P56 | P71 | P80 | P90 | P112 | P140 | P160 | P224 | P280 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| SW6-1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| SW6-2 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| SW6-3 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| SW6-4 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

1.3 Operation control function by the remote controller

(1) Switching sequence of the operation mode switches of remote controller

→ Dehumidifying → Cooling → Fan → Heating →

(2) [CPU reset]

When the "CHECK" and "GRILL" buttons on the remote controller are pressed at the same time, this function is activated. This function is same as power supply reset.

(3) [Power failure compensation function]

- This function becomes effective when "POWER FAILURE COMPENSATION SET" is valid by setting the remote controller functions.
- The remote controller's status is always stored in memory, and after recovery of power, operation is resumed according to the memory contents. However the auto swing stop position and timer mode are cancelled, but the weekly timer setting is restored with the holiday setting through all weekdays.

By resetting the clock and cancelling the holiday setting for each weekday after recovery of power, weekly timer setting becomes effective.

- Contents stored in memory for power failure compensiton are as follows.
 - Note (1) Item ©⑦ and ⑧ are stored in memory regardless of whether the power failure compensation setting is valid or invalid, and silent mode setting is cancelled regardless of whether the power failure compensation setting is valid or invalid.
 - ① Running or Stopping status just before power failure

If it had been operating under OFF timer mode or simple timer mode, memorzed status is as stopping (At the recovery of power, the timer mode is cancelled but weekly timer setting is changed to the holiday setting through all weekdays

- ② Operation mode
- ③ Fan speed mode
- ④ Room temperature setting
- ⑤ Louver auto swing/stop

However, the stop position (position 4) is cancelled and is becomes the level position (position 1).

- "Remote control function items", set with the remote controller function setting ("Indoor unit function items" are stored in the inoor unit's memory.)
- ⑦ Upper limit value and lower limit value set by temperature setting control.
- 8 Clock timer setting and weekly timer setting (Other timer settings are not sotred in memory).

[Parts layout on remote controller PCB]



Control selector switch (SW1)

| Switch | | Function |
|--------|---|--------------------------|
| C)//1 | М | Master remote controller |
| 31/1 | S | Slave remote controller |

Note (1) SW2 is not normally used, so do not change the selection.

1.4 Operation control function by the outdoor controller

(A) Normal control

(1) Operation of major functional components under each operation mode

| Operation mode | Cooling/Dehumidifying | | | Heating | | | |
|---|--------------------------|-------------------|--------------|--------------------------|-------------------|------------------------------|--|
| Fonctional item | Thermostat ON | Thermostat OFF | Fan | Thermostat ON | Thermostat OFF | Defrost | |
| Compressor (CM) | 0 | × | × | 0 | × | 0 | |
| Magnetic contactor CM1 (52X1, 52X2) | 0 | 0 | ×/O | 0 | 0 | 0 | |
| Outdoor unit fan mortor (FMo-1) | 0 | ×/O | ×/O | O/X | ×/O | O→× | |
| Outdoor unit fan mortor (FMo-2) | O/X | ×/O | ×/O | O/X | ×/O | O→× | |
| 4 way valve (20S) | × | × | × | 0 | 0 | O→× | |
| Heating electronic expansion valve (EEVH) | Fully open | Fully open | ※ 1 | Opening Angle Control | *2 | Fully closed / Fully open | |
| Super cooling coil electronic expansion valve (EEVSC) | Opening Angle Control | Fully closed | Fully closed | Fully closed | Fully closed | Fully closed | |
| Solenoid valve (SV1) (oil return) | O/X | × | × | O/X | × | O/X | |
| Solenoid valve (SV6) (fluid return) | O/X | O/× | × | O/X | O/X | O/X | |
| Solenoid valve (SV11) (gas bypass) | × | × | × | O/X | × | × | |
| Crankcase heater (CH) | O/X | O/X | 0 | O/X | O/X | O/X | |

Note (1) It means O : ON, $\times : OFF$, $O/\times : -$, $\times/O : ON$ or OFF.

(2) This shows the state of output when all indoor units are under the same mode.

(3) *1 : When stopped from cooling, it is fully open

When stopped from heating, it is fully closed unless another degree of opening is specified by the electronic expansion valve (EEV) control at the stop.

**2: When stopped from heating, it is fully closed unless another degree of opening is specified by the electronic expansion valve (EEV) control at the stop.

(2) Compressor pre-start control

(a) Remote controller full stop \rightarrow Operation

- (i) Start conditions
 - When it has changed to the compressor operation frequency command > 0 Hz from the state of compressor stopping.
- (ii) Control contents
 - It sets the compressor operation frequency command = 0 Hz, and then after this control ends, It starts the compressor.
- (iii) End conditions
 - When all of following conditions are satisfied
 - ① It has elapsed 15 seconds after the start of this control.



• Meaning of marks

| 52X1, 52X2 | Solenoid for compressor | СМ | Compressor |
|------------|------------------------------------|-------|--|
| EEVH | Heating electronic expansion valve | EEVSC | Subcooling coil electronic expansion valve |
| SV6 | Solenoid valve [Oil return] | _ | |

(b) Cooling \rightarrow Heating

(i) Start conditions

- When the outdoor unit operation mode is changed from the cooling operation to heating operation
- (ii) Control contents
 - 1) When the compressor is operating, it makes the compressor stopped.
 - 2) Each functional component operates according to the sequence shown below.

(iii) End conditions

• End of sequence



Start conditions established

· Meaning of marks

| СМ | Compressor | EEVH | Heating electronic expansion valve |
|------------|----------------------|-------|--|
| FMo1, FMo2 | Fan motor | EEVSC | Subcooling coil electronic expansion valve |
| 20S | 4-way solenoid valve | — | |

(c) Heating \rightarrow Cooling

- (i) Start conditions
 - When the outdoor unit operation mode is changed from the heating operation to cooling operation
- (ii) Control contents
 - 1) When the compressor is operating, it makes the compressor stopped.
 - 2) Each functional component operates according to the sequence shown below.
- (iii) End conditions
 - End of sequence



Start conditions established

Note (1) *: It is fully closed till the end of 3-minute delay after the automatic reset.

• Meaning of marks

| СМ | Compressor | EEVH | Heating electronic expansion valve |
|------------|----------------------|-------|--|
| FMo1, FMo2 | Fan motor | EEVSC | Subcooling coil electronic expansion valve |
| 20S | 4-way solenoid valve | — | |

(3) Compressor control

(a) 4-way valve switching safeguard

- In order to switch 4-way valve completely, it makes the compressor speed increasing as follows.
- (i) This control starts to increase the compressor speed from 10Hz after the compressor pre-start control ends.
- (ii) The target compressor speed is shown in following table.

| Item | 4-way valve switching safegu | uard/Target compressor speed | |
|------------|------------------------------|------------------------------|--|
| Model | Frequency (Fk) | Speed (rps) | |
| FDC224KXE6 | 70 | 50 | |
| FDC280KXE6 | 70 | 50 | |
| FDC335KXE6 | 71 | 42 | |

(b) Compressor protection start

- After the 4-way valve switching safeguard, the compressor is controlled with the following compressor protection start.
- 1 Compressor protection start, normal
- ② Compressor protection start A
- ③ Compressor protection start B

| | | | Thermostat ON start | |
|----------------|--|----------------------------------|------------------------------------|------------------------------------|
| | | Initial start remote | Operation mode | Operation mode is |
| | | | is changed during | not changed during |
| | | | thermostat OFF | thermostat OFF |
| Compressor ON | Less than 45 min after power ON | Compressor protection start B | Compressor protection start B | Compressor protection start B |
| Initial | 45min. or more after power ON | Compressor protection start A | Compressor protection start A | Compressor protection start A |
| Compressor ON | Compressor ON Less than 45 min after stop Compressor normal protection start | | Compressor normal protection start | Compressor normal protection start |
| Second & later | 45min. or more after stop | Compressor protection start A | Compressor protection start A | Compressor protection start A |

- (i) Compressor protection start, normal
 - < Control contents >

Compressor maintains operation at lower limit frequency, after 4-way valve switching safeguard ends. (During this control, compressor speed is prohibited to increase.)

After this control ends, compressor speed is governed by the compressor speed control.

- < End conditions >
 - When either one of the following conditions is established
 - a) When it has elapsed 1 minute and 45 seconds after the start



(ii) Compressor protection start A

< Control contents >

① Compressor maintains operation at lower limit frequency, after 4-way valve switching safeguard ends. If the time from starting till reaching the lower limit frequency after 4-way valve switching safeguard operation has elapsed 1 minute, the target frequency is changed to that of 1 minute later from the lower limit frequency.

② During this control, the target frequency is increased at a rate of 5Hz/minute from the lower limit frequency. (Note) The starting point of this control is the completion point of inverter start (10Hz).

< End conditions >

- When either one of following conditions is established
- a) When the frequency upper limit increase by this control continued for 15 minutes in total
 - When the inverter has stopped within 15 minutes after the start and is started again, it starts with the normal protection start and increases the frequency upper limit at a rate of 5 Hz/minute till the frequency increase continues for 15 minutes in total.



(iii) Compressor protection start B

- < Control contents >
 - Compressor maintains operation at lower limit frequency, after 4-way valve switching safeguard ends. If the time from starting till reaching the lower limit frequency after 4-way valve switching safeguard operation
 - has elapsed 2 minutes, the target frequency is changed to that of 2 minutes later from the lower limit frequency. ② For 18 minutes after starting, the target frequency is increased at a rate of 5Hz/2 minutes from the lower limit frequency.
 - ③ For 18 minutes after starting, the starting point of this control is the completion point of inverter start (10 Hz).
 - ④ From 18 minutes to 24 minutes, it is increased at a rate of 5 Hz/minute.
- < End conditions >

When either one of the following conditions is established

(a) This frequency-up control will end when the cumulative operation time after starting becomes 24 minutes. If the inverter stopped within 24 minutes after starting and starts again, it starts with "Compressor protection start, normal" and increases the frequency at a rate of 5Hz/minute till the cumulative operation time after starting becomes 24 minutes.

However, if 45 minutes have been elapsed since inverter stopped and starts again, it starts with "Compressor protection start A".



(4) Outdoor fan control

(a) Outdoor fan speed and fan motor rotation speed.

The 7th outdoor fan speed in the following table is specified as the rated speed. Under the normal control, the speeds up to 8th level (800 rpm) are used.

| Outdoor for ton | Coo | ling | Неа | ting |
|------------------|------------|------------|------------|------------|
| Outdoor fail tap | FMo1 [rpm] | FMo2 [rpm] | FMo1 [rpm] | FMo2 [rpm] |
| 0th speed | 0 | 0 | 0 | 0 |
| 1st speed | 200 | 0 | 200 | 0 |
| 2nd speed | 200 | 200 | 200 | 200 |
| 3rd speed | 300 | 300 | 300 | 300 |
| 4th speed | 400 | 400 | 400 | 400 |
| 5th speed | 500 | 500 | 500 | 500 |
| 6th speed | 575 | 575 | 575 | 575 |
| 7th speed | 700 | 700 | 700 | 700 |
| 8th speed | 800 | 800 | 800 (780) | 800 (780) |

Note (1) Figures in the parentheses in the above table are applicable to FDC224KXE6.

(b) Fan control during cooling

During cooling and dehumidifying, fan speed is controlled in accordance with the high pressure (sensed by PSH) and the outdoor air temperature (sensed by Tho-A).

(i) Initial fan speeds are as follows.

Initial ourdoor fan speed at cooling

| Model | Outdoor air temp $\leq 10^{\circ}$ C | 10°C < Outdoor air Temp. < 15°C | $15^{\circ}C \leq Outdoor air Temp.$ |
|------------|--------------------------------------|---------------------------------|--------------------------------------|
| All models | 2nd speed | 4th speed | 6th speed |

- (ii) During normal operation, the speed is changed in accordance with the high pressure value.
 - \odot When it has detected HP \geq 2.2 MPa for 1 minute continuously, the fan speed is raised by one tap.
 - O When it is 1.5 MPa < HP < 2.2 MPa, the present fan speed is maintained.
 - 3 When it has detected HP \leqq 1.5 MPa for 1 minute continuously, the fan speed is dropped by one tap.
 - ④ Control range of fan speed is 1th 8th speeds.



High pressure (MPa)

- (iii) When states under this control change from HP < 3.3 MPa to HP \ge 3.3 MPa, the fan speed is changed preferentially to the followings. (After the change it returns to the normal control.)
 - ① When the outdoor air temperature $\geq 30^{\circ}$ C, it changes to 7th or higher speed.
 - O When the outdoor air temperature < 30°C, it changes to 3th or higher speed.
 - ③ When the fan speed was higher than the above before the change of states, the fan speed is not changed.

(c) Outdoor fan cooling control at low outdoor air temperature.

- (i) Start conditions
 - This control is performed when all of following conditions is established.
 - ① When the ordinary outdoor fan control is performed
 - ② Outdoor air temperature $\leq 10^{\circ}$ C (It is reset with the hysteresis of the outdoor air temperature > 15°C.)



Outdoor air temperature

- ③ Outdoor fan speed = 1st speed (200 rpm)
- (ii) Control contents
 - ① Initial fan speed is 200 rpm
 - 2 If the following high pressure is detected for 20 seconds continuously, fan speed will be changed



③ Outdoor fan speed is in a range of 130 rpm – 300 rpm.

(iii) End conditions

When either one of following conditions is established

- ① When the ordinary outdoor unit fan cooling control ends
- ⁽²⁾ Outdoor air temperature $> 15^{\circ}$ C
- ③ Outdoor fan speed \geq 2th speed

(Note) This control range is not more than $300 \text{ rpm} \times 1 \text{fan}$.

(d) Outdoor fan heating control

The fan speed control is performed based on the low pressure (detected with PSL) during heating operation.

- (i) Initial fan speed is 6th speed.
- (ii) Speed is changed depending on the low pressure value.
 - ① When it is detected LP ≤ 0.75 MPa for 30 seconds continuously, the fan speed is raised by 1 tap.
 - O When it is 0.75 MPa < LP < 0.85 MPa, the present fan speed is maintained.
 - ③ When it is detected LP ≥ 0.85 MPa for 30 seconds continuously, the fan speed is dropped by 1 tap.
 - ④ Control range of fan speed is 1st 8th speeds.



- (iii) When states change from LP < 1.0 MPa to HP ≥ 1.0 MPa during this control, the fan speed is changed preferentially to the following. (It returns to the normal control after the change.)
 ① It changes to 4th or lower speed.
 - 2 If the fan speed was lower than the above speed before the change of states, the fan speed does not change.

(5) Defrost control

(a) Temperature condition of defrosting

) **Start conditions** (Standard specification or cold region specification can be selected by switching the jumper wire J15.)

Defrost operation will start, when outdoor unit whose compressor is operating under heating mode has satisfied all the following conditions.

- (i) When $\overline{3}3$ minutes of cumulative compressor operation time has passed since heating operation started.
- (ii) When 33 minutes of cumulative compressor operation time has passed since the previous defrosting ended.
- (iii) When 8 minutes has passed since the compressor turned ON from OFF status.
- (iv) When 8minutes has passed since one outdoor fan turned ON from OFF status.
- (v) After all above conditions have been met, when any of the following conditions is satisfied.
 - When the outdoor heat exchanger temperature (sensed by Tho-R) and the outdoor air temperature (sensed by Tho-A) dropped below the defrosting start temperature in Fig. 1 for 30 seconds continuously
 When the suction pressure saturated temperature calculated by the low pressure (sensed by PSL) and the
 - When the suction pressure saturated temperature calculated by the low pressure (sensed by PSL) and the outdoor air temperature (sensed by Tho-A) dropped below the defrosting start temperature in Fig. 2 for 3 minutes continuously



2) End conditions

- Defrosting operation stops when any of the following conditions is satisfied.
- (i) When 12 minutes has passed since defrost started
- (ii) When the outdoor heat exchanger temperature (sensed by Tho-R) is detected 10°C or higher continuously for 10 seconds
 - (iii) When it has detected the high pressure $(HP) \ge 3.0MPa$

(b) Time condition of defrosting

1) Start conditions

- Defrosting operation start when all of the following conditions are satisfied.
- (i) When 33 minutes of cumulative compressor operation time has passed since heating operation started.
- (ii) When 33 minutes of cumulative compressor operation time has passed since the previous defrosting ended.
- (iii) When 105 seconds has passed since the compressor turned ON from OFF status in heating mode.
- (iv) When the oil return condition has been established
- (v) Following cases are excluded.
- ^① When the upper limit frequency of the compressor protection start A or B is lower than the defrosting frequency
 - 2 During the normal compressor protection start

End conditions

2)

- Defrosting operation stops when any of the following conditions is satisfied.
- (i) When 12 minutes has passed since defrost started
- (ii) When the outdoor heat exchanger temperature (sensed by Tho-R) is detected 10°C or higher continuously for 10 seconds
- (iii) When it has detected the high pressure (HP) \geq 3.0MPa

(6) Protective control

(a) Discharge pipe temperature (Td) control

Discharge pipe temperature sensor (Tho-D1) monitors the discharge pipe temperature (Td) to avoid the rise of discharge pipe temperature.

1) Compressor capacity control

- (i) Start conditions
 - When all of following conditions are satisfied
 - ① When the compressor is ON state.
 - 2 When it detects the discharge pipe temperature (sensed by Tho-D1) is higher than 120°C
- (ii) Control contents

Whenever it detects the discharge pipe temperature is higher than 120°C for 5 seconds, the capacity is decreased.

- (iii) End conditions
 - When any of the following conditions is satisfied
 - 1 When the discharge pipe temperature (sensed by Tho-D1) drops below 110°C
 - ^② When the compressor is OFF state.
 - 3 During the defrosting control

2) Indoor EEV slightly open control at heating stop.

Rise of discharge pipe temperature (Td) is restarined by opening the indoor EEV during heating stop.

(b) Over-current protection control (Current safe)

- 1) If the input current value at the inverter inlet (converter inlet L3-phase) exceeds the setting value, the compressor speed is reduced. If the higher value persists even after the speed reduction, the speed is reduced further.
- 2) This control terminates when it is lower than the reset value for 3 minutes continuously or lower than the setting value for 6 minutes continuously.

(c) Power transistor temperature (PT) protective control

If the power transistor temperature exceeds 75°C, the compressor speed is controlled.



(7) Test run

Power transistor temp. (°C)

(a) Start conditions

- (i) Turn ON the test run switch (SW5-1). The switch is invalid if it is turned ON before the power ON.
- (ii) Pump down switch (SW5-3) must be turned OFF.

(b) Contents of control

- (i) Turning ON the dip switch (SW5-2) conducts cooling operation and turning OFF (SW5-2) conducts heating operation.
 - 1) Cooling operation
 - Compressor operation frequency control is conducted by the cooling low pressure control.
 - 2) Heating operation

Compressor operation frequency control is conducted by the heating high pressure control.

(ii) Test run start signal under corresponding operation mode is transmitted to all indoor units connected.

(c) End conditions

- (i) When the test run switch (SW5-1) is turned OFF, it stops.
- (ii) When it has stopped anomalously by the error control during test run, the error is displayed in the same way as the case of normal operation and the state of anomalous stop is kept ON even if the test run switch (SW5-1) is turned OFF.

(B) Optional controls

• Functions of outdoor PCB connector CNS1 and CNZ1

① CNS1 connector : By changing the allocation of external input functions [P07-"X"] on the 7-segment, following functions can be selected.

| Function No. "X" | CNS1 short circuited | CNS1 open |
|--|----------------------|-----------------------|
| "0" : External operation input | Operation permission | Operation prohibition |
| "1" : Demand input | Invalid | Valid |
| "2" : Forced cooling/heating input | Heating | Cooling |
| "3" : Silent mode input 1 | Valid | Invalid |
| "4" : Spare | | |
| "5" : Outdoor fan snow guard control input | Valid | Invalid |
| "6" : Test run external input 1 | Test run start | Normail operation |
| "7" : Test run external input 2 | Cooling test run | Heating test run |
| "8" : Silent mode input 2 | Valid | Invalid |
| "9" : Spare | | — |

© CNZ1 connector: By changing the allocation of external output functions [P06- "X"] on the 7-segment, following functions can be selected.

| "0" : Operation output |
|----------------------------|
| "1" : Error output |
| "2" : Compressor ON cutput |
| "3" : Fan ON output |
| "4 – 9" : Spare |

(1) External input and demand input

(a) Operation permission and prohibition modes

- (Note) With 7-segment display [P07]-[0]
- 1) Operation permission or operation prohibition mode is switched with the connector (CnS1) and the jumper wire (J13) on the outdoor PCB.
 - J13: Switching of CnS1 input method
 - J13 short-circuited: CNS1 is for the level input.
 - J13 open: CnS1 is for the pulse input.
- 2) Operation permission/prohibition control by the external input CnS1 of outdoor unit

| Input: CnS1 | Switching with J13 | CnS1: Switching of operation permission/ prohibition modes |
|---------------|-----------------------------|--|
| Short-circuit | Short-circuit (Level input) | Operation prohibition mode → Operation permission mode |
| Open | Open (Pulse input) | Switching of operation permission/ operation prohibition modes (Reversal) |
| Short-circuit | Short-circuit (Level input) | Operation permission mode → Operation prohibition mode |
| Open | Open (Pulse input) | (NOP) |

- Note (1) Factory setting J13: Short-circuit, CnS1: Short-circuit (Short-circuit pin connected)
- The operation condition is desplayed on the LCD of remote controller and is transferred to optional centralised controller.
- 4) When the control comand from remote controller is not accepted (Under the condition of the system all stop status by external input), "Center" is dispalyed. See Item 5) mentioned below.
- 5) CnS1 performs the following operations depending on the short-circuit or open of the jumper wire (J13). In case of pulse input, the pulse width is 500ms or larger.
 - ① J13 Short-circuit

| | | | | | Air-cond | itioner ON OK |
|--------------------------------|-----------|----------|---------------------------|-------------------|---------------------------------------|---------------|
| CnS1 input OFF (Open) | | | ON (| (Short-circuit) | / | OFF (Open) |
| | | | PUS | SH 1 | | |
| Remote controller operation | | L | | | !∟ | |
| Remote controller display | Center | K | Remote | | | Center |
| Air-conditioner operation/stop | OFF | | ON | OFF | ON | OFF |
| ② J13 - Open | | | | | | |
| CnS1 input | <u>ON</u> | | OFF Air-conditioner OI | | | _ |
| | | usн П | Pl | ЈЅН РИЅН Р П П | | |
| Remote controller operation | Center | Remote | Center | Remote | Center | |
| Remote controller display | | | « | * | · · · · · · · · · · · · · · · · · · · | |
| Air-conditioner operation/stop | OFF | ON | OFF | ON | OFF | |

(b) Demand control

- (Note) With 7-segment [P07] = [1]
 - 1) Demand control and normal operation are switched with the connector (CnS1) and the jumper wire (J13) on the outdoor PCB.
 - J13: Switching of CnS1 input method
 - J13 short-circuit: CnS1 is for the level input
 - J13 open: CnS1 is for the pulse input

2) Operation/ stop control by the demand input CnS1 of outdoor unit

| Input: CnS1 | Switching with J13 | CnS1: Switching of demand control/ normal operation |
|---------------|-----------------------------|---|
| Short-circuit | Short-circuit (Level input) | Demand control → Normal operation |
| Open | Open (Pulse input) | Switching of normal operation/ demand control (Reversal) |
| Short-circuit | Short-circuit (Level input) | Normal operation → Demand control |
| Open | Open (Pulse input) | NOP |

Note (1) Factory setting - J13: Short-circuit, CnS1: Short-circuit (Short-circuit pin connected)

- The operation condition is desplayed on the LCD of remote controller and is transferred to optional centralised controller.
- 4) Demand control

Demand ratio can be switched with the dip switches (SW4-5, 4-6) on the outdoor PCB.

SW4-5, SW4-6 demand switching: 0 – Open, 1 – Short-circuit (Factory default is open)

| SW4-5 | SW4-6 | Compressor Out put(%) |
|-------|-------|--------------------------|
| 0 | 0 | 80 |
| 1 | 0 | 60 |
| 0 | 1 | 40 |
| 1 | 1 | 0 |

 CnS1 performs the following operations depending on the short circuited or open of the jumper wire (J13). In the case of pulse input, the pulse width is 500ms or larger.

1) J13 - Short-circuit

Air-conditioner operation/stop



Compressor OFF

Compressor OFF

(2) Silent mode control

(a) Start conditions

When all of the following conditions is established

- (i) At the start of silent mode initiated by the indoor unit or when the silent mode input is made effective (short-circuited) at the external input terminal (Factory default: CnG2) on the outdoor unit
- (ii) When the outdoor unit operation mode is cooling or heating
- (iii) When the outdoor air temperature satisfies the following conditions
 - 1) Silent setting 0, 1: Effective in zone A and B
 - 2) Silent setting 2, 3: Effective in zone B
 - (Note) Silent setting 0 to 3 can be swiched by [P05] of 7-segment display.





<Outdoor operation mode - Heating>



Outdoor air temperature (°C)

- (iv) It is excluded when the following invalid conditions are established (For prevention of anomalous pressure rise at start)
 - For 30 seconds after either compressor has been turned ON
 - (During a special operation)
 - During the 4-way valve switching safeguard
 - During the defrost control
 - During the oil return control
 - During the moved pump down control
 - During the pump down control for removal of the unit

(Note) Any controls affected by the restriction of compressor and outdoor fan capcity during the silent mode are excluded.

(b) Control contents

Setting values can be changed with the silent setting as follows.

- (i) Upper limit of compressor speed is restricted.
- (ii) Upper limit of outdoor fan speed is restricted.

| Item | Upper limit of compressor speed | | | Upper limit of outdoor fan speed | | | |
|---------------------------------------|---------------------------------|-----------|--|----------------------------------|--------|------|--|
| | rps | | | rp | m | | |
| Setting | P224 | P280 P335 | | P224 | P280 | P335 | |
| Silent setting 0 (Factory default) | 80 | 100 | | 780 | 800 | | |
| Silent setting 1 | 74 | 88 | | 700 | 00 700 | | |
| Silent setting 2 | 64 | 80 | | 575 | 575 | | |
| Silent setting 3 | 50 | 60 | | 540 | 540 | | |

(c) End condition

• When the starting conditions are not established

(3) Outdoor fan snow protection control

(a) This control is enabled/disabled by entering data into 7-segment display.

(b) Setting method of outdoor fan control

[Starting conditions]

When following conditions are established for 10 minutes continuously.

- Snow protection control setting is valid ([P02]-1) and outdoor air temperature < 3°C or external input of outdoor fan snow protection control ON. ([P07]-5 and CnS1 is shorted)
 - ① Set the Code No. to "P02".
 - "0" or "1" is displayed at the data display area.
 "0": Outdoor fan control disabled (Factory setting)
 "1": Outdoor fan control enabled
 - ③ Press SW7 (Data write/delete) for 3 seconds continuously.
 - ④ "0" or "1" blinks every 0.5 second at the data display area.
 - (5) Press SW8 (one digit) to toggle the display back and forth between "0" and "1" (blinking).
 - If SW7 is pressed for 3 seconds or longer continuously while "0 " and "1" is blinking, the blinking stops. With this operation, the enabled/disabled setting of outdoor fan control is stored in memory of EEPROM, and henceforth the outdoor fan is controlled according to the contents of memory.
 - ⑦ Contents of the outdoor fan control are retained even if the power is turned off and backed on again.

(c) Contents of outdoor fan snow protection control

- ① If the outdoor air temperature drops 3°C or lower when the unit is all stop or error stop, the outdoor fan runs at the rating speed (7th speed) once every 10 minutes.
- ② The outdoor fan runs for 30 seconds.*
 - *Operation time outdoor fan is changeable from 10 to 600 seconds by [P03]
- ③ During this snow protection control, the compressor's magnetic contactor (52X1 52X2) is ON.

(d) End conditions of outdoor fan snow protection control

When follwing conditions are established.

- Snow protection control setting is invalid ([P02]-0) or outdoor air temperature > 5°C and external input of outdoor fan snow protection control OFF ([P07]-[5]and CnS1is opend).
- (ii) Compressor ON
- (iii) During all stop by anomaly
 - <Outdoor air temperature condition at snow protection control>



(4) External output

This function is used in order to operate the external optional devices in conjunction with relay outputs of the respective operation information from outdoor unit.

[External output function]

External output function of CnZ1 can be switched by changing of [P06] on 7-segment display as mentioned below.

0: Operation output

- When the outdoor unit operation mode is "Operation", the external output relay is turned ON.
- (Note) The "Operation" includes not only compressor ON mode but also Fan mode and thermostat OFF mode under the condition of remote controller ON. But the anomalous stop is excluded.
- 1: Error output
 - It is turned ON at anomalous stop, and turned OFF when "CHECK" and "RESET" buttons on remote controller are pressed simutaneously after recovering from the anomaly. Even if "CHECK" and "RESET" buttons are pressed before recovering from the anomaly, it is not turned OFF, but when recovering from the anomaly later, it is automatically turned OFF.
- 2: Compressor ON output
 - It is turned ON when the compressor is ON.
- 3: Fan ON output
 - It is turned ON when the outdoor fan speed command > 0.

(5) Energy saving mode control

This control is effective, when [P04] of 7-segment display is set 000, 040, 060, 080 (except OFF)

(a) Control contents

- (i) Compressor upper limit speed is changed according to the setting ratio.
- (ii) Compressor upper limit speed is obtained by multiplying the rating speed (at cooling/heating) with the setting ratio as follows.
 - OFF: Normal (Factory setting)
 - 80%: 80% of rating compressor upper limit speed
 - 60%: 60% of rating compressor upper limit speed
 - 40%: 40% of rating compressor upper limit speed
 - 0%: 0% of rating compressor upper limit speed (stop)
- (iii) Except 0% of energy saving ratio, the following controls take precedence over this control.
 - 4-way valve switching safeguard
 - Defrosting control
 - Oil return control
 - During the pump down control for removal of the unit
 - Pump down control at start/stop

(6) Forced cooling/heating operation

- (a) With this control, SW3-7 on the outdoor PCB is turned ON and CnG1 (equipped with short circuit pin) is shorted or opened so as to forcibly determined whether the indoor unit is operated for cooling or heating.
- (b) If any operation mode other than the forcible mode is commanded from indoor unit, the mode unmatch message is displayed on the remote controller or others and operation enters in the FAN mode.

| SW3-7 | CnG1 | Operation | |
|-------|-------|--------------|--|
| ON | Open | Cooling only | |
| | Close | Heating only | |

(7) Emergency stop control

When one of indoor units receives the emergency stop signal from optional device like as refrigerant leakage detector and the information is transmitted to the outdoor unit, the outdoor unit stops operation and an emergency stop error is transmitted to all indoor units running.

Make the emergency stop effective by remote controller indoor function setting.

- (a) When it receives the "Emergency stop" command from the indoor unit, it makes all stop by error.
- (b) It shows the Error display "E63" and transmits the "Emergency stop" command to all indoor units.
- (c) If the "Emergency stop reset" command is received from the indoor unit, the "Emergency stop reset" command is transmitted to all indoor units.

(8) Pump down operation control for removal of the unit

When an outdoor unit is discarded or removed, the pump down control is performed at the outdoor unit side in order to recover the refrigerant quickly to the outdoor unit.

(a) Start conditions

This is implemented with the liquid service valve closed.

- (i) Outdoor unit operation mode Stop
- (ii) Turn ON the test run cooling switch SW5-2 (cooling).
- (iii) Turn ON the pump down switch SW5-3 (pump down).
- (iv) Turn ON the test run switch SW5-1 when the above (i)-(iii) statuses are satisfied. Note (1) Input before the power ON is invalid.

(b) Control contents

(i) Compressor starts under compressor start protection control and runs at target speed of pump down operation. However, when the operation start conditions have been established during the 3-minute delay control of compressor, the compressor starts after completing the 3-minute delay control.

| Item | Нр | Target compressor speed at pump down operation |
|------------|----|--|
| FDC224KXE6 | 8 | 50HZ |
| FDC280KXE6 | 10 | 62HZ |
| FDC335KXE6 | 12 | 52HZ |

- (ii) As the start conditions are established, both red LED and green LED on the outdoor PCB flash continuously.
 7-segment display shows "PdS" (Channel 0) at the code display area.
- (iii) During the pump down operation control, the protective controls (excluing low pressure protective control, anomalous low pressure control and pressure ratio protection control) and the error detection control are effective.
- (iv) The sub-cooling coil expansion valve (EEVSC) closes fully during the pump down control.

(c) End conditions

If any of the following conditions is satisfied, this control ends.

- If a low pressure (LP) ≤ 0.01MPa is detected for 5 seconds continuously, it ends normally and initiates the followings.
 - ① Red LED: keeps lighting
 - ② Green LED: keeps flashing
 - ③ 7-segment display: PdE
 - ④ Remote controller: Stop
- (ii) Anomalous all stop by the error detection control
- (iii) If the cumulative compressor operation time under the pump down control totals 15 minutes (ending by time count up), it stops and initiates the following.
 - ① Red LED: stays OFF
 - ② Green LED: keeps flashing
 - ③ 7-segment display: No display
 - Remote controller: Stop
- (iv) When any of setting switches (SW5-1, SW5-2 and SW5-3) has been turned OFF during pump down. (Note) Even if only the pump down switch SW5-3 is turned OFF, it does not recognized as the cooling test run mode, but stops

(C) Data output

(1) 7-segment and operation data retention

(a) 7-segment display

Operation information is displayed for checking various operation data during test run and for helping malfunction diagnosis at servicing. Input data to microcomputer, contents of outdoor unit control, indoor unit registration information, or other, are mainly displayed on the 7-segment LED.

- (i) Operation information display
 - ① Displays each item at 7-segment of 3-digit \times 2 on the outdoor unit PCB.
 - ② Display is controlled with the following buttons.
 - SW9: Setting button for order of 10 of display code

SW8: Setting button for order of 1 of display code

- SW7: Data erase/write button
- ③ Select the order of 10 for the code No. of each item with SW9 or SW8 for the order of 1.
 - Following identification alphabets are used at the code display.

"C": "C00" – "C99"

- "P": "P00" "Pxx" (up to a place where content is specified)
- ④ Code [C96] is operable item. It is possible to delete the retained operation data (data of 30 minutes preceding an anomalous stop) by following resetting procedure.
 - <Resetting operation>
 - Select code [C96]. If any anomalous data is retained, the data display [dEL] is shown.
 - Pressing SW7 for 3 seconds erases the memory data on RAM. (EEPROM data are not erased.)
 - As the data are erased, the data display shows [- -].
 When no anomalous data are retained, it displays [---] as well.
 - Unless the reset operation is performed, data are retained. Therefore, if normal operation is resumed without the reset operation and an anomalous stop occurs again, no new anomalous data cannot be retained, but former anomalous data are still retained unchanged.
- (5) If you press SW8 (order of 1), the number changes $0 \rightarrow 1 \rightarrow 2 \dots 9 \rightarrow 0$.
- If you press SW9 (order of 10), the number jumps to the leading code of each order of 10. Data display [Cxx] and setting value display [Pxx] are considered to be continuous.

Example: Pressing SW9 at [C07] it changes to [C10]

- : Pressing SW9 at [C90], it changes to [P00]
- Codes [C44] are operable items. With the following reset operation, the cumulative compressor operation time corresponding to the code No. can be erased (reset). (Reset of operation time after replacing the compressor)
 <Resetting operation>
 - Select codes [C44]. Cumulative compressor operation time up to present is displayed.
 - Pressing SW7 for 3 seconds erases the memory data.
 - However, the cumulative compressor operation time data in the 30 minutes log data preceding an anomalous stop (if this retained log data are not deleted) are not erased by this procedure.
- [®] Data display for spare items is left in blank.
- (ii) When the temperature is below -10.0°C for the display of discharge pressure saturated temperature and suction pressure saturated temperature, the fraction after decimal point is rounded up. (Because the range of 7-segment display is 3-digit.)
- (iii) Return the error No. display after an error to the normal display by turning ON the dipswitch SW3-1.

- (iii) Precedence of display
 - $() \quad [Exx] > [Related to check operation ([CHJ] > [CHU])] > [PdE] > [PdS] > [oPx] > [Cxx]$
 - $\ \ \,$ If resetting from the display of $\ \,$, it is switched to [C00].
 - If SW8 or SW9 is pressed during the display of ①, it changes to [C00].
 However, unless no button input is done for 10 seconds after change to [C00], it changes to the display of ① automatically according to the precedence.
 - ④ Display switching

Special display is the display other than [CXX].



* If the special display is reset in the meanwhile, it remains as [CXX].

(b) List of 7-segment displays

| Code No. | Contents of display | Data display range | Minimum unit | Remarks |
|--|---|---------------------|--------------|----------------------|
| Error display | [Exx] | | | |
| Caution display | [oPx] | | | |
| Special display | [PdS][PdE] | | | |
| | | | | |
| Code No. | Contents of data display | Data display range | Minimum unit | Remarks |
| <sensor td="" v<=""><td>value, actuator information></td><td></td><td></td><td></td></sensor> | value, actuator information> | | | |
| C00 | CM1 operation frequency | 0 ~ 130 | 1Hz | |
| C01 | (Spare) | | | |
| C02 | Tho-A Outdoor air temperature | L,-20 ~ 43 | 1°C | |
| C03 | Tho-R1 Heat exchanger temperature 1 | L,-25 ~ 73 | 1°C | |
| C04 | Tho-R2 Heat exchanger temperature 2 | L,-25 ~ 73 | 1°C | |
| C05 | (Spare) | | | |
| C06 | (Spare) | | | |
| C07 | Tho-D1 Discharge pipe temperature (CM1) | L,31 ~ 136 | 1°C | |
| C08 | (Spare) | | | |
| C09 | (Spare) | | | |
| C10 | Tho-C1 Under-dome temperature (CM1) | L,5 ~ 90 | 1°C | |
| C11 | (Spare) | | | |
| C12 | Tho-P1 Power transistor temperature (CM1) | L,5 ~ 136 | 1°C | |
| C13 | (Spare) | | | |
| C14 | Tho-SC Sub-cooling coil temperature 1 | L,18 ~ 73 | 1°C | |
| C15 | Tho-H Sub-cooling coil temperature 2 | L,-25 ~ 73 | 1°C | |
| C16 | Tho-S Suction pipe temperature | L25 ~ 73 | 1°C | |
| C17 | Inverter secondary current | 0 ~ 50 | 1A | |
| C18 | CT1 (CM1) current | 0 ~ 50 | 1A | |
| C19 | (Spare) | | | |
| C20 | EEVH1 Heating expansion valve opening angle | 0 ~ 500 | 1 nulse | |
| C21 | (Spare) | 0 200 | 1 puise | |
| C22 | EEVSC Sub-cooling coil expansion valve opening angle | 0 ~ 500 | 1 pulse | |
| C23 | FMo1 Actual fan speed | 0 ~ 999 | 10min-1 | |
| C24 | FMo2 Actual fan speed | 0~999 | 10min-1 | |
| C25 | PSH High pressure sensor | 0~4.15 | 0.01MPa | |
| C26 | PSL Low pressure sensor | 0~1.70 | 0.01MPa | |
| C27 | (Spare) | | | |
| C28 | (Spare) | | | |
| C29 | (Spare) | | | |
| | (Spare) | | | Order of 100: 63H1-1 |
| C30 | Proseuro switch | 0,1 | | Order of 10: (Spare) |
| | riessure switch | (0: Close, 1: Open) | | Order of 1: (Spare) |
| | | | | Order of 100, CNS1 |
| C21 | External input | 0,1 | | Order of 10: CNS1 |
| | еленанири | (0: Close, 1: Open) | _ | Order of 1: ONC1 |
| 1 | | | | Order of 1: CNG1 |

| Code No. | Contents of data display | Data display range | Minimum unit | Remarks |
|--|--|---------------------|-----------------|---|
| | | | | Order of 100: CNG2 |
| C32 | External input | 0,1 | _ | Order of 10: (Spare) |
| | - | (0: Close, 1: Open) | | Order of 1: (Spare) |
| | | | | Order of 100: 52C-1 |
| C33 | Relay output | 0,1 | _ | Order of 10: 20S |
| | | (0: Close, 1: Open) | | Order of 1: Crankcase heater 1 |
| | | | | Order of 100: SV6 |
| C34 | Relay output | 0,1 | _ | Order of 10: (Spare) |
| | | (0: Close, 1: Open) | | Order of 1: (Spare) |
| | | | | Order of 100: SV1 |
| C35 | Relay output | 0,1 | _ | Order of 10: SV11 |
| | | (0: Close, 1: Open) | | Order of 1: SV12 |
| | | | | Order of 100: (Spare) |
| C36 | Relay output | 0,1 | _ | Order of 10: (Spare) |
| | | (0: Close, 1: Open) | | Order of 1: (Spare) |
| | | | | Order of 100: External output (CNZ1) |
| C37 | External output | 0,1 | _ | Order of 10: CnH Operation output |
| | * | (0: Close, 1: Open) | | Order of 1: CnY Anomalous output |
| | | | | * |
| C38 | (Spare) | _ | _ | |
| | | | | |
| | | | | |
| C39 | (Spare) | _ | _ | |
| | | | | |
| <out< td=""><td>door unit information></td><td></td><td></td><td></td></out<> | door unit information> | | | |
| C40 | Number of connected indoor units | 0 ~ 50 | 1 | |
| C41 | Capacity of connected indoor units | 0 ~ 200 | 1 | |
| C42 | Number of indoor units with thermostat ON | 0 ~ 50 | 1 | |
| C43 | Required Hz total | 0 ~ 999 | 1Hz | |
| C44 | Cumulative compressor operation time | 0 ~ 655 | 100h | |
| <u> </u> | (CM1) | | 10011 | |
| C45 | (Spare) | 50 50 | 0.100 | |
| C46 | Discharge pressure saturated temperature | -50 ~ 70 | 0.1°C | Range unable to display (-10°C or under) is in the unit of 1°C. |
| C47 | Suction pressure saturated temperature | -50 ~ 30 | 0.1°C | Range unable to display (-10°C or under) is in the unit of 1°C. |
| C48 | Sub-cooling coil temperature sensor 1 saturated pressure | -0.68 ~ 4.15 | 0.01 MPa | 0 is omitted in negative range. -0.68 \rightarrow [68] |
| C49 | Cooling sub-cooling | 0 ~ 50 | 0.1deg | |
| C50 | Heating overheat | 0 ~ 50 | 0.1deg | |
| C51 | Sub-cooling coil overheat | 0 ~ 50 | 0.1deg | |
| C52 | Discharge pipe overheat 1 | 0 ~ 50 | 0.1deg | |
| C53 | Under-dome overheat 1 | 0 ~ 50 | 0.1deg | |
| C54 | Target cooling low pressure | 0.00 ~ 2.00 | 0.01MPa | |
| C55 | Target heating high pressure | 1.60 ~ 4.15 | 0.01MPa | |
| C56 | Target Fk | 0 ~ 999 | 1Hz | |
| C57 | Inverter 1 operation frequency command | 0 ~ 130 | 1Hz | |
| C58 | (Spare) | 0 ~ 130 | 1Hz | |
| C59 | FMo1 Fan Speed command | 0 ~ 999 | 10min-1 | |
| C60 | FMo2 Fan Speed command | 0 ~ 999 | 10min-1 | |

| Code No. | Contents of data display | Data display range | Minimum unit | Remarks |
|--|---|--------------------|-----------------|---------|
| <ano< td=""><td>omalous counter information></td><td></td><td></td><td></td></ano<> | omalous counter information> | | | |
| C70 | Counter · Sensor wire disconnected | 0 ~ 3 | 1 | |
| C71 | Counter · High pressure protection | 0~5 | 1 | |
| C72 | Counter · Anomalous low pressure ③ (During operation) | 0~5 | 1 | |
| C73 | Counter · Anomalous low pressure ① (During stop) | 0~5 | 1 | |
| C74 | Counter · Discharge pipe 1 anomalous temperature | 0~5 | 1 | |
| C75 | Counter · Anomalous FMo1 stop | 0~5 | 1 | |
| C76 | Counter · Anomalous FMo2 stop | 0~5 | 1 | |
| C77 | Counter · Current cut (CM1) | 0~4 | 1 | |
| C78 | Counter · Compressor 1 starting failure | 0 ~ 20 | 1 | |
| C79 | Counter · Inverter 1 comunication error | 0~4 | 1 | |
| C80 | (Spare) Counter · Power transistor 1 overheat | 0~4 | 1 | |
| C81 | (Spare) | | | |
| C82 | Counter · Inverter 1 desynchronism error | 0~4 | 1 | |
| C83 | Counter · Inverter 1 comunication error cumulative | 0 ~ 127 | 1 | |
| C84 | Counter · Indoor/outdoor comunication error | 0~255 | 1 | |
| C85 | Counter · CPU reset | 0~255 | 1 | |
| C86 | (Spare) | | | |
| C87 | (Spare) | | | |
| C88 | (Spare) | | | |
| C89 | (Spare) | | | |
| C90 | (Spare) | | | |
| C91 | (Spare) | | | |
| C92 | (Spare) | | | |
| C93 | Counter – Liquid-back error | 0 ~ 3 | 1 | |
| C94 | (Spare) | | | |
| | | | | |
| | | | | |
| <oth< td=""><td>ers></td><td></td><td></td><td></td></oth<> | ers> | | | |
| C95 | (Spare) | | | |
| C96 | Data reset | | | |
| C97 | Program · Sub version | 0 ~ 991 | _ | |
| C98 | Program · POL version | 0.00 ~ 9.99 | 0.01 | |
| C99 | Auto feed display | _ | | |

| Code No. | Contents of data display | Data display range | Minimum unit | Remarks |
|--------------------------|--|--|-----------------|---|
| <user setting=""></user> | | | | |
| P00 | (Spare) | | - | |
| P01 | Operation priority selection | 0,1 | _ | 0: First push priority (at shipping) 1: Last push priorit |
| P02 | Outdoor unit fan snow protection control | 0,1 | _ | 0: Control disabled (at shipping) 1: Control enabled |
| P03 | Outdoor unit fan snow protection control ON time setting | 30 : (Factory default) 10, 30 ~ 600 [Sec] | 30 | Changes like 10, 30, 60 90 600 |
| P04 | Energy saving mode *2 | OFF,000,040, 060,080 | | 0: OFF, 1: 0%, 2: 40%. 3: 60%, 4: 80% Factory default is 0: OFF. |
| P05 | Silencing mode setting | $\frac{0:(Factory default)}{0 \sim 9}$ | 1 | |
| P06 | Allocation of external output (CnZ1) | $\frac{0:(Factory default)}{0 \sim 9}$ | 1 | |
| P07 | Allocation of external input (CnS1) | $\frac{0:(Factory default)}{0 \sim 9}$ | 1 | |
| P08 | Allocation of external input (CnS2) | $\frac{1:(Factory default)}{0 \sim 9}$ | 1 | |
| P09 | Allocation of external input (CnG1) | $\frac{2:(Factory default)}{0 \sim 9}$ | 1 | |
| P10 | Allocation of external input (CnG2) | $\frac{3:(Factory default)}{0 \sim 9}$ | 1 | |

| Code No. | Data display contents | Data display range | Min. unit | Remarks |
|--|--|---|--------------|---|
| <serv< td=""><td>vice engineer setting></td><td></td><td></td><td></td></serv<> | vice engineer setting> | | | |
| P16 | (Spare) | | | |
| P17 | (Spare) | | | |
| P18 | (Spare) | | | |
| P19 | Preferencial switch to ensure certain indoor outlet air temperature at heating | 0 : (Factory default) 0.1 | _ | 0: Control for ensuring certain indoor outlet air temperature at heating is valid1: Control for ensuring certain indoor outlet air temperature at heating is invalid |
| P20 | Allowable total capacity of thermostat ON indoor units to ensure certain indoor outlet temperature at heating | 110 : (Factory default) 100, 090, 080 | _ | Changes to 110, 100, 090, 080, 110 |
| P21 | Allowable number of thermostat ON indoor units to ensure certain indoor outlet temperature at heating | $\frac{0:(Factory default)}{0 \sim 9}$ | 1 | |
| P22 | (Spare) | | | |
| P23 | (Spare) | | | |
| P24 | (Spare) | | | |
| P25 | (Spare) | | | |
| <nev< td=""><td>vsuper link setting></td><td></td><td></td><td></td></nev<> | vsuper link setting> | | | |
| P30 | Superlink communication status | 0,1 | _ | 0: Previous superlink 1: New superlink |
| P31 | Automatic address setting start input | $\frac{0:(Factory \ default)}{0,1}$ | _ | 0: Automatic address setting standby 1: Automatic address setting start |
| P32 | Input the starting indoor address for automatic address setting | $\frac{1:(Factory default)}{1 \sim 127}$ | 1 | Specify the starting indoor address connected in one refrigerant system for automatic address setting. |
| P33 | Input the number of connected indoor units | $\frac{1:(Factory default)}{1 \sim 24 (*)}$ | 1 | Specify the number of indoor units connected in one refrigerant system for automatic address setting. (*) Maximum connectable number of indoor units for each outdoor unit |
| P34 | Polarity difinition | $\frac{0:(Factory default)}{0,1}$ | _ | 0: Network polarity not defined 1: Network polarity defined |
| P36 | (Spare) | | | |
| P37 | (Spare) | | | |
| P38 | (Spare) | | | |
| P39 | (Spare) | | | |

(c) Saving of Operation Data

Mainly for investigating the causes of market claims, operation data are always saved in memory. If any trouble occurs, the data writing is stopped and only the operation data prior to the time when the trouble occurs are recorded. These data can be loaded to a PC via RS232C connector of PCB and utilized for identifying causes.

- (i) Operation data for a period of 30minutes prior to the present operation are saved and updated continuously.
- (ii) If an anomalous stop occurs, the data are not updated any more.
- (iii) Data are written in based on 1 minute sampling interval and following data is transmitted to PC upon demand.

| Data | Data range | Example | | |
|-----------------------------------|---------------------------------|----------------------------|--|--|
| Software version | Ascii 15 bytes | KD3C218######## (# : NULL) | | |
| PID (Program ID) | Ascii 2 bytes | 5D | | |
| Outdoor unit capacity | Ascii 3 bytes | As listed blow | | |
| Power supply frequency | Ascii 2 bytes | 60 | | |
| Outdoor address | Ascii 2 bytes | 00 ~ 3F | | |
| Indoor address \times 16 units | Ascii 2 bytes \times 16 units | 40 ~ 7F | | |
| Indoor capacity \times 16 units | Ascii 3 bytes × 16 units | 022 ~ 280 | | |
| | | | | |

| Outdoor unit composition | Outdoor unit capacity data | Remarks |
|--------------------------|----------------------------|--|
| Single type | Example: 10HP - [S10] | S: Display with Horse Power of single type |

(iv) Error retention and monitoring data

| Code | Write contents | Record data | | | | |
|------|-------------------------|------------------|---------------|-----------------|------------|----------------------------------|
| No. | write contents | Data write range | Unit of write | Number of bytes | | Contents |
| 00 | Indoor 1 Thi-A | -14 ~ 50 | A/D value | 1 | Return air | |
| 01 | Indoor 1 Thi-R1 | 0 ~ 72 | A/D value | 1 | Heat exch | anger 1 |
| 02 | Indoor 1 ThI-R2 | 0~72 | A/D value | 1 | Heat exch | anger 2 |
| 03 | Indoor 1 Thi-R3 | 0~72 | A/D value | 1 | Heat exch | anger 3 |
| 04 | Indoor 1 EEV | 0 ~ 470 | 1 pulse | 2 | | |
| 05 | Indoor 1 operation/stop | 0,1 | _ | 1 | 0 | Stop |
| | | | | | 1 | Operation |
| 06 | Indoor 1 operation mode | 0 ~ 4 | - | 1 | 0 | Auto |
| | | | | | 1 | Dehumidifying |
| | | | | | 2 | Cooling |
| | | | | | 3 | Fan |
| | | | | | 4 | Heating |
| 07 | Indoor 1 request Hz | 0 ~ 255 | 1Hz | 1 | | |
| 08 | Indoor 1 answer Hz | 0 ~ 255 | 1Hz | 1 | | |
| 09 | Indoor 1 indoor local | - | - | 1 | Bit0 | Anti-frost |
| | | | | | Bit1 | EEV opening angle implementation |
| 10 | Indoor 1 Thi spare | -14 ~ 50 | A/D value | 1 | Discharge | , |
| 11 | Indoor 1 type | 0 ~ 67 | _ | 1 | 0 | FDT |
| | | | | | 1 | FDK |
| | | | | | 2 | Others |
| | | | | | 3 | FDE |
| | | | | | 4 | FDTC |
| | | | | | 5 | |
| | | | | | 6 | |
| | | | | | 7 | |
| | | | | | 60 ~ | |
| 12 | Indoor 1PID | _ | _ | 1 | | |

| Code No. | Write contents | Record data Data write range | Unit of write | Number of bytes | Contents |
|---|---|---------------------------------|---------------|-----------------|--|
| 0 | Error code | 00 ~ 99 | - | 1 | 00: No error on outdoor unit 01-99: All errors |
| 1 | Error existing unit address | 00 ~ FF | - | 1 | 00 – 3F: Outdoor 40 – 6F: Indoor |
| | | | | | |
| <sen:< td=""><td>sor value></td><td></td><td></td><td></td><td></td></sen:<> | sor value> | | | | |
| 2 | Tho-A Outdoor air temperature | -20 ~ 70 | A/D value | 1 | |
| 3 | Tho-R1 Heat exchanger temp. 1 | -40 ~ 75 | A/D value | 2 | |
| 4 | Tho-R2 Heat exchanger temp. 2 | -40 ~ 75 | A/D value | 2 | |
| 5 | Tho-D1 Discharge pipe temp. (CM1) | -20 ~ 140 | A/D value | 1 | |
| 6 | Tho-S Suction pipe temperature | -40 ~ 75 | A/D value | 2 | |
| 7 | Tho-SC Sub-cooling coil temp. 1 | -40 ~ 75 | A/D value | 2 | |
| 8 | Tho-H Sub-cooling coil temp. 2 | -40 ~ 75 | A/D value | 2 | |
| 9 | Tho-P1 Power transistor temp. (Radiator fin) | -20 ~ 140 | A/D value | 1 | |
| 10 | Inverter secondary current | 0~50 | A/D value | 1 | |
| 11 | Tho-C1 Under-dome temp. (CM1) | -40 ~ 90 | A/D value | 1 | |
| 12 | CT1 Current | 0 ~ 50 | A/D value | 1 | |
| 13 | High pressure sensor | 0~4.15 | A/D value | 1 | |
| 14 | Low pressure sensor | 0~1.70 | A/D value | 1 | |
| <out< td=""><td>door unit information></td><td></td><td></td><td></td><td></td></out<> | door unit information> | | | | |
| 15 | Number of connected indoor units | 0~127 | 1 unit | 1 | |
| 16 | Capacity of connected indoor units | 0 ~ 65535 | _ | 2 | |
| 17 | Number of indoor units with thermostat ON | 0~255 | 1 unit | 1 | |
| 18 | Total capacity of indoor units with cooling thermostat ON | 0 ~ 65535 | | 2 | |
| 19 | Total capacity of indoor units with heating thermostat ON | 0 ~ 65535 | | 2 | |
| | | | | | 0 Stop |
| 20 | Operation mode | 0~2 | - | 1 | 1 Cooling |
| | | | | | 2 Heating |
| 21 | Inverter CM1 actual operation frequency | 0~255 | 1Hz | 1 | |
| 22 | FMo1 Actual fan speed | 0 ~ 65535 | 10min-1 | 2 | |
| 23 | FMo2 Actual fan speed | 0 ~ 65535 | 10min-1 | 2 | |
| 24 | Required Hz total | 0 ~ 65535 | 1Hz | 2 | |
| 25 | Discharge pressure saturated temperature | -50 ~ 70 | 0.01°C | 2 | |
| 26 | Suction pressure saturated temperature | -50 ~ 30 | 0.01°C | 2 | |
| 27 | Sub-cooling coil temp. sensor 1 saturated pressure | -0.68 ~ 4.15 | 0.01MPa | 2 | |
| 28 | Pressure ratio | 1.0 ~ 10.0 | 0.1 | 1 | |
| 29 | Cooling sub-cooling | 0 ~ 50 | 0.1deg | 2 | |
| 30 | Suction overheat | 0 ~ 50 | 0.1deg | 2 | |
| 31 | Sub-cooling coil overheat | 0~50 | 0.1deg | 2 | |
| 32 | Discharge pipe overheat | 0 ~ 50 | 0.1deg | 2 | |
| 33 | Compressor 1 under-dome overheat | 0~50 | 0.1deg | 2 | |
| 34 | Target Fk | 0 ~ 65535 | 1Hz | 2 | |
| 35 | Answer Hz total | 0 ~ 65535 | 1Hz | 2 | |
| 36 | Inverter 1 operation frequency command | 0 ~ 120 | 1Hz | 1 | |
| Code | Write contents | Record data | Unit of | Number of | | Cor | ntents |
|--|---|----------------|---------|-----------|--------|-------------------|---------------------------|
| 37 | FMo1 Fan speed command | $0 \sim 65535$ | 10min-1 | 2 | | | |
| 38 | FMo2 Fan speed command | 0 ~ 65535 | 10min-1 | 2 | | | |
| 39 | EEVH1 opening degree | 0 ~ 65535 | 1 pulse | 2 | | | |
| 40 | EEVSC opening degree | 0 ~ 65535 | 1 pulse | 2 | | | |
| 41 | Compressor target cooling low | 0.00 ~ 2.00 | 0.01MPa | 1 | | | |
| | pressure | | | | | | |
| 42 | Compressor target heating high pressure | 0.00 ~ 4.15 | 0.01MPa | 2 | | | |
| 43 | Outdoor EEVH target superheat | 0 ~ 25.5 | 0.1°C | 1 | Actual | range: 5°C – 11°C | C |
| 44 | Outdoor EEVH initial learning opeing position | 0 ~ 255 | 1 pulse | 1 | | | |
| 45 | Outdoor EEVSC target superheat | 0 ~ 25.5 | 0.1°C | 1 | | | |
| 46 | Cumulative amount of hold-up oil. | 0 ~ 2550 | 10cc | 1 | Actual | range: 0cc - 1100 | lcc |
| 47 | Oil return count down | 0 ~ 255 | 3 min. | 1 | Actual | range: 0 – 600min | n (10 hour) |
| <pcf< td=""><td>B hardware input></td><td></td><td></td><td></td><td></td><td></td><td></td></pcf<> | B hardware input> | | | | | | |
| 48 | External input | _ | _ | 1 | Bit0 | 63H1 | 0: Open, 1: Short-circuit |
| | | | | | Bit1 | (Spare) | 0: Open, 1: Short-circuit |
| | | | | | Bit2 | CNS1 | 0: Open, 1: Short-circuit |
| | | | | | Bit3 | CNS2 | 0: Open, 1: Short-circuit |
| | | | | | Bit4 | CNG1 | 0: Open, 1: Short-circuit |
| | | | | | Bit5 | CNG2 | 0: Open, 1: Short-circuit |
| | | | | | Bit6 | (Spare) | 0: Open, 1: Short-circuit |
| | | | | | Bit7 | (Spare) | 0: Open, 1: Short-circuit |
| 49 | Dip SW [SW3] | _ | _ | 1 | Bit0 | SW3-1 | 0 : OFF, 1 : ON |
| | | | | | Bit1 | SW3-2 | 0 : OFF, 1 : ON |
| | | | | | Bit2 | SW3-3 | 0 : OFF, 1 : ON |
| | | | | | Bit3 | SW3-4 | 0 : OFF, 1 : ON |
| | | | | | Bit4 | SW3-5 | 0 : OFF, 1 : ON |
| | | | | | Bit5 | SW3-6 | 0 : OFF, 1 : ON |
| | | | | | Bit6 | SW3-7 | 0 : OFF, 1 : ON |
| | | | | | Bit7 | SW3-8 | 0 : OFF, 1 : ON |
| 50 | Dip SW [SW4] | _ | _ | 1 | Bit0 | SW4-1 | 0 : OFF, 1 : ON |
| | | | | | Bit1 | SW4-2 | 0 : OFF, 1 : ON |
| | | | | | Bit2 | SW4-3 | 0 : OFF, 1 : ON |
| | | | | | Bit3 | SW4-4 | 0 : OFF, 1 : ON |
| | | | | | Bit4 | SW4-5 | 0 : OFF, 1 : ON |
| | | | | | Bit5 | SW4-6 | 0 : OFF, 1 : ON |
| | | | | | Bit6 | SW4-7 | 0 : OFF, 1 : ON |
| | | | | | Bit7 | SW4-8 | 0 : OFF, 1 : ON |
| 51 | Dip SW [SW5] | _ | _ | 1 | Bit0 | SW5-1 | 0 : OFF, 1 : ON |
| | | | | | Bit1 | SW5-2 | 0 : OFF, 1 : ON |
| | | | | | Bit2 | SW5-3 | 0 : OFF, 1 : ON |
| | | | | | Bit3 | SW5-4 | 0 : OFF, 1 : ON |
| | | | | | Bit4 | SW5-5 | 0 : OFF, 1 : ON |
| | | | | | Bit5 | SW5-6 | 0 : OFF, 1 : ON |
| | | | | | Bit6 | SW5-7 | 0 : OFF, 1 : ON |
| | | | | | Bit7 | SW5-8 | 0 : OFF, 1 : ON |

| Code No. | Write contents | Record data Data write range | Unit of write | Number of bytes | Contents | | |
|--|--|---------------------------------|------------------|-----------------|----------|------------------------------|---------------------------|
| 52 | Dip SW [SW6] | - | _ | 1 | Bit0 | SW6-1 | 0 : OFF, 1 : ON |
| | | | | | Bit1 | SW6-2 | 0 : OFF, 1 : ON |
| | | | | | Bit2 | SW6-3 | 0 : OFF, 1 : ON |
| | | | | | Bit3 | SW6-4 | 0 : OFF, 1 : ON |
| | | | | | Bit4 | SW6-5 | 0 : OFF, 1 : ON |
| | | | | | Bit5 | SW6-6 | 0 : OFF, 1 : ON |
| | | | | | Bit6 | SW6-7 | 0 : OFF, 1 : ON |
| | | | | | Bit7 | SW6-8 | 0 : OFF, 1 : ON |
| 53 | Jumper SW | _ | _ | 1 | Bit0 | J11 | 0: Open, 1: Short-circuit |
| | | | | | Bit1 | J12 | 0: Open, 1: Short-circuit |
| | | | | | Bit2 | J13 | 0: Open, 1: Short-circuit |
| | | | | | Bit3 | J14 | 0: Open, 1: Short-circuit |
| | | | | | Bit4 | J15 | 0: Open, 1: Short-circuit |
| | | | | | Bit5 | J16 | 0: Open, 1: Short-circuit |
| | | | | | Bit6 | (Spare) | |
| | | | | | Bit7 | (Spare) | |
| <pcf< td=""><td>3 hardware output></td><td></td><td></td><td></td><td></td><td></td><td></td></pcf<> | 3 hardware output> | | | | | | |
| 54 | Relay output | _ | _ | 1 | Bit0 | 52X1, 52X2 | 0 : OFF, 1 : ON |
| | | | | | Bit1 | 208 | 0 : OFF, 1 : ON |
| | | | | | Bit2 | CH1 | 0 : OFF, 1 : ON |
| | | | | | Bit3 | SV1 | 0 : OFF, 1 : ON |
| | | | | | Bit4 | SV6 | 0 : OFF, 1 : ON |
| | | | | | Bit5 | SV11 | 0 : OFF, 1 : ON |
| | | | | | Bit6 | (Spare) | 0 : OFF, 1 : ON |
| | | | | | Bit7 | (Spare) FMC1,2 | 0 : OFF, 1 : ON |
| 55 | Relay output | _ | — | 1 | Bit0 | Operation output (CnH) | 0 : OFF, 1 : ON |
| | | | | | Bit1 | Error output (CnY) | 0 : OFF, 1 : ON |
| | | | | | Bit2 | External output (CnZ) | 0 : OFF, 1 : ON |
| | | | | | Bit3 | (Spare) | 0 : OFF, 1 : ON |
| | | | | | Bit4 | (Spare) | 0 : OFF, 1 : ON |
| | | | | | Bit5 | (Spare) | 0 : OFF, 1 : ON |
| | | | | | Bit6 | (Spare) | 0 : OFF, 1 : ON |
| | | | | | Bit7 | (Spare) | 0 : OFF, 1 : ON |
| <rela< td=""><td>ated to compressor></td><td></td><td></td><td></td><td></td><td></td><td></td></rela<> | ated to compressor> | | | | | | |
| 56 | CM1 Cumulative operation hours (Approx.) | 0 ~ 65535 | 1h | 2 | | | |
| 57 | CM1 Starting times | 0 ~ 65535 | × 20 times | 2 | | | |
| 58 | CM1 3-minute delay timer | 0 ~ 180 | 1 sec | 1 | | | |
| 59 | Energizing time count down | 0 ~ 255 | 1 min | 1 | | | |
| 60 | Control status CH Compressor protection timer | 0 ~ 360 | 3 min | 1 | | | |
| 61 | Control status CH Compressor protection start | 0~15 | _ | 1 | 15 | Protection start complete | |
| | * * | | | | 0 ~ 14 | Protection start ON | |

| Code No. | Write contents | Record data Data write range | Unit of write | Number of bytes | of Contents | | |
|--|---|--|------------------|-----------------|-------------|---------------------|--|
| <erro< td=""><td>or counter information></td><td></td><td></td><td></td><td></td><td></td><td></td></erro<> | or counter information> | | | | | | |
| 72 | Control status HP (63H1) anomaly counter | 0~5 | 1 | 1 | | | |
| 73 | Control status LP anomaly counter while running | 0~5 | 1 | 1 | | | |
| 74 | Control status LP anomaly counter while stopping | 0~5 | 1 | 1 | | | |
| 75 | Control status Td1 error counter | 0 ~ 5 | 1 | 1 | | | |
| 76 | Control status DC fan motor 1 error counter | 0 ~ 5 | 1 | 1 | | | |
| 77 | Control status DC fan motor 2 error counter | 0 ~ 5 | 1 | 1 | | | |
| 78 | Control status sensor wire disconnected counter | 0 ~ 3 | 1 | 1 | | | |
| 79 | Control status INV1 current cut error counter | 0 ~ 4 | 1 | 1 | | | |
| 80 | Control status INV1 starting failure counter | 0 ~ 20 | 1 | 1 | | | |
| 81 | Control status INV1 communication error counter | 0~4 | 1 | 1 | | | |
| 82 | Control status INV1 desynchronism error counter | 0 ~ 4 | 1 | 1 | | | |
| 83 | Control status INV1 communication error counter cumulative | 0 ~ 255 | 1 | 1 | | | |
| 84 | (Spare) Control status INV1 power transistor overheat error counter | 0 ~ 4 | 1 | 1 | | | |
| 85 | Control status INV1 rotor lock error counter | 0 ~ 127 | 1 | 1 | | | |
| <sett< td=""><td>ing value display></td><td></td><td></td><td></td><td></td><td></td><td></td></sett<> | ing value display> | | | | | | |
| 96 | Operation priority switching outsoor fan | 0,1 | | 1 | 0 | First push priority | |
| 80 | snow protection control | | _ | | 1 | Last push priority | |
| 87 | Outdoor fan snow protection control | 0,1 | | 1 | 0 | Invalid | |
| 67 | | | | | 1 | Valid | |
| 88 | Outdoor fan snow protection control ON time setting | 30: (Factory default) 10, 30 – 600 [sec] | 10 sec | 1 | | | |
| 89 | Demand ratio change value | OFF, 000, 040, 060, 080 Factory default 0: OFF | _ | 1 | | | |
| 90 | Silent mode setting | 0~9 | | 1 | | | |
| 91 | CNS1 function quota value | 0~9 | | 1 | | | |
| 92 | CNS2 function quota value | 0~9 | | 1 | | | |
| 93 | CNG1 function quota value | 0~9 | | 1 | | | |
| 94 | CNG2 function quota value | 0~9 | _ | 1 | | | |
| 95 | External output function quota | 0~9 | _ | 1 | | | |
| 96 | Target cooling low pressure compensation | -0.20 ~ +0.20 | 0.01MPa | 1 | | | |
| 97 | Target cooling high pressure compensation | 0.00 ~ 0.40 | 0.01MPa | 1 | | | |
| 98 | Heating setting 1 (Target outlet temperature) | 40 ~ 50 | 1 [°C] | 1 | | | |

| Code No. | Write contents | Record data Data write range | Unit of write | Number of bytes | | Contents | |
|-----------------|--|---------------------------------|------------------|--------------------|---|-------------|--|
| 99 | Heating setting 2 (Target high pressure) | 3.15 ~2.75 | 0.05 [MPa] | 1 | | | |
| 100 | Heating setting 3 (Judgment temperature) | 30 ~ 38 | 1 [℃] | 1 | | | |
| <other></other> | | | | | | | |
| 104 | Override number | 0 ~ | — | 1 | | | |
| | | | | | | | |
| | <indoor information="" unit=""></indoor> | | | | | | |
| 106 | Registered indoor 1 – 8 operation | 0~4 | - | 8 | 0 | Auto | |
| | mode | | | | 1 | Humidifying | |
| | | | | | 2 | Cooling | |
| | | | | | 3 | Fan | |
| | | | | | 4 | Heating | |
| 107 | Registered indoor 1 – 8 request Hz | 0~255 | 1Hz | 8 | | | |
| 108 | Registered indoor 1 – 8 answer Hz | 0~255 | 1Hz | 8 | | | |

Compressor stop cause (Cord No. C68) It shows the latest compressor anomalous stop cause

| Compressor stop cause | | | | | | |
|-----------------------|--|----|--|--|--|--|
| | At power on | 0 | | | | |
| | Outdoor air temperature | 1 | | | | |
| | Outdoor heat exchanger temperture 1 | 2 | | | | |
| | Outdoor heat exchanger temperture 2 | 3 | | | | |
| | Discharge pipe temperature sensor 1(CM1) | 4 | | | | |
| | Suction pipe temperature sensor | 5 | | | | |
| Sensor disconnection | Sub-cooling temperature sensor 1(liquid side) | 6 | | | | |
| and/or short-circuit | Sub-cooling temperature sensor 2(gas side) | 7 | | | | |
| | Under-dome temperature sensor 1 | 8 | | | | |
| | Power transistor temperature sensor 1 | 9 | | | | |
| | Active filter temperature sensor | 10 | | | | |
| | High pressure sensor | 11 | | | | |
| | Low pressure sensor | 12 | | | | |
| | HP anomaly | 20 | | | | |
| | LP anomaly | 21 | | | | |
| | Td1 anomaly | 22 | | | | |
| | FMo1 anomaly | 23 | | | | |
| | FMo2 anomaly | 24 | | | | |
| Anomaly datastion | Inverter 1 current cut | 25 | | | | |
| Anomaly detection | Inverter 1 startup failure | 26 | | | | |
| | Inverter 1 communication error | 27 | | | | |
| | Inverter 1 anomalous compressor induced voltage and torque | 28 | | | | |
| | Inverter 1 power tansistor overheat | 29 | | | | |
| | Inverter 1 rotor lock | 30 | | | | |
| | Liquid flooding anomaly | 31 | | | | |
| Ston by postniction | Outdoor operation mode heating/cooling switching | 40 | | | | |
| Stop by restriction | Heating overload protection | 41 | | | | |

(2) Outdoor PCB setting

| Code | Input | Remarks | | |
|-------|---|---|--|--|
| SW1 | Outdoor address No. (Order of 10) | | | |
| SW2 | Outdoor address No. (Order of 1) | | | |
| SW3-1 | Inspection LED reset | Normal ★/Reseet | | |
| SW3-2 | Automatic backup operation | None ★/With | | |
| SW3-7 | Forced heating/cooling | Normal \bigstar /Forced heating-cooling | | |
| SW3-8 | Test mode | Normal ★/Test | | |
| SW5-1 | Test run SW | Normal ★/Test run | | |
| SW5-2 | Test run | Heating ★/Cooling | | |
| SW5-3 | Pump down SW | Normal ★/Pump down | | |
| SW7 | Data erase/Write | | | |
| SW8 | 7-segment display code No. increasing (order of 1) | | | |
| SW9 | 7-segment display code No. increasing (order of 10) | | | |
| SW4-1 | | | | |
| SW4-2 | | See following table. | | |
| SW4-3 | Model selection | | | |
| SW4-4 | | | | |
| SW4-5 | Demand ratio selection | See following table. | | |
| SW4-6 | Demand ratio selection | See following table. | | |
| SW5-5 | SL selection | New SL ★/Previous SL | | |
| J11 | Power supply voltage selection | Open | | |
| J12 | Power supply voltage selection | Open | | |
| J13 | External input Level/Pulse | Level ★/Pulse | | |
| J14 | Defrost reset temperature | Normal ★/Intensive | | |
| J15 | Defrost start temperature Normal/Cold region | Normal \bigstar /Cold weather region | | |

Note (1) Jumper wires J13, J15 indicate short-circuit/open. (2) Dip switch SW's indicate OFF/ON.

(3) \bigstar indicates the factory default setting (OFF).

■ Model selection with SW4-1 – SW4-4

| Model Switch | FDC224 | FDC280 | FDC335 |
|-----------------|--------|--------|--------|
| SW4-1 | 0 | 1 | 0 |
| SW4-2 | 0 | 0 | 1 |
| SW4-3 | 0 | 0 | 0 |
| SW4-4 | 0 | 0 | 1 |

Note (1) 0: OFF, 1: ON

Demand ratio selection with SW4-5, SW4-6

| SW4-5 | SW4-6 | Compressor capacity (%) |
|-------|-------|-------------------------|
| 0 | 0 | 80 |
| 1 | 0 | 60 |
| 0 | 1 | 40 |
| 1 | 1 | 0 |

Note (1) 0: OFF, 1: ON

2 SYSTEM TROUBLESHOOTING PROCEDURE

2.1 Basics of troubleshooting

Basic troubleshooting is to check/analyze/save data by connecting the Mente PC.

Whenever arriving at the site, always connect the Mente PC before starting work.

Method of error data analysis (Basic procedure)

- Identify whether particular error occurred during operation or stopping.
- Is it caused by the installation conditions of outdoor/indoor unit? (Refrigerant quantity, pipe length, short-circuit, clogged filter, etc.)
- Isn't there any beginner's mistake at the installation? (Wrong address, mistake in piping or wiring, etc.)
- Is the failure related to any hardware (parts)? (SV main body, coil, capillary, check valve, sensor, etc.)
- Is it a major component.

Compressor, inverter PCB and outdoor DC fan motor.

• Is it a failure of electrical component?



2.2 Explanation of troubleshooting

(a) Checking 15V on the control PCB (Step to check if the inverter PCB fails or not)

Use this to diagnose E41, E42, E45 and E48.



(b) Inspection of short-circuit on the power transistor module terminals

Disconnect the wiring of compressor and check for short-circuit with a tester.

Inspect between terminals of: P-U, P-V, P-W, N-U, N-V, N-W and P-N

It will be easier to contact the tester at the following place at each terminal.

P: P terminal of power transistor

N: N terminal of power transistor

U: End of red harness to compressor

V: End of white harness to compressor

W: End of blue harness to compressor

| Terminal (+) | Terminal (-) | Normal value (Ω) | | |
|--------------|--------------|---------------------------|--|--|
| Р | N | Several 10 M | | |
| Ν | Р | Several M | | |
| Р | U | | | |
| Р | V | Several 10 M | | |
| Р | W | | | |
| N | U | | | |
| N | V | Several 100K | | |
| N | W | | | |
| U | Р | | | |
| V | Р | Several 100K | | |
| W | Р | | | |
| U | N | | | |
| V | N | Several 10 M | | |
| W N | | 1 | | |

Note (1) When a measured value is 0 - a few k Ω , the element may be broken. Replace the power transistor part.

2.3 Contents of troubleshooting

(a) List of inspection displays

1) Indoor and outdoor units

| Remote controller error code | 7-segment display | Name of inspection | Classification | Page |
|------------------------------------|----------------------|---|-------------------------------|------|
| E1 | - | Remote controller communication error | Communication error | 59 |
| E2 | _ | Duplicated indoor unit address | Address setting error | 60 |
| E3 | _ | Outdoor unit signal line error | Address pairing setting error | 61 |
| E5 | _ | Communication error during operation | Communication error | 62 |
| E6 | _ | Indoor heat exchanger temperature thermistor anomaly (Thi-R) | Thermistor wire breakage | 63 |
| E7 | _ | Indoor return air temperature thermistor anomaly (Thi-A) | Thermistor wire breakage | 64 |
| E9 | _ | Drain trouble | System error | 65 |
| E10 | _ | Excessive number of indoor units (more than 17 units) by controlling one remote controller | Communication error | 66 |
| E12 | — | Address setting error by mixed setting method | Address setting error | 67 |
| E16 | — | Indoor fan motor anomaly (FDT series) | DC fan motor error | 68 |
| LIU | - | Indoor fan motor anomaly (FDK series) | DC fan motor error | 69 |
| E19 | - | Indoor unit operation check drain motor check mode anomaly | Setting error | 70 |
| E28 | - | Remote controller temperature thermistor anomaly (Thc) | Thermistor wire breakage | 71 |
| E30 | E30 | Unmatch connection of indoor and outdoor unit | System error | 72 |
| E31 | E31 | Duplicated outdoor unit address No. | Address setting error | 73 |
| E32 | E32 | Open L3 Phase on power supply at primary side | Site setting error | 74 |
| E26 | E36-1 | Discharge pipe temperature error (Tho-D1) | System error | 75 |
| E30 | E36-3 | Liquid flooding anomaly | System error | 76 |
| E37 | E37-1, 2 E37-5, 6 | Outdoor heat exchanger temperature thermistor (Tho-R) and subcooling coil temperature thermistor (Tho-SC, -H) anomaly | Thermistor wire breakage | 77 |
| E38 | E38 | Outdoor air temperature thermistor anomaly (Tho-A) | Thermistor wire breakage | 78 |
| E39 | E39-1 | Discharge pipe temperature thermistor anomaly (Tho-D1) | Thermistor wire breakage | 79 |
| E40 | E40 | High pressure anomaly (63H1-1 activated) | System error | 80 |
| E41 (E51) | E41 (E51)-1 | Power transister overheat | System error | 81 |
| E42 | E42-1 | Current cut (CM1) | System error | 82 |
| E43 | E43-1 E43-2 | Excessive number of indoor units connected, excessive total capacity of connection | Site setting error | 83 |
| E45 | E45-1 | Communication error between inverter PCB and outdoor control (PCB) | Communication error | 84 |
| E46 | E46 | Mixed address setting methods coexistent in same network | Address setting error | 85 |
| E48 | E48-1 E48-2 | Outdoor DC fan motor anomaly | DC fan motor error | 86 |
| E49 | E49 | Low pressure anomaly | System error | 87 |
| E53/E55 | E53/E55-1 | Suction pipe temperature thermistor anomaly (Tho-S), Under-dome temperature thermistor anomaly (Tho-C1) | Thermistor wire breakage | 88 |
| E54 | E54-1 E54-2 | High pressure sensor anomaly (PSH)/Low pressure sensor anomaly (PSL) | Thermistor wire breakage | 89 |
| E56 | E56-1 | Power transitor temperature thermistor anomaly (Tho-P1) | Thermistor wire breakage | 90 |
| E58 | E58-1 | Anomalous compressor by loss of synchronism | System error | 91 |
| E59 | E59-1 | Compressor startup failure (CM1) | System error | 92 |
| E60 | E60-1 | Rotor position detection failure (CM1) | System error | 93 |
| E63 | E63 | Emergency stop | Site setting error | 94 |

2) Optional controller in-use

| SL SL SL | -1N-E -2N-E -3N-E | Indo contr | or unit ol PCB | Outde contr | oor unit ol PCB | Location of | Description of trouble | Repair |
|----------------|-------------------------|---------------|-------------------|----------------|--------------------|-------------------------------|---|-------------|
| Error code | Red LED | Red LED | Green LED | Red LED | Green LED | trouble | | method |
| E75 | Keeps flashing | Stays OFF | Keeps flashing | Stays OFF | Keep flashing | SL-1N-E SL-2N-E SL-3N-E | Communication enor (Deflective comm- unication circuit on the main unit of SL1N-E, SL2N-Eor SL3N-E) | Replacoment |

(b) Troubleshooting















| _ | | | | | |
|---|-------------------------|-----------------------------|-------|--------------------------------------|-----------------------------------|
| ρ | Error code | LED | Green | Red | Content |
| | Remote controller: None | controller: None Indoor – – | - | $\overline{\mathbf{F}}_{\mathbf{x}}$ | |
| | 7-segment display: | Outdoor | _ | _ | Excessive noise/violation $(2/3)$ |
| L | | | | | |

G

















| _ | | | | | |
|---|--------------------|---------|----------------|----------------|-----------|
| μ | Error code | LED | Green | Red | Content |
| | Remote controller: | Indoor | Keeps flashing | Stays Off | ●WAIT |
| | 7-segment display: | Outdoor | Keeps flashing | Keeps flashing | χ, |
| L | <u></u> | | | | |



 Note: (1) When anomaly occurs during establishing communication between indoor and outdoor unit, error code E5 is displayed (outdoor red LED flash 2-times) In case of E5, the way of troubleshooting is same as above mentioned (except for checking of connecting wire) When reset the power after E5 occurs, if this anomaly recurs, **WAIT** is displayed on remote controller. If power ON/OFF is repeated in a short period (within 1 minute), **WAIT** may be displayed. In such case, please wait for 3 minute after the power breaker OFF.
(2) If any error is detected 30 minutes after displaying "WAIT" on the remote controller, the display changes to "INSPECT I/U".















Note: If the indoor unit cannot communicate normally with the remote controller for 180 seconds, the indoor unit PCB starts to reset automatically.











Note: When the pump down switch is turned on, communication between indoor and outdoor units is cancelled so that "Communication error E5" will be displayed on the remote controller and indoor control PCB, but this is normal.







Note: When this anomaly occurs at power ON, disconnection of connector or breakage of wire of float switch is suspected. Check and correct it (or replace it, if necessary).

| | | | | | G |
|---|------------------------|---------|----------------|-----------|--|
| Ø | Error code | LED | Green | Red | Content |
| | Remote controller: E10 | Indoor | Keeps flashing | Stays Off | Excessive number of indoor units (moe than 17 units) |
| | 7-segment display: - | Outdoor | Keeps flashing | Stays Off | by controlling one remoto controller |





4.

| 4. Presumable cause | |
|--|--|
| Mistake in address setting for indoor unit | |
| | |
| | |
| | |
| | |

Note:









- Note: Indoor operation check/drain pump check mode If the power is ON after SW7-1ON. indoor operation check/drain pump check mode can be established.
 - 1) When the communication between remote controller and indoor PCB is established 15 seconds after power ON, it goes to indoor operation check.
 - 2) When the communication between remote controller and indoor PCB is not established, it goes to drain pump check (CnB connector should be open before power ON)


Note: After 10 seconds has elapsed since remote controller temperature thermistor was switched from invalid to valid, E28 will not be displayed even if the thermistor harness is disconnected or broken. However, in such case, the indoor return air temperature thermistor (Thi-A) will be valid instantly instead of the remote controller temperature thermistor (The).

Please note that even though the remote controller temperature thermistor (Thc) is valid, the displayed return air temperature on the remote controller LCD shows the value detected by the indoor return air temperature thermistor (Thi-A), not by the remote controller temperature thermistor (Thc).









Note: After taken above measure, reset the power and confirm no error is displayed occurs. Unless the power is reset after changing address, the set address will not be confirmed. In case of combination use, set the same address to both master and slave units. Distinction of master or slave unit is done by setting SW4-7. (Refer the instruction manual and technical manual for details)

















- 80 -





- 81 -

81

85°C

81°C 85°C Power transistor thermistor temperature

If the error does not recur, connect the Mente PC and continue to collect data.



In case that there is no the insulation resistance anomaly, the compressor anomaly could be considered. If this anomaly occurs after replacement of power transistor module and/or inverter PCB, try to replace compressor as well. If the error does not recur, connect the Mente PC and continue to collect data



Note: After completing the above procedure, reset the power and confirm that the error display does not recur. Unless the power is reset for both indoor unit and outdoor unit, the set addresses will not be confirmed.





Note: After completing the above procedure, reset the power and confirm that the error display does not recur. Unless the power is reset for both indoor unit and outdoor unit, the set addresses will not be confirmed.





Note: Check whether the indoor unit is connected to other outdoor superlink network. If the error does not recur, connect the Mente PC and continue to collect data.





Ð



- 90 -







-93-



Note: Indoor unit detected emergency stop signal gives command "all stop"

2.4 Outdoor unit control PCB replacement procedure

PCB012D017A





Fan motor voltage measurement point

Fig.1 Voltage measurement points



Appearance of the controller

2.5 Inverter PCB replacement procedure

PCB012D018AB



Parts Arrangement View



Fig.1 Voltage Measurement Points



Installation Method to Power transistor

• Procedure on tightening harness (snubber capacitor) and power transistor with screw.

A metallic connection binder is set in each hole of the inverter PCB of "P", "N", "U", "V", and "W"

beforehand. Then tighten the harness (snubber capacitor) and the power transistor with the screw together. (Connect snubber capacitor with "P" and "N".)

■ Function of Dip switch for control (SW3, 4, 5)

•SW3 (Function setting)

| Switch | | Function | |
|--------|-----|------------------------|--|
| SW2 1 | ON | Inspection LED reset | |
| 5W3-1 | OFF | Normal | |
| SW2 7 | ON | Forced cooling/heating | |
| SW3-7 | OFF | Normal | |

•SW4 (Change demand ratio)

| Switch | | | Function | |
|--------------|---------|--------|-------------------------|-------------------------|
| | ON | | OFF | Compressor capacity 60% |
| SW4-5 OFF | UN | CIVA C | ON | Compressor capacity 0% |
| | 5 W 4-0 | OFF | Compressor capacity 80% | |
| | OFF | | ON | Compressor capacity 40% |

•SW5 (Function setting)

Function of Jumper wire (J13, 15) (With: Shorted / None: Opened)

| Jumper | | Function | |
|----------|------|----------------------------------|--|
| With Ext | | External input Level input | |
| J15 | None | External input Pulse input | |
| With | | Defrost time Normal | |
| J15 | None | Defrost time Cold weather region | |

•SW4 (Model selection)

| Switch | SW4 | | | |
|--------|-----|-----|-----|-----|
| Model | 1 | 2 | 3 | 4 |
| FDC224 | OFF | OFF | OFF | OFF |
| FDC280 | ON | OFF | OFF | OFF |
| FDC335 | OFF | ON | OFF | ON |

| | ON/OFF | Function | |
|----------|--------|---------------------------------|-----------|
| SW5 1 | ON | Test run switch | Test run |
| 5 W 3-1 | OFF | Test run switch | Normal |
| SW5 2 | ON | Test run operation mode | Cooling |
| SW3-2 | OFF | Test run operation mode | Heating |
| ON ON | | Pump down switch | Pump down |
| S W 5-5 | OFF | Pump down switch | Normal |
| SW5 5 | ON | Super link protocol: Previos SL | |
| 5 VV 5-5 | OFF | Super link protocol: New SL | |

•SW7, 8, 9 (Function setting)

| Switch | Function | | |
|--------|--------------------------|-------------|--|
| SW7 | Data erase/data write | | |
| SW8 | 7-segment dispalay No.UP | order of 1 | |
| SW9 | 7-segment dispalay No.UP | order of 10 | |

Function of Connector

| Connector | Function | Color | Connector | Function | Color |
|-----------|--|-------|-----------|----------------------------------|--------|
| CNEEV1 | Heating EEV | Red | CNF2 | Sub-cooling coil thermistor 1 | Green |
| CNEEV2 | Sub-cooling coil EEV | White | CNP1 | Power transistor thermistor (CM) | Yellow |
| CNA2 | Power fan motor | - | CNL1 | High pressure sensor | Blue |
| CNFAN1 | Fan motor 1 | White | CNL2 | Low pressure sensor | White |
| CNFAN2 | Fan motor 2 | Red | CNS1 | External input | _ |
| CNQ1 | High pressure switch (CM1) | White | CNS2 | Demand input | _ |
| | Heat exchanger thermistor 1 (Exit/front) | | CNN1 | 4-way switching solenoid valve | Red |
| CNTH | Discharge pipe thermistor | White | CNN2 | Solenoid valve•oil return (CM1) | Green |
| CNIR | Suction pipe thermistor | white | CNN6 | Solenoid valve (liquid bypass) | Pink |
| | External air thermistor | | CNN9 | Solenoid valve (gas bypass) | Black |
| CNB2 | Heat exchanger thermistor 2 | Red | CMM1 | Solenoid valve for CM | Gray |
| CNU1 | Under-dome thermistor (CM1) | Blue | CNR1 | Crankcase heater | White |
| CNF1 | Sub-cooling coil thermistor 1 | White | | | |

•DIP Switch setting list (1) Outdoor unit

| (a) | Control | PCE |
|-----|---------|-----|
|-----|---------|-----|

| SW1 Outdoor address No. (Order of 10) 4 0-9 SW2 Outdoor address No. (Order of 1) 9 0-9 SW3-1 Inspection LED reset Normal*/Reset OFF keep OFF SW3-2 Spare OFF keep OFF keep OFF SW3-3 Spare OFF keep OFF keep OFF SW3-4 Reserved OFF keep OFF keep OFF SW3-5 Check operation start Normal*/Start OFF keep OFF SW3-6 Reserved OFF keep OFF keep OFF SW3-7 Forced heating/cooling Normal*/Forced OFF keep OFF SW4-4 OFF keep OFF SW4-4 SW4-4 OFF keep OFF SW4-4 SW4-5 Demand ratio selection OFF keep OFF SW4-4 SW4-4 Spare OFF Keep OFF SW4-5 SW4-5 Demand ratio selection Normal*/Test run OFF Keep OFF SW4-6 | Switches | Description | | Default setting | | Remarks |
|--|----------|--|-------------------------|-----------------|---------------|---|
| SW2 Outdoor address No. (Order of 1) 9 0-9 SW3-1 Inspection LED reset Normal*/Reset OFF keep OFF SW3-2 Spare OFF keep OFF SW3-4 Reserved OFF keep OFF SW3-5 Check operation start Normal*/Start OFF keep OFF SW3-6 Reserved OFF keep OFF keep OFF SW3-6 Reserved OFF keep OFF keep OFF SW3-7 Forced heating/cooling Normal*/Forced OFF keep OFF SW4-1 Sw3-4 Reserved OFF keep OFF SW4-2 Model selection As per model See table 1 SW4-3 Model selection OFF See table 2 SW4-4 OFF Keep OFF Keep OFF SW4-5 Demand ratio selection OFF Keep OFF SW4-5 Demand ratio selection OFF Normal*/Forced OFF SW4-5 Demand ratio selection Normal*/Cooling OFF Normal SW5-1 Test run mode Heating*/Cooling | SW1 | Outdoor address No. (Order of 10) | | 4 | | 0-9 |
| SW3-1 Inspection LED reset Normal*/Reset OFF Normal SW3-2 Spare OFF keep OFF SW3-3 Spare OFF keep OFF SW3-4 Reserved OFF keep OFF SW3-5 Check operation start Normal*/Start OFF keep OFF SW3-6 Reserved OFF Normal Keep OFF SW3-7 Forced heating/cooling Normal*/Forced OFF Normal SW3-8 Reserved OFF Normal Keep OFF SW4-1 SW4-2 Model selection As per model See table 1 SW4-2 Model selection OFF See table 2 SW4-3 Spare OFF Keep OFF SW4-4 OFF Keep OFF See table 2 SW4-4 Spare OFF Keep OFF SW4-5 Demand ratio selection OFF Normal SW4-5 Demand ratio selection Normal*/Fung down OFF Normal SW4-5 Spare OFF Keep OFF Keep OFF SW5-5 Iven Jaw <td>SW2</td> <td>Outdoor address No. (Order of 1)</td> <td></td> <td>9</td> <td></td> <td>0-9</td> | SW2 | Outdoor address No. (Order of 1) | | 9 | | 0-9 |
| SW3-2 Spare OFF keep OFF SW3-2 Spare OFF keep OFF SW3-3 Reserved OFF keep OFF SW3-4 Reserved OFF keep OFF SW3-6 Reserved OFF keep OFF SW3-7 Forced heating/cooling Normal*/Forced OFF keep OFF SW3-7 Forced heating/cooling Normal*/Forced OFF keep OFF SW4-1 Sw4-3 See table 1 See table 1 SW4-4 Model selection OFF Keep OFF SW4-4 OFF Keep OFF Keep OFF SW4-4 OFF Keep OFF See table 2 SW4-3 Spare OFF Keep OFF SW4-4 OFF Keep OFF Keep OFF SW4-5 Demand ratio selection OFF Keep OFF SW4-7 Reserved OFF Keep OFF SW5-1 Test run mode Heating*/Cooling OFF SW5-2 Test run mode Heating*/Cooling OFF SW5-3 Superlink selection Normal*/Pump down OFF SW5-4 Reserved OFF Keep OFF SW5-5 Superlink selection Normal*/Pump down </td <td>SW3-1</td> <td>Inspection LED reset</td> <td>ormal*/Reset</td> <td>OFF</td> <td>Normal</td> <td>1 · · · · · · · · · · · · · · · · · · ·</td> | SW3-1 | Inspection LED reset | ormal*/Reset | OFF | Normal | 1 · · · · · · · · · · · · · · · · · · · |
| SW3-3 Spare OFF keep OFF SW3-3 Check operation start Normal*/Start OFF keep OFF SW3-5 Check operation start Normal*/Forced OFF Normal SW3-6 Reserved OFF Normal Keep OFF SW3-7 Forced heating/cooling Normal*/Forced OFF Normal SW4-4 Sw4-3 OFF Normal See table 1 SW4-4 Sw4-4 OFF See table 2 SW4-5 Demand ratio selection OFF See table 2 SW4-4 Sw4-5 OFF Keep OFF SW4-5 Demand ratio selection OFF Keep OFF SW4-4 Sw4-6 Demand ratio selection OFF Keep OFF SW4-5 Spare OFF Keep OFF Keep OFF SW4-6 Spare OFF Normal Spare SW5-5 Superlink selection Normal*/Pound down OFF Normal SW5-5 Reserved OFF Keep OFF SW5-5 Superlink selection New SL*/Previous SL OFF Keep O | SW3-2 | Spare | | OFF | | keep OFF |
| SW3-4 Reserved OFF keep OFF SW3-5 Check operation start Normal*/Start OFF keep OFF SW3-6 Reserved OFF Normal Keep OFF SW3-7 Forced heating/cooling Normal*/Forced OFF Normal SW3-7 Forced heating/cooling Normal*/Forced OFF Normal SW4-1 Seerved OFF keep OFF Keep OFF SW4-2 Model selection OFF See table 1 SW4-3 Sw4-4 OFF Keep OFF SW4-4 OFF Keep OFF See table 2 SW4-4 OFF Keep OFF Keep OFF SW4-5 Demand ratio selection OFF Normal SW4-7 Reserved OFF Normal SW4-7 Reserved OFF Keep OFF SW5-1 Test run mode Heating*/Cooling OFF Normal SW5-2 Reserved OFF Normal See off SW5-3 Pump down operation Normal*/Pump down OFF Normal SW5-4 | SW3-3 | Spare | | OFF | | keep OFF |
| SW3-5 Check operation start Normal*/Start OFF Normal SW3-6 Reserved OFF Normal OFF Keep OFF SW3-7 Forced heating/cooling Normal*/Forced OFF Normal Keep OFF SW3-8 Reserved OFF Normal Keep OFF Keep OFF SW4-1 SW4-2 Model selection As per model See table 1 SW4-4 SW4-4 OFF Keep OFF See table 2 SW4-4 Sw4-6 Demand ratio selection OFF Keep OFF SW4-7 Reserved OFF Keep OFF Keep OFF SW4-8 Spare OFF Keep OFF Keep OFF SW5-1 Test run mode Heating#/Cooling OFF Normal SW5-2 Test run mode Normal*/Pump down OFF Normal SW5-3 Pump down operation Normal*/Pump down OFF Neep OFF SW5-4 Reserved OFF Neep OFF Keep OFF SW5-5 Reserved OFF Keep OFF Keep OFF SW5-6 | SW3-4 | Reserved | | OFF | | keep OFF |
| SW3-6 Reserved OFF Normal SW3-7 Forced heating/cooling Normal*/Forced OFF Normal SW3-8 Reserved OFF Normal See porfs SW4-1 SW4-2 Model selection As per model See table 1 SW4-2 Model selection OFF See table 2 SW4-4 OFF See table 2 SW4-4 OFF Keep OFF SW4-4 OFF Keep OFF SW4-4 OFF Keep OFF SW4-4 OFF Keep OFF SW4-4 Spare OFF Keep OFF SW4-7 Reserved OFF Keep OFF SW5-3 Pump down operation Normal*/Pump down OFF Neep OFF SW5-4 Reserved OFF Keep OFF Sweep OFF SW5-5 Superlink selection New SL*/Previous SL OFF Keep OFF SW5-7 Reserved OFF Keep OFF Keep OFF SW5-7 Reserved OFF Keep OFF Keep OFF SW5-7 Reserved | SW3-5 | Check operation start N | ormal*/Start | OFF | Normal | |
| SW3-7 Forced heating/cooling Normal*/Forced OFF Normal SW3-8 Reserved OFF keep OFF SW4-1 OFF keep OFF SW4-2 Model selection As per model See table 1 SW4-4 OFF See table 2 SW4-4 OFF Keep OFF SW4-4 OFF See table 2 SW4-7 Reserved OFF Keep OFF SW4-7 Reserved OFF Keep OFF SW4-7 Reserved OFF Keep OFF SW4-8 Spare OFF Normal*/Test run OFF SW5-1 Test run mode Heating*/Cooling OFF Normal SW5-2 Test run mode Normal*/Pump down OFF Normal SW5-3 Pump down operation Normal*/Pump down OFF Keep OFF SW5-5 Superlink selection New SL*/Previous SL OFF Neep OFF SW5-7 Reserved OFF Keep OFF Keep OFF SW5-8 Reserved OFF Keep OFF Keep OFF | SW3-6 | Reserved | | OFF | | keep OFF |
| SW3-8 Reserved OFF keep OFF SW4-1 Sw4-2 See table 1 See table 1 SW4-2 SW4-3 OFF See table 1 SW4-4 Sw4-5 OFF See table 2 SW4-4 OFF See table 2 See table 2 SW4-5 Demand ratio selection OFF See table 2 SW4-6 Demand ratio selection OFF Keep OFF SW4-7 Reserved OFF Keep OFF SW4-8 Spare OFF Normal SW5-9 Pump down operation Normal*/Pump down OFF Normal SW5-4 Reserved OFF Keep OFF Sw5-6 Superlink selection New SL*/Previous SL OFF Neep OFF SW5-6 Reserved OFF Keep OFF Keep OFF Sw6-7 Reserved OFF Keep OFF SW5-7 Reserved OFF Keep OFF Keep OFF Sw6-7 Reserved OFF Keep OFF SW6-1 Reserved OFF Keep OFF Keep OFF Sw6-3 Spare OFF Keep OFF <td>SW3-7</td> <td>Forced heating/cooling N</td> <td>ormal*/Forced</td> <td>OFF</td> <td>Normal</td> <td></td> | SW3-7 | Forced heating/cooling N | ormal*/Forced | OFF | Normal | |
| SW4-1 See table SW4-2 Model selection SW4-3 See table 1 SW4-4 OFF SW4-4 See table 1 SW4-4 OFF SW4-5 Demand ratio selection SW4-6 Demand ratio selection SW4-7 Reserved SW4-7 Reserved SW5-1 Test run SW Normal*/Test run OFF SW5-2 Test run mode Heating*/Cooling OFF SW5-3 Pump down operation Normal*/Pump down OFF SW5-4 Reserved SW5-5 Superlink selection New SL*/Previous SL OFF SW5-7 Reserved SW5-7 Reserved SW5-7 Reserved SW5-7 Reserved SW5-7 Reserved SW5-7 Reserved SW5-8 Reserved SW5-7 Reserved SW6-1 Reserved SW6-2 Reserved SW6-3 Spare SW6-4 <td>SW3-8</td> <td>Reserved</td> <td></td> <td>OFF</td> <td></td> <td>keen OFF</td> | SW3-8 | Reserved | | OFF | | keen OFF |
| SW4-2 Model selection As per model See table 1 SW4-3 Sw4-4 OFF See table 1 SW4-4 OFF See table 2 SW4-4 OFF See table 2 SW4-5 Demand ratio selection OFF See table 2 SW4-7 Reserved OFF Keep OFF SW4-8 Spare OFF Keep OFF SW5-1 Test run mode Heating*/Cooling OFF Normal SW5-2 Test run mode Heating*/Cooling OFF Normal SW5-3 Pump down operation Normal*/Pump down OFF Keep OFF SW5-4 Reserved OFF Keep OFF Keep OFF SW5-5 Superlink selection New SL*/Previous SL OFF Keep OFF SW5-6 Reserved OFF Keep OFF Keep OFF SW5-7 Reserved OFF Keep OFF Keep OFF SW6-1 Reserved OFF Keep OFF Keep OFF SW6-1 Reserved OFF Keep OFF See oFF SW6-2 Reserved <td>SW4-1</td> <td>10001100</td> <td></td> <td>011</td> <td></td> <td></td> | SW4-1 | 10001100 | | 011 | | |
| Model selection As per model See table 1 SW4-3 OFF See table 2 SW4-4 OFF See table 2 SW4-5 Demand ratio selection OFF See table 2 SW4-4 OFF Keep OFF See table 2 SW4-7 Reserved OFF Keep OFF SW4-8 Spare OFF Normal*/Test run OFF Normal SW5-7 Test run mode Heating*/Cooling OFF Normal Normal*/Pump down OFF Normal SW5-4 Reserved Normal*/Pump down OFF Normal Normal*/Switch to spare Normal Normal SW5-7 Reserved OFF New SL Swep OFF Keep OFF Swep OFF S | SW4-2 | | | | | |
| SW4-4 OFF See table 2 SW4-5 OFF See table 2 SW4-7 Reserved OFF Keep OFF SW4-8 Spare OFF Keep OFF SW5-1 Test run SW Normal*/Test run OFF Normal SW5-2 Test run mode Heating*/Cooling OFF Normal SW5-3 Pump down operation Normal*/Pump down OFF Normal SW5-4 Reserved OFF Keep OFF Keep OFF SW5-5 Superlink selection New SL*/Previous SL OFF Neep OFF SW5-7 Reserved OFF Keep OFF Keep OFF SW6-1 Reserved OFF Keep OFF Keep OFF SW6-3 Spare OFF Keep OFF Keep OFF See table 3 | SW4-3 | Model selection | | As per r | nodel | See table 1 |
| SW4-5 Demand ratio selection OFF See table 2 SW4-6 Demand ratio selection OFF See table 2 SW4-7 Reserved OFF Keep OFF SW4-8 Spare OFF Keep OFF SW5-1 Test run SW Normal*/Test run OFF Normal SW5-2 Test run mode Heating*/Cooling OFF Normal SW5-3 Pump down operation Normal*/Pump down OFF Normal SW5-4 Reserved OFF Keep OFF SW5-5 Superlink selection New SL*/Previous SL OFF Neep OFF SW5-6 Reserved OFF Keep OFF Keep OFF SW5-7 Reserved OFF Keep OFF Keep OFF SW5-8 Reserved OFF Keep OFF Keep OFF SW6-1 Reserved OFF Keep OFF Keep OFF SW6-2 Reserved OFF Keep OFF Keep OFF SW6-3 Spare OFF Keep OFF Keep OFF SW6-4 Spare OFF Keep OFF Keep OFF SW6-5 Spare OFF Keep OFF Keep OFF SW6-6 Spare OFF Keep OFF | SW4-4 | | | | | |
| Drm and ratio selection Dif See table 2 SW4-6 OFF Keep OFF SW4-7 Reserved OFF Keep OFF SW4-8 Spare OFF Keep OFF SW5-1 Test run SW Normal*/Test run OFF Normal SW5-2 Test run mode Heating*/Cooling OFF Normal SW5-2 Test run mode Heating*/Cooling OFF Normal SW5-4 Reserved OFF Normal Normal SW5-4 Reserved OFF Normal State SW5-7 Reserved OFF Keep OFF Keep OFF SW5-7 Reserved OFF Keep OFF Keep OFF SW5-7 Reserved OFF Keep OFF Keep OFF SW6-1 Reserved OFF Keep OFF Keep OFF SW6-2 Reserved OFF Keep OFF Keep OFF SW6-3 Spare OFF Keep OFF Keep OFF SW6-4 Spare OFF Keep OFF Keep OFF SW6-5 Spare <td>SW4-5</td> <td></td> <td></td> <td>OFF</td> <td></td> <td></td> | SW4-5 | | | OFF | | |
| SW4-7 Reserved OFF Keep OFF SW4-8 Spare OFF Keep OFF SW5-1 Test run NW Normal*/Test run OFF Normal SW5-2 Test run mode Heating*/Cooling OFF Heating SW5-2 Test run mode Heating*/Cooling OFF Normal SW5-2 Test run mode Heating*/Cooling OFF Normal SW5-4 Reserved OFF Normal SW5-5 Superlink selection New SL*/Previous SL OFF Keep OFF SW5-6 Reserved OFF Keep OFF Keep OFF SW5-7 Reserved OFF Keep OFF SW5-8 Reserved OFF Keep OFF SW6-1 Reserved OFF Keep OFF SW6-2 Reserved OFF Keep OFF SW6-3 Spare OFF Keep OFF SW6-4 Spare OFF Keep OFF SW6-5 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF | SW4-6 | Demand ratio selection | | OFF | | See table 2 |
| SW4-8 Spare OFF Keep OFF SW5-2 Test run SW Normal*/Test run OFF Normal SW5-2 Test run mode Heating*/Cooling OFF Normal SW5-3 Pump down operation Normal*/Pump down OFF Normal SW5-4 Reserved OFF Keep OFF SW5-5 Superlink selection New SL*/Previous SL OFF Keep OFF SW5-6 Reserved OFF Keep OFF Keep OFF SW5-7 Reserved OFF Keep OFF SW5-8 Reserved OFF Keep OFF SW6-1 Reserved OFF Keep OFF SW6-2 Reserved OFF Keep OFF SW6-3 Spare OFF Keep OFF SW6-4 Reserved OFF Keep OFF SW6-5 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF | SW4-7 | Reserved | | OFF | | Keen OFF |
| Bits Direct OFF Normal SW5-1 Test run SW Normal*/Test run OFF Normal SW5-2 Test run mode Heating*/Cooling OFF Normal SW5-3 Pump down operation Normal*/Pump down OFF Normal SW5-4 Reserved OFF Keep OFF SW5-5 Superlink selection New SL*/Previous SL OFF New SL(Auto) SW5-6 Reserved OFF Keep OFF SW5-7 Reserved OFF Keep OFF SW5-8 Reserved OFF Keep OFF SW6-1 Reserved OFF Keep OFF SW6-2 Reserved OFF Keep OFF SW6-3 Spare OFF Keep OFF SW6-4 Spare OFF Keep OFF SW6-5 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 | SW4-8 | Spare | | OFF | | Keen OFF |
| SW5-2 Test run mode Heating*/Caoling OFF Heating SW5-3 Pump down operation Normal*/Pump down OFF Normal SW5-4 Reserved OFF Normal SW5-5 Superlink selection New SL*/Previous SL OFF Neep OFF SW5-6 Reserved OFF Keep OFF Keep OFF SW5-7 Reserved OFF Keep OFF SW5-8 Reserved OFF Keep OFF SW5-7 Reserved OFF Keep OFF SW6-2 Reserved OFF Keep OFF SW6-3 Spare OFF Keep OFF SW6-4 Spare OFF Keep OFF SW6-5 Spare OFF Keep OFF SW6-4 Spare OFF Keep OFF SW6-5 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Spare | SW5-1 | Test run SW | ormal*/Test run | | Normal | |
| SW5-3 Pump down operation Normal*/Pump down OFF Normal SW5-4 Reserved OFF Keep OFF SW5-5 Superlink selection New SL*/Previous SL OFF Neep OFF SW5-6 Reserved OFF Keep OFF Keep OFF SW5-7 Reserved OFF Keep OFF SW5-8 Reserved OFF Keep OFF SW6-1 Reserved OFF Keep OFF SW6-2 Reserved OFF Keep OFF SW6-3 Spare OFF Keep OFF SW6-4 Reserved OFF Keep OFF SW6-3 Spare OFF Keep OFF SW6-4 Reserved OFF Keep OFF SW6-5 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW77 Data Erase/Write Erase | SW5-2 | Test run mode | estings/Cooling | | Heating | |
| SW5-4 Reserved OFF Keep OFF SW5-4 Reserved OFF New SL*/Previous SL OFF New SL(Auto) SW5-6 Reserved OFF Keep OFF Keep OFF SW5-7 Reserved OFF Keep OFF SW5-7 Reserved OFF Keep OFF SW5-7 Reserved OFF Keep OFF SW5-8 Reserved OFF Keep OFF SW6-1 Reserved OFF Keep OFF SW6-2 Reserved OFF Keep OFF SW6-3 Spare OFF Keep OFF SW6-4 Spare OFF Keep OFF SW6-5 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Data Erase/Write Erase/Write Frase SW7 Data Erase/Write OFF Keep OFF SW8 7-segment display code No. increase (Order of 10) 0 0 J10 Superink terminal spare Normal*/switch to spare Wit | SW5_2 | Pump down operation | ormal*/Pump down | | Normal | |
| SW5-5 Superlink selection New SL*/Previous SL OFF New SL(Auto) SW5-5 Superlink selection OFF Keep OFF SW5-7 Reserved OFF Keep OFF SW5-8 Reserved OFF Keep OFF SW5-9 Reserved OFF Keep OFF SW5-1 Reserved OFF Keep OFF SW6-1 Reserved OFF Keep OFF SW6-2 Reserved OFF Keep OFF SW6-3 Spare OFF Keep OFF SW6-4 Spare OFF Keep OFF SW6-5 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW7 Data Erase/Write Erase*/Write OFF Keep OFF SW7 Data Erase/Write Erase/Write OFF Keep OFF SW8 7-segment display code No. increase (Order of 1) 0 0 J10 Superlink terminal spare Normal*/switch to spare With Normal J11 Power voltage selection As per voltage See table 3 J13 < | SW5_4 | Reserved | ormany r ump down | | Normai | Keen OFF |
| SW5-6 Reserved OFF Keep OFF SW5-7 Reserved OFF Keep OFF SW5-8 Reserved OFF Keep OFF SW5-1 Reserved OFF Keep OFF SW6-2 Reserved OFF Keep OFF SW6-3 Spare OFF Keep OFF SW6-4 Reserved OFF Keep OFF SW6-3 Spare OFF Keep OFF SW6-4 Reserved OFF Keep OFF SW6-5 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW7 Data Erase/Write Erase/Write OFF SW8 7-segment display code No. increase (Order of 1) 0 0 J10 Superlink termi | SW5-5 | Superlink selection | ew SI */Previous SI | | New SI (Auto) | |
| SW5-7 Reserved OFF Keep OFF SW5-7 Reserved OFF Keep OFF SW6-1 Reserved OFF Keep OFF SW6-2 Reserved OFF Keep OFF SW6-3 Spare OFF Keep OFF SW6-4 Spare OFF Keep OFF SW6-5 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW8 7-segment display code No. increase (Order of 1) 0 0 SW9 7-segment display code No. increase (Order of 10) 0 0 J10 Superlink terminal spare Normal*/switch to spare See table 3 J12 Power voltage selection As per voltage <td>SW5_6</td> <td>Papartical Papartical</td> <td>ew SE-71 Tevious SE</td> <td></td> <td>New OL(Auto)</td> <td>Koon OEE</td> | SW5_6 | Papartical Papartical | ew SE-71 Tevious SE | | New OL(Auto) | Koon OEE |
| SW5-8 Reserved OFF Keep OFF SW6-1 Reserved OFF Keep OFF SW6-2 Reserved OFF Keep OFF SW6-2 Reserved OFF Keep OFF SW6-3 Spare OFF Keep OFF SW6-4 Spare OFF Keep OFF SW6-4 Spare OFF Keep OFF SW6-5 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW7 Data Erase/Write OFF Keep OFF SW8 7-segment display code No. increase (Order of 1) 0 0 J10 Superlink terminal spare Normal*/switch to spare With J11 Power voltage selection As per voltage See table 3 J13 External input Level*/Pulse With Level J14 Spare With Keep With Junt | SW5_7 | Reserved | | | | Keep OFF |
| SW6-1 Reserved OFF Keep OFF SW6-1 Reserved OFF Keep OFF SW6-2 Reserved OFF Keep OFF SW6-3 Spare OFF Keep OFF SW6-4 Reserved OFF Keep OFF SW6-5 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Data Erase/Write Erase*/Write SW6-8 Spare OFF Keep OFF SW6-9 OFF Keep OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW8-7 Segment display code No. increase (Order of 1) 0 0 SW8 7-segment display code No. increase (Order of 10) 0 0 J10 Superlink terminal spare Normal*/switch to spare With J11 Power voltage selection As per voltage See table 3 J13 External input Level*/Pulse With Level J14< | SW5_0 | Reserved | | | | Keep OFF |
| SW6-2 Reserved OFF Keep OFF SW6-3 Spare OFF Keep OFF SW6-4 Spare OFF Keep OFF SW6-5 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW8 7-segment display code No. increase (Order of 1) 0 0 SW9 7-segment display code No. increase (Order of 10) 0 0 J10 Superlink terminal spare Normal*/switch to spare With J11 Power voltage selection As per voltage See table 3 J12 Power voltage selection As per voltage See table 3 J13 External input Level*/Pulse With Level < | SWJ-0 | Papanyad | | | | Keep OFF |
| SWG-3 Spare OFF Keep OFF SWG-4 Spare OFF Keep OFF SWG-5 Spare OFF Keep OFF SWG-6 Spare OFF Keep OFF SWG-7 Spare OFF Keep OFF SWG-8 Spare OFF Keep OFF SWG-7 Spare OFF Keep OFF SWG-8 Spare OFF Keep OFF SWG-7 Spare OFF Keep OFF SWG-8 Spare OFF Keep OFF SW7 Data Zrase/Write Erase*/Write OFF SW8 7-segment display code No. increase (Order of 1) 0 0 J10 Superlink terminal spare Normal*/switch to spare With J11 Power voltage selection As per voltage See table 3 J13 External input Level*/Pulse With Level J14 Spare With Keep With Mormal*/Cold region | SW6-2 | Papanyad | | | | Keep OFF |
| SW6-4 Spare OFF Keep OFF SW6-5 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Data Erase/Write Erase*/Write SW6-8 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW7 Data Erase/Write Erase*/Write OFF SW8 7-segment display code No. increase (Order of 1) 0 0 J10 Superlink terminal spare Normal*/switch to spare With J11 Power voltage selection As per voltage See table 3 J13 External input Level*/Pulse With Level J14 Spare With Keep With Vith J15 Defrost start temperature Normal*/Cold region With Normal | SW6_2 | Sporo | | | | Keep OFF |
| SW6-5 Spare OFF Keep OFF SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW6-8 Spare see/Write Erase*/Write OFF SW8 7-segment display code No. increase (Order of 1) 0 0 SW9 7-segment display code No. increase (Order of 10) 0 0 J10 Superlink terminal spare Normal*/switch to spare With J11 Power voltage selection As per voltage See table 3 J12 Power voltage selection As per voltage See table 3 J13 External input Level*/Pulse With Level J14 Spare With Keep With Normal J15 Defrost start temperature Normal*/Cold region With Normal | SW6_4 | Spare | | | | Keep OFF |
| SW6-6 Spare OFF Keep OFF SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW7 Data Erase/Write Erase*/Write OFF SW8 7-segment display code No. increase (Order of 1) 0 0 SW8 7-segment display code No. increase (Order of 10) 0 0 J10 Superlink terminal spare Normal*/switch to spare With J11 Power voltage selection As per voltage See table 3 J13 External input Level*/Pulse With Level J14 Spare With Keep With Mormal | SW6_5 | Spare | | | | Keep OFF |
| SW6-7 Spare OFF Keep OFF SW6-8 Spare OFF Keep OFF SW7 Data Erase/Write Erase*/Write OFF SW8 7-segment display code No. increase (Order of 1) 0 0 SW8 7-segment display code No. increase (Order of 10) 0 0 J10 Superlink terminal spare Normal*/switch to spare With Normal J11 Power voltage selection As per voltage See table 3 J13 External input Level*/Pulse With Level J14 Spare With Keep With J15 Defrost start temperature Normal*/Cold region With Normal | SW6_6 | Spare | | | | Keep OFF |
| SW6-8 Spare OFF Keep OFF SW7-0 Data Erase/Write OFF Erase SW7-1 Data Erase/Write OFF Erase SW7-2 Sw7-1 Data Erase/Write OFF Erase SW8-7 Segment display code No. increase (Order of 1) 0 0 0 J10 Superlink terminal spare Normal*/switch to spare With Normal J11 Power voltage selection As per voltage See table 3 J12 Power voltage selection As per voltage See table 3 J13 External input Level*/Pulse With Level J14 Spare With Keep With Mormal*/Cold region | SW6_7 | Spare | | | | Keep OFF |
| SW07 Data Erase/Write Erase*/Write OFF Erase SW8 7-segment display code No. increase (Order of 1) 0 0 SW9 7-segment display code No. increase (Order of 1) 0 0 J10 Superlink terminal spare Normal*/switch to spare With Normal J11 Power voltage selection As per voltage See table 3 J13 External input Level*/Pulse With Level J14 Spare With Keep With J15 Defrost start temperature Normal*/Cold region With Normal | SW6_9 | Spare | | | | Keep OFF |
| SW8 7-segment display code No. increase (Order of 1) 0 SW8 7-segment display code No. increase (Order of 1) 0 J10 Superlink terminal spare Normal*/switch to spare J11 Power voltage selection As per voltage J12 Power voltage selection As per voltage J13 External input Level*/Pulse J14 Spare With J15 Defrost start temperature Normal*/Cold region | SW0 0 | Data Eraca/Write | racat /Writa | | France | Reep OI I |
| SW9 7-segment display code No. Increase (Order of 10) 0 J10 Superlink terminal spare Normal*/switch to spare J11 Power voltage selection As per voltage J12 Power voltage selection As per voltage J13 External input Level*/Pulse J14 Spare With J15 Defrost start temperature Normal*/Cold region | SW/ | Zesement display and No increase (Order | rase*/ write | | Erase | |
| U10 Superlink terminal spare Normal*/switch to spare With Normal J11 Power voltage selection As per voltage See table 3 J13 External input Level*/Pulse With Level J14 Spare With Keep With Keep With J15 Defrost start temperature Normal*/Cold region With Normal | SW0 | 7-segment display code No. increase (Order | r of 10) | 0 | | <u> </u> |
| Oto Outpermint terminal spare Intermint within it of that J11 J12 Power voltage selection As per voltage See table 3 J13 External input Level*/Pulse With Level J14 Spare With Keep With Keep With J15 Defrost start temperature Normal*/Cold region With Normal | 110 | Superlink terminal apara | ormalit/awitch to apore | With | Normal | <u> </u> |
| Dist Power voltage selection As per voltage See table 3 J13 External input Level*/Pulse With Level J14 Spare With Keep With Keep With J15 Defrost start temperature Normal*/Cold region With Keep With | 111 | Superinik terminal spare | ormant/ switch to spare | WILT | normai | <u> </u> |
| J13 External input Level*/Pulse With Level J14 Spare With Keep With J15 Defrost start temperature Normal*/Cold region With Normal | J12 | Power voltage selection | | As per \ | voltage | See table 3 |
| J14 Spare With Keep With J15 Defrost start temperature Normal*/Cold region With Normal | J13 | External input | evel*/Pulse | With | Level | |
| J15 Defrost start temperature Normal*/Cold region With Normal | J14 | Spare | | With | | Keep With |
| | J15 | Defrost start temperature N | ormal*/Cold region | With | Normal | |
| J16 JUutdoor unit type selection IKXR/KX With IKXR ISee table 1 | J16 | Outdoor unit type selection K | XR/KX | With | KXR | See table 1 |

Table 1: Model selection with SW4-1-SW4-4 and J16

| | | 0: 01 | -F 1:0N |
|-------|------|-------|---------|
| | 224 | 280 | 335 |
| SW4-1 | 0 | 1 | 0 |
| SW4-2 | 0 | 0 | 1 |
| SW4-3 | 0 | 0 | 0 |
| SW4-4 | 0 | 0 | 1 |
| J16 | None | None | None |

Table 2: Demand ratio selection with SW4-5, SW4-6 0: OFF 1:0N

| SW4-5 | SW4-6 | Compressor capacity (%) |
|-------|-------|-------------------------|
| 0 | 0 | 80 |
| 1 | 0 | 60 |
| 0 | 1 | 40 |
| 1 | 1 | 0 |

 Table 3: Power voltage selection with J11, J12

| Table 3: Power voltage selection with J11, J12 | | | | |
|--|-----|-----------------|--|--|
| - | | 0: None 1: With | | |
| Outdoor unit | J11 | J12 | | |
| 380V 60Hz | 0 | 1 | | |
| 380/415V 50Hz | 0 | 0 | | |
| | | | | |

(2) Indoor unit

| Switches | Description | | De | fault setting | Remarks |
|----------|---------------------------------------|-------------------------|----------|---------------|---------------|
| SW1 | Indoor unit address No. (Order of 10) | | 0 | | 0-9 |
| SW2 | Indoor unit address No. (Order of 1) | | 0 | | 0-9 |
| SW3 | Outdoor unit address No. (Order of 10 | 0) | 4 | | 0-9 |
| SW4 | Outdoor unit address No. (Order of 1) |) | 9 | | 0-9 |
| SW5-1 | Superlink selection | Automatic*/Previous SL | OFF | Automatic | |
| SW5-2 | Indoor unit address No. (Order of 100 |) | OFF | 0 | OFF: 0, ON: 1 |
| SW6-1 | | | | | |
| SW6-2 | Madel colortion | | A | | Saa tabla 1 |
| SW6-3 | Model selection | | As per r | nodel | See table 1 |
| SW6-4 | | | | | |
| SW7-1 | Test run, Drain motor | Normal*/Test run | OFF | Normal | |
| SW7-2 | Reserved | | OFF | | keep OFF |
| SW7-3 | Spare | | OFF | | keep OFF |
| SW7-4 | Reserved | | OFF | | keep OFF |
| JSL1 | Superlink terminal spare | Normal*/switch to spare | With | Normal | |
| | | * Default setting | | | |

Table 1: Indoor unit model selection with SW6-1-SW6-4

| Table 1.1 | able 1. Industruinister selection with SWO 1 SWO 4 | | | | | | | | | | | | |
|-----------|--|-----|-----|-----|-----|-----|-----|-----|------|------|------|-------|--------|
| | | | | | | | | | | | | 0: OF | F 1:ON |
| | P22 | P28 | P36 | P45 | P56 | P71 | P80 | P90 | P112 | P140 | P160 | P224 | P280 |
| SW6-1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| SW6-2 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| SW6-3 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| SW6-4 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |



| CH1 | Crankcase heater |
|------------|---|
| CM | Compressor motor |
| CNA-Z | Connector |
| CT1 | Current sensor |
| C1 | Electrolytic capacitor |
| DM | Diode module |
| EEVH | Heating expansion valve |
| EEVSC | Super-cooling coil expansion valve |
| FMo1,2 | Blower motor |
| F1 | Fuse |
| IPM | Intelligent power module |
| J11,12 | Power supply, voltage switching |
| J13 | External input switching level/pulse |
| J14 | Spare |
| J15 | Defrosting start temperature selection, |
| | normal/cold region |
| LED1 | Inspection (Red) |
| LED1 (INV) | Normal (Yellow) Flashing |
| LED2 | Normal (Green) |
| LED3 | Service (Green) |
| L1~L3 | DC reactor |
| PSH | High pressure sensor |
| PSL | Low pressure sensor |
| PWB1~3 | PCB |
| R1 | Rush current suppression resistor |
| SVI | Solenoid valve (oil return) |
| SV6 | Solenoid valve (fluid return) |

| SW1 | | Address setting SW outdoor unit No. (2 digits) | TB1;2 | | | |
|---------|-----|--|-------|--|--|--|
| SW2 | | Address setting SW outdoor unit No. (1 digit) | Tho- | | | |
| SW3-1 | | Inspection LED reset | Tho- | | | |
| SW3-2 | | Spare | Tho- | | | |
| SW3-4,5 | | Spare | Tho- | | | |
| SW3-7 | ON | Forced heating/cooling mode | | | | |
| | OFF | Normal operation | Tho- | | | |
| SW3-8 | ON | Test mode | Tho- | | | |
| | OFF | Normal operation | Tho- | | | |
| S#4-1~4 | | Model setting | Tho- | | | |
| SW4-5,6 | | Demand switching | X01~ | | | |
| SW4-7,8 | | Spare | 7SEG | | | |
| SW5-1 | ON | Test run | | | | |
| | OFF | Normal operation | 20S | | | |
| S#5-2 | ON | Cooling at test run | 52X1 | | | |
| | OFF | Heating at test run | 63H1 | | | |
| S#5-3 | ON | Pump-down operation | | | | |
| | OFF | Normal operation | | | | |
| S#5-4 | | Spare | | | | |
| SW5-5 | ON | Super Link communication | | | | |
| | OFF | Super Link II communication | | | | |
| SW7 | | Data delete/write | | | | |
| SW8 | 1 | 7-segment indication up (1 digit) | | | | |
| SW9 | - | 7-segment indication up (2 digits) | | | | |
| | | | | | | |

| 2 | Terminal block |
|----------|--|
| -A | External air thermistor |
| -C1 | Under-dome thermistor |
| -D1 | Discharge pipe thermistor |
| ·H | Super-cooling coil thermistor 2 |
| -P1 | Power transistor thermistor |
| ·R1 | Heat exchanger thermistor 1 (Exit/front) |
| -R2 | Heat exchanger thermistor 1 (Exit/rear) |
| -S | Suction pipe thermistor |
| ·SC | Super-cooling coil thermistor 1 |
| 03,06~09 | Aux. relay |
| 1 | 7-segment LED (Data display) |
| 62 | 7—segment LED (Function display) |
| | 4-way switching solenoid |
| ,2 | Solenoid for CM |
| -1 | High pressure switch |
| | |

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ELECTRICAL

WIRING

3.1 Outdoor unit

Models FDC224KXE6, 280KXE6

PCB003Z033

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| | CM | Compressor motor |
|---|------------|---|
| | CNA-Z | Connector |
| | CT1 | Current sensor |
| | C1 | Electrolytic capacitor |
| | DM | Diode module |
| | EEVH | Heating expansion valve |
| | EEVSC | Super-cooling coil expansion valve |
| | FMo1,2 | Blower motor |
| | F1 | Fuse |
| | IPM | Intelligent power module |
| | J11,12 | Power supply, voltage switching |
| | J13 | External input switching level/pulse |
| | J14 | Spare |
| | J15 | Defrosting start temperature selection, |
| | | normal/cold region |
| | LED1 | Inspection (Red) |
| | LED1 (INV) | Normal (Yellow) Flashing |
| | LED2 | Normal (Green) |
| | LED3 | Service (Green) |
| | L1~L3 | DC reactor |
| | PSH | High pressure sensor |
| - | PSL | Low pressure sensor |
| | PWB1~3 | PCB |
| | R1 | Rush current suppression resistor |
| | SV1 | Solenoid valve (oil return) |
| | SV6 | Solenoid valve (fluid return) |
| | SV11 | Solenoid valve (gas bypass) |
| | | |

Crankcase heater

| SW1 | | Address setting SW outdoor unit No. (2 digits) | TB1,2 | Terminal block | | | |
|----------|-----|--|--------------|--|--|--|--|
| SW2 | | Address setting SW outdoor unit No. (1 digit) | Tho-A | External air thermistor | | | |
| SW3-1 | | Inspection LED reset | Tho-C1 | Under-dome thermistor | | | |
| SW3-2 | | Spare | Tho-D1 | Discharge pipe thermistor | | | |
| SW3-4,5 | | Spare | Tho-H | Super-cooling coil thermistor 2 | | | |
| SW3-7 | ON | Forced heating/cooling mode | Tho-P1 | Power transistor thermistor | | | |
| | OFF | Normal operation | Tho-R1 | Heat exchanger thermistor 1 (Exit/front) | | | |
| SW3-8 | ON | Test mode | Tho-R2 | Heat exchanger thermistor 1 (Exit/rear) | | | |
| | OFF | Normal operation | Tho-S | Suction pipe thermistor | | | |
| SW4-1~4 | | Model setting | Tho-SC | Super-cooling coil thermistor 1 | | | |
| SW4-5.6 | | Demand switching | X01~03,06~09 | Aux. relay | | | |
| SW4-7,8 | | Spare | 7SEG1 | 7-segment LED (Data display) | | | |
| SW5-1 ON | | Test run | 7SEG2 | 7-segment LED (Function display) | | | |
| | OFF | Normal operation | 20S | 4-way switching solenoid | | | |
| SW5-2 | ON | Cooling at test run | 52X1,2 | Solenoid for CM | | | |
| | OFF | Heating at test run | 63H1-1 | High pressure switch | | | |
| SW5-3 | ON | Pump-down operation | • | | | | |
| | OFF | Normal operation | | | | | |
| SW5-4 | | Spare | | | | | |
| SW5-5 ON | | Super Link communication | | | | | |
| | OFF | Super Link II communication | | | | | |
| SW7 | | Data delete/write | | | | | |
| SW8 | | 7-segment indication up (1 digit) | | | | | |
| SW9 | | 7-segment indication up (2 digits) | | | | | |

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CH1

Model FDC335KXE6

3.2 Indoor unit

(a) Ceiling cassette-4 way type (FDT) Models All models



Notes 1.---indicates wiring on site.

2.Use twin core cord (0.75 \sim 1.25mm²) at signal line between indoor unit and outdoor unit, and signal line between indoor units.

3.Use twin core cord (0.3mm^2) at remote controller line. See spec sheet of remote controller in case that the total length is more than 100m.

4.Do not put signal line and remote controller line alongside power source line.

| Color Marks | | | | | | | | | | |
|-------------|--------|------|--------------|--|--|--|--|--|--|--|
| Mark | Color | Mark | Color | | | | | | | |
| BK | Black | RD | Red | | | | | | | |
| BL | Blue | WH | White | | | | | | | |
| BR | Brown | Y | Yellow | | | | | | | |
| OR | Orange | Y/GN | Yellow/Green | | | | | | | |

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PJF000Z053

| | | | | | | Color I | Marks |
|----------|---|-------|---|------------|---------------------------------------|---------|--------------|
| CNA~Z | Connector | SM | Stepping motor | SW7-1 | Operation check, Drain motor test run | Mark | Color |
| DM | Drain motor | | (For electronic expansion valve) | TB1 | Terminal block (Power source) | BK | Black |
| F200~203 | Fuse | SW1 | Indoor unit address : tens place | 1 | (mark) | BL | Blue |
| FM | Fan motor | SW2 | Indoor unit address : ones place | TB2 | Terminal block (Signal line) (Cmark) | BR | Brown |
| FS | Float switch | SW3 | Outdoor unit address : tens place | Thc | Thermistor (Remote controller) | GR | Gray |
| JSL1 | Live Superlink terminal setting (for spare) | SW4 | Outdoor unit address : ones place | Thi-A | Thermistor (Return air) | OR | Orange |
| LED · 2 | Indication lamp | SW5-1 | Automatic adjustment / Fixed | Thi-R1,2,3 | Thermistor (Heat exchanger) | Ρ | Pink |
| | (Green-Normal operation) | | preivious version of Superlink protocol | X4 | Relay for DM | RD | Red |
| LED · 3 | Indication lamp (Red-Inspection) | SW5-2 | Indoor unit address : hundreds place | mark | Closed-end connector | WH | White |
| LM1~4 | Louver motor | SW6 | Model capacity setting | | | Y | Yellow |
| | | | | | | Y/GN | Yellow/Green |



4.Do not put signal line and remote controller line alongside power source line.

| | Color Ma | ırks | | | | | | | | | | |
|----------------|---------------------|-----------------|--------------------|------------|-----------------------|--------------------|--------------------------|-----------------------------|---------------------------|--|------------|---|
| | Mark | Color | | | | | | | | | CF11 | Capacitor for FMI |
| | BK | Black | | | | | | | | | CNA~Z | Connector |
| | BL | Blue | | | | | | | | | DM | Drain motor |
| | BR | Brown | | | | | | | | | F | Fuse |
| | | Orange | | | | | | | | | FM+1 | Fan motor (with thermostat) |
| | RD | Red | | | | | | | | | FS | Float switch |
| | WH | White | | | | | | | | | JSL1 | Live Superlink terminal setting (for spare) |
| | Y | Yellow | | | | | | | | | LED · 2 | Indication lamp (Green-Normal operation) |
| | Y/GN | Yellow/Green | | | | | | | | | LED · 3 | Indication lamp (Red-Inspection) |
| | | | | | | | 5 or 6 v | vires | | | LM | Louver motor |
| | Power | source line | | | | Tri | SM . | Thi-R1 Thi-R2 In | I-R3 ThI-A | | LS | Louver switch |
| | betwe | en indoor units | Connector for bran | iching | | | | 4 4 4 | 1 41 | | CM. | Stepping motor |
| Power | source | i | 3-pipe systems | ecuvery | 220-24 CNS2 220-24 | ** | | 4 4 4 | - 4 | | SIVI | (for electronic expansion valve) |
| Single- | -phase | | at CNU | | * * | | | * * * * * | с <u>х</u> х | | SW1 | Indoor unit address: tens place |
| 220-2 220V- | 40V~ 50Hz - 60Hz | тві | £ ≥ | | | | 4V ≤ 1 23456 | | | 1 | SW2 | Indoor unit address: ones place |
| Power | source (| | | | BL W | H BK | CNA RD | CNN | CNH BK | | SW3 | Outdoor unit address: tens place |
| line | 1. | | F (3.15A) | \'x6 \'x | 2 \ x 4 | LED 2 LED 3 | ³ SW1 SW2 SW3 | SW5 JS | L1 | | SW4 | Outdoor unit address: ones place |
| | | WH | F (3.15A) | | \x3 > | √5\ ੈ+ ੈ+ | $ \Phi \Phi $ | SW6 Superlink | (spare) | | 0.115 1 | Automatic adjustment/Fixed previous |
| | Earth - | Y/GN | | | CNR | | CNB CNK1 | SW7 B | K2 | | 500-1 | version of Superlink protocol |
| | Laiui — | | | WH 1 3 5 7 | | | | For Heat recovery | - | Ontion | SW5-2 | Indoor unit address: hundreds place |
| | | | ÷ | | BR. | | ≥ 찢 찍 띰 | 3-pipe systems | -1 1+12 +12 1 | | SW6 | Model capacity setting |
| | | | | | F (0.16A) | | | | CNT2 CNT3 | XR1 XR2 (Heating) | SW7-1 | Operation check, Drain motor test run |
| | | | | | | | ╝ҲӏҲӏѦӏӹ҄Ҁ | (SVG) - XB3 - | 4 BL 4 | XR3 (Thermo ON) | TB1 | Terminal block (Power source) (mark) |
| | | | | | | | <u>++</u> 000 | (SVE) - XB4 | - L 5 ⁵ | | TB2 | Terminal block (Signal line) (mark) |
| | | | | Y/GN | . H. | | XY | L_ ₁ | Control PCB | XR5 (Remote operation input: volt-free contact) | Thc | Thermistor (Remote controller) |
| | | | FI | Mil C | | | | Signal line (Shielded cord) | · · · | - | ThI-A | Thermistor (Return air) |
| | | | | CF11 | Divi | Ľ | The L | Signal line | | | Thi-R1,2,3 | Thermistor (Heat exchanger) |
| | | | | | | | L | | | | Tri | Transformer |
| | | | | | | | | | | | | |

(c) Ceiling cassette-2 way type (FDTW) Models FDTW28KXE6, 45KXE6, 56KXE6

X1~3,6

Х4

Х5

Relay for FM

Relay for DM Relay for LM

PJB001 Z560

- Notes 1. — indicates wiring on site.
 - 2. Use twin core cable (0.75~1.25mm²) at signal line between indoor unit

 - and outdoor unit, and signal line between indoor units. 3. Use twin core cable (0.3mm²) at remote controller line. See spec sheet
 - of remote controller in case that the total length is more than 100m.
 - 4. Do not put signal line and remote controller line alongside power source line.

| Color N | larks | | | | | | | | |
|------------------------------|-------------------|--|-------------------|---------------|------------------|------------------------------------|--------------|--|----------|
| Mark | Color | | | | | | | | CFI1 |
| BK | Black | | | | | | | | CNA~Z |
| BL | Blue | | | | | | | | рм |
| BR | Brown | | | | | | | | F |
| GR | Gray | | | | | | | | EM 1 |
| OR | Urange | | | | | | | | EQ |
| RD | Ked | | | | | | | | |
| WH | Vellew | | | | | | | | |
| | | | | | | | | | |
| 1/01 | | | | | | | | | LED · 3 |
| | | | | | 5 or 6 wire | s | | | LM |
| Pow | er source line | | | Tr | SM | Thi-R1 Thi-R2 Thi- | R3 Thi-A | | LS |
| betv | ween indoor units | Connector for branching controller of heat recovery | LS 220- | 2400 | | | Ľ | | SM |
| Power source Single-phase | | CNU | T WH | | | | | | SW1 |
| 220-240V~ 50H | Hz | | <u>8</u> | ₩ 19V ₽₽₩₩ 24 | V Realise | | 5 8 8 | | SW2 |
| | TB1 | | CNS (| | 123456 CNA | 1 2 3 4 5 CNN Y | 6 1 2 CNH | | SW3 |
| Power source ∫ | | F (3.15A) | | | RD | SW5 JSL1 | BK | | SW4 |
| line | ``N WH | F (3.15A) CNWO X6 RD X | \x2 \x4 \x3 | X5\ + + + | SW1 SW2 SW3 SW4 | 4 Sw6 Superlink (sp | are) | | SW5-1 |
| Earth- | <u>Y/gn</u> | СNM3 | | CNJ2 CNI | | SW7 BK | | | SW5-2 |
| | | | | | <u>f</u> | For Heat recovery | | Option | SWE |
| | | | BR NH BR | R R | s @ @ C | | 1+12 +12 1 | VR1 (Oneration) | SW7_1 |
| | | a | F (0.16A) | | | 205) • XB1 - XB1 - XB1 - XB1 - XB2 | 2 CNT2 CNT3 | XR2-• (Heating) | |
| | | | Ĩ CNR | P (M) B | ĂĂŬŔÊ (| SVG)XB3 | 4 BL 4 | XR3 (Thermo ON) | |
| | | | | | <u>∓∓</u> 0))))) | SVE) (- <u>XB4</u> | 5 6 | | The |
| | | Y/G | N M | | X Y L | I | Control PCB | XR5 (Remote operation input: volt-free contact) | |
| | | FM.1 | | | Remote | ·─_} Signal line (Shielded cord) | | | |
| | | CF1 | Divi | ť | | Signal line | | | INI-KI,2 |
| | | | L | | L | between indoor drifts | | | Irl |
| | | | | | | | | | 1 1 1 |

| CFI1 | Capacitor for FMI |
|------------|---|
| CNA~Z | Connector |
| DM | Drain motor |
| F | Fuse |
| FM11 | Fan motor (with thermostat) |
| FS | Float switch |
| JSL1 | Live Superlink terminal setting (for spare) |
| LED · 2 | Indication lamp (Green-Normal operation) |
| LED · 3 | Indication lamp (Red-Inspection) |
| LM | Louver motor |
| LS | Louver switch |
| SM | Stepping motor |
| | (for electronic expansion valve) |
| SW1 | Indoor unit address: tens place |
| SW2 | Indoor unit address: ones place |
| SW3 | Outdoor unit address: tens place |
| SW4 | Outdoor unit address: ones place |
| SW5-1 | Automatic adjustment / Fixed previous |
| | version of Superlink protocol |
| SW5-2 | Indoor unit address: hundreds place |
| SW6 | Model capacity setting |
| SW7-1 | Operation check, Drain motor test run |
| TB1 | Terminal block (Power source) (mark) |
| TB2 | Terminal block (Signal line) (mark) |
| Thc | Thermistor (Remote controller) |
| ThI-A | Thermistor (Return air) |
| Th1-R1,2,3 | Thermistor (Heat exchanger) |
| Tri | Transformer |
| X1~3,6 | Relay for FM |
| Х4 | Relay for DM |
| X5 | Relay for LM |

- Notes 1. — indicates wiring on site.
 - Set twin core cable (0.75~1.25mm²) at signal line between indoor unit and outdoor unit, and signal line between indoor units.
 Use twin core cable (0.3mm²) at remote controller line. See spec sheet

 - of remote controller in case that the total length is more than 100m.
 - 4. Do not put signal line and remote controller line alongside power source line.
| Color Marks | | | | | | |
|-------------|--------------|--|--|--|--|--|
| Mark | Color | | | | | |
| BK | Black | | | | | |
| BL | Blue | | | | | |
| BR | Brown | | | | | |
| GR | Gray | | | | | |
| OR | Orange | | | | | |
| RD | Red | | | | | |
| WH | White | | | | | |
| Y | Yellow | | | | | |
| Y/GN | Yellow/Green | | | | | |



| CF11,2 | Capacitor for FMI |
|------------|---|
| CNA~Z | Connector |
| DM | Drain motor |
| F | Fuse |
| FM11,2 | Fan motor (with thermostat) |
| FS | Float switch |
| JSL1 | Live Superlink terminal setting (for spare) |
| LED·2 | Indication lamp (Green-Normal operation) |
| LED · 3 | Indication lamp (Red-Inspection) |
| LM | Louver motor |
| LS | Louver switch |
| CM. | Stepping motor |
| DIVI | (for electronic expansion valve) |
| SW1 | Indoor unit address: tens place |
| SW2 | Indoor unit address: ones place |
| SW3 | Outdoor unit address: tens place |
| SW4 | Outdoor unit address: ones place |
| | Automatic adjustment / Fixed previous |
| SW5-1 | version of Superlink protocol |
| SW5-2 | Indoor unit address: hundreds place |
| SW6 | Model capacity setting |
| SW7-1 | Operation check, Drain motor test run |
| TB1 | Terminal block (Power source) (mark) |
| TB2 | Terminal block (Signal line) (mark) |
| Thc | Thermistor (Remote controller) |
| Thi-A | Thermistor (Return air) |
| Th1-R1,2,3 | Thermistor (Heat exchanger) |
| Tri | Transformer |
| X1~3,6 | Relay for FM |
| X4 | Relay for DM |
| X5 | Relay for LM |
| mark | Closed-end connector |

- Notes 1. - indicates wiring on site.
 - 2. Use twin core cable (0.75~1.25mm²) at signal line between indoor unit

 - and outdoor unit, and signal line between indoor units. 3. Use twin core cable (0.3mm²) at remote controller line. See spec sheet
 - of remote controller in case that the total length is more than 100m.
 - 4. Do not put signal line and remote controller line alongside power source line.

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| Color Ma | arks | | | | | | | | | | | |
|----------|---------------|----------------|--------------------------------|----------------------------------|-------------|--------------------|------------------------|----------------|-------------|------------------|---------------------------|-----------|
| Mark | Color |] | | | | | | | | | | |
| BK | Black | | | | | | | | | | | |
| BL | Blue | | | | | | | | | | | |
| BR | Brown | | | | | | | | | | | |
| GR | Gray | 1 | | | | | | | | | | |
| LB | Light Blue | 1 | | | | | | | | | | |
| LG | Light Green | 1 | | | | | | | | | | |
| OR | Orange | 1 | | | | | | | | | | |
| Р | Pink | 1 | | | | | | | | | | |
| RD | Red | 1 | | SW1 SW2 SW3 S | SW4 | | | | | | | |
| WH | White | 1 | | | \odot | | | | | | | |
| Y | Yellow | 1 | | S | v5 [5 | or 6 wires | | | | | | |
| Y/GN | Yellow/Green | 1 | | CNL6 | SM | / | | Thi-R1 Thi-F | R2 Thi-R3 | Thi-A | | |
| | | | | 1234567891 | | | ١ť | 4 lith | | ut da l | | |
| | | | | | T //// | Tr | , 4 | + + | 144 1 | | | |
| | Dowor course | Connec | tor for branching | | 1 ((1)) | CNA2 | | | * 8 8 | ΥI | | |
| | hetween indor | nrunits 3-pipe | er of neat recovery systems | 2211122 | 레레페이스톤 니 | L 220-240V | | | | | | |
| Power | source | | CNU | | | г Г | 트 | | | | | |
| (Single | -phase) | R | H BL | | H H H H H H | | 9Vසිසිසිසි 24V ම | 2 8 8 8 | 5 X X | 哭 哭 | | |
| 220-24 | 40V~ 50Hz | TB1 | | CNL5 CNL1 CNL2 CNL4 C | NL3 12345 | 6 CNW1 | CNW2 | 1 2 3 | 4 5 6 | 1 2 | | |
| Dowor | | | RD 3 | BK BK BL WH E | K CNA RD | WH | BK | CNN | ΙY | CNH BK | | |
| line | | RD F (3.15 | A) WH 1 | $\chi^{1} = \chi^{1} = \chi^{1}$ | \x4 | | | | 101.1 | +12 1 | Option | |
| | () | N WH F (3.15 | | 7X6\ (X2\ (|)^- | , _L | ED·2 LED·3 🕃 | SW6 | JSLI | 2 | - XB1 | eration) |
| | | | RD | | | x5 | | Superli | ink (spare) | CNT 3 | XR2 | ating) |
| | Forth | Y/GN | | • · · · · · · · · | • | · | ਕ ਕ ਇ | 5W7 [| CNK2 | BL 4 | - XR3 (Th | ermo ON) |
| | | | | | | | | | BK | 5 | XR4 -+ (Ins | spection) |
| | | | | | CNR C | CNJ2 CNS | CNI | UNB UN WH W | K I H | 6 Ų- | VP5 (Remote operation inn | wit- |
| | | = | | | WH 13 | BL 13 BL | BL | 1 3 1 | 2 | | volt-free contact) | ut. |
| | | | CNM3 | C UH H M L | MH BR | MH BL | | H B B | 8 | | For Heat recovery | |
| | | | WH | ₩ ₩ ₩ ₩ | | | CNI2 | | | +12 1 | 3-pipe systems | |
| | | | | | | R2 | | | | 2 | -XB1 (20 | DS) |
| | | | | | ₹ BL | | UNJS | | | RD 3 | - <u></u> XB2_+ (S\ | VH) |
| | | | | | 1 | | | | | 4 | - <u>XB3</u> (S) | √G) |
| | | | | | LL . | | P ^{CNS3} ⊡-7T | B2 X Y A | В 🕀 | 5나- | (XB4) (S) | √E) |
| | | | CNF1 | <u>+</u> | (j~) | | 5 [™] FS ⊔ | | ΤŃΙ | Orantaral DOD | | |
| | | | | 15 | DM | LSA | | | i! i! " | | | |
| | | | (| M | | | | <u> </u> | | Signal line (Shi | (hroo hable | |
| | | | FM:1 | ËЛ L | | I M | | ≁ Remote L | <u> </u> | | sidod odruj | |
| | | | C | Fi1 5 | | | | Controller | L | Signal line | a or units | |
| | | | | | | | | | , | | or office | |
| | | | | <u>+</u> | | | | | | | | |

| CFI1 | Capacitor for FMI |
|------------|---|
| CNA~Z | Connector |
| DM | Drain motor |
| F | Fuse |
| FM11 | Fan motor (with thermostat) |
| FS | Float switch |
| JSL1 | Live Superlink terminal setting (for spare) |
| LED · 2 | Indication lamp (Green-Normal operation) |
| LED · 3 | Indication lamp (Red-Inspection) |
| LM | Louver motor |
| LS | Louver switch |
| CM | Stepping motor (for electronic expansion |
| 21/1 | valve) |
| SW1 | Indoor unit address: tens place |
| SW2 | Indoor unit address: ones place |
| SW3 | Outdoor unit address: tens place |
| SW4 | Outdoor unit address: ones place |
| 014/5 1 | Automatic adjustment / Fixed previous |
| SW5-1 | version of Superlink protocol |
| SW5-2 | Indoor unit address: hundreds place |
| SW6 | Model capacity setting |
| SW7-1 | Operation check, Drain motor test run |
| TB1 | Terminal block (Power source) (mark) |
| TB2 | Terminal block (Signal line) (mark) |
| Thc | Thermistor (Remote controller) |
| Thi-A | Thermistor (Return air) |
| Th1-R1,2,3 | Thermistor (Heat exchanger) |
| Trı | Transformer |
| X1~3,6 | Relay for FM |
| X4 | Relay for DM |
| X5 | Relay for LM |
| mark | Closed-end connector |
| | |

(d) Ceiling cassette-1 way type (FDTS) Model FDTS45KXE6

Notes 1. — — indicates wiring on site.

Section 2. Use twin core cable (0.75~1.25mm²) at signal line between indoor unit and outdoor unit, and signal line between indoor units.
 Use twin core cable (0.3mm²) at remote controller line. See spec sheet of remote controller in case that the total length is more than 100m.

4. Do not put signal line and remote controller line alongside power source line.



| CNA~Z | Connector |
|------------|---|
| DM | Drain motor |
| F | Fuse |
| FM11,2 | Fan motor (with thermostat) |
| FS | Float switch |
| JSL1 | Live Superlink terminal setting (for spare) |
| LED · 2 | Indication lamp (Green-Normal operation) |
| LED · 3 | Indication lamp (Red-Inspection) |
| LM | Louver motor |
| LS | Louver switch |
| SM | Stepping motor (for electronic expansion valve) |
| SW1 | Indoor unit address: tens place |
| SW2 | Indoor unit address: ones place |
| SW3 | Outdoor unit address: tens place |
| SW4 | Outdoor unit address: ones place |
| OWE 1 | Automatic adjustment / Fixed previous |
| 500-1 | version of Superlink protocol |
| SW5-2 | Indoor unit address: hundreds place |
| SW6 | Model capacity setting |
| SW7-1 | Operation check, Drain motor test run |
| TB1 | Terminal block (Power source) (mark) |
| TB2 | Terminal block (Signal line) (mark) |
| Thc | Thermistor (Remote controller) |
| ThI-A | Thermistor (Return air) |
| ThI-R1,2,3 | Thermistor (Heat exchanger) |
| Tri | Transformer |
| X1~3,6 | Relay for FM |
| X4 | Relay for DM |
| X5 | Relay for LM |
| mark | Closed-end connector |
| | |

Capacitor for FMI

CF11,2

Notes 1. — — indicates wiring on site.

- 2. Use twin core cable (0.75~1.25mm²) at signal line between indoor unit
- and outdoor unit, and signal line between indoor units.
- 3. Use twin core cable (0.3mm²) at remote controller line. See spec sheet
- of remote controller in case that the total length is more than 100m.
- 4. Do not put signal line and remote controller line alongside power source line.



Models All models Direct blow panel (e) Ceiling cassette-1 way compact type (FDTQ)

Notes

1.--indicates wiring on site.

2.Use twin core cord (0.75~1.25mm²) at signal line between indoor unit and outdoor unit, and signal line between indoor units.

3.Use twin core cord (0.3mm^2) at remote controller line. See spec sheet of remote controller in case that the total length is more

than 100m.

4.Do not put signal line and remote controller line alongside power source line.

| CFI | Capacitor for FMI |
|---------|---|
| CNA~Z | Connector |
| DM | Drain motor |
| F | Fuse |
| FMI | Fan motor (with thermostat) |
| FS | Float switch |
| JSL1 | Live Superlink terminal setting (for spare) |
| LED · 2 | Indication lamp |
| | (Green-Normal operation) |
| LED · 3 | Indication lamp (Red-Inspection) |
| LM | Louver motor |
| LS | Louver switch |

| SM | Stepping motor |
|-------|---|
| | (For electronic expansion valve) |
| SW1 | Indoor unit address: tens place |
| SW2 | Indoor unit address: ones place |
| SW3 | Outdoor unit address: tens place |
| SW4 | Outdoor unit address: ones place |
| SW5-1 | Automatic adjustment / Fixed |
| | preivious version of Superlink protocol |
| SW5-2 | Indoor unit address: hundreds place |
| SW6 | Model capacity setting |
| SW7-1 | Operation check, Drain motor test run |
| | |

| TB1 | Terminal block (Power source) |
|------------|--------------------------------------|
| | (mark) |
| TB2 | Terminal block (Signal line) (mark) |
| Thc | Thermistor (Remote controller) |
| Thi-A | Thermistor (Return air) |
| Thi-R1,2,3 | Thermistor (Heat exchanger) |
| Trı | Transformer |
| X1~3,6 | Relay for FM |
| Х4 | Relay for DM |
| X5 | Relay for LM |
| mark | Closed-end connector |

| Mark | Color | Mark | Color |
|------|--------|------|--------------|
| RK | Black | RD | Red |
| | Diddk | | White |
| DL | DIUE | W T | WIILE |
| BK | Brown | Y | Yellow |
| GR | Gray | Y/GN | Yellow/Green |
| OR | Orange | | |



2.Use twin core cord $(0.75{\sim}1.25 \text{mm}^2)$ at signal line between indoor unit and outdoor unit, and signal line between indoor units.

3.Use twin core cord (0.3mm^2) at remote controller line. See spec sheet of remote controller in case that the total length is more than 100m.

4.Do not put signal line and remote controller line alongside power source line.

Color Marks

| Mark | Color | Mark | Color |
|------|--------|------|--------------|
| BK | Black | RD | Red |
| BL | Blue | WH | White |
| BR | Brown | Y | Yellow |
| GR | Gray | Y/GN | Yellow/Green |
| OR | Orange | | |

Changing the fan tap

The factory setting of the fan tap is "Standard". Change the fan tap to "High Speed 1" by using the function setting of the wired remote controller.

| CATEGORY | NUMBER | FUNCTION | SETTING |
|--------------|--------|---------------|--------------|
| I/U FUNCTION | 02 | FAN SPEED SET | HIGH SPEED 1 |

Invalidating the louver button

The factory setting of the louver button is "Valid". Change the louver button to "Invalid" by using the function setting of the wired remote controller.

| CATEGORY | NUMBER | FUNCTION | SETTING |
|---------------------------------------|--------|-------------|---------|
| FUNCTION (REMOTE CONTROLLER FUNCTION) | 07 | 🗔 LOUVER SW | INVALID |

| CFI | Capacitor for FM1 |
|---------|---|
| CNA~Z | Connector |
| DM | Drain motor |
| F | Fuse |
| FMi | Fan motor (with thermostat) |
| FS | Float switch |
| JSL1 | Live Superlink terminal setting (for spare) |
| LED · 2 | Indication lamp |
| | (Green-Normal operation) |
| LED · 3 | Indication lamp (Red-Inspection) |
| | |

| SM | Stepping motor |
|-------|---|
| | (For electronic expansion valve) |
| SW1 | Indoor unit address: tens place |
| SW2 | Indoor unit address: ones place |
| SW3 | Outdoor unit address: tens place |
| SW4 | Outdoor unit address: ones place |
| SW5-1 | Automatic adjustment / Fixed |
| | preivious version of Superlink protocol |
| SW5-2 | Indoor unit address: hundreds place |
| SW6 | Model capacity setting |
| SW7-1 | Operation check Drain motor test run |

| TB1 | Terminal block (Power source) | |
|------------|--------------------------------------|--|
| | (□ mark) | |
| TB2 | Terminal block (Signal line) (mark) | |
| Thc | Thermistor (Remote controller) | |
| Thi-A | Thermistor (Return air) | |
| Thı-R1,2,3 | Thermistor (Heat exchanger) | |
| Trı | Transformer | |
| X1~3,6 | Relay for FM | |
| Χ4 | Relay for DM | |
| X5 | Relay for LM | |
| mark | Closed-end connector | |

(f) Duct connected-High static pressure type (FDU) Models FDU71KXE6



Relay for DM

Closed-end connector

X4

mark

Indoor unit address: hundreds place

Operation check, Drain motor test run

Terminal block (Power source) (
mark)

Model capacity setting

Notes 1. — — indicates wiring on site.

2. Use twin core cable (0.75~1.25mm²) at signal line between indoor unit

JSL1

LED · 2

LED · 3

SM

Live superlink terminal setting (for spare)

Indication lamp (Green - Normal operation)

Indication lamp (Red - Inspection)

Stepping motor (for electronic expansion valve)

SW5-2

SW7-1

TB1

SW6

and outdoor unit, and signal line between indoor units.

3. Use twin core cable (0.3mm²) at remote controller line. See spec sheet

- of remote controller in case that the total length is more than 100m.
- 4. Do not put signal line and remote controller line alongside power source line.



| | L |
|---------------|---|
| CFI | Capacitor for FMI |
| CNA~Z | Connector |
| DM | Drain motor |
| F | Fuse |
| FMI | Fan motor (with thermostat) |
| FS | Float switch |
| JSL1 | Live Superlink terminal setting (for spare) |
| LED · 2 | Indication lamp (Green-Normal operation) |
| LED · 3 | Indication lamp (Red-Inspection) |
| CM | Stepping motor (for electronic expansion |
| 5101 | valve) |
| SW1 | Indoor unit address: tens place |
| SW2 | Indoor unit address: ones place |
| SW3 | Outdoor unit address: tens place |
| SW4 | Outdoor unit address: ones place |
| 014/5 1 | Automatic adjustment/Fixed previous |
| 500-1 | version of Superlink protocol |
| SW5-2 | Indoor unit address: hundreds place |
| SW6 | Model capacity setting |
| SW7-1 | Operation check, Drain motor test run |
| TB1 | Terminal block (Power source) (mark) |
| TB2 | Terminal block (Signal line) (mark) |
| Thc | Thermistor (Remote controller) |
| Th I-A | Thermistor (Return air) |
| Th I - R1,2,3 | Thermistor (Heat exchanger) |
| Trı | Transformer |
| X1~3,6 | Relay for FM |
| Х4 | Relay for DM |
| mark | Closed-end connector |
| 52FL,FM,FH | Electromagnetic contactor for FMI |

- Notes 1. - indicates wiring on site.
 - 2. Use twin core cable (0.75~1.25mm²) at signal line between indoor unit
 - and outdoor unit, and signal line between indoor units.
 - 3. Use twin core cable (0.3mm²) at remote controller line. See spec sheet
 - of remote controller in case that the total length is more than 100m.
 - 4. Do not put signal line and remote controller line alongside power source line.



- Notes 1. — indicates wiring on site.
 - 2. Use twin core cable (0.75~1.25mm²) at signal line between indoor unit
 - and outdoor unit, and signal line between indoor units.
 - 3. Use twin core cable (0.3mm²) at remote controller line. See spec sheet
 - of remote controller in case that the total length is more than 100m.
 - 4. Do not put signal line and remote controller line alongside power source line.



| Fil | Capacitor for FM | |
|--------------|--|--|
| NA~Z | Connector | |
| M | Drain motor | |
| : | Fuse | |
| Mil | Fan motor (with thermostat) | |
| S | Float switch | |
| | Live Superlink terminal setting | |
| ISLI | (for spare) | |
| | Indication lamp | |
| ED·2 | (Green-Normal operation) | |
| ED·3 | Indication lamp (Red-Inspection) | |
| | Stepping motor | |
| bIVI | (for electronic expansion valve) | |
| SW 1 | Indoor unit address: tens place | |
| SW2 | Indoor unit address: ones place | |
| SW3 | Outdoor unit address: tens place | |
| SW4 | Outdoor unit address: ones place | |
| | Automatic adjustment / Fixed | |
| 5W5-1 | previous version of Superlink protocol | |
| SW5-2 | Indoor unit address: hundreds place | |
| SW6 | Model capacity setting | |
| ו קאוי | Operation check, Drain motor | |
| 5007-1 | test run | |
| т п 1 | Terminal block (Power source) | |
| | (mark) | |
| B2 | Terminal block (Signal line) (mark) | |
| "hc | Thermistor (Remote controller) | |
| hı−A | Thermistor (Return air) | |
| "h ⊨ R1,2,3 | Thermistor (Heat exchanger) | |
| Îr i | Transformer | |
| X1~3,6 | Relay for FM | |
| X4 | Relay for DM | |
| mark | Closed-end connector | |

PJR002Z258

Notes 1. — — indicates wiring on site.

2. Use twin core cable (0.75~1.25mm²) at signal line between indoor unit

and outdoor unit, and signal line between indoor units.

 Use twin core cable (0.3mm²) at remote controller line. See spec sheet of remote controller in case that the total length is more than 100m.

4. Do not put signal line and remote controller line alongside power source line.

| \rightarrow | |
|---------------|--|
| 14 | |
| 1 | |

Models FDUM22KXE6, 28KXE6, 36KXE6, 45KXE6, 56KXE6, 71KXE6, 90KXE6 (g) Duct connected-Middle static pressure type (FDUM)



| | | Indication lamp |
|------------|------------|--|
| | | (Green-Normal operation) |
| | LED · 3 | Indication lamp (Red-Inspection) |
| | SM | Stepping motor |
| | Civi | (for electronic expansion valve) |
| | SW1 | Indoor unit address: tens place |
| ר) | SW2 | Indoor unit address: ones place |
| | SW3 | Outdoor unit address: tens place |
| JN) (nr | SW4 | Outdoor unit address: ones place |
| , | OWE 1 | Automatic adjustment/Fixed |
| | 500-1 | previous version of Superlink protocol |
| | SW5-2 | Indoor unit address: hundreds place |
| | SW6 | Model capacity setting |
| | 0.007 1 | Operation check, Drain motor |
| | 5007-1 | test run |
| | וסד | Terminal block (Power source) |
| | ы | (mark) |
| | TB2 | Terminal block (Signal line) (mark) |
| | Thc | Thermistor (Remote controller) |
| | Thi-A | Thermistor (Return air) |
| | Th1-R1,2,3 | Thermistor (Heat exchanger) |
| | Tri | Transformer |
| | X1~3,6 | Relay for FM |
| | Х4 | Relay for DM |
| | mark | Closed-end connector |
| | | |

CF11,2

CNA~Z

FM11,2

DM

FS

JSL1

Capacitor for FM

Fan motor (with thermostat)

Live Superlink terminal setting

Connector

Fuse

Drain motor

Float switch

(for spare)

- Notes 1. — indicates wiring on site.
 - 2. Use twin core cable (0.75~1.25mm²) at signal line between indoor unit
 - and outdoor unit, and signal line between indoor units.
 - 3. Use twin core cable (0.3mm²) at remote controller line. See spec sheet
 - of remote controller in case that the total length is more than 100m.
 - 4. Do not put signal line and remote controller line alongside power source line.



Notes

1.--indicates wiring on site.

 2.Use twin core cord (0.75~1.25mm²) at signal line between indoor unit and outdoor unit, and signal line between indoor units.
 3.Use twin core cord (0.3mm²) at remote controller line.

 $3.0 \mathrm{se}$ twin core cord $(0.3 \mathrm{mm}^2)$ at remote controller line. See spec sheet of remote controller in case that the total length is more than 100m.

4.Do not put signal line and remote controller line alongside power source line.

| CFI | Capacitor for FMI | 0 |
|---------|---|----|
| CNA~Z | Connector | |
| DM | Drain motor | ę |
| F | Fuse | 0 |
| FMI | Fan motor (with thermostat) | ę |
| FS | Float switch | ę |
| JSL1 | Live Superlink terminal setting (for spare) | ę |
| LED · 2 | Indication lamp | |
| | (Green-Normal operation) | ę |
| LED · 3 | Indication lamp (Red-Inspection) | C. |

| SM | Stepping motor |
|-------|---|
| | (For electronic expansion valve) |
| SW1 | Indoor unit address: tens place |
| SW2 | Indoor unit address: ones place |
| SW3 | Outdoor unit address: tens place |
| SW4 | Outdoor unit address: ones place |
| SW5-1 | Automatic adjustment/Fixed |
| | preivious version of Superlink protocol |
| SW5-2 | Indoor unit address: hundreds place |
| SW6 | Model capacity setting |
| | |

| SW7-1 | Operation check, Drain motor test run |
|------------|---------------------------------------|
| TB1 | Terminal block (Power source) |
| | (mark) |
| TB2 | Terminal block (Signal line) (mark) |
| Thc | Thermistor (Remote controller) |
| Thi-A | Thermistor (Return air) |
| Thi-R1,2,3 | Thermistor (Heat exchanger) |
| Tri | Transformer |
| X1~3,6 | Relay for FM |
| X4 | Relay for DM |

| arks |
|------|
| |

| | ldiks | | |
|------|--------|------|--------------|
| Mark | Color | Mark | Color |
| BK | Black | RD | Red |
| BL | Blue | WH | White |
| BR | Brown | Y | Yellow |
| GR | Gray | Y/GN | Yellow/Green |
| OR | Orange | | |



(i) Wall mounted type (FDK)

45KXE6,

56KXE6

4. Do not put signal line and remote controller line alongside power source line.



Models FDK71KXE6

PHA000Z984

| Mark | Color | | CELL2 | Capacitor for FM |
|----------|---------------------------------|--|------------------|--|
| BK | BIACK | | CNA~7 | Connector |
| BD | Blue | | F | Fuse |
| BR | Brown | | FM:1,2 | Fan motor (with thermostat) |
| UK | Urange | | 101.1 | Live Superlink terminal |
| P | Pink | | JOLI | setting (for spare) |
| RD | Red | | | Indication lamp |
| WH | White | | | (Green-Normal operation) |
| Y | Yellow | | | Indication lamp |
| Y/GN | Yellow/Green | yen | LED · 3 | (Red-Inspection) |
| | | | LM | Louver motor |
| | | | SM | Stepping motor |
| | | 5 or 6 wires | | (for electronic expansion valve) |
| | | SM Thi-R1 Thi-R2 Thi-R3 Thi-A | SW1 | Indoor unit address: tens place |
| | Power source | urgeling Tr. YM) ĽĊĹ I ĽĆĹ I ĽĆĹ I | SW2 | Indoor unit address: ones place |
| | between indo | index runits Connector for branching | SW3 | Outdoor unit address: tens place |
| | | controller of heat recovery LM(M) 220-240V 3 | SW4 | Outdoor unit address: ones place |
| Powe | er source | | SW5-1 | Automatic adjustment / Fixed |
| (Sing | (le-phase) j | | | previous version of Superlink protocol |
| 220- | 240V~ 50Hz /~ 60Hz 1 | > | SW5-2 | Indoor unit address: |
| | | | 0.00 | nundreds place |
| Power so | iurce $\langle - \overline{} -$ | | Joeration) 5WD | Model capacity setting |
| line | (| | (hermo ON) SW7-1 | Operation check, Drain motor |
| | | | nspection) | Terminal block (Dewer course) |
| | Farth | | TB1 | |
| | | | iput. | Terminal block (Signal line) |
| | | | TB2 | (mark) |
| | | | 20S) Thc | Thermistor (Remote controller) |
| | | | SVH) Thi-A | Thermistor (Return air) |
| | | | 3VG) Thi-R1,2,3 | Thermistor (Heat exchanger) |
| | | | Tri | Transformer |
| | | Control PCB 3-pipe systems | X1~3,6 | Relay for FM |
| | | M V.GN Hemote | X4 | Relay for DM |
| | | | | |
| | | CF(1) | | |
| | | | | |

(j) Ceiling suspended type (FDE) Models FDE36KXE6A, 45KXE6A, 56KXE6A

Notes 1. —— indicates wiring on site.

Color Marks

- 2. Use twin core cable (0.75~1.25mm²) at signal line between indoor unit
- and outdoor unit, and signal line between indoor units.
- Use twin core cable (0.3mm²) at remote controller. See spec sheet of remote controller in case that the total length is more than 100m.
- 4. Do not put signal line and remote controller line alongside power source line.

Ŧ

| _Color Marks | | |
|--|--------------|---------------------------------------|
| Mark Color | CE-12 | Capacitor for FM |
| BK Black | | Connector |
| BL Blue | F | Fuse |
| BR Brown | FM:1.2 | Fan motor (with thermostat) |
| OR Urange | | Live Superlink terminal |
| P Pink | JSLI | setting (for spare) |
| RD Red | | Indication lamp |
| WH White | | (Green-Normal operation) |
| Y Yellow | | Indication lamp |
| Y/GN Yellow/Green | LED · 3 | (Red-Inspection) |
| | LM | Louver motor |
| | SM | Stepping motor |
| | 01/1 | (for electronic expansion valve) |
| | SWI | Indoor unit address: tens place |
| Power source line Tru (A) ĽÓ I ĽÓ I ĽÓ I | SW2 | Indoor unit address: ones place |
| between indoor units Connector for branching | 5W3 | Outdoor unit address: tens place |
| | 31/4 | Automatic adjustment / Eived |
| | SW5-1 | nevious version of Superlink protocol |
| (3mller-mase) | | Indoor unit address. |
| 220V~ 60Hz TB1 T2.3.4.5 CNW1 CNW2 12.3.4.5 1 2 3 4 5 6 1 2 4121 Option | SW5-2 | hundreds place |
| | SW6 | Model capacity setting |
| | 014/7 1 | Operation check, Drain motor |
| | SW/-1 | test run |
| | трі | Terminal block (Power source) |
| Earth — — — | IDI | (mark) |
| | TB2 | Terminal block (Signal line) |
| | | (Lmark) |
| | Thc | Thermistor (Remote controller) |
| | Ihi-A | Thermistor (Return air) |
| | Ini-R1,2,3 | Transformer |
| | | Transformer |
| 1 V/GN 1 V/GN . Bernote III L - Signal line (Shielded corril | XI~3,0 | Relay for FIVI |
| | _∧4 ■mark | Closed—end connector |
| | | |
| | | |
| | | |
| | | |

Models FDE71KXE6A, 112KXE6A, 140KXE6A

PFA003Z827

- Notes 1. ——indicates wiring on site.
 - 2. Use twin core cable (0.75~1.25mm²) at signal line between indoor unit
 - and outdoor unit, and signal line between indoor units. 3. Use twin core cable (0.3mm²) at remote controller. See spec sheet
 - of remote controller in case that the total length is more than 100m.
 - Do not put signal line and remote controller line alongside power source line.



| CFI | Capacitor for FMI | |
|------------|---|--|
| CNA~Z | Connector | |
| F | Fuse | |
| FMI | Fan motor (with thermostat) | |
| JSL1 | Live Superlink terminal setting (for spare) | |
| LED · 2 | Indication lamp (Green-Normal operation) | |
| LED · 3 | Indication lamp (Red-Inspection) | |
| SW | Stepping motor | |
| | (for electronic expansion valve) | |
| SW1 | Indoor unit address: tens place | |
| SW2 | Indoor unit address: ones place | |
| SW3 | Outdoor unit address: tens place | |
| SW4 | Outdoor unit address: ones place | |
| SW5-1 | Automatic adjustment/Fixed previous | |
| 500 1 | version of Superlink protocol | |
| SW5-2 | Indoor unit address: hundreds place | |
| SW6 | Model capacity setting | |
| SW7-1 | Operation check, Drain motor test run | |
| ТВ1 | Terminal block (Power source) (mark) | |
| TB2 | Terminal block (Signal line) (mark) | |
| Thc | Thermistor (Remote controller) | |
| ThI-A | Thermistor (Return air) | |
| ThI-R1,2,3 | Thermistor (Heat exchanger) | |
| Tri | Transformer | |
| X1~3,6 | Relay for FM | |
| mark | Closed-end connector | |

Notes 1.—— indicates wiring on site.

- 2.Use twin core cord (0.75~1.25mm²) at signal line between indoor unit and outdoor unit, and signal line between indoor units.
- 3.Use twin core cord (0.3mm²) at remote controller line.
- See spec sheet of remote controller in case that the total length is more than 100m.
- Do not put signal line and remote controller line alongside power source line.



| CFI | Capacitor for FMI | |
|--------------------------------------|---|--|
| CNA~Z | Connector | |
| F | Fuse | |
| FMI | Fan motor (with thermostat) | |
| JSL1 | Live Superlink terminal setting (for spare) | |
| LED · 2 | Indication lamp (Green-Normal operation) | |
| LED · 3 | Indication lamp (Red-Inspection) | |
| SM | Stepping motor (for electronic expansion valve) | |
| SW1 | Indoor unit address: tens place | |
| SW2 | Indoor unit address: one place | |
| SW3 | Outdoor unit address: tens place | |
| SW4 Outdoor unit address: ones place | | |
| SW5-1 | Automatic adjustment/Fixed previous version | |
| | of Superlink protocol | |
| SW5-2 | Indoor unit address: hundreds place | |
| SW6 | Model capacity setting | |
| SW7-1 | Operation check/Drain motor test run | |
| TB1 | Terminal block (Power source) ([mark) | |
| TB2 | Terminal block (Signal line) (mark) | |
| Thc | Thermistor (Remote controller) | |
| ThI-A | Thermistor (Return air) | |
| ThI-R1,2,3 | Thermistor (Heat exchanger) | |
| Tri | Transformer | |
| X1~3,6 | Relay for FM | |
| mark | Closed-end connector | |

(I) Floor standing (without casing) type (FDFU) Models All models

PGD000Z058A

- Notes 1.——indicates wiring on site
 - 2.Use twin core cord (0.75~1.25mm²) at signal line between indoor unit and outdoor
 - unit, and signal line between indoor units.
 - 3.Use twin core cord (0.3mm²) at remote controller line.
 - See spec sheet of remote controller in case that the total length is more
 - than 100m.
 - 4.Do not put signal line and remote controller line alongside power source line.



- Notes 1.——indicates wiring on site.
 - 2. Use twin core cable $(0.75 \sim 1.25 \text{mm}^2)$ at signal line between indoor unit
 - and outdoor unit, and signal line between indoor units.
 - 3. Use twin core cable (0.3mm^2) at remote controller line. See spec sheet
 - of remote controller in case that the total length is more than 100m. 4. Do not put signal line and remote controller line alongside power source line.

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| Pressure switch setting value | | | | |
|---|----------------------------|--|--|--|
| Name | Setting value | | | |
| High pressure switch (63H1-1) [For protection] | 4.15 open/3.15 close (MPa) | | | |

Solenoid valve operation

| Name | Control content | | |
|------|--|--------|--|
| CVIC | At inverter accumulator start | : Open | |
| 500 | During under-dome temperature control : Open | | |
| SV1 | During discharge temperature control | : Open | |

Low pressure sensor (PSL) : Compressor control Thermistor (Tho-D1) Protection Thermistor (Tho-A) 0.18 ON/0.236 OFF (MPa) Thermistor (Tho-R1, R2 Error 0.134 ON/0.18 OFF (MPa) Thermistor (Tho-S) High pressure sensor (PSH) : Compressor control Thermistor (Tho-SC) Protection Thermistor (Tho-H) Cooling : 3.70 ON (MPa) Thermistor (Tho-C1) Heating : 3.00 ON (MPa) Thermistor (ThI-R1,R2) : Heating operation : Indoor fan control Cooling operation : Frost prevention

Superheat control

| | : For control of discharge pipe temperature |
|----|---|
| | : For heating and cooling to low outdoor temp., for control of defrosting |
| 2) | : For control of defrosting |
| | : For control of suction pipe temperature |
| | : Sub-cooling coil control during cooling |
| | : Sub-cooling coil control during cooling |
| | : Under-dome temperature control |
| | |

Thermistor (ThI-R3)

Function of thermistor

: Cooling superheat control

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To next unit by turn

| Pressure switcl | n setting value |
|-----------------|-----------------|
|-----------------|-----------------|

| Name | Setting value | |
|---|----------------------------|--|
| High pressure switch (63H1-1) [For protection] | 4.15 open/3.15 close (MPa) | |

Solenoid valve operation

| Name | Control content | |
|------|---------------------------------------|--------|
| SV6 | At inverter accumulator start | : Open |
| | During under-dome temperature control | : Open |
| SV1 | During discharge temperature control | : Open |

| Function of thermistor | | | |
|--|--|------------------------|---|
| Low pressure sensor (PSL) | : Compressor control | Thermistor (Tho-D1) | : For control of discharge pipe temperature |
| | Protection 0.18 0N/0.236 0FF (MPa) | Thermistor (Tho-A) | : For heating and cooling to low outdoor temp., for control of defrosting |
| | | Thermistor (Tho-R1,R2) | : For control of defrosting |
| | 0.134 ON/0.18 OFF (MPa) | Thermistor (Tho-S) | : For control of suction pipe temperature |
| High pressure sensor (PSH) | : Compressor control | Thermistor (Tho-SC) | : Sub-cooling coil control during cooling |
| Protection Cooling : 3.70 ON (MPa) Heating : 3.00 ON (MPa) | Protection | Thermistor (Tho-H) | : Sub-cooling coil control during cooling |
| | Heating : 3.00 ON (MPa) | Thermistor (Tho-C1) | : Under-dome temperature control |
| Thermistor (Thi-R1,R2) | : Heating operation : Indoor fan control | | |
| | Cooling operation : Frost prevention | | |
| | Superheat control | | |
| Thermistor (Thı-R3) | : Cooling superheat control | | |

5 APPLICACTION DATA

5.1 Installation of indoor unit

This manual is for the installation of an indoor unit.

For electrical wiring work (Indoor), refer to the electrical wiring work installation manual. For remote controller installation, refer to the installation manual attached to a remote controller. For wireless kit installation, refer to the installation manual attached to a wireless kit. For electrical wiring work (Outdoor) and refrigerant pipe work installation for outdoor unit, refer to the installation manual attached to an outdoor unit. This unit must alwavs be used with the panel.

SAFETY PRECAUTIONS Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself. The precautionary items mentioned below are distinguished into two levels, MWARNING and MCAUTION . AWARNING: Wrong installation would cause serious consequences such as injuries or death. ACAUTION : Wrong installation might cause serious consequences depending on circumstances Both mentions the important items to protect your health and safety so strictly follow them by any means. After completing the installation, do commissioning to confirm there are no abnormalities, and explain to the customers about "SAFETY PRECAUTIONS", correct operation method and maintenance method (air filter cleaning, operation method and temperature setting method) with user's manual of this unit. Ask your customers to keep this installation manual together with the user's manual. Also, ask them to hand over the user's manual to the new user when the owner is changed. **WARNING** Installation should be performed by the specialist. 0 If you install the unit by yourself, it may lead to serious trouble such as water leakage, electric shock, fire, and injury due to overturn of the unit. Install the system correctly according to these installation manuals. Ø tion may cause explosion, injury, water leakage, electric shock, and fire Improper instal Consider measurement not to exceed the limit of the density of refrigerant in the event of leakage especially when it is installed in a small room. Consult the specialist about the measure. If the density of refrigerant exceeds the limit in the event of the leakage, serious accidents may occur due to lack of oxygen. Use the genuine accessories and the specified parts for installation. • If parts unspecified by our company are used it could cause water leakage, electric shock, fire, and injury due to overturn of the unit •Ventilate the working area well in case the refrigerant leaks during installation. Q If the refrigerant contacts the fire, toxic gas is produced Install the unit in a location that can hold heavy weight. Ø Improper installation may cause the unit to fall leading to accidents Install the unit properly in order to be able to withstand strong winds such as typhoons, and earthquakes. Q Improper installation may cause the unit to fall leading to accidents. Do not mix air in to the cooling cycle on installation or removal of the air conditioner. (If air is mixed in, the pressure in the cooling cycle will rise abnormally and may cause explosion and injuri Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit. Ø Power source with insufficient capacity and improper work can cause electric shock and fire. OUse specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in order not to apply unexpected stress on the terminal. 0 Loose connections or hold could result in abnormal heat generation or fire Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services Ø panel property. Improper fitting may cause abnormal heat and fire. Check for refrigerant gas leakage after installation is completed. Ø If the refrigerant gas leaks into the house and comes in contact with a fan heater, a stove, or an oven, toxic gas is produced Ouse the specified pipe, flare nut, and tools for R410A. Ø Using existing parts (R22) could cause the unit failure and serious accident due to explosion of the cooling cycle. Tighten the flare nut according to the specified method by with torque wrench. Ø If the flare nut were tightened with excess torque, it could cause burst and refrigerant leakage after a long period Make sure there is no dust or clogging on both the plug and the socket nor loose connection of the socket before plugging, and plug in securely to the end of the blade. 0 Accumulation of dust, clogging on the socket or plug, or loose installation of the socket could cause electric shock and fire. Replace the socket if it is loose. Connect the pipes for refrigeration circuit securely in installation work before compressor is operated. If the compressor is operated when the service valve is open without connecting the pipe, it could cause explosion and injuries due to abnormal high pressure in the systen Stop the compressor before removing the pipe on pump down work. Ø If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle Use the genuine optional parts. And installation should be performed by a specialist. Ø If you install the unit by yourself, it could cause water leakage, electric shock and fire Do not repair by yourself. And consult with the dealer about repair (Improper repair may cause water leakage, electric shock or fire. Consult the dealer or a specialist about removal of the air conditioner. Ø Improper installation may cause water leakage, electric shock or fire. Turn off the power source during servicing or inspection work. Ø If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan. Do not run the unit when the panel or protection guard are taken off. Touching the rotating equipment, hot surface, or high voltage section could cause an injury to be caught in the machine, to get \bigcirc burned, or electric shock. Shut off the power before electrical wiring work. It could cause electric shock, unit failure and improper running

| ſ | ▲ CAUTION | |
|---|--|------------------------------|
| | Perform earth wiring surely. Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper e cause unit failure and electric shock due to a short circuit. | arth could |
| I | Use the circuit breaker of correct capacity. Ising the incorrect capacity one could cause the system failure and fire | 0 |
| | • Do not use any materials other than a fuse of correct capacity where a fuse should be used. | $\overline{\bigcirc}$ |
| I | Connecting the circuit by wire or copper wire could cause unit failure and fire. Do not install the indoor unit near the location where there is possibility of flammable gas lea | kages. |
| | If the gas leaks and gathers around the unit, it could cause fire. | |
| | (such as thinner, petroleum etc.) may be generated or accumulated, or volatile flammable sub are handled. | stances |
| I | Do not use the indoor unit at the place where water splashes such as laundry. | |
| I | Indoor unit is not waterproof. It could cause electric shock and fire. Do not use the indoor unit for a special purpose such as food storage, cooling for precision | |
| | instrument, preservation of animals, plants, and a work of art. It could cause the damage of the items. | \bigcirc |
| I | Do not install nor use the system near equipments which generate electromagnetic wave or h harmonics. | igh |
| | Equipments like inverter equipment, private power generator, high-frequency medical equipment, or telecommu equipment might influence the air conditioner and cause a malfunction and breakdown. Or the air conditioner m influence medical equipments or telecommunication equipments, and obstruct their medical activity or cause jar | nication () ght nming. |
| I | Do not install the remote controller at the direct sunlight. It would go to be default or defaultion of the remote controller. | \bigcirc |
| | Do not install the indoor unit at the place listed below. | |
| | Places where flammable gas could leak. Places where carbon fiber, metal powder or any powder is floated. Place where the substances which affect the air conditioner are generated such as sulfide gas, chloride gas, a alkali. Places exposed to oil mist or steam directly. | acid or |
| | On vehicles and ships Places where machinery which generates high harmonics is used. Places where cosmetics or special sprays are frequently used. Highly salled area such as beach. Heavy snow area Places where the system is affected by smoke from a chimney. Attivide area 1000e | |
| | Do not put any valuables which will break down by getting wet under the air conditioner. Conducting and days when the platic behavior by a first a based and if downed | |
| I | belongings. | |
| | Do not use the base trame for the outdoor unit which is corroded or damaged after a long per use. It could cause the unit falling down and injury. | |
| | Pay attention not to damage the drain pan by weld sputter when brazing work is done near th If sputter entered into the unit during brazing work, it could cause damage (pinhole) of drain pan and leakage of avail damain keen the indonr unit nakked or cover the indonr unit | e unit. water. To |
| I | Install the drain pipe to drain the water surely according to the installation manual. | |
| I | Improper connection of the drain pipe may cause dropping water into room and damaging user's belongings. Do not put the drain pipe directly into the ditch where toxic gas such as sulfide gas is general | ted. |
| I | Toxic gas would flow into the room and it would cause serious damage to user's health and safety. | \bigcirc |
| | Do not state the usant pipe to modor unit and user (das real rump system) outdoor unit. Toxic exhaust gas would flow into room and it might cause serious damage (some poisoning or deficiency of ox user's health and safety. | ygen) to |
| | For drain pipe installation, be sure to make descending slope of greater than 1/100, not to ma and not to make air-bleeding. Check if the drainage is correctly done during commissioning and ensure the space for inspection and maintens | ke traps, |
| | • Ensure the insulation on the pipes for refrigeration circuit so as not to condense water. | |
| | Incomplete insulation could cause concensation and it would wet ceiling, hoor, and any other valuables. Do not install the outdoor unit where is likely to be a nest for insects and small animals. Insects and small animals could come into the electronic components and cause breakdown and fire. Instruct th | e user to |
| | keep the surroundings clean. Pay extra attention, carrying the unit by hand. Carry the unit with 2 people if it is heavier than 20kg. Do not use the plastic straps but the grabbing place, moving the plastic straps but the grabbing place is the service of the s | ng the unit |
| | by hand. Use protective gloves in order to avoid injury by the aluminum fin. Make sure to dispose of the packaging material. | |
| | Leaving the materials may cause injury as metals like nail and woods are used in the package. Do not operate the system without the air filter. It may cause the breakdown of the system to clocobin of the heat exchanger. | $\overline{\bigcirc}$ |
| | Do not four any button with wet hands. | $\overline{\bigcirc}$ |
| | Do not touch the refrigerant piping with bare hands when in operation. The pipe during operation would become very hot or cold according to the operating condition, and it could cause | e a burn |
| | or rostone. Do not clean up the air conditioner with water. It rould rause alertis shock | $\overline{\bigcirc}$ |
| | Do not turn off the power source immediately after stopping the operation. De not turn off the power source immediately after stopping the operation. | $\overline{\Diamond}$ |
| | Do our set wat in more user or immuss. Sumerwise it UOUU cause water rearkage or UreakuUWII. Do not control the operation with the circuit breaker. It could reage fair a water leakan la addition the fair mark effort markfully and a more across taking | $\overline{\bigcirc}$ |

Ceiling cassette-4way type (FDT) (a)



2 Selection of installation location for the indoor unit

- Select the suitable areas to install the unit under approval of the user.
- · Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
- · Areas where there is enough space to install and service.
- · Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- Areas where there is no obstruction of airflow on both air return grille and air supply port.
- · Areas where fire alarm will not be accidentally activated by the air conditioner.
- · Areas where the supply air does not short-circuit.
- · Areas where it is not influenced by draft air.
- · Areas not exposed to direct sunlight. Areas where dew point is lower than around 28°C and relative humidity is lower than 80% This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above.
- If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe.
- · Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.) Areas where any items which will be damaged by getting wet are not placed such as food. table wares, server, or medical equipment under the unit.
- Areas where there is no influence by the heat which cookware generates.
 Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.
- · Areas where lighting device such as fluorescent light or incandescent light doesn't affect the operation.
- (A beam from lighting device sometimes affects the infrared receiver for the wireless remote controller and the air conditioner might not work properly.)
- @Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.
- (3)If there are 2 units of wireless type, keep them away for more than 6m to avoid malfunction due to cross communication.
- (4) When plural indoor units are installed nearby, keep them away for more than 4 to 5m.

Space for installation and service

- When it is not possible to keep enough space between indoor unit and wall or between indoor units, close the air supply port where it is not possible to keep space and confirm there is no short circuit of airflow.
- Install the indoor unit at a height of more than 2.5m above the floor.



Set blow-out pattern

- Select the most proper number of blow-out air supply port direction from 4 way, 3 way or 2 way according to the shape of the room and installation position. (1 way is not available.)
- If it is necessary to change the number of air supply port, prepare the covering materials.
- (sold as accessory) Instruct the user not to use low fan speed when 2way or 3way air supply is used.
- Do not use 2way air supply port under high temperature and humidity environment. (Otherwise it could cause condensation and leakage of water.)
- It is possible to set the airflow direction port by port independently. Refer to the user's manual for details

PJA012D007 / 🕅

③Preparation before installation

- If suspension bolt becomes longer, do reinforcement of earthquake resistant. OFor grid ceiling
 - When suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.
- OIn case the unit is hanged directly from the slab and is installed on the ceiling plane which has enough strength.
 - When suspension bolt length is over 1000mm, apply the earthquake resistant brace to the bolt.
- Prepare four (4) sets of suspension bolt, nut and spring washer (M10 or M8) on site

Ceiling opening, Suspension bolts pitch, Pipe position



④Installation of indoor unit

Work procedure

- Prepare a ceiling hole with the size of from 860mm × 860mm to 910mm × 910mm referring to the template attached in the package
- Arrange the suspension bolt at the right position (725mm×778mm).
- Make sure to use four suspension bolts and fix them so as to be able to hold 500N load. Ensure that the lower end of the suspension bolt should be 50mm above the ceiling 4. plane. Temporarily put the four lower nuts 150mm above the ceiling plane and the upper nuts on distant place from the lower nuts in order not to obstruct hanging the indoor unit or adjust the indoor unit position, and then hang the indoor unit.
- Adjust the indoor unit position after hanging it by inserting the level gauge attached on the package into the air supply port and checking if the gap between the ceiling plane and the indoor unit is appropriate. In order to adjust the indoor unit position, adjust the lower nuts while the upper nuts are put on distant place. Confirm there is no backlash between the hanger plate for suspension bolt and the lower nut and washer.



(4)Installation of indoor unit (continued)

- Make sure to install the indoor unit horizontally. Confirm the levelness of the indoor unit with a level gauge or transparent hose filled with water. Keep the height difference at both ends of the indoor unit within 3mm.
- 7. Tighten four upper nuts and fix the unit after height and levelness adjustment.



Caution

- Do not adjust the height by adjusting upper nuts. It will cause unexpected stress on the indoor unit and it will lead to deformation of the unit, failure of attaching a panel, and generating noise from the fan.
- Make sure to install the indoor unit horizontally and set the gap between the unit underside and the ceiling plane properly. Improper installation may cause air leakage, dew condensation, water leakage and noise.
- Even after decorative panel attached, still the unit height can be adjusted finely. Refer to the installation manual for decorative panel for details.
- Make sure there is no gap between decoration panel and ceiling surface, and between decoration panel and the indoor unit. The gap may cause air leakage, dew condensation and water leakage.
- In case decorative panel is not installed at the same time, or ceiling material is installed after the unit installed, put the cardboard template for installation attached on the package (packing material of cardboard box) on the bottom of the unit in order to avoid dust coming into the indoor unit.

5Refrigerant pipe

Caution

- Ouse the new refrigerant pipe
- When re-using the existing pipe system for R22 or R407C, pay attention to the following items. • Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts. • Do not use thin-walled nines
- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation.

In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.

- Do not use any refrigerant other than R410A. Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.
- Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.
- Use special tools for R410 refrigerant

Work procedure

- 1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
 - Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
 - (Gas may come out at this time, but it is not abnormal.)
- Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
 Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
 ※Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In

addition, do not twist and crush the pipes.

- ※Do a flare connection as follows:
- Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
- When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
- 3. Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
 - Make sure to insulate both gas pipes and liquid pipes completely.
 X Incomplete insulation may cause dew condensation or water dropping.
- 4. Refrigerant is charged in the outdoor unit.

As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

| | | Strap (Accessory) | Pipe cover (Accessory) |
|---------------|--|---|---|
| Pipe diameter | Tightening torque N·m | | 6- |
| φ 6.35 | 14 to 18 | THE | |
| φ 9.52 | 34 to 42 | anna | Hanne |
| φ 12.7 | 49 to 61 | THINK | WIIIIII |
| φ 15.88 | 68 to 82 | / (777) | 77777 |
| φ 19.05 | 100 to 120 | /The thickness of ins | ulation should be 20mm or more. |
| | Pipe diameter φ 6.35 φ 9.52 φ 12.7 φ 15.88 φ 19.05 | Pipe diameter Tightening torque N-m \$\overline{6.35} 14 to 18 \$\overline{9.52} 34 to 42 \$\overline{4.127} 49 to 61 \$\overline{9.158} 68 to 82 \$\overline{4.150} 100 to 120 | Pipe diameter Tightening torque N-m Strap (Accessory) ϕ 6.35 14 to 18 ϕ 5.35 34 to 42 ϕ 12.7 49 to 61 ϕ 15.88 68 to 82 The thickness of ins |

6 Drain pipe

Caution

- Install the drain pipe according to the installation manual in order to drain properly.
- Imperfection in draining may cause flood indoors and wetting the household goods, etc.
 Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may
- cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end
 of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

Work procedure

 Insert the supplied drain hose (the end made of soft PVC) to the step of the drain socket on the indoor unit and fix it securely with the clamp. Attach the hose clamp to the drain hose around 10mm from the end.
 Do not apply adhesives on this end.



- Prepare a joint for connecting VP-20 pipe, adhere and connect the joint to the drain hose (the end made of rigid PVC), and adhere and connect VP-20 pipe (prepare on site).
 XAs for drain pipe, apply VP-20 made of rigid PVC which is on the market.
 - Make sure that the adhesive will not get into the supplied drain hose. It may cause the flexible part broken after the adhesive is dried up and gets rigid.
 - The flexible drain hose is intended to absorb a small difference at installation of the unit or drain pipes.
 Do not bend or make an excess offset on the drain hose as shown in the picture.
 Bend or excess offset will cause drain leakage.



- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
 - Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe.

Do not set up air vent.

main drain pipe



- er size for VP-30 or bigger Descending slope greater than 1/100
- Insulate the drain pipe.
 Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.
 - X After drainage test implementation, cover the drain socket part with pipe cover (small size), then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless.

Drain up

The position for drain pipe outlet can be raised up to 700mm above the ceiling. Use elbows for installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before vertical pipe, the backflow of water will increase when the unit is stopped, and it may cause overflow of water from the drain pan on the indoor unit. In order to avoid overflow, keep the horizontal pipe length and offset of the pipe within the limit shown in the figure below.



6 Drain pipe (continued)

Drain test

• After installation of drain pipe, make sure that drain system work in good condition and no water leakage from joint and drain pan. Check if the motor sound of drain pump is normal or not

Checking window for draining

Drain plug

- Do drain test even if installation of heating season.
- For new building cases, make sure to complete the test before hanging the ceiling.
 Pour water of about 1000cc into the drain pan in the indoor unit by pump so as not to get the electrical component wet.
- 2. Make sure that water is drained out properly and there is no water leakage from any joints of the drain pipe at the test. Confirm that the water is properly drained out while the drain motor is operating. At the drain socket
- (transparent), it is possible to check if the water is drained out properly.
- Unplug the drain plug on the indoor unit to remove remaining water on the drain pan after the test, and re-plug it. And insulate the drain pipe properly finally.

Drain pump operation

OIn case electrical wiring work finished

- Drain pump can be operated by remote controller (wired)
- For the operation method, refer to Operation for drain pump in the installation manual for wiring work.
- OIn case electrical wiring work not finished
- Drain pump will run continuously when the dip switch"SW7-1" on the indoor unit PCB is turned ON, the Connector CNB is disconnected, and then the power supply (230VAC on the terminal block (1) and (2)) is turned ON. Make sure to turn OFF "SW7-1" and reconnect the Connector CNB after the test.

Wiring-out position and wiring connection

- Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country.
- Be sure to use an exclusive circuit.
- Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in order not to apply unexpected stress on the terminal. • Do not put both power source line and signal line on the same route. It may cause miscommu-
- nication and malfunction.
- Be sure to do D type earth work.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.
- 1. Remove a lid of the control box (3 screws) and the wiring cover (2 screws). 2. Hold each wiring inside the unit and fasten
- them to terminal block securely.
- 3. Fix the wiring with clamps.
- 4. Install the removed parts back to original place.



⑧Panel installation

- Attach the panel on the indoor unit after electrical wiring work.
- Refer to panel installation manual for details. (See next page)

Ocheck list after installation

Check the following items after all installation work completed.

| Check if; | Expected trouble | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely? | Falling, vibration, noise | |
| Inspection for leakage is done? | Insufficient capacity | |
| Insulation work is properly done? | Water leakage | |
| Water is drained properly? | Water leakage | |
| Supply voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all | |
| There is mis-wiring or mis-connection of piping? | PCB burnt out, not working at all | |
| Earth wiring is connected properly? | Electric shock | |
| Cable size comply with specified size? | PCB burnt out, not working at all | |
| Any obstacle blocks airflow on air inlet and outlet? | Insufficient capacity | |

10 How to check the dirt of drain pan (Maintenance)

The method of checking the dirt of drain pan

- It is possible to check the dirt for inlet of drain pan without detaching the panel.
- (Inspection is not possible when the high efficient filter and option spacer is installed.) 1. Open the air return grille and remove the panel corner cover on drain pan side.
- 2. Remove the cover of inspection window. (1screw) 3. Check the drain pan from the inspection window.
 - If the drain pan is very dirty, remove the drain pan and clean it.
- After checking of the dirty of drain pan, restore the cover of the inspection window 4.
- securely. Improper restoration of the cover may cause dew condensation and water leakage.



Attention for removing drain pan

The fixing components have been attached the with drain pan. Pay attention to these components during installation and removing. Take off the hanging hook after removing four screws. During the installation of drain pan, fix the drain pan firmly by using four screws after hanging it up with the fixing hook.





PANEL INSTALLATION MANUAL



PJF012D003



(b) Ceiling cassette-4way compact type (FDTC)

① Before installation

Install correctly according to the installation manual.

- · Confirm the following points:
- O Unit type/Power supply specification O Pipes/Wires/Small parts O Accessory items

| Accessor | y itme | | | | | | | |
|---------------------------------------|--|---------------------------------------|--|--------------------------|---|---|------------------------------|----------------------------|
| For unit hanging For refrigerant pipe | | | For draom pipe | | | | | |
| Flat washer (M10) | Level gauge (Insulation) | Pipe cover(big) | Pipe cover (small) | Strap | Pipe cover(big) | Pipe cover(small) | Drain hose | Hose clamp |
| ١ | | 6 | 6 | ⊫ | \bigcirc | Ø | @ | Ø |
| 8 | 4 | 1 | 1 | 4 | 1 | 1 | 1 | 1 |
| For unit hanging | For adjustment in hoisting in the unit's main body | For heat insulation of cas nine | For heat insulation of liquid tube | For pipe cover fixing | For heat insulation of drain socket | For heat insulation of drain socket | For drain pipe connecting | For drain hose mounting |

2 Selection of installation location for the indoor unit

- ① Select the suitable areas to install the unit under approval of the user
- Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling. Areas where there is enough space to install and service.
- Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- Areas where there is no obstruction of airflow on both air return grille and air supply port.
- Areas where fire alarm will not be accidentally activated by the air conditioner
- Areas where the supply air does not short-circuit.
- Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 28°C and relative humidity is lower than 80%. This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above If there is a possibility to use it under such a condition, attach additional insulation of 10 to
- 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe. Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)
- Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit. Areas where there is no influence by the heat which cookware generates.
- Areas where not exposed to oil mist, powder and/or steam directly such as above fryer. Areas where lighting device such as fluorescent light or incandescent light doesn't affect the operation.

(A beam from lighting device sometimes affects the infrared receiver for the wireless remote controller and the air conditioner might not work properly.)

- ② Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.
- ③ If there are 2 units of wireless type, keep them away for more than 5m to avoid malfunction due to cross communication.
- When plural indoor units are installed nearby, keep them away for more than 4m.

Space for installation and service

- When it is not possible to keep enough space between indoor unit and wall or between indoor units, close the air supply port where it is not possible to keep space and confirm there is no short circuit of airflow
- Install the indoor unit at a height of more than 2.5m above the floor.

4000mm or more 11 Indoor unit Indoor unit surface Wall 1000mm or more 2500mm or more ecorative pa 1 1000mm or more Obstacle Floor 7 1

PJA012D756

③ Preparation before installation

- If suspension bolt becomes longer, do reinforcement of earthquake resistant. O For grid ceiling
 - When suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.
 - O In case the unit is hanged directly from the slab and is installed on the ceiling plane which has enough strength.
- When suspension bolt length is over 1000mm, apply the earthquake resistant brace to the bolt. Prepare four (4) sets of suspension bolt, nut and spring washer (M10 or M8) on site.



④ Installation of indoor unit

Work procedure

- This units is designed for 2 x 2 grid ceiling.
- If necessary, please detach the T bar temporarily before you install it.

If it is installed on a ceiling other than 2 x 2 grid ceiling, provide an inspection port on the control box side.

- Arrange the suspension bolt at the right position (530mm×530mm).
- 3. Make sure to use four suspension bolts and fix them so as to be able to hold 500N load.
- Ensure that the lower end of the suspension bolt should be 45mm above the ceiling plane. Temporarily put the four lower nuts 91mm above the ceiling plane and the upper nuts on distant place from the lower nuts in order not to obstruct hanging the indoor unit or adjust the indoor unit position, and then hang the indoor unit.



Adjust the indoor unit position after hanging it by inserting the level gauge attached on the package into the air supply port and checking if the gap between the ceiling plane and the indoor unit is appropriate. In order to adjust the indoor unit position, adjust the lower nuts while the upper nuts are put on distant place. Confirm there is no backlash between the hanger plate for suspension bolt and the lower nut and washer.



④ Installation of indoor unit (continued)

- Make sure to install the indoor unit horizontally. Confirm the levelness of the indoor unit with a level gauge or transparent hose filled with water. Keep the height difference at both ends of the indoor unit within 3mm
- Tighten four upper nuts and fix the unit after height and levelness adiustment

Caution

- Do not adjust the height by adjusting upper nuts. It will cause unexpected stress on the indoor unit and it will lead to deformation of the unit, failure of attaching a panel, and generating noise fr
- Make sure to install the indoor unit horizontally and set the gap between the unit underside and the ceiling plane properly. Improper installation may cause air leakage, dew condensation, water leakage and noise.
- Even after decorative panel attached, still the unit height can be adjusted finely. Refer to the installation manual for decorative panel for details.
- Make sure there is no gap between decoration panel and ceiling surface, and between decoration panel and the indoor unit. The gap may cause air leakage, dew condensation and water leakage.
- In case decorative panel is not installed at the same time, or ceiling material is installed after the unit installed, put the cardboard template for installation attached on the package (packing material of cardboard box) on the bottom of the unit in order to avoid dust coming into the indoor unit.

⑤ Refrigerant pipe

Caution

- Use the new refrigerant pipe
- When re-using the existing pipe system for R22 or R407C, pay attention to the following items. Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts. Do not use thin-walled pipes
- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation.
- In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes
- Do not use any refrigerant other than R410A. Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting
- into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc. Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and
- compressor breakdown etc Use special tools for R410 refrigerant.

- Work procedure
- 1. Remove the flare nut and blind flanges on the pipe of the indoor unit. % Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them (Gas may come out at this time, but it is not abnormal.)
- Pay attention whether the flare nut pops out, (as the indoor unit is sometimes pressured.)
 Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit. Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes.
 Do a flare connection as follows:

 - Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them
- When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
- Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
- Make sure to insulate both gas pipes and liquid pipes completely.
 X Incomplete insulation may cause dew condensation or water dropping.
- Refrigerant is charged in the outdoor unit

As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

| _ | | | Strap (Accessory) Pipe cover (Accessory) |
|---|---------------|-----------------------|---|
| | Pipe diameter | Tightening torque N-m | |
| | φ 6.35 | 14 to 18 | |
| | φ 9.52 | 34 to 42 | \ |
| | φ 12.7 | 49 to 61 | TTTTTTH ATTTTT |
| | φ 15.88 | 68 to 82 | |
| | φ 19.05 | 100 to 120 | The thickness of insulation should be 20mm or more. |

6 Drain pipe

Caution

- Install the drain pipe according to the installation manual in order to drain properly
- Imperfection in draining may cause flood indoors and wetting the household goods etc. • Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell. Connect the pipe securely to avoid water leakage from the joint.

- Insulate the pipe properly to avoid condensation drop.
 Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/ or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance

6 Drain pipe (continued)

Work procedure

- Insert the supplied drain hose (the end made of soft PVC) to the step of the drain socket on the indoor unit and fix it securely with the clamp. Attach the hose clamp to the drain hose around 10mm from the end.
- Do not apply adhesives on this end.



- Prepare a joint for connecting VP-20 pipe, adhere and connect the joint to the drain hose (the end made of rigid PVC), and adhere and connect VP-20 pipe (prepare on site). XAs for drain pipe, apply VP-20 made of rigid PVC which is on the market.
- Make sure that the adhesive will not get into the supplied drain hose.
- It may cause the flexible part broken after the adhesive is dried up and gets rigid.
- The flexible drain hose is intended to absorb a small difference at installation of the unit or drain pipes. Do not bend or make an excess offset on the drain hose as shown in the picture Bend or excess offset will cause drain leakage



- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
- Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe.
- Do not set up air vent



- unit, lay the main pipe 100mm below the drain outlet of the unit. In addition, select VP-30 or bigger size for main drain pipe.
- 4. Insulate the drain pipe
 - Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.

Desce

* After drainage test implementation, cover the drain socket part with pipe cover (small size). then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless.

Drain up

• The position for drain pipe outlet can be raised up to 600mm above the ceiling. Use elbows for installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before vertical pipe, the backflow of water will increase when the unit is stopped, and it may cause overflow of vater from the drain pan on the indoor unit. In order to avoid overflow, keep the horizontal pipe length and offset of the pipe within the limit shown in the figure below.



Drain test

- After installation of drain pipe, make sure that drain system work in good condition and no water leakage from joint and drain pan. Check if the motor sound of drain pump is normal or not.
- Do drain test even if installation of heating season. For new building cases, make sure to complete the test before .
- hanging the ceiling.
- Pour water of about 1000cc into the drain pan in the indoor unit by pump so as not to get the electrical component wet.
- 2. Make sure that water is drained out properly and there is no water leakage from any joints of the drain pipe at the test. Confirm that the water is properly drained out while the drain motor is operating. At the drain socket (transparent), it is possible to check if the water is drained out properly.
- Unplug the drain plug on the indoor unit to remove remaining water 3 on the drain pan after the test, and re-plug it. And insulate the drain pipe properly finally.



БĽ

VP-30 or bigge

ding stop greater than 1/100

6 Drain pipe (continued)

Drain pump operation

- O In case electrical wiring work finished
- Drain pump can be operated by remote controller (wired). For the operation method, refer to Operation for drain pump in the installation manual for wiring work.
- O In case electrical wiring work not finished
 - Drain pump will run continuously when the dip switch "SW7-1" on the indoor unit PCB is turned ON, the Connector CNB is disconnected, and then the power supply (220-240VAC on the terminal block [1] and 2] or [1 and [N]) is turned ON.
 - Make sure to turn OFF "SW7-1" and reconnect the Connector CNB after the test...

⑦ Wiring-out position and wiring connection

- Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country. Be sure to use an exclusive circuit.
- Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in order not to apply unexpected stress on the terminal.
- Do not put both power source line and signal line on the same route. It may cause
- miscommunication and malfunction Be sure to do D type earth work.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.
- Remove a lid of the control box (2 screws).
- Hold each wiring inside the unit and fasten them to terminal block securely. 2.





⑧ Panel installation

- After wiring work finished, install the panel on the indoor unit.
 Refer to panel installation manual for details.(Set next page)

Accessory items

| 1 | Hook | P | 1 piece | For fixing temporarily |
|---|-------|----------|----------|--------------------------|
| 2 | Chain | recorded | 2 pieces | |
| 3 | Bolt | () Jamma | 4 pieces | For installing the panel |
| 4 | Screw | 4 | 1 piece | For attaching a hook |
| 5 | Screw | 6 Jan | 2 pieces | For attaching a chain |

(8) Panel installation (continued)

Work procedure

- Make sure that the indoor unit is positioned at the correct height with the supplied level gauge.
- Remove the level gauge before you install the panel. Screw the two bolts of the supplied four bolts by about 5mm. (\bullet mark (B) [Figure 1] 2. 3. Attach the supplied hook to the indoor unit with the screw (1 screw). [Figure 2]
- 4 Open the air return grille. 5.
- 6. 7
- [Figure 5]
- Tighten the two bolts which were used to install the panel temporarily and the other two bolts. 8 Open a lid of the control box.
- 10. Fix the louver motor wiring and the drain pump wiring with clamp. And put louver motor wiring into the control box. [Figure 6]
- Connect the connector of louver motor. [Figure 6]
- Attach two chains to the air return grille with two screws. [Figure 7]
 Install the corner panels back to original places. At that time attach the chains to the panel with
- screws together. 14. Close the air return grille.
- (0) **The P** [Finure 2] (A) ([Figure Finure 31 ₽ [Figure 5] đ [Figure 5] Drain p [Figure 7] [Figure 6]

(9) Check list after installation

· Check the following items after all installation work completed.

| Check if | Expected trouble | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely? | Falling, vibration, noise | |
| Inspection for leakage is done? | Insufficient capacity | |
| Insulation work is properly done? | Water leakage | |
| Water is drained properly? | Water leakage | |
| Supply voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all | |
| There is mis-wiring or mis-connection of piping? | PCB burnt out, not working at all | |
| Earth wiring is connected properly? | Electric shock | |
| Cable size comply with specified size? | PCB burnt out, not working at all | |
| Any obstacle blocks airflow on air inlet and outlet? | Insufficient capacity | |



- 8. Tighten the two bolts used for fixing the panel temporarily and the other two.
- 135 -



(C) Ceiling cassette-2way type (FDTW)

(1)Before installation

Install correctly according to the installation manual.

Confirm the following points:

OUnit type/Power supply specification OPipes/Wires/Small parts OAccessory items



②Selection of installation location for the indoor unit

① Select the suitable areas to install the unit under approval of the user.

- · Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
- · Areas where there is enough space to install and service.
- · Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- · Areas where there is no obstruction of airflow on both air return grille and air supply port.
- · Areas where fire alarm will not be accidentally activated by the air conditioner.
- Areas where the supply air does not short-circuit.
- Areas where it is not influenced by draft air.
- · Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 28°C and relative humidity is lower than 80%. This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above.
- If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe.
- Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.) · Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.
- Areas where there is no influence by the heat which cookware generates. · Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.
- · Areas where lighting device such as fluorescent light or incandescent light doesn't affect the operation
- (A beam from lighting device sometimes affects the infrared receiver for the wireless remote controller and the air conditioner might not work properly.)
- (2)Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

(3) When plural indoor units are installed nearby, keep them away for more than 4 to 5m.

Space for installation and service

Install the indoor unit at a height of more than 2.5m above the floor.



③Preparation before installation

- If suspension bolt becomes longer, do reinforcement of earthquake resistant. OFor grid ceiling
- When suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.
- OIn case the unit is hanged directly from the slab and is installed on the ceiling plane which has enough strength
- When suspension bolt length is over 1000mm, apply the earthquake resistant brace to the bolt. Prepare four (4) sets of suspension bolt, nut and spring washer (M10) on site.

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③Preparation before installation (continued)

If placing the unit with the top plate facing up (in the reversed orientation of packaging) is unavoidable, use care so that the area of the than supporting member of the unit, will not be subjected to excessive loads. (A heavy load on the central part of this area could cause a damage to the filter).





(4)Installation of indoor unit

Work procedure

- 1. Cut an installation opening in the ceiling to the measurements specified for ceiling opening.
- 2 Set the suspension bolts in place
- ※ The suspension bolts pitch center do not match the panel center 3.
- Make sure to use four suspension bolts and fix them so as to be able to hold 500N load. Ensure that the lower end of the suspension bolt should be 50mm above the ceiling plane. Temporarily put the four lower nuts 150mm above the ceiling plane and the upper nuts on distant place from the lower nuts in order not to obstruct hanging the indoor unit or adjust the indoor unit position, and then hang the indoor unit.
- Adjust the indoor unit position after hanging it by inserting the level gauge attached on 5. the package into the air supply port and checking if the gap between the ceiling plane and the indoor unit is appropriate. In order to adjust the indoor unit position, adjust the lower nuts while the upper nuts are put on distant place. Confirm there is no backlash between the hanger plate for suspension bolt and the lower nut and washer.



Even after decorative panel attached, still the unit height can be adjusted finely. Refer to the installation manual for decorative panel for details.

5Refrigerant pipe

Caution

- Use the new refrigerant pipe. When re-using the existing pipe system for R22 or R407C, pay attention to the following items. · Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts. Do not use thin-walled pipes.
- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.
- Do not use any refrigerant other than R410A.
- Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.
- Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc. Use special tools for R410 refrigerant.

Work procedure

- 1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
 - % Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
 - (Gas may come out at this time, but it is not abnormal.)
- Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.) 2. Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
- *Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes
 - *Do a flare connection as follows:
- Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
- When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
- 3. Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
 - Make sure to insulate both gas pipes and liquid pipes completely.
- XIncomplete insulation may cause dew condensation or water dropping.
- 4. Refrigerant is charged in the outdoor unit.
- As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

| Strap | Tightening torque N·m | Pipe diameter |
|-------|-----------------------|------------------|
| | 14 to 18 | ••6.35 |
| Z | 34 to 42 | ••9.52 |
| 7 | 49 to 61 | ••12.7 |
| - | 68 to 82 | ••15.88 |
|] | 100 to 120 | •• 1 9.05 |



6 Drain pipe

Caution

- Install the drain pipe according to the installation manual in order to drain properly
 - Imperfection in draining may cause flood indoors and wetting the household goods , etc.
- Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

Work procedure

1. Insert the supplied drain hose (the end made of soft PVC) to the step of the drain socket on the indoor unit and fix it securely with the clamp.



6 Drain pipe (continued)

- 2. Prepare a joint for connecting VP-20 pipe, adhere and connect the joint to the drain hose (the end made of rigid PVC), and adhere and connect VP-20 pipe (prepare on site). XAs for drain pipe, apply VP-20 made of rigid PVC which is on the market.
 - Make sure that the adhesive will not get into the supplied drain hose
 - It may cause the flexible part broken after the adhesive is dried up and gets rigid. The flexible drain hose is intended to absorb a small difference at installation of the unit. or drain pipes. Intentional bending, expanding may cause the flexible hose broken and water leakage.



- 3. Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
 - Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe. Do not set up air vent.



When sharing a drain pipe for more than one unit, lay the main pipe 100mm below the drain outlet of the unit. In addition, select VP-30 or bigger size for main drain pipe



4. Insulate the drain pipe.

- Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.
 - % After drainage test implementation, cover the drain socket part with pipe cover (small size), then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless.

Drain up

The position for drain pipe outlet can be raised up to 750mm above the ceiling. Use elbows for installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before vertical pipe, the backflow of water will increase when the unit is stopped, and it may cause overflow of water from the drain pan on the indoor unit. In order to avoid overflow, keep the horizontal pipe length and offset of the pipe within the limit shown in the figure below.



Drain test

- After installation of drain pipe, make sure that drain system work in good condition and no water leakage from joint and drain pan. Check if the motor sound of drain pump is normal or not
- Do drain test even if installation of heating season.
- For new building cases, make sure to complete the test before hanging the ceiling.
 Pour water of about 1000cc into the drain pan in the indoor unit by pump so as not to get
- the electrical component wet. 2. Make sure that water is drained out properly and there is no water leakage from any joints
- of the drain pipe at the test.
- Confirm that the water is properly drained out while the drain motor is operating. At the drain socket (transparent), it is possible to check if the water is drained out properly.
- Unplug the drain plug on the indoor unit to remove remaining water on the drain pan after the test, and re-plug it. And insulate the drain pipe properly finally. 3



6 Drain pipe (continued)

Drain pump operation

- OIn case electrical wiring work finished
- Drain pump can be operated by remote controller (wired)
- For the operation method, refer to Operation for drain pump in the installation manual for wiring work
- OIn case electrical wiring work not finished

Drain pump will run continuously when the dip switch "SW7-1" on the indoor unit PCB is turned ON, the Connector CNB is disconnected, and then the power supply (230VAC on the terminal block (1) and (2)) is turned ON. Make sure to turn OFF "SW7-1" and reconnect the Connector CNB after the test.

In case of gravity drainage

- 1. Remove the rubber plug and insulation from the gravity drainage port.
- 2. Connect the drain hose (VP-20) using the Gravity drainage connecting tube (option) and secure firmly with a clamp.
 - (* If the drain tube is directly connected with the gravity drainage port, the drain pan could not be removed.)
- 3. Find CNR drain motor connector (blue, 2P) in the control box, and remove it. (* If the unit is used with this connector being connected, the drainage will go out through the standard drain connecting port, causing leaks.)



Wiring-out position and wiring connection

- Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country.
- Be sure to use an exclusive circuit.
- Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in order not to apply unexpected stress on the terminal.
 Do not put both power source line and signal line on the same route. It may cause miscommu-
- nication and malfunction.
- Be sure to do D type earth work.
 For the details of electrical wiring work, see attached instruction manual for electrical wiring work.
- 1. Remove a lid of the control box (2 screws).
- 2. Hold each wiring inside the unit and fasten them to a terminal block securely.
- 3. Fix the wiring with supplied screw, nut and washer.
- 4. Install the removed parts back to original place.



®Panel installation

Attach the panel on the indoor unit after electrical wiring work.

Work procedure

1. Using the paper pattern attached as an accessory, check to ensure the unit height and ceiling opening are finished true to the specified dimensions. Remove the suction panel from the panel assembly. (Ref. below diagram)



- 2. Among the bolts which are attached to the panel, 2 screw must
- be inserted 5mm at the diagonal positions. Hang the panel on the 2 bolts and temporarily tighten them. 3. Tighten the temporarily tightened 2 bolts and the remaining
- 4. 2 bolts.
- 5. Tighten the 2 short bolts (15mm) at the louver supporting section of blower outlet central part. Connect the connecter of louver motor and limit switch through the
- 6. side cutout of control box



Louver support

J

(Sectional view of blower outlet central part)

û

Short bolt-

When the louver motor does not operate by the remote controller operation, check the 7. connection of the connector, turn off the power for 10 seconds or longer, and reset.

9 Check list after installation

Check the following items after all installation work completed.

| Check if | Expected trouble | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely? | Falling, vibration, noise | |
| Inspection for leakage is done? | Insufficient capacity | |
| Insulation work is properly done? | Water leakage | |
| Water is drained properly? | Water leakage | |
| Supply voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all | |
| There is mis-wiring or mis-connection of piping? | PCB burnt out, not working at all | |
| Earth wiring is connected properly? | Electric shock | |
| Cable size comply with specified size? | PCB burnt out, not working at all | |
| Any obstacle blocks airflow on air inlet and outlet? | Insufficient capacity | |

(d) Ceiling cassette-1way type (FDTS)

1 Before installation

• Install correctly according to the installation manual.

| | O Unit t | ype/Powers | supply spec | cification | O Pipes/W | ires/Small p | arts O | Accessory i | tems |
|---|-------------------------------------|---------------------------------------|--|--------------------------|------------------------------------|---|---|------------------------------|----------------------------|
| l | For main unit suspension | | For refrigerant | | For panel | | For dra | in pipe | |
| l | Paper pattern | Pipe cover (big) | Pipe cover (small) | Strap | Round machine screw (M5 x 35) | Pipe cover (big) | Pipe cover (small) | Drain hose | Hose clamp |
| | | \mathbf{O} | 0 | | | 6 | 0 | Ĵ | () |
| L | 2 pcs | 1 pcs | 1 pcs. | 4 pcs. | 7 pcs. | 1 pcs. | 1 pcs. | 1 pcs. | 1 pcs. |
| | (One for left and one for right) | For heat insulation of gas pipe | For heat insulation of liquid pipe | For pipe cover fixing | Fixing of direct air flow panel | For heat insulation of drain socket | For heat insulation of drain socket | For drain pipe connecting | For drain hose mounting |

2 Selection of installation location for the indoor unit

- ① Select the suitable areas to install the unit under approval of the user. Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling. Areas where there is enough space to install and service.
- Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- Areas where there is no obstruction of airflow on both air return grille and air supply port. Areas where fire alarm will not be accidentally activated by the air conditioner.
- Areas where the supply air does not short-circuit. Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 28°C and relative humidity is lower than 80%. This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above. If there is a possibility to use it under such a condition, attach additional insulation of 10 to
- 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe. Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)
- Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.
- Areas where there is no influence by the heat which cookware generates
- Areas where not exposed to oil mist, powder and/or steam directly such as above fryer. Areas where lighting device such as fluorescent light or incandescent light doesn't affect the
- operation. (A beam from lighting device sometimes affects the infrared receiver for the wireless remote
- controller and the air conditioner might not work properly.)
 (2) Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength
- is not enough, it could cause injury due to unit falling.
 If there are 2 units of wireless type, keep them away for more than 6m to avoid malfunction due to
- cross communication.
- ④ When plural indoor units are installed nearby, keep them away for more than 4 to 5m.

Space for installation and service



③ Preparation before installation

- spension bolt becomes longer, do reinforcement of earthquake resistant.
- O For arid ceilina When the suspension bolt length is over 500mm, or the gap between the ceiling and roof is over
- 700mm, apply earthquake resistant brace to the bolt. O In case the unit is hanged directly from the slab and is installed on the ceiling plane which has
- enough strength When suspension bolt length is over 1000mm, apply the earthquake resistant brace to the bolt. Prepare four (4) sets of suspension bolt, nut and spring washer (M10) on site.



④ Installation of indoor unit

Delivery

710 710

Ceiling o

- O Deliver the unit as close as possible to the installation location without unpacking it. O If unpacked and delivery can not be avoided, use a nylon sling or a rope with pads placed where the rope contacts the unit so it is not scratched.
- O To place the unit on the floor after unpacking, be sure that the unit bottom surface is facing up. (To
- avoid damage to the unit bottom surface as it is made of a styrene foam). O The unit and wood are fixed with two wood screws. When unpacking them, remove the two wood
- screws



Pipe side Water supply

0-3mm

/Vinyl hose

Make the pipe side slightly lower

PJC012D012

5 Refrigerant pipe

Caution

- Use the new refrigerant pipe.
- When re-using the existing pipe system for R22 or R407C, pay attention to the following items. Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts. Do not use thin-walled pipes.
- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation.
- In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes. Do not use any refrigerant other than R410A.
- Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.
- Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into the pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.
- Use special tools for R410 refrigerant.

Work procedure

- 1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
 - Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them. (Gas may come out at this time, but it is not abnormal.)
 - Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
- Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
 ※ Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes.
 - Do a flare connection as follows:
 - Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
- When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
- Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
 - Make sure to insulate both gas pipes and liquid pipes completely.
 - X Incomplete insulation may cause dew condensation or water dropping.
- 4. Refrigerant is charged in the outdoor unit.
- As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

| Pipe diameter | Tightening torque N·m |
|---------------|-----------------------|
| φ 6.35 | 14 to 18 |
| φ 9.52 | 34 to 42 |
| φ 12.7 | 49 to 61 |
| φ 15.88 | 68 to 82 |
| φ 19.05 | 100 to 120 |



6 Drain pipe

Caution

- Install the drain pipe according to the installation manual in order to drain properly.
- Imperfection in draining may cause flood indoors and wetting the household goods etc.
 Do not put the drain pipe directly into the dich where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/ or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

6 Drain pipe (continued)

Work procedure

 Insert the supplied drain hose (the end made of soft PVC) to the step of the drain socket on the indoor unit and fix it securely with the clamp. Attach the hose clamp to the drain hose around 10mm from the end
 Do not apply adhesives on this end.



- Prepare a joint for connecting VP-20 pipe, adhere and connect the joint to the drain hose (the end made of rigid PVC), and adhere and connect VP-20 pipe (prepare on site).
 - As for drain pipe, apply VP-20 made of rigid PVC which is on the market.
 Make sure that the adhesive will not get into the supplied drain hose.
 - It may cause the flexible part broken after the adhesive is dried up and gets rigid.
 - The flexible drain hose is intended to absorb a small difference at installation of the unit or drain pipes. Intentional bending, expanding may cause the flexible hose broken and water leakage.



- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
 - Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe.
 - Do not set up air vent.



When sharing a drain pipe for more than one unit, lay the main pipe 100mm below the drain outlet of the unit. In addition, select VP-30 or bigger size for main drain pipe.



Insulate the drain pipe.

- Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.
- ※ After drainage test implementation, cover the drain socket part with pipe cover (small size), then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless.

Drain up

The position for drain pipe outlet can be raised up to 600mm above the ceiling. Use elbows for
installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before vertical
pipe, the backflow of water will increase when the unit is stopped, and it may cause overflow of
water from the drain pan on the indoor unit. In order to avoid overflow, keep the horizontal pipe
length and offset of the pipe within the limit shown in the figure below.


(6) Drain pipe (continued)

Drain test

- After installation of drain pipe, make sure that drain system work in good condition and no water leakage from joint and drain pan. Check if the motor sound of drain pump is normal or not.
- Do drain test even if installation of heating season.
- For new building cases, make sure to complete the test before hanging the ceiling.
- 1. Pour water of about 1000cc into the drain pan in the indoor unit by pump so as not to get the electrical component wet.
- 2. Make sure that water is drained out properly and there is no water leakage from any joints of the drain pipe at the test.
- Confirm that the water is properly drained out while the drain motor is operating. At the drain socket (transparent), it is possible to check if the water is drained out properly.
- 3. Unplug the drain plug on the indoor unit to remove remaining water on the drain pan after the test, and re-plug it. And insulate the drain pipe properly finally.



⑦ Wiring-out position and wiring connection

- Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country. Be sure to use an exclusive circuit.
- Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in order not to apply unexpected stress on the terminal.
- Do not put both power source line and signal line on the same route. It may cause miscommunication and malfunction.
- Be sure to do D type earth work.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.
- 1. Remove a lid of the control box (2 screws).
- 2. Hold each wiring inside the unit and fasten them to terminal block securely.
- 3. Fix the wiring with clamps.
- 4. Install the removed parts back to original place.



8 Panel installation

- Attach the panel on the indoor unit after electrical wiring work.
- Refer to attached manual for panel installation for details.



② Screw the two installation screws to the indoor



③ Hook the panel the two screws (-②), and slide the panel approximately 10mm along the allow in following figure. Screw left five installation



④ Connect the connectors of louver motor and limit switch using "opening" space



- 5 Return the baffle plate at its original position.
- 6 Close the grille.
- Confirm the grille fixed with a hook securely. * The grille may take the liberty to open if grille is not

Baffle plate

screw to the indoor unit.



fixed securely.

(9) Check list after installation

| Check if: | Expected trouble | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely? | Falling, vibration, noise | |
| Inspection for leakage is done? | Insufficient capacity | |
| Insulation work is properly done? | Water leakage | |
| Water is drained properly? | Water leakage | |
| Supply voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all | |
| There is mis-wiring or mis-connection of piping? | PCB burnt out, not working at all | |
| Earth wiring is connected properly? | Electric shock | |
| Cable size comply with specified size? | PCB burnt out, not working at all | |
| Any obstacle blocks airflow on air inlet and outlet? | Insufficient capacity | |

(e) Ceiling cassette-1way compact type (FDTQ)

①Before installation Install correctly according to the installation manual. Confirm the following points: OUnit type/Power supply specification OPipes/Wires/Small parts OAccessory items Accessory item Strap Pipe cover(big) Hose clamp Pipe co Drain hos (0)Ð Ŀ 6 6 ф) 0 For dr

②Selection of installation location for the indoor unit

Select the suitable areas to install the unit under approval of the user

- Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
- · Areas where there is enough space to install and service
- · Areas where it can be drained properly. Areas where drain pipe descending slope can be taken
- · Areas where there is no obstruction of airflow on both air return grille and air supply port.
- · Areas where fire alarm will not be accidentally activated by the air conditioner.
- · Areas where the supply air does not short-circuit.
- · Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 28°C and relative humidity is lower than 80%. This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above.
- If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe. Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)
- · Areas where any items which will be damaged by getting wet are not placed such as food,
- table wares, server, or medical equipment under the unit. Areas where there is no influence by the heat which cookware generates.
- Areas where not exposed to oil mist, powder and/or steam directly such as above fryer. (2) Check if the place where the air conditioner is installed can hold the weight of the unit. If it is
 - not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.
- $(\ensuremath{\textcircled{3}})$ When plural indoor units are installed nearby, keep them away for more than 3m.

Space for installation and service

Install the indoor unit at a height of more than 2.5m above the floor.



③Preparation before installation

- If suspension bolt becomes longer, do reinforcement of earthquake resistant.
- OFor grid ceiling
- When suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt. OIn case the unit is hanged directly from the slab and is installed on the ceiling plane which
- has enough strength
- When suspension bolt length is over 1000mm, apply the earthquake resistant brace to the bolt.
- Prepare four (4) sets of suspension bolt, nut and spring washer (M10) on site.

Ceiling opening, Suspension bolts pitch, Pipe position

| Symbol | Content |
|--------|---------------------------------|
| A | Gas piping |
| В | Liquid piping |
| С | Drain piping |
| D | Hole for wiring |
| E | Suspension bolts |
| F1,2 | Outside air opening for ducting |

PJC012D116



④Installation of indoor unit

Work procedure

- In case of installing on a ceiling other than 2 x 2 grid ceiling, prepare a ceiling hole with the size of 600mm x 740mm. Arrange the suspension bolt at the right position (528mm x 576mm). Make sure to use four suspension bolts and fix them so as to be able to hold 500N load.
- 3.
- Make sure to use four suspension bolts and fix them so as to be able to hold 500N load. Ensure that the lower end of the suspension bolt should be 85mm above the ceiling plane. Temporarily put the four lower nuts 125mm above the ceiling plane and the upper nuts on distant place from the lower nuts in order not to obstruct hanging the indoor unit or adjust the indoor unit position, and then hang the indoor unit. Adjust the indoor unit position after hanging it so that the bottom surface of the indoor unit is on the same level as the ceiling (bottom surface of the T bar). The allowable gap between the bottom surface of the ceiling and that of the indoor unit is when the bottom surface of the indoor unit is no higher than 5mm. In order to adjust the indoor unit position, adjust the iower nuts while the upper nuts are put on distant place. Confirm there is no backlash between the hanger plate for suspension bolt and the lower nut and washer. Ā
- 5.
- and the lower nut and washer.

Caution









1. Insert the supplied drain hose (the end made of soft PVC) to the step of the drain socket on the indoor unit and fix it securely with the clamp. Attach the hose clamp to the drain hose around 10mm from the end. Do not apply adhesives on this end.



2. Prepare a joint for connecting VP-20 pipe, adhere and connect the joint to the drain hose (the end made of rigid PVC), and adhere and connect VP-20 pipe (prepare on site). XAs for drain pipe, apply VP-20 made of rigid PVC which is on the market.

- When drain pipe is set to rising in the nearest of the unit, use the VP-20 pipe. When drain pipe is set to after the horizontal pulling, use the VP-25 and above pipe.
- Make sure that the adhesive will not get into the supplied drain hose. It may cause the flexible part broken after the adhesive is dried up and gets rigid.
- The flexible drain hose is intended to absorb a small difference at installation of the unit or drain pipes. Intentional bending, expanding may cause the flexible hose broken and water leakage.



- 3. Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
 - Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe

Do not set up air vent.



4. Insulate the drain pipe.

Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.

dina slope a

than 1/100

X After drainage test implementation, cover the drain socket part with pipe cover (small size), then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless.

Drain up

 The position for drain pipe outlet can be raised up to 600mm above the ceiling. Use elbows for
installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before vertical pipe, the backflow of water will increase when the unit is stopped, and it may cause overflow of water from the drain pan on the indoor unit. In order to avoid overflow, keep the horizontal pipe length and offset of the pipe within the limit shown in the figure below.



Drain test

 After installation of drain pipe, make sure that drain system work in good condition and no water leakage from joint and drain pan. Check if the motor sound of drain pump is normal or not

- Do drain test even if installation of heating season.
- For new building cases, make sure to complete the test before hanging the ceiling. Remove the drain grommet, and pour water of about 1000cc into the drain pan in the indoor unit by pump so as not to get the electrical component wet.
- Make sure that water is drained out properly and there is no water leakage from any joints of the drain pipe at the test. Confirm that the water is properly drained out while
- the drain motor is operating. At the drain socket (transparent), it is possible to check if the water is drained out properly. Unplug the drain plug on the indoor unit to remove 3. remaining water on the drain pan after the test, and re-plug it.
- Make sure to install the grommet back to original 4.
- Insulate the drain pipe properly finally. 5.



Insert the edge of water pump hose in the drain pan.

⑦Drain pipe (continued)

Drain pump operation

- OIn case electrical wiring work finished
- Drain pump can be operated by remote controller (wired).

For the operation method, refer to Operation for drain pump in the installation manual for wiring work. OIn case electrical wiring work not finished

Drain pump will run continuously when the dip switch"SW7-1" on the indoor unit PCB is turned ON, the Connector CNB is disconnected, and then the power supply (220-240VAC on the terminal block () and () is turned ON Make sure to turn OFE "SW7-1" and reconnect the Connector CNB after the test

®Wiring-out position and wiring connection

- Electrical installation work must be performed according to the installation manual by an electrical installation service provider gualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country.
- Be sure to use an exclusive circuit. Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in
- order not to apply unexpected stress on the terminal Do not put both power source line and signal line on the same route. It may cause miscommu-
- nication and malfunction. Be sure to do D type earth work.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work
- 1. Remove a lid of the control box (2 screws) and the wiring cover (2 screws).
- 2. Hold each wiring inside the unit and fasten them to terminal block securely
- 3. Take out the wiring to upper direction of wiring cover, and fix the wiring with clamp. 4. Install the removed parts back to original place.
- Caution

Make sure to install the wiring cover. Otherwise it may cause dew condensation into the control box.



(9)Panel installation

Attach the panel on the indoor unit after electrical wiring work Refer to panel installation manual for details. (See next page)

OCheck list after installation

| Check if | Expected trouble | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely? | Falling, vibration, noise | |
| Inspection for leakage is done? | Insufficient capacity | |
| Insulation work is properly done? | Water leakage | |
| Water is drained properly? | Water leakage | |
| Supply voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all | |
| There is mis-wiring or mis-connection of piping? | PCB burnt out, not working at all | |
| Earth wiring is connected properly? | Electric shock | |
| Cable size comply with specified size? | PCB burnt out, not working at all | |
| Any obstacle blocks airflow on air inlet and outlet? | Insufficient capacity | |

PANEL INSTALLATION MANUAL

PJC012D118

Please read this manual together with installation manual of indoor unit.



Notice

2

If the louver cannot be moved by remote control operation, cut off the main power for over 10 seconds after confirming the connection of connector, then turn on the power again.

Accessories

| 1 | Air filter | 1 | |
|---|-------------------|---|---------------------|
| 2 | Hanging bolts | 4 | For mounting panel |
| 3 | Screws (M4 L=8mm) | 2 | For mounting chains |

Confirm the mounting level of main unit





• Confirm the mounting level of air conditioner and ceiling. Adjust the level of air conditioner so that the bottom of air conditioner is at the same level as that of ceiling plate (the T-bar).

The level differential tolerance between the bottom surface of ceiling and that of main unit is that air conditioner main unit cannot be higher than ceiling bottom surface for 5mm.

Caution

Do not set the main unit below the bottom surface of ceiling.

• Confirm the level of air conditioner.



3 Mount the panel

- ① Attach 2 of 4 hanging bolts supplied with the panel on the indoor piping side and its diagonal position respectively, and tighten them gently for 5mm. (▲ B marks)
- ② Open the suction grille, hang the panel onto 2 bolts, and secure it temporarily. When securing the panel temporarily, hang the panel onto (A) side bolts as shown in the left figure, then hang onto (B) side while turning it.
- ③ Tighten the temporarily secured hanging bolts and other 2 hanging bolts.
- ④ Remove 2 screws on the control box, and open the cover.
- (5) Connect the connector for louver motor (white 4P) and the connector for limit switch (white 3P).

The connector on the indoor unit side is in the control box.

- (6) After connecting the connectors, pass the wiring on the panel side through wiring hole. Hold the connector in the control box.
- O Close control box cover, and tighten 2 screws.
- (a) Mount the chain attached with suction grille on the panel using screw. The screws for mounting chain and hanging bolts are in the same bag.
- (9) Close suction grille, then work is completed.
- 10 If the louver cannot be moved by remote control operation, cut off the power for over 10 seconds after confirming the connection of connector, then turn on the power again.









(f) Duct connected High static pressure type (FDU)

(1) Models 71~140

OThis model is middle static ducted type air conditioning unit. Therefore, do not use this model for direct blow type air conditioning unit.



PJC012D048

③Preparation before installation

5Duck Work

A corrugated board (for preventing sputtering) is attached to the main body of the air conditioner (on the outlet port). Do not remove it until connecting the duct.

(1) The air conditioner main unit does not have an air filter. Incorporate it into the easy-to-clean suction arille.

2 Blowout duct

- The ducts should be at their minimum lengths.
- Keep the bends to a minimum. (The bending radius should be as large as possible.)

Bad example Bad example Good example) ſſ

Conduct the duct work before ceiling attachment.

3 Suction duct

Make sure to insulate the duct to prevent dewing on it.

(4) Location and form of blow outlet should be selected so that air from the outlet will be distributed all over the room, and equipped with a device to control air volume

(5)Make sure provide an inspection hole on the ceiling. It is indispensable to service elecric equipment, motor, functional components and cleaning of heat exchanger



Delete

Bad example of duct work

①If a duct is not provided at the suction side but it is substituted with the space over the ceiling, humidity in the space will increase by the influence of capacity of ventilation fan, strength of wind blowing against the out door air louver, weather (rainy day) and others.

a)Moisture in air is likely to condense over the external plates of the unit and to drip on the ceiling. Unit should be operated under the conditions as listed in the above table and within the limitation of wind volume. When the building is a concrete structure, especially immediately after the construction, humidity tends to rise even if the space over the ceiling is not substituted in place of a duct. In such occasion, it is necessary to insulate the entire unit with glass wool (25mm). (Use a wire net or equivalent to hold the glass wool in place.)

b)It may run out the allowable limit of unit operation (Example: When outdoor air temperature is 35°C DB, suction air temperature is 27°C WB) and it could result in such troubles as compressor overload. etc.

c)There is a possibility that the blow air volume may exceed the allowable range of operation due to the capacity of ventilation fan or strength of wind blowing against external air louver so that drainage from be heat exchanger may fall to reach the drain pan but leak outside (Example: drip on to the ceiling) with consequential water leakage in the room.

(2)If vibration damping is not conducted between the unit and the duct, and between the unit and the slab, vibration will be transmitted to the duct and vibration noise may occur. Also, vibration may be transmitted from the unit to the slab. Vibration damping must be performed.



6 Refrigerant pipe

Caution

Use the new refrigerant pipe.

When re-using the existing pipe system for R22 or R407C, pay attention to the following items. Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts. Do not use thin-walled pipes

- Use phosphorus deoxidized copper allov seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes
- Do not use any refrigerant other than R410A. Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.
- Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.
- Use special tools for R410 refrigerant.

Piping work



When conducting piping work, make sure to allow the pipes to be aligned in a straight line for at least 250 mm, as shown in the left illustration. (This is necessary for the drain pump to function) where attached

Work procedure

- 1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
- se sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them
 - (Gas may come out at this time, but it is not abnormal.)
- Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.) 2.Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit. %Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes.
 - *Do a flare connection as follows:
 - Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them
- When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
- Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
- Make sure to insulate both gas pipes and liquid pipes completely.
 X Incomplete insulation may cause dew condensation or water dropping
- 4. Refriderant is charged in the outdoor unit.

As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

| Pipe diameter | Tightening torque N·m |
|---------------|-----------------------|
| φ 6.35 | 14 to 18 |
| φ 9.52 | 34 to 42 |
| φ 12.7 | 49 to 61 |
| φ 15.88 | 68 to 82 |
| φ 19.05 | 100 to 120 |

Strap (Accessory) Pipe cover (Accessory) uunti 111111 <u>Yanna</u> The thickness of insulation should be 20mm or mor

⑦Drain pipe

Caution

Install the drain pipe according to the installation manual in order to drain properly

- Imperfection in draining may cause flood indoors and wetting the household goods, etc. • Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop. Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance

Work procedure

1. Insert the supplied drain hose (the end made of soft PVC) to the step of the drain socket on



⑦Drain pipe (continued)

- Prepare a joint for connecting VP-20 pipe, adhere and connect the joint to the drain hose 2. (the end made of rigid PVC), and adhere and connect VP-20 pipe (prepare on site). %As for drain pipe, apply VP-20 made of rigid PVC which is on the market.
 - •When installing drain pipe, use VP-20 for the pipe goes up the closest to the unit, and VP-25 or higher number product for farther pipes.
 - Make sure that the adhesive will not get into the supplied drain hose. It may cause the flexible part broken after the adhesive is dried up and gets rigid.
 - The flexible drain hose is intended to absorb a small difference at installation of the unit or drain pipes. Intentional bending, expanding may cause the flexible hose broken and water leakage.



- 3. Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
 - Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe.
 - Do not set up air vent.



- addition, select VP-30 or bigger size for main drain pipe 4. Insulate the drain pipe.
- Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.
- * After drainage test implementation, cover the drain socket part with pipe cover (small size), then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless.

Drain up

• The position for drain pipe outlet can be raised up to 600mm above the ceiling. Use elbows for installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before vertical pipe, the backflow of water will increase when the unit is stopped, and it may cause overflow of water from the drain pan on the indoor unit. In order to avoid overflow, keep the horizontal pipe length and offset of the pipe within the limit shown in the figure below



Otherwise, the construction point makes it same as drain pipe construction

Drain test

- Conduct a drain test after completion of the electrical work. During the trail, make sure that drain flows properly through the piping and that no water leaks from connections.
- In case of a new building, conduct the test before it is furnished with the ceiling. 4. Be sure to conduct this test even when the unit is installed in the heating season.

Procedures

- Supply about 1000 cc of water to the unit through the air outlet by using a feed water pump. 2. Check the drain while cooling operation.
- Insert water supply ho for 50mm to Attached drain hose clamp supply water. (Insert hose facing toward bottom) Pour water into a convex joint Drain piping ____*__ Main F unit Drain situation can be checked with transparent socket. If the electrical work has not been completed, connect a convex joint in the drain pipe connection to provide a water inlet. Then, check if water leaks from the piping system and that drain flows through the drain pipe normally. to Install Outline of bottom drain piping work If the bottom drain piping can be done with a Connecting port of top drain pipe descending gradient (1/50-1/100), it is possible to connect the pipes as shown in the drawing below. 12 Standard h ard hard polyvinyl Connecting port of bottom drain pipes 20 Insulating material Rubber stopper (to be removed)-Uncoupling the drain motor connector P.C. board Uncouple the connector CNR for the drain motor as illustrated in the drawing on the right. Note: If the unit is run with the connector coupled, drain water will be discharged from the upper drain For drain motor connector CNR (blue) pipe joint, causing a water leak.

⑦Drain pipe (continued)

Drain pump operation

- OIn case electrical wiring work finished
- Drain pump can be operated by remote controller (wired)

For the operation method, refer to Operation for drain pump in the installation manual for wiring work.

OIn case electrical wiring work not finished

Drain pump will run continuously when the dip switch"SW7-1" on the indoor unit PCB is turned ON, the Connector CNB is disconnected, and then the power supply (230VAC on the terminal block 1 and 2) is turned ON. Make sure to turn OFF "SW7-1" and reconnect the Connector CNB after the test.

8 Wiring-out position and wiring connection

 Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country.

Be sure to use an exclusive circuit.

۳I

VP-30 or bigge than 1/100

- Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in order not to apply unexpected stress on the terminal. • Do not put both power source line and signal line on the same route. It may cause miscommu-
- nication and malfunction Be sure to do D type earth work
- ā
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.



(9) Check list after installation

Check the following items after all installation work completed.

| Check if | Expected trouble | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely? | Falling, vibration, noise | |
| Inspection for leakage is done? | Insufficient capacity | |
| Insulation work is properly done? | Water leakage | |
| Water is drained properly? | Water leakage | |
| Supply voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all | |
| There is mis-wiring or mis-connection of piping? | PCB burnt out, not working at all | |
| Earth wiring is connected properly? | Electric shock | |
| Cable size comply with specified size? | PCB burnt out, not working at all | |
| Any obstacle blocks airflow on air inlet and outlet? | Insufficient capacity | |

(1) Tap selection on blower unit (when the high peformance filter is used)

The fan tap's factory setting is "Standard," If you want to change it to the high static-pressure setting. you can avail yourself of the following two methods. Use one of the two methods to set the fan tap. Make sure to perform the functional setting with remote controller.

Select [Indoor function] in the functional setting mode, and change the function number [01] [High wall setting].

For operation method, refer to the user's manual of the remote controller.

| Function number A Functional content B | | Setting content C | Default setting | | |
|--|--------|-------------------|-----------------|-------------|--|
| 01 | | Llie | h well eatting | Standard O | |
| | | High wall setting | | High wall 1 | |
| UNIT: Pa | | | | | |
| Static Standard | | і Тар | 50 | | |
| Pressure | High T | ар | 130 | | |

- Taps should not be used under static pressure outside the unit mentioned above.
- Dew condensation may occur with the unit and wet the ceiling or furniture. Do not use under static pressure outside the unit of 50Pa or less. Water drops may be blown from the diffuser outlet of the unit and wet the ceiling or furniture.

(2) Models 224, 280



Refrigerant gas side piping

n port

Refrigerant liquid side pip

Power source inlet port

Drain piping co

Suspension bolt

А B

D

Vinyl hose

The wood screws should be removed



①Air filters are not provided with the main frame of the air conditioner. Assemble on to the suction grill which can be cleaned easily

②Fit the silencing chamber according to the noise level tolerance inside the installation room. If it is particularly necessary to keep the noise level low, further silencing devices is required (always install them in offices, and conference rooms).

- ③In order to keep the vibration from transferring to the ceiling and the slab, use a campus joint for the duct and a vibration proof rubber for the main frame.
- (4)Attach an airflow adjustment damper to the connection point of the OA duct so airflow adjustment may be possible after installation.
- ⑤For the blowing outlet, select a shape and location where air may circulate, and a structure where airflow may be controlled.
- (6)An inspection hole must be made in the ceiling surface. This is necessary for the repair and maintenance of the electrical parts, motor and functional parts, as well as for cleaning the heat exchanger

(7)Insulation must be performed for the duct to prevent water condensation on the duct. The thickness of the insulating material is 65 mm (JISA 9501).

A bad example of duct work



①If the suction duct is not used, and the attic is used as a suction duct, the attic will become extremely humid depending on the performance of the ventilation fan, the strength of wind blowing to the atmospheric gallery and the climate (e.g., rainy days).

- a. Condensation occurs on the outer board of the unit and water may fall on the ceiling. Use the unit according to the air conditions in the above table and airflow limits. In concrete constructions, high humidity can occur in new constructions even when the attic is not used as a suction duct. In this case, insulate the entire unit with glass wool (25 mm) (use a metal net to hold the wool)
- b. Operation of the unit may exceed its limits (for example, when the temperature of the suction air is 24 °C with the outdoor temperature of 35 °C DB). In such a cases, problems such as an overload of the compressor may occur.
- c. The volume of the air blowing in may increase due to the performance of the ventilation fan and the wind strength blowing against the atmospheric gallery. The air usage limit may be exceeded, and the water from the heat exchanger will not be able to drain to the drain pan. Instead it will drain outside and cause a water leak (to the ceiling).
- (2)If vibration damping is not conducted between the unit and the duct, and between the unit and the slab, vibration will be transmitted to the duct and vibration noise may occur. Also, vibration may be transmitted from the unit to the slab. Vibration damping must be performed.

Simple setting method for duct measurement

The following shows the method when duct is used at one side of 250mm as 1Pa/m by frictional resistance per the unit length of the duct, and in case of 250 type (single unit)/280 type (multi unit), 60Hz rating airflow for a example.



6Refrigerant pipe

Caution

Use the new refrigerant pipe.

- When re-using the existing pipe system for R22 or R407C, pay attention to the following items.
- · Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts. Do not use thin-walled pipes.
 Ouse phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation.
- In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.
- Do not use any refrigerant other than R410A. Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into
- refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc. Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or
- water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc. Use special tools for R410 refrigerant.
- The indoor unit pipes allow the maintenance panel to be removed. Therefore, regardless of the piping direction, there should be a straight section of 400 mm or more.

Work procedure

- When brazing work, perform it while cool down around the brazing port with wet towels to prevent the overheating.
- 2. After check the gas leak test, install the heat insulation (prepare on site) to the brazing port of the indoor unit.
 - Be sure to perform the heat insulation both of gas side piping with liquid side piping.
 - %If heat insulation does not install to the pipes, dew condensation may occurs and it may cause the water leakage.
 - The thickness of the heat insulation should be more than 20mm.

3. Refrigerant is charged in the outdoor unit.

As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

| Single unit | | | Multi unit | | | |
|-------------|---------------|--------|------------|---------------|---------|---------|
| Tume 000 | Liquid piping | ••9.52 | Tume 004 | Liquid piping | ••9.52 | Flaring |
| Type 200 | Gas piping | ••25.4 | Type 224 | Gas piping | ••19.05 | Flaring |
| T 050 | Liquid piping | ••12.7 | T | Liquid piping | ••9.52 | Flaring |
| Type 250 | Gas piping | •25.4 | Type 280 | Gas piping | ••22.22 | Flaring |

ODrain pipe

Caution

- Install the drain pipe according to the installation manual in order to drain properly.
- Imperfection in draining may cause flood indoors and wetting the household goods , etc.
- Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

Work procedure

1. Insert the supplied drain hose (the end made of soft PVC) to the step of the drain socket on the indoor unit and fix it securely with the clamp. Attach the hose clamp to the drain hose around 10mm from the end. Do not apply adhesives on this end.



- end made of rigid PVC), and adhere and connect VP-25 pipe (prepare on site). XAs for drain pipe, apply VP-25 made of rigid PVC which is on the market.
 - Make sure that the adhesive will not get into the supplied drain hose.
 - It may cause the flexible part broken after the adhesive is dried up and gets rigid.
 - The flexible drain hose is intended to absorb a small difference at installation of the unit or drain pipes. Intentional bending, expanding may cause the flexible hose broken and water leakage.

7 V Over 20mm



⑧Wiring-out position and wiring connection

- Electrical installation work must be performed according to the installation manual by an
 electrical installation service provider qualified by a power provider of the country, and be
 executed according to the technical standards and other regulations applicable to electrical
 installation in the country.
 Be sure to use an exclusive circuit.
- Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in order not to apply unexpected stress on the terminal.
- Do not put both power source line and signal line on the same route. It may cause miscommunication and malfunction.
- Be sure to do D type earth work.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.
- 1. Remove a lid of the control box (2 screws) and a hook which is located on top of it.
- 2. Hold each wiring inside the unit and fasten them to terminal block securely.
- 3. Fix the wiring with clamps.
- 4. Install the removed parts back to original place.





9Check list after installation

| Check if | Expected trouble | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely? | Falling, vibration, noise | |
| Inspection for leakage is done? | Insufficient capacity | |
| Insulation work is properly done? | Water leakage | |
| Water is drained properly? | Water leakage | |
| Supply voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all | |
| There is mis-wiring or mis-connection of piping? | PCB burnt out, not working at all | |
| Earth wiring is connected properly? | Electric shock | |
| Cable size comply with specified size? | PCB burnt out, not working at all | |
| Any obstacle blocks airflow on air inlet and outlet? | Insufficient capacity | |

(g) Duct connected Middle static pressure type (FDUM)

PJR012D317 🏠





6 Refrigerant pipe

- Use the new refrigerant pipe.
- When re-using the existing pipe system for R22 or R407C, pay attention to the following items. Change the flare nuts with the attached ones (JIS category 2), and rep Do not use thin-walled pipes
- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipe
- Do not use any refrigerant other than R410A.
- Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc. Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or
- water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc. Use special tools for R410 refrigerant.



When conducting piping work, make sure to allow the pipes to be aligned in a straight line for at least 250 mm, as shown in the left illustration. (This is necessary for the drain pump to function)

Pipe cover (Accessory)

Anna

gann.

lation should be 20mm or i

Work procedure

- Remove the flare nut and blind flanges on the pipe of the indoor unit. X Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
 - (Gas may come out at this time, but it is not abnormal.)
- Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
- addition, do not twist and crush the pipes.
- Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the coppe When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw
- the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe
- Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps. Make sure to insulate both gas pipes and liquid pipes completely.
 - X Incomplete insulation may cause dew condensation or water dropping.
- Refrigerant is charged in the outdoor unit. As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

| Strap (Accessory) | Tightening torque N·m | Pipe diameter |
|-------------------|-----------------------|------------------|
| 177 | 14 to 18 | ••6.35 |
| TITIT | 34 to 42 | ••9.52 |
| 70000 | 49 to 61 | ••12.7 |
| ALL I | 68 to 82 | •• 1 5.88 |
| /The thickness of | 100 to 120 | •• 1 9.05 |

ODrain pipe

- Install the drain pipe according to the installation manual in order to drain properly
- Imperfection in draining may cause flood indoors and wetting the household goods, etc. Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop. Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

Work procedure

1. Insert the supplied drain hose (the end made of soft PVC) to the step of the drain socket on the indoor unit and fix it securely with the clamp. Attach the hose clamp to the drain hose around 10mm from the end. Do not apply adhesives on this end.







(h) Duct connected (Ultra thin) Low static pressure type (FDQS)

PJC012D013





(5)Duck Work (continued)

- The air conditioning unit main body is not equipped with air filters. Incorporate air filters in an air intake grille, which will facilitate the cleaning of air filters.
- In the case of a rear-intake type with duct and a rear-intake ceiling-return type installation. 4 be sure to provide a 350 mm x 1300 mm inspection opening right beneath the unit's fan side bottom plate to permit servicing of the unit as illustrated in installation geometries. In the case of an underside-intake type with duct and underside-intake ceiling-return type, provide an intake opening right beneath the unit's fan side bottom plate so that it will serve as an inspection opening as well. Also see to its dimensions so that the intake opening will be made to 350 mm x 1300 mm.
- Take care to install a duct horizontally in connecting the unit with a diffuser.
- 6. When a canvas duct is used for either intake or outlet duct, install it with care so that it may not get flattened.
- 7 Select a desirable diffuser position and diffuser form to ensure the distribution of winds throughout the room and use a diffuser employing a structure that provides the capability to regulate winds
- Install the air conditioning unit main body via vibration-isolating rubbers to prevent vibrations from propagating directly from the air conditioning unit main body to the ceiling and slab.
- Secure at least 0.15m² for the opening of an air intake.
 Never fail to heat-insulate the ducts to prevent condensation on their surfaces.

6 Refrigerant pipe

Caution

- Output the new refrigerant pipe.
- When re-using the existing pipe system for R22 or R407C, pay attention to the following items · Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts Do not use thin-walled pipes.
- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipe
- Do not use any refrigerant other than R410A. Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.
- Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc. • Use special tools for R410 refrigerant.

Work procedure

- 1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
- X Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
- (Gas may come out at this time, but it is not abnormal.)
- Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
 Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
- *Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes. XDo a flare connection as follows
- Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them
- When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
- 3. Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
 - Make sure to insulate both gas pipes and liquid pipes completely.
 - X Incomplete insulation may cause dew condensation or water dropping.
- 4. Refrigerant is charged in the outdoor unit.

As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit. Strap (Accessory) Pipe cover (Accessory)

| Pipe diameter | Tightening torque N·m | annin 1 |
|---------------|-----------------------|---|
| ••6.35 | 14 ~ 18 | |
| ••9.52 | 34 ~ 42 | |
| ••12.7 | 49 ~ 61 | |
| | | The thickness of insulation should be 20mm or mor |

⑦Drain pipe

Caution

- Install the drain pipe according to the installation manual in order to drain properly
- Imperfection in draining may cause flood indoors and wetting the household goods, etc. Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
 Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end • of the drain pipe after installation
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance

() Drain pipe (continued)

Work procedure

1. Insert the supplied drain hose (the end made of soft PVC) to the step of the drain socket on the indoor unit and fix it securely with the clamp. Attach the hose clamp to the drain hose around 10mm from the end. •Do not apply adhesives on this end.

Do not use acetone-based adhesives to connect the drain socket.



- 2. Prepare a joint for connecting VP-20 pipe, adhere and connect the joint to the drain hose (the end made of rigid PVC), and adhere and connect VP-20 pipe (prepare on site). XAs for drain pipe, apply VP-20 made of rigid PVC which is on the market
 - Make sure that the adhesive will not get into the supplied drain hose It may cause the flexible part broken after the adhesive is dried up and gets rigid.
 - The flexible drain hose is intended to absorb a small difference at the unit or installation of drain pipes. Intentional bending, expanding may cause the flexible hose broken and water leakage



- 3. Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
- Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe.

Do not set up air vent.



addition, select VP-30 or bigger size for main drain pipe.



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- 4. Insulate the drain pipe.
 - Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.
 - X After drainage test implementation, cover the drain socket part with pipe cover (small size), then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless.

Drain up

The position for drain pipe outlet can be raised up to 600mm above the ceiling. Use elbows for installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before vertical pipe, the backflow of water will increase when the unit is stopped, and it may cause overflow of water from the drain pan on the indoor unit. In order to avoid overflow, keep the horizontal pipe length and offset of the pipe within the limit shown in the figure below.



Drain test

- Conduct a drainage test after completion of the electrical work. During the trial, make sure that drain flows properly through the piping and that no water leaks from connections.
- In case of a new building, conduct the test before it is furnished with the ceiling. 4. Be sure to conduct this test even when the unit is installed in the heating season.

Procedures

Supply about 1000 cc of water to the unit through the air outlet by using a feed water pump.
 Check the drain while cooling operation.



⑦Drain pipe (continued)

Drain pump operation

OIn case electrical wiring work finished

Drain pump can be operated by remote controller (wired).

For the operation method, refer to Operation for drain pump in the installation manual for wiring work.

OIn case electrical wiring work not finished

Drain pump will run continuously when the dip switch "SW7-1" on the indoor unit PCB is turned ON, the Connector CNB is disconnected, and then the power supply (230VAC on the terminal block 1 and 2) is turned ON. Make sure to turn OFF "SW7-1" and reconnect the Connector CNB after the test.

®Wiring-out position and wiring connection

Electrical installation work must be performed according to the installation manual by an electrical installation service rovider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country.

- Be sure to use an exclusive circuit.
 Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in order not to apply unexpected stress on the terminal.
- Do not put both power source line and signal line on the same route. It may cause miscommu-nication and malfunction.
- Be sure to do D type grounding work.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.
- 1. Remove a lid of the control box (3 screws) and the wiring cover (2 screws).
- 2. Hold each wiring inside the unit and fasten them to terminal block securely.
- 3. Fix the wiring with clamps.
- 4. Install the removed parts back to original place.



9Check list after installation

| Check if | Expected trouble | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely? | Falling, vibration, noise | |
| Inspection for leakage is done? | Insufficient capacity | |
| Insulation work is properly done? | Water leakage | |
| Water is drained properly? | Water leakage | |
| Supply voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all | |
| There is mis-wiring or mis-connection of piping? | PCB burnt out, not working at all | |
| Earth wiring is connected properly? | Electric shock | |
| Cable size comply with specified size? | PCB burnt out, not working at all | |
| Any obstacle blocks airflow on air inlet and outlet? | Insufficient capacity | |

Wallmounted type (FDK) (i)

PHA012D033





④Installation of indoor unit

ATTENTION

- In carrying the unit into an installation site, carry it in the original packaging to a point as close to the proposed installation site as possible.
- When the unit needs to be unpacked during haulage due to a compelling reason, wrap it with nylon slings or the like to prevent possible damages.
- Note: Do not hold the unit by the diffuser louver in carrying it. When the unit needs to be laid on a floor after unpacking, always lay it with its front facing upward.

Installation of the mounting plate

ATTENTION

This unit cannot be installed directly onto a wall surface. Regardless of the surface it is to be installed onto, you should use the mounting plate supplied with the unit.

OInstall it securely by spotting a structural member running underneath the wall (stud or the like) and after ascertaining its levelness.



OThe levelness of the mounting plate should be adjusted with the four fixing screws fastened temporarily.

-0 Ω Datum hole 0

ORotate the plate around the datum hole to achieve the levelness.

Hints for making a hole on a wall



- 160 -



⑦Refrigerant pipe

Caution

- Use the new refrigerant pipe. When re-using the existing pipe system for R22 or R407C, pay attention to the following items. · Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts. Do not use thin-walled pipes.
- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.
- Do not use any refrigerant other than R410A.
- Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc. Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or
- water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc. Ouse special tools for R410 refrigerant.

Work procedure

- 1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
 - % Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
 - (Gas may come out at this time, but it is not abnormal.)
 - Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
- 2. Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit. *Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes.
 - X Do a flare connection as follows:
 - Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
 - When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
- 3. Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
 - Make sure to insulate both gas pipes and liquid pipes completely. X Incomplete insulation may cause dew condensation or water dropping.
- 4. Refrigerant is charged in the outdoor unit.

As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

| Pipe diameter | Tightening torque N·m |
|---------------|-----------------------|
| φ6.35 | 14 to 18 |
| φ9.52 | 34 to 42 |
| φ12.7 | 49 to 61 |
| φ15.88 | 68 to 82 |



⑧Drain pipe

Caution

- Install the drain pipe according to the installation manual in order to drain properly
- Imperfection in draining may cause flood indoors and wetting the household goods, etc.
- Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell. Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.
- 1. A general-purpose hard PVC pipe VP-16 can be connected to the drain hose tip as a part of drain piping.
- 2. Drain piping must be given a descending grade so that drain water may flow smoothly and it must not have any trap or bump within the system (The pipe can be routed through the left, right, rear or bottom of the unit) Hard PVC pipes (VP-16) laid indoors must be kept warm.

(8) Drain pipe (continued)

3. Pour water into the drain pan placed underneath the heat exchanger to make sure that it is properly drained outdoors





Do drain test even if installation of heating season.

9Check list after installation

Check the following items after all installation work completed.

| Check if; | Expected trouble | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely? | Falling, vibration, noise | |
| Inspection for leakage is done? | Insufficient capacity | |
| Insulation work is properly done? | Water leakage | |
| Water is drained properly? | Water leakage | |
| Supply voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all | |
| There is mis-wiring or mis-connection of piping? | PCB burnt out, not working at all | |
| Earth wiring is connected properly? | Electric shock | |
| Cable size comply with specified size? | PCB burnt out, not working at all | |
| Any obstacle blocks airflow on air inlet and outlet? | Insufficient capacity | |

PHA012D033

(j) Ceiling suspended type (FDE)

(1)Before installation



PFA012D618

③ Preparation before installation (continued)



 When the pipe is routed through the back. Cut the removed top cover, and install to the rear panel instead of rear cover.

⑦Drain pipe

The drain pipes may face out towards the back to the left, or to the right side.

Remove

- Install the drain pipe according to the installation manual in order to drain properly. Imperfection in draining may cause flood indoors and wetting the household goods, etc. Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the
- other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop. Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation. Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap
- in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

- 1. Insert drain hose completely to the base, and tighten the drain hose clamp securely. (adhesive must not be used.) When plumbing on the left side, move the rubber plug and the cylindrical insulating materials by the pipe connecting hole on
- the left side of the unit to the right side. A Beware of a possible outflow of water that may
- occur upon removal of a drain plug. Fix the drain hose at the lowest point with a hose clamp supplied as an accessory. % Give a drain hose a gradient of 10mm
- as illustrated in the right drawing by laving it without leaving a slack.
- Take head of electrical cables so that they may not run beneath the drain hose.
- A drain hose must be clamped down with a hose clamp. There is a possibility that drain water overflows.
- Connect VP-20(prepare on site) to drain hose. (adhesive must not be used.)
 W Use commercially available rigid PVC general pipe VP-20 for drain pipe.
- Do not to make the up-down bending and trap in the mid-way while assum-ing that the drain pipes is downhill. (more than 1/100) Never set up air vent.
- 5. Insulate the drain pipe.
- Insulate the drain hose clamp with the heat insulation supplied as accessories. · When the unit is installed in a humid place, consider precautions against dew condensation such as heat insulation for the drain pipe.

Drain test

- After installation of drain pipe, make sure that drain system work in good
- condition and no water leakage from joint and drain pan.
 - Do drain test even if installation of heating season.

mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe. 3. Cover the flare connection part of the indoor unit with attached insulation material

- after a gas leakage inspection, and tighten both ends with attached straps Make sure to insulate both gas pipes and liquid pipes completely.
 Xincomplete insulation may cause dew condensation or water dropping
- Refrigerant is charged in the outdoor unit. As for the additional refrigerant charge for the indoor unit and piping, refer to the installation

manual attached to the outdoor unit.

| Pipe diameter | Tightening torque N·m |
|---------------|-----------------------|
| ø 6.35 | 14 to 18 |
| ø 9.52 | 34 to 42 |
| ø 12.7 | 49 to 61 |
| ø 15.88 | 68 to 82 |
| ø 19.05 | 100 to 120 |





(k) Floor standing (with casing) type (FDFL)

① Before installation

- Install correctly according to the installation manual.
- Confirm the following points: O Unit type/Power supply specification O Pipes/Wires/Small parts O Accessory items Accessory item

| For ins | tallation | | For refrigerant pipe | | | | For drain pipe |
|---------------|--|------------------------------------|---|---|--------------------------|----------------------------|------------------------------|
| Floor bracket | Tapping screw | Pipe cover | Pipe | cover | Strap | Joint pipe | Drain hose |
| | (X)IIII | $\overline{\mathbb{O}}$ | 0 | 5 | ⊫ | Ð | eDDDDDD |
| 2 | 2 | 2 | 1 | 1 | 8 | 1 | 1 |
| | For installing remote controller (M4 x I 12) | For heat insulation of gas pipe | For on site side of liquid pipe (150 mm length) | For liquid pipe between Heat exchanger/ expansion valve box(70 mm length) | For pipe cover fixing | For connecting gas pipe | For drain pipe connecting |

② Selection of installation location for the indoor unit

This indoor unit can be installed either to the floor or to the wall. Select a location with the following suitable conditions.

- ① Select the suitable areas to install the unit under approval of the user.
- Areas where the indoor unit can deliver hot and cold wind sufficiently. Areas where there is enough space to install and service.
- Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- Areas where there is no obstruction of airflow on both air return grille and air supply port. Areas where fire alarm will not be accidentally activated by the air conditioner.
- Areas where the supply air does not short-circuit.
- Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 23°C and relative humidity is lower than 80%. This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe.
- Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.) Areas where any items which will be damaged by getting wet are not placed such as food, table
- wares, server, or medical equipment under the unit. Areas where there is no influence by the heat which cookware generates.
- Areas where not exposed to oil mist, powder and/or steam directly.
- Areas where lighting device such as fluorescent light or incandescent light doesn't affect the operation.
- Å beam from lighting device sometimes affects the infrared receiver for the wireless remote controller and the air conditioner might not work properly.)
- 2 Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause the unit falling down and injury.
- 3 When plural indoor units are installed nearby, keep them away for more than 4 to 5m.

Space for installation and service



PGD012D005





5 Refrigerant piping

Caution

- Use the new refrigerant pipe.
 When re-using the existing pipe system for R22 or R407C, pay attention to the following items.
 Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts.
 Do not use thin-walled pipes.
- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation.
 In addition, make sure there is no damage both inside and outside of the pipe, and no harmful
- In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.
- Do not use any refrigerant other than R410A. Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc. Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe.
- any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc. • Use special tools for R410 refrigerant.

Work procedure

- Remove the flare nut and blind flanges on the pipe of the indoor unit. (The connection of Liquid/Gas side of heat exchange, Inlet/outlet of the expansion valve box) (4 places)
 - Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them. (Gas may come out at this time, but it is not abnormal.)
 - Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
- Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
 Make sure to connect the liquid pipe between the heat exchanger and expansion value box (indicated in Section A of the figure).
 - O Pipes can be take out in 2 directions, from the rear and from the floor.
 - ${\rm O}$ Use the provided joint pipes to connect gas pipes. Connect in the direction that the pipe will be removed.
 - Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes.
 Do a flare connection as follows:
 - Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
- When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
- Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
- Make sure to insulate both gas pipes and liquid pipes completely.
 - X Incomplete insulation may cause dew condensation or water dropping.
- 4. Refrigerant is charged in the outdoor unit
- As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit. Strep (Accessory) Pipe cover (Accessory)

| Pipe diameter | Tightening torque N·m | Vinnin |
|---------------|-----------------------|---|
| φ 6.35 | 14 to 18 | |
| φ 9.52 | 34 to 42 | |
| ¢ 12.7 | 49 to 61 | |
| φ 15.88 | 68 to 82 | The thickness of insulation should be 20mm or more. |
| φ 19.05 | 100 to 120 | |

O There are "System name" and "Refrigerant amount" columns on the name plate of the outdoor unit. Write the system name and the amount of the refrigerant in the columns.





⑧ Remote Controller

Caution

Appearance When installing the remote controller and selecting the line of remote controller of the unit, refer to the Electric Wiring Instruction Manual provided in the unit and Installation Manual provided for wired remote controller

Remote controller installation base



(Check)

- Ensure that the wires are not hitting the edges.
- Conduct a test run to confirm there are no problems.

9 Check list after installation

| Check if; | Expected trouble | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely? | Falling, vibration, noise | |
| Inspection for leakage is done? | Insufficient capacity | |
| Insulation work is properly done? | Water leakage | |
| Water is drained properly? | Water leakage | |
| Supply voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all | |
| There is mis-wiring or mis-connection of piping? | PCB burnt out, not working at all | |
| Earth wiring is connected properly? | Electric shock | |
| Cable size comply with specified size? | PCB burnt out, not working at all | |
| Any obstacle blocks airflow on air inlet and outlet? | Insufficient capacity | |

Floor standing (without casing) type (FDFU) **(I)**

1 Before installation

- Install correctly according to the installation manual. Confirm the following points:
- O Unit type/Power supply specification O Pipes/Wires/Small parts O Accessory items

| Accessory ite | em | | | | | |
|------------------|------------------------------------|---|---|-----------------------|----------------------------|------------------------------|
| For installation | | | For refrigerant pipe | | | For drain pipe |
| Floor bracket | Pipe cover | Pipe cover Strap Joint pipe | | | Drain hose | |
| | $\overline{\bigcirc}$ | Q | 5 | | Ð | @]]]]]]]] |
| 2 | 2 | 1 | 1 | 8 | 1 | 1 |
| | For heat insulation of gas pipe | For on site side of liquid pipe (150 mm length) | For liquid pipe between Heat exchanger/ expansion valve box(70 mm length) | For pipe cover fixing | For connecting gas pipe | For drain pipe connecting |

② Selection of installation location for the indoor unit

This indoor unit can be installed either to the floor or to the wall. Select a location with the following suitable conditions.

- ① Select the suitable areas to install the unit under approval of the user
- Areas where the indoor unit can deliver hot and cold wind sufficiently.
- Areas where there is enough space to install and service.
- Areas where it can be drained properly. Areas where drain pipe descending slope can be taken. Areas where there is no obstruction of airflow on both air return grille and air supply port.
- Areas where fire alarm will not be accidentally activated by the air conditioner.
- Areas where the supply air does not short-circuit.
- Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 23°C and relative humidity is lower than 80%. This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above. If there is a possibility to use it under such a condition, attach additional insulation of 10 to
- 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe. Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.) Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit. Areas where there is no influence by the heat which cookware generates.
- Areas where not exposed to oil mist, powder and/or steam directly. Areas where lighting device such as fluorescent light or incandescent light doesn't affect the

operation. (Å beam from lighting device sometimes affects the infrared receiver for the wireless remote controller and the air conditioner might not work properly.)

- 2 Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause the unit falling down and injury.
- ③ When plural indoor units are installed nearby, keep them away for more than 4 to 5m.



③ Preparation before installation



Floor bracket (provided)

PGD012D006



⑤ Refrigerant piping

Caution

- Use the new refrigerant pipe. When re-using the existing pipe system for R22 or R407C, pay attention to the following items.
 Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts. Do not use thin-walled pipes. Jse phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for
- refrigeration pipe installation.
- In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes. Do not use any refrigerant other than R410A. Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting
- Into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc. Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid
- any dust, dirf or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc. Use special tools for R410 refrigerant.

Work procedure

- 1. Remove the flare nut and blind flanges on the pipe of the indoor unit. (The connection of Liquid/Gas
- side of heat exchange, Inlet/outlet of the expansion valve box) (4 places) %Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them. (Gas may come out at this time, but it is not abnormal.) • Pay attention whether the flare nut pops out (as the indoor unit is sometimes pressured.)
- 2. Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
 - O Make sure to connect the liquid pipe between the heat exchanger and expansion valuve box (indicated in Section A of the figure).
 - Pipes can be take out in 2 directions, from the rear and from the floor. \cap
 - O Use the provided joint pipes to connect gas pipes. Connect in the direction that the pipe will be removed.
- %Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes. *Do a flare connection as follows:
- Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
- · When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
- Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
- Make sure to insulate both gas pipes and liquid pipes completely.
- X Incomplete insulation may cause dew condensation or water dropping.
- Refrigerant is charged in the outdoor unit
- As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

| | | Strap (Accessory) | Pipe cover (Accessory) |
|---------------|-----------------------|---------------------|--|
| Pipe diameter | Tightening torque N·m | | |
| φ 6.35 | 14 to 18 | 177 | ATT I |
| φ 9.52 | 34 to 42 | 1111111 | |
| φ 12.7 | 49 to 61 | TITIT | |
| φ 15.88 | 68 to 82 | 1 (777) | 1111 |
| φ 19.05 | 100 to 120 | /The thickness of i | insulation should be 20mm or more |
| | | | Contract of the Contract of Contract, State |

O There are "System name" and "Refrigerant amount" columns on the name plate of the outdoor unit. Write the system name and the amount of the refrigerant in the columns.





(8) Check list after installation

| Check if; | Expected trouble | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely? | Falling, vibration, noise | |
| Inspection for leakage is done? | Insufficient capacity | |
| Insulation work is properly done? | Water leakage | |
| Water is drained properly? | Water leakage | |
| Supply voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all | |
| There is mis-wiring or mis-connection of piping? | PCB burnt out, not working at all | |
| Earth wiring is connected properly? | Electric shock | |
| Cable size comply with specified size? | PCB burnt out, not working at all | |
| Any obstacle blocks airflow on air inlet and outlet? | Insufficient capacity | |

(m) Duct Connected-Compact & Flexible type (FDUH)

PJC012D200



2 Selection of installation location for the indoor unit

① Select the suitable areas to install the unit under approval of the user.

- Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
- · Areas where there is enough space to install and service.
- · Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- · Areas where there is no obstruction of airflow on both air return grille and air supply port.
- · Areas where fire alarm will not be accidentally activated by the air conditioner.
- · Areas where the supply air does not short-circuit.
- · Areas where it is not influenced by draft air.
- · Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 28°C and relative humidity is lower than 80%. This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above.
- If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe.
- · Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)
- · Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.
- · Areas where there is no influence by the heat which cookware generates.
- · Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.
- (2) Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

Space for installation and service

Install the indoor unit at a height of more than 2.5m above the floor.



③Preparation before installation

- If suspension bolt becomes longer, do reinforcement of earthquake resistant. OFor grid ceiling When suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt. OIn case the unit is hanged directly from the slab and is installed on the ceiling plane which
- has enough strength
- OWhen suspension bolt length is over 1000mm, apply the earthquake resistant brace to the bolt. Prepare four (4) sets of suspension bolt, nut and spring washer (M10) on site.

③Preparation before installation (continued)

Ceiling opening, Suspension bolts pitch, Pipe position

| Symbol | | Content | |
|--------|------------------|-----------------------------|-----------------------|
| | Model | FDUH22KXE6,28KXE6 | FDUH36KXE6 |
| A | Gas piping | \$\$\phi 9.52(3/8") (Flare) | φ 12.7 (1/2") (Flare) |
| В | Liquid piping | φ 6.35(1/4") (Flare) | |
| C1 | Drain piping | VP20 Note (2) | |
| C2 | Drain piping | To be used instead of "C1" | |
| D | Hole for wiring | φ 30 | |
| E | Suspension bolts | (M10) | |

Notes (1) The model name label is attached on the fan case inside the air return grille. (2) Prepare the connecting socket (VP20) on site. (As for drain piping, it is possible to choose C1 or C2)



④Installation of indoor unit

Work procedure

- Arrange the suspension bolt at the right position (488mmx576mm).
 Make sure to use four suspension bolts and fix them so as to be able to hold 500N load.
- Suspension bolt



4 Installation of indoor unit (continued)

- 3. Make sure to install the indoor unit horizontally. Confirm the levelness of the indoor unit with a level gauge or transparent hose filled with water. Keep the height difference at both ends of the indoor unit within 3mm.
- 4. Tighten four upper nuts and fix the unit after height and levelness adjustment.

Caution

Do not adjust the height by adjusting upper nuts. It will cause unexpected stress on the indoor unit and it will lead to deformation of the unit, failure of attaching a panel, and generating noise from the fan

Indoor unit

Make sure to install the indoor unit horizontally and set the gap between the unit underside and the ceiling plane properly. Improper installation may cause air leakage, dew condensation, water leakage and noise.

5Duct work



5 Duct work (continued)

Example of bad duct work





- (1)If the suction duct is made in the ceiling without using the suction side duct, the temperature inside the ceiling will be high owing to the ventilating fan's performance, the strength of any wind blowing against the outdoor air louver, weather (on a rainy day) and other factors.
 - The outside plate of the unit may have condensation, causing water to drip on the ceiling. Also, in the case of a new house of a concrete structure, the temperature may be high without a duct inside the ceiling. In such a case, keep the whole unit warm using glass wool (25mm). (Cover the glass wool with wire netting or the like.)
- The unit may be beyond its operation limit, causing overloading of the compressor, and other trouble.
- Because the blowing capacity of the unit increases, owing to the ventilating fan's performance and any wind blowing against the outdoor air louver, up to its use limit, draining liquid from the heat exchanger does not flow into the drain pan, possibly flowing to the outside and causing water leaks (in which drained liquid drips on the ceiling).

6 Refrigerant pipe

Caution

- Ouse the new refrigerant pipe.
- When re-using the existing pipe system for R22 or R407C, pay attention to the following items. · Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts. Do not use thin-walled pipes.
- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful
- substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.
- Do not use any refrigerant other than R410A. Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc
- Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.

Use special tools for R410 refrigerant.

Work procedure

- 1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
 - % Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
 - (Gas may come out at this time, but it is not abnormal.)
 - Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
- 2. Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit. *Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes.
 - * Do a flare connection as follows:
 - Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
 - When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
- 3. Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
 - Make sure to insulate both gas pipes and liquid pipes completely. % Incomplete insulation may cause dew condensation or water dropping.
- Refrigerant is charged in the outdoor unit. 4.
- As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

| | | Strap (Accessory) Pipe cover (Accessor |
|---------------|-----------------------|--|
| Pipe diameter | Tightening torque N·m | à |
| φ 6.35 | 14 to 18 | THE ALL ALL ALL ALL ALL ALL ALL ALL ALL AL |
| φ 9.52 | 34 to 42 | |
| ф 12.7 | 49 to 61 | |
| ф 15.88 | 68 to 82 | 1 177777777 |
| ф 19.05 | 100 to 120 | The thickness of insulation should be 20mm or more |

⑦Drain pipe

Caution

- Install the drain pipe according to the installation manual in order to drain properly.
- Imperfection in draining may cause flood indoors and wetting the household goods,etc. Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

Work procedure

- 1. Connect the drain pipe (VP-20) to drain socket using "transparent soft tube (accessory)" and secure firmly with a clamp.

 - Do not apply adhesives on both side. (*1 If the drain tube is directly connected with drain socket, the drain socket and drain pan would not be able to be removed.}

(*2 As optional setting, rubber hose (inside diameter \$\phi19\$) can be connected directly with clamp to above drain socket under the later condition.}



- 2. Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
 - Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe. Do not set up air vent.





one unit, lay the main pipe 100mm below the drain outlet of the unit. In addition, select VP-30 or bigger size for main drain pipe.



- 3. Insulate the drain pipe.
 - Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.
 - * After drainage test implementation, cover the drain socket part with pipe cover (small size), then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless.

Drain test

- After installation of drain pipe, make sure that drain system work in good condition and no water leakage from joint and drain pan.
- Do drain test even if installation of heating season.
- For new building cases, make sure to complete the test before hanging the ceiling.
 Remove the drain grommet, and pour water of about 1000cc into the drain pan in the
- indoor unit by pump so as not to get the electrical component wet. 2. Make sure that water is drained out properly and there is no water leakage from any joints
- of the drain pipe at the test. 3. Make sure to install the grommet back to original place.
- 4. Insulate the drain pipe properly finally.



8 Wiring-out position and wiring connection

- Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country.
- Be sure to use an exclusive circuit. Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in order not to apply unexpected stress on the terminal.
- Do not put both power source line and signal line on the same route. It may cause miscom-munication and malfunction.
- Be sure to do D type earth work.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.
- Remove a lid of the control box (2 screws).
- Hold each wiring inside the unit and fasten them to terminal block securely. 2.
- Fix the wiring with clamps. 3. 4. Install the removed parts back to original place



Procedure for optional setting of control box

(i) Remove bottom plate

(ii) Unfasten two (2) "straps" for wire.

(iii) Remove the plate for control box. (2 screws), and set it at optional position (oposite side).

- (iv) Remove the control box (2 screws), and set it at optional position (oposite side). (v) Cut insulation of "U" shape space.
- (vi) Gen instantion of the strate option.
 Through this cutting, set and fix all wires by four (4) "clamps" and two (2) "straps".
 (vi) Close the previous "U" shape wiring space by insulation, and set the bottom plate again.
- 1 Wiring Location (Original)



2 Wiring Location (Optional)

After fix @, the modification of wiring length should be done, by B



9 Check list after installation

| Check if; | Expected trouble | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely? | Falling, vibration, noise | |
| Inspection for leakage is done? | Insufficient capacity | |
| Insulation work is properly done? | Water leakage | |
| Water is drained properly? | Water leakage | |
| Supply voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all | |
| There is mis-wiring or mis-connection of piping? | PCB burnt out, not working at all | |
| Earth wiring is connected properly? | Electric shock | |
| Cable size comply with specified size? | PCB burnt out, not working at all | |
| Any obstacle blocks airflow on air inlet and outlet? | Insufficient capacity | |

5.2 Electric wiring work instruction

Electrical wiring work must be performed by an electrician qualified by a local power provider according to the electrical installation technical standards and interior wiring regulations applicable to the installation site.

| Security instructions | |
|---|---------|
| Accord with following items. Otherwise, there will be the risks of electric shock ar caused by overheating or short circuit. | ıd fire |
| | |
| Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit. | • |
| Power source with insufficient capacity and improper work can cause electric shock and fire. | |
| Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in order not to apply unexpected stress on the terminal. | C |
| Loose connections or hold could result in abnormal heat generation or fire. | |
| Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property. Income fitting may cause observable had fine. | C |
| | |
| • Make sure there is no dust or clogging on both the plug and the socket nor loose connection of the socket before plugging, and plug in securely to the end of the blade. | C |
| Accumulation of dust, clogging on the socket or plug, or loose installation of the socket could cause electric shock and fire. Replace the socket if it is loose. | |
| Use the genuine optional parts. And installation should be performed by a specialist | |
| If you install the unit by yourself, it could cause water leakage, electric shock and fire. | |
| Do not repair by yourself. And consult with the dealer about repair. | ~ |
| Improper repair may cause water leakage, electric shock or fire. | C |
| Consult the dealer or a specialist about removal of the air conditioner. | - |
| Improper installation may cause water leakage, electric shock or fire. | |
| Turn off the power source during servicing or inspection work. | |
| If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan. | |
| Shut off the power before electrical wiring work. It could cause electric shock, unit failure and improper running. | |
| ▲ CAUTION | |
| Perform earth wiring surely. Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could cause unit failure and electric shock due to a short circuit. | Ę |
| Make sure to install earth leakage breaker on power source line. (countermeasure thing to high harmonics.) Absence of breaker could cause electric shock. | |
| Use the circuit breaker of correct capacity. | |
| Using the incorrect capacity one could cause the system failure and fire. | |
| Do not use any materials other than a fuse of correct capacity where a fuse should be used. Connecting the circuit by wire or cooper wire could cause unit failure and fire. | Ć |
| Use power source line of correct capacity | _ |
| Using incorrect capacity one could cause electric leak, abnormal heat generation and fire. | |
| During the second cord and stranded cord on power source and signal side terminal block. In addition, do not mingle difference capacity solid or stranded cord. Inappropriate cord setting could cause loosing screw on terminal block, bad electrical contact, smoke and fire. | Ć |
| Do not turn off the power source immediately after stopping the operation. Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or breakdown. | 6 |
| Do not control the operation with the circuit breaker. It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury. | 6 |

① Electrical Wiring Connection

- Install an over-current and earth leakage breaker (threshold current: 30mA) specified for each unit without fail.
- Provide a dedicated branching circuit and never share a branching circuit with other equipment. If shared, disconnection at the circuit breaker may occur, which can cause secondary damage.
- Set earth of D-type.
- Connection of a cable beyond 3.5 mm² is not permitted. When cables of over 5.5 mm² are in use, provide a dedicated pull box to take a branch to an indoor unit.
- Keep "remote controller line" and "power source line" away from each other on constructing of unit outside.
- Run the lines (power source, remote controller and "between indoor and outdoor unit") upper ceiling through iron pipe or other tube protection to avoid the damage by mouse and so on.
- Do not add cord in the middle of line (of indoor power source, remote controller and signal) route on outside of unit. If connecting point is flooded, it could cause problem as for electric or communication.
 (In the case that it is necessary to set connecting point on the signal line way, perform thorough waterproof measurement.)
- Do not connect the power source line [220V/240V/380V/415V] to signal side terminal block. Otherwise, it could cause failure.
- Screw the line to terminal block without any looseness, certainly.
- Do not turn on the switch of power source, before all of line work is done.

| (1) Elec | trical Wiring Conne | ction (c | ontinued |) | | | | |
|--|--|--|---|---|--|---|--|----------------------------------|
| Electrical wring contector (contract) Electrical wring work must be performed by an electlician an qualified by a local power provider. These wiring specifications are determined on the assumption that the following instructions are observed: | | | | | | | | |
| ① Do not use cords other than copper ones. Do not use any supply line lighter than one specified in parentheses for each type below. -braided cord (code designation 68245 EC 51), if allowed in the relevant part 2; -ordinary tough rubber sheathed cord (code designation 60245 EC 53); -flat whin lines (cord (code designation 60227 EC 41); | | | | | | | | |
| -ordinary polyvinyt chloride sheathed cord (code designation 60227 IEC 53); ② Provide a separate power outlet for each outdoor or indoor unit. ③ All indoor units grouped in one system must have power source that can be turned on or off simultaneously. ④ Pay extra attention so as not to confuse signal line and power source line connection, because an error in their connection can be bum all the boards at one. | | | | | | | | |
| Conne Conne Rerr num In ac Furti Consta earti Conne In ac Furti Conne In ac Furti Conne In ac Furti Conne In ac Furti Conne In ac Furti Consta eart In ac Furti Consta eart In ac Furti Consta eart In ac Furti Consta eart In ac Furti Consta eart In ac Furti Consta eart In ac Furti Consta eart In ac Furti Consta eart Furti Consta eart eart Consta eart ea | tion of the line ("Betv love lid of control box before ber pointed on label of termina killion, pay enough attention to nermore, connect earth line to all earth leakage breaker on p leakage breaker. p function of selected earth lea use) or circuit breaker is requir broken is required breaker is required broken is required breaker is required. | veen indo connect the l block. confirm the earth position wer source kage breake ed in series | or and ou above lines number to lin n of terminal e line. In ado r is only for e with the earth | tdoor uni , and conne es, because block of pow dition, selec earth-fault pro- h leakage bro | t", Earti ct the line there is el ver source the type ptection, h taker. | n and Remoting s to terminal blo ectrical polarity e of breaker for in and switch (switch | e controlle ck according xcept earth line verter circuit a ch itself and typ | r) to as pe |
| Cabli | ng system diagran | n (Ou | tdoor/in | door uni | t conn | ection proc | edure) | |
| Power source Inc. Specification of each line power source Inc. Specificatio of each line power source Inc. Spec | | | | | | | | |
| Cir | cuit breaker | Sig | nal line (be | tween indo | outd or and o | oor units. utdoor units) | | |
| Image: number of the specification Power source line specification | | | | | | | | |
| Wiring sp | ecification | | | | | | | |
| Unit type | Earth leakage breaker | Circuit Switch breaker | Over- current protector rated | Power source line | Wire length | Wiring size | Remote controller line | Earth line |
| 22-36 45-90 112-160 | 15A 30mA 0.1sec | 30A | 15A | 2.0mm² ×2 | 304m 216m 129m | 0.75~ 1.25mm ² ×2 | 0.3mm ² x2cores | 2.0mm ² |
| In case of 71-140 | Duct connected -High sta | ic pressure | e- type | 2.0mm ² | 87m | 0.75~ | 0.3mm ² | a.a. 2 |
| 224,280 | 15A 30mA 0.1sec | 30A | 15A | ×2 | 48m | 1.25mm ² x2 | ×2cores | 2.0mm* |
| vote (1) The cord distances are calculated with a voltage drop of 2%. If the distance should exceed the above data, review the cord thickness to use in accordance with your extension cord regulations. (2) When total extension of remote controller line is more than 100m, change the size of cord according to *③ Remote Control, Wiring and functions*. | | | | | | | | |
| In cas | e of Heat recover | / 3-pipe | system | IS | | | | |
| Branchin Wher manu | g controller of heat re h this unit is used as al of a branching con | a "Heat troller (o | Pripe system Recove ption). | stems wii ry 3-pip | ing e Syst | ems", refer | to the ins | stallation |
| ② Add | ress setting | | | | | | | |
| Address In the ca remote c As for de | setting is done by (1) se of (2) "Automatic a controller after once c stails of setting procee | Manual address s omplete dure, refe | address setting", i setting. er to instr | setting o t is possi uctions a | r (2) Au ble to c ttacheo | utomatic add hange addr d to the outo | dress setting ess setting loor unit fo | ng. g by wired or details. |

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③ Remote Control, Wiring and functions

| Do not install it on the following | j places. | | | | |
|---|---|--|--|--|--|
| (1) Place exposed to direct sunlight | (4) Hot surface or cold surface enough to generate condensation | | | | |
| (2) Places near heat devices | (5) Place exposed to oil mist or steam directly. | | | | |
| (3) High humidity places | (6) Uneven surface | | | | |
| Installation and wiring of | remote controller | | | | |
| Install remote controller refer Wiring of remote controller and | ing to the attached manual. | | | | |
| (on-site configuration) | ouid use 0.5mm x2 core wires of cables. | | | | |
| ③ Maximum prolongation of rem | ote control wiring is 600 m. | | | | |
| If the prolongation is over 100m, cha | nge to the size below. | | | | |
| But, wiring in the remote controller according to wire connecting. Water contact failure. | case should be under 0.5mm ² . Change the wire size outside of the case proof treatment is necessary at the wire connecting section. Be careful about | | | | |
| 100-200m 0.5mm ² ×2 cr | ore | | | | |
| Under 300m 0.75mm ² × 2 | core | | | | |
| Linder 400m 1 0Emm ² v 0 | 0070 | | | | |

- Under 400m 1.25mm² × 2 core
- Under 500m 2.0mm² × 2 core
- ④ Avoid using multi-core cables to prevent malfunction.
- 6 Keep remote controller line away from earth (frame or any metal of building).
 6 Make sure to connect remote controller line to the remote controller and terminal block of indoor unit. (No polarity)

③ Remote Control, Wiring and functions (continued)

Control plural indoor units by a single remote controller

① A remote controller can control plural indoor units (up to 16)

- In above setting, all plural indoor units will operate under same mode and temperature setting. ② Connect all indoor units with 2 core remote controller line for group control.
- Use the function of manual address setting to set the indoor and outdoor address number. 3
- Ob not forget to set the number for the outdoor units. ④ As shown in the following figure, the remote control can be used to control multiple outdoor units.
- 5 One remote control is able to perform group control for multiple units (maximum 16 units). O Use the rotary SW1 and SW2 provided on the indoor unit PCB (Printed circuit board) to set unique remote control communication address avoiding duplication.



- ③Press the TEST button for 3 seconds or longer.
- The screen display will switch to: "☆ TEST RUN ▼ "
- (3) When the O (SET) button is pressed while " IEST RUN ▼ " is indicated, a cooling test run will start.
- The screen display will switch to " TEST RUN ".
- 2. Ending a cooling test run.
- Pressing the OON/OFF button, the O (TEMP) button or O (MODE) button will end a cooling test run. (Cooling test run will end after 30 minutes pass.)
- * 2 TEST RIN " shown on the screen will go off.

④ Trial operation (continued)

Checking operation data

- Operation data can be checked with remote control unit operation.
- 1. Press the CHECK button. The display change " OPER DATA ₹ ×
- Press the O (SET) button while "OPER DATA ▼" is displayed.
- 3. When only one indoor unit is connected to remote controller, "DATA LOADING " is displayed (blinking indication during data loading). Next, operation data of the indoor unit will be displayed. Skip to step 7.
- 4. When plural indoor units is connected, the smallest address number of indoor unit among all connected indoor unit is displayed. [Example]
- "⊕\$ SELECT I/U" (blinking 1 seconds) → "I/U000 🛓 " blinkina.
- 5. Select the indoor unit number you would like to have data displayed with the
- Determine the indoor unit number with the
 (SET) button.
 (The indoor unit number changes from blinking indication to continuous indication) "I/U000" (The address of selected indoor unit is blinking for 2 seconds.)
- "DATA LOADING" (A blinking indication appears while data loaded.)
- Next, the operation data of the indoor unit is indicated.
 Upon operation of the button, the current operation data is displayed in order from data number 01.
- The items displayed are in the following table.
- *Depending on models, the items that do not have corresponding data are not displayed. 8. To display the data of a different indoor unit, press the AIR CON NO. button, which allows you to go back to the indoor unit selection screen.
- 9. Pressing the OON/OFF button will stop displaying data. Pressing the (RESET) button during remote control unit operation will undo your last
- operation and allow you to go back to the previous screen. OIf two (2) remote controllers are connected to one (1) inside unit, only the master controller is available
- for trial operation and confirmation of operation data. (The slave remote controller is not available.)

| Number | | Data Item |
|-----------|----------------------------|--|
| 01 | * | (Operation Mode) |
| 02 | SET TEMP° | (Set Temperature) |
| 03 | RETURN AIR°c | (Return Air Temperature) |
| 04 | ⊜SENSOR°c | (Remote Controller Thermistor Temperature) |
| 05 | THI-R1° | (Indoor Unit Heat Exchanger Thermistor / U Bend) |
| 06 | THI-R2c | (Indoor Unit Heat Exchanger Thermistor /Capillary) |
| 07 | THI-R3c | (Indoor Unit Heat Exchanger Thermistor /Gas Header |
| 08 | I/U FANSPEED | (Indoor Unit Fan Speed) |
| 09 | DEMANDHz | (Frequency Requirements) |
| 10 | ANSWERHz | (Response Frequency) |
| 11 | I/UEEVP | (Pulse of Indoor Unit Expansion Valve) |
| 12 | TOTAL I/U RUNH | (Total Running Hours of The Indoor Unit) |
| 21 | OUTDOORර් | (Outdoor Air Temperature) |
| 22 | THO-R1° | (Outdoor Unit Heat Exchanger Thermistor) |
| 23 | THO-R2C | (Outdoor Unit Heat Exchanger Thermistor) |
| 24 | COMPHz | (Compressor Frequency) |
| 25 | HPMPa | (High Pressure) |
| 26 | LPMPa | (Low Pressure) |
| 27 | Tdc | (Discharge Pipe Temperature) |
| 28 | COMP BOTTOMරු | (Comp Bottom Temperature) |
| 29 | CTAMP | (Current) |
| | | |
| | | |
| 34 | 0/UFANSPEED | (Outdoor Unit Fan Speed) |
| 35 | 63H1 | (63H1 On/Off) |
| 36 | DEFROST | (Defrost Control On/Off) |
| 37 | TOTAL COMP RUNH | (Total Running Hours of The Compressor) |
| 38 | 0/U EEV 1P | (Pulse of The Outdoor Unit Expansion Valve EEVC) |
| 39 | 0/U EEV2P | (Pulse of The Outdoor Unit Expansion Valve EEVH) |
| Trail ope | eration of drain pump | |
| rain num | n operation from remote co | ntrol unit is possible. Operate a remote control unit b |
| unipulli | | nition unit lo possible. Operate a remote control unit t |

following the steps described below.

- 1. To start a forced drain pump operation.
- ①Press the TEST button for three seconds or longer.
- The display will change "% TEST RUN ▼"
- ②Press the ▼ button once and cause "DRAIN PUMP \$" to be displayed.
- ③When the (SET) button is pressed, a drain pump operation will start.
- Display: "윤이 TO STOP "
- 2. To cancel a drain pump operation.
- ()If either (SET) or (OON/OFF) button is pressed, a forced drain pump operation will stop. The air conditioning system will become OFF.

OIf two (2) remote controllers are connected to one (1) inside unit, only the master controller is available for trial operation and confirmation of operation data. (The slave remote controller is not available.)

5 Function Setting by Remote Controller

The functional setting.

- The initial function setting for typical using is performed automatically by the indoor unit connected, when remote controller and indoor unit are connected.
- As long as they are used in a typical manner, there will be no need to change the initial settings.
- If you would like to change the initial setting marked " \bigcirc ", set your desired setting as for the selected item.
- The procedure of functional setting is shown as the following diagram.

[Flow of function setting]

Start : Stop air-conditioner and press "O" (SET) and

" $\vec{\mathbb{Q}}$ " (MODE) buttons at the same time for over three seconds.

- Finalize : Press "O" (SET) button.
- Reset : Press " (RESET) button.
- Select : Press \blacksquare \heartsuit button.
- End : Press **IN/OFF** button.

It is possible to finish above setting on the way,

and unfinished change of setting is unavailable.

Record and keep the setting

Note 1: The initial setting marked X is decided by connected indoor and outdoor unit, and is automatically defined as following table.

| Function No. | Item | Default | Model | | |
|---------------------------------|-----------------|--------------|--|--|--|
| Remote controller function02 | AUTO RUN SET | AUTO RUN ON | "Auto-RUN" mode selectable indoor unit. | | |
| | | AUTO RUN OFF | Indoor unit without "Auto-RUN" mode | | |
| Remote controller function06 | SSIFAN SPEED SW | ருண VALID | Indoor unit with two or three step of air flow setting | | |
| | | டு 🗷 INVALID | Indoor unit with only one of air flow setting | | |
| Remote controller function07 | 🖾 LOUVER SW | ල 🖾 VALID | Indoor unit with automatically swing louver | | |
| | | கு INVALID | Indoor unit without automatically swing louver | | |
| Remote controller function13 | I/U FAN | HI-MID-LO | Indoor unit with three step of air flow setting | | |
| | | HI-LO | Indoor unit with two step of air flow setting | | |
| | | HI-MID | | | |
| | | 1 Fan Speed | Indoor unit with only one of air flow setting | | |
| Remote controller function15 | MODEL TYPE | Heat Pump | Heat pump unit | | |
| | | COOLING ONLY | Exclusive cooling unit | | |
| Services and the set of the set | Remote controller function ": Initial settings *": Automatic criterion | | top air-conditioner and press 2(SET) + ⊡(MODE) buttons e same time for over three seconds. |
|---|--|----------|--|
| BRINCTION * Function Prinction Setting D1 SETURE 14 SET Setting D1 SETURE 14 SET Setting D2 IATID SENSET Setting D3 IDEAL 2014 DIAL DIAL Setting D3 IDEAL 2014 DIAL Setting D3 IDEAL 2014 DIAL Setting D3 IDEAL 2014 DIAL Setting D4 IDEAL 2014 DIAL Setting D5 IDEAL 2014 DIAL Setting conducing 14.0 | | | |
| Subscription When you use at 50Hz area 01 GRIUE 74 SET TH INNUD O 02 IATIO RUNSET TH INNUD O 02 IATIO RUNSET TH INNUD O 03 IORD RHS SET HIN BUILT O 03 IORD RHS SET HIN BUILT Automatical operation is impossible 03 IORD RHS SET SCINCE VALID O 04 IORI RHS SET HIN BUILT Temperature setting button is not working 05 IORD RHS SET SCINCE VALID O 05 IORD RHS SET SCINCE VALID O 05 IORD RHS SET SCINCE VALID O 06 IORT RHS SET SCINCE VALID SCINCE VALID 07 IORT RHS SET SCINCE VALID SCINCE VALID 08 IORT RHS SET SCINCE VALID SCINCE VALID 09 IBSENSER SET SCINCE VALID SCINCE VALID 09 IBSENSER SET SCINCE VALID SCINCE VALID 09 IBSENSER SET VALID SCINCE VALID SCINCE VALID 09 IBSENSER SET VALID SCINCE VALID SCINCE VALID 09 IBSENSER SET VALID SCINCE VALID SCI | | | |
| 01 Definition Particle NUM 021 Automatical operation is impossible 021 Automatical operation is into working 041 DEVELOP 051 DEVELOP 061 | | | When you use at 50Hz area |
| Coll 2. MUD RENST When you use at 50Hz area O2 INTO RUNST When you use at 50Hz area O2 INTO RUNST When you use at 50Hz area O3 IOBID THEFSH Coll 2. MUD Coll 2. M | 01 GRILLE T↓ SET Setting ↑↓ INVALID | 0 | 1 |
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| Internet Security VALID C4 TECH FIDE SU Internet ICTICE INFORMATION Temperature setting button is not working C5 TECH VALID Temperature setting button is not working C5 TECH VALID Mode button is not working C6 TECH FAUSTION Internet VALID C6 TECH VALID Mode button is not working C6 TECH VALID Security VALID C6 TECH VALID Security VALID C7 TECH LUUVER SW Internet VALID C6 TECH VALID Security VALID C7 TECH LUUVER SW Gescurty VALID C6 TECH VALID Security VALID C6 TECH VALID Security VALID C6 TECH VALID Security VALID C7 TECH VALID Security VALID C6 TECH VALID Security VALID | 02 AUTO RUN SET | * | |
| Image: Solution Control Image: Solution Contro Image: Solution Contro | | * | Automatical operation is impossible |
| 04 IDEX < | | | Tomporature setting button is not working |
| Image: Signed Price Pric | | | l emperature setting button is not working |
| OS [QU UAVUET SW | (전문) YALIU (전문) INVALI | | Mode button is not working |
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| OB EXEMPTION EXEMPTION Remote themistor is not working. EXEMPTION Remote themistor is working, and to be set for producing +3.0 C increase in the EXEMPTION REMOTE WORKING. EXEMPTION Remote themistor is working, and to be set for producing +3.0 C increase in the EXEMPTION REST RET. EXEMPTION Remote themistor is working, and to be set for producing +3.0 C increase in the EXEMPTION REST RET. ID AUTO RESTART ID AUTO RESTART INVALID O VENT LINK In case of Single split series, by connecting ventilation device to C IN indoor printed circuit board (in case of VFF series, by connecting ventilation device to C IN indoor printed circuit board (in case of VFF series, by connecting ventilation device to C IN indoor printed circuit board (in case of Single split series, by connecting ventilation device to C IN indoor printed circuit board (in case of VFF series, by connecting ventilation device to C IN indoor printed circuit board (in case of VFF series, by connecting ventilation device to C IN indoor printed circuit board (in case of VFF series, by connecting ventilation device to C IN indoor printed circuit board (in case of VFF series, by connecting ventilation device to C IN indoor printed circuit board (in case of VFF series, | | | |
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| Image: Select of the select | 09 [므SENSOR SET] | | Timer button is not working |
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| Image: Series Processing | | • | Remote thermistor is working, and to be set for producing +3.0 C increase in temperature. |
| Image: Set of the indication in the four. 11 12 14 15 16 16 </td <td></td> <td></td> <td>Remote thermistor is working, and to be set for producing $+2.0$ C increase in temperature.</td> | | | Remote thermistor is working, and to be set for producing $+2.0$ C increase in temperature. |
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| INVERTION INVERTION NO YENT In case of Single split series, by connecting ventilation device to CN indoor printed circuit board (in case of VRF series, by connecting it indoor printed circuit board), the operation of ventilation device is operation of indoor unit. IND VENT LINK | 10 AUTO RESTART | | |
| 11 YENT LINK SET ND YENT In case of Single split series, by connecting ventilation device to CN indoor printed circuit board (in case of VRF series, by connecting it 1 indoor printed circuit board), the operation of ventilation device is operation of indoor unit. ND VENT LINK In case of Single split series, by connecting ventilation device to CN of the indo operation of indoor unit. ND VENT LINK In case of Single split series, by connecting it to CND of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board (in case of VRF series, by connecting ventilation device independent) 12 TEMP FANDE SET In Case of Single split series, by connecting it to CND of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor field second in case of VRF series, by connecting it to CND of the indoor field second in case of VRF series, by connecting it to CND of the indoor of set term will vary following the control. 13 I.// IFAN If ou change the range of set temperature, the indication of set term will not vary following the control, and keep the set temperature. 14 Second temperature, the indication of set term will not vary following the control of functions 770405110N " accordingly. You unsut change the indoor functiofs 77 | VALID | 0 | |
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| VENT LINK Indoor printed circuit board (in case of VRF series, by connecting it indoor printed circuit board), the operation of ventilation device is operation of indoor unit. IND VENT LINK In case of Single split series, by connecting ventilation device to CNT of the incorrigit to CND of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board), you can operate/stop the ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board (in case of VRF series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board (in case of VRF series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting ventilation device to CNT of the indoor printed circuit board from the set remperature. 11 INDIVIDUAL If you input signal into CNT of the indoor printed circuit board from the input indoor unit will be operated independently according to the input if you unit to CNT of the indoor printed circuit board from texternal, al connect to the same remote controller are operated according to the input into CNT of the indoor printed circuit board from texternal, al connect to the same remote controller are operated according to the input if you input into CNT of the indoor printed circuit board from text | | | In case of Single split series, by connecting ventilation device to CNT of the |
| Implementation operation of indoor unit. In case of Single spit series, by connecting ventilation device to CNT of the indoor print board), you can operate /stop the ventilation device independently/by II.2 TEMP RANGE SET INDN CHANGE If you change the range of set temperature, the indication of set ter will vary following the control. If you change the range of set temperature, the indication of set ter will not vary following the control, and keep the set temperature. II.TUTFAN HI-MID-U0 HI-MID Airflow of fan becomes the three speckaal *action Airflow of fan becomes the two speckaal *action If you change the range of set terms speckaal *action Airflow of fan becomes the two speckaal *action Airflow of fan becomes the two speckaal *action Airflow of fan is fixed at one speed. II.4 #AIRE FIDE II.5 MOEL TYPE HEAT PUIP K IG EXTERNED CONTROL SET If you input signal into CNT of the indoor printed circuit board from indoor unit will be operated independently according to the input if you input signal into CNT of the indoor printed circuit board from encent to the same remote controller are operated according to the input if you input signal into CNT of the indoor printed circuit board from encent to the same remote controller are operated according to the input if you input input into CNT of the indoor printed circuit board from encent to the same remote controller are operated according to the input if you input input into CNT of the indoor printed circuit board from encent to the same remote controller are operated according to the input if you input input into CNT of the indoor printe | VENT LINK | | indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board), the operation of ventilation device is linked with the |
| NO VENT LINK In Case of Sign Series, by connecting it to CND of the indoor print board (in case of Sign Series, by connecting it to CND of the indoor print board), you can operate /stop the ventilation device independently by 12 TEMP RANGE SET In DN CHANGE If you change the range of set temperature, the indication of set ter will vary following the control. 13 I.VU FAN If you change the range of set temperature, the indication of set ter will vary following the control. 13 I.VU FAN If you change the range of set temperature, the indication of set ter will not vary following the control. 14 III-ID X 14 IFAN SPEED X 15 INDEL TYPE If you change the remote controller function of the indoor printed circuit board from external, al connect to the indoor printed circuit board from external, al connect to the indoor printed circuit board from external, al connect to the same remote controller are operated according to the input input signal into CNT of the indoor printed circuit board from external, al connect to the same remote controller are operated according to the input input into CNT of the indoor printed circuit board from external, al connect to the same remote controller are operated according to the input input into CNT of the indoor printed circuit board from external, al connect to the same remote controller are operated according to the input input input into CNT of the indoor printed circuit board from external, al connect to the same remote controller are operated according to the input inpu | | | operation of indoor unit. |
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| 14 | 1 FAN SPEED | * | Airflow of fan is fixed at one speed. |
| Image: space spac | 14 字, POSITION | | lf you change the remote controller function "POSITION", |
| IST RECENTED IST Concentration of the index of the | | 10 | Jyou must change the indoor functio萨明伊和SILIUM " accordingly. IYou can select the louver stop position in the four |
| IS FULLE IYIFE HEAT FUMP IG EXTERNAL CONTROL SET If you input signal into CNT of the indoor printed circuit board from indoor unit will be operated independently according to the input information in the indoor printed circuit board from external, all connect to the same remote controller are operated according to the input input to the same remote controller are operated according to the input connect to the same remote controller are operated according to the input input to the same remote controller are operated according to the input connect to the same remote controller are operated according to the input connect to the same remote controller are operated according to the input connect to the same remote controller are operated according to the input connect to the same remote controller are operated according to the input connect to the same remote controller are operated according to the input connect to the same remote controller are operated according to the input connect to the same remote controller are operated according to the input connect to the same remote controller are operated according to the input connect to the same remote controller are operated according to the input connect controller are operated according to the input connect controller according to the input connect control connect controller according to the input connect control connect connect control connect connect connect control connect connec | FREE STOP | | The louver can stop at any position. |
| 16 EXTERNAL CONTROL SET 16 EXTERNAL CONTROL SET INDIVIDUAL If you input signal into CNT of the indoor printed circuit board from indoor unit will be operated independently according to the input signal into CNT of the indoor printed circuit board from external, all fyou input into CNT of the indoor printed circuit board from external, all connect to the same remote controller are operated according to the input signal into CNT of the indoor printed circuit board from external, all connect to the same remote controller are operated according to the input signal into CNT of the indoor printed circuit board from external, all connect to the same remote controller are operated according to the input signal into CNT of the indoor printed circuit board from external, all connect to the same remote controller are operated according to the input signal into CNT of the indoor printed circuit board from external, all connect to the same remote controller are operated according to the input signal into CNT of the indoor printed circuit board from external, all connect to the same remote controller are operated according to the input signal into CNT of the indoor printed circuit board from external, all connect to the same remote controller are operated according to the input signal into CNT of the indoor printed circuit board from external into CNT of the indoor printed circuit board from external into CNT of the indoor printed circuit board from external into CNT of the indoor printed circuit board from external into CNT of the indoor printed circuit board from external into CNT of the indoor printed circuit board from external into CNT of the indoor printed circuit board from external into CNT of the indoor printed circuit board from external into CNT of the indoor printed circuit board from external into CNT of the indoor printed circuit board from external into CNT of the indo | 15 I MUUEL IYPE Heat Pump | * | 4 |
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| 17 ROUNTERP INDICATION SET INDICATION OFF | | | indoor unit will be operated independently according to the input from external |
| 17 ROCH TEMP INDICATION SET | | I | connect to the same remote controller are operated according to the input from external |
| | 17 ROOM TEMP INDICATION SET | 10 | - · · |
| INDICATION ON In normal working indication, indoor unit temperature is indicated in | INDICATION ON | | In normal working indication, indoor unit temperature is indicated instead of airflo |
| 18 **©INDICATION (Only the master remote controller can be indicated.) | 18 XGINDICATION | | (Only the master remote controller can be indicated.) |
| | | 0 | |
| India. A SET | | 1 | Heating preparation indication should not be indicated. |
| Temperature indication is by degree C | 19 07 Faci b | 0 | Temperature indication is by degree C |

5 Function Setting by Remote Controller (continued) (ii) Indoor unit function Stop air-conditioner and press (SET) + (MODE) buttons " ()": Initial settings at the same time for over three seconds. "* ": Automatic criterion FUNCTION SET 🔻 Indoor unit No. are indicated only when Note1: Fan setting of "HIGH SPEED" **I/UFUNCTION** ▲ plural indoor units are connected. Indoor unit air flow setting Fan tap Function setting I/J000 A 02 FAN SPEED SET FAN STANDARD HI-MID-LO HI-LO HI- MID STANDARD I/0001 \$ * SPEED HIGH SPEED HIGH SPEED I/U002 🕏 Ж SET HIGH UHI- HI- MID UHI- MID UHI- HI I/0003‡ SPEED1, 03 |FILTER SIGN SET 1/JO04 \$ Initial function setting of some indoor unit is "HIGH SPEED". INDICATION OFF Type 1 Type 2 The filter sign is indicated after running for 180 hours. 0 The filter sign is indicated after running for 600 hours. To set other indoor unit, press TYPE 3 Type 4 The filter sign is indicated after running for 1000 hours AIRCON NO. button, which The filter sign is indicated after running for 1000 hours, then the indoor unit will be stopped by compulsion after 24 hours. allows you to go back to the indoor unit selection screen 04 국규 POSITION If you change the indoor function 704 POSI TION you must change the remote controller function of the four the fou (for example: I/U 00). " accordingly. 4POSITION STOP FREE STOP 0 The louver can stop at any position. 05 EXTERNAL INPUT LEVEL INPUT PULSE INPUT 0 06 OF BATTON PERFOSSION/PROHED TION INWALID 0 YALID Permission/prohibition control of operation will be valid. 07 BHERGENCY STOP <u>invalid</u> Valid \cap With the VRF series, it is used to stop all indoor units connected with the same outdoor unit imm When stop signal is inputed from remote on-off terminal "CNT-6", all indoor units are stopped in OFFSET +3.0% OFFSET +2.0% To be reset for producing +3.0 C increase in temperature during heating. To be reset for producing +2.0 C increase in temperature during heating. 08 🕸 SP OFFSET OFFSET +1.0c To be reset for producing +1.0 C increase in temperature during heating NO OFFSET OFFSET +2.0t To be reset producing +2.0 C increase in return air temperature of indoor unit. OFFSET +1.5% OFFSET +1.0% To be reset producing +1.5 C increase in return air temperature of indoor unit. 09 RETURN AIR TEMP To be reset producing +1.0 C increase in return air temperature of indoor unit. NO OFFSET С OFFSET -1.0°c To be reset producing -1.0 C increase in return air temperature of indoor unit. To be reset producing -1.5 C increase in return air temperature of indoor unit. 0FFSET - 1.5% OFFSET -2.0°c To be reset producing -2.0 C increase in return air temperature of indoor unit. 10 🕸 FAN CONTROL LOW FAN SPEED When heating thermostat is OFF, fan speed is low speed. \cap When heating thermostat is OFF, fan speed is set speed. SET FAN SPEED When heating thermostat is OFF, fan speed is operated intermittently. INTERMITTENCE Fan Off When heating thermostat is OFF, the fan is stopped When the remote thermistor is working, "FAN OFF" is set automatically Do not set "FAN OFF" when the indoor unit's thermistor is working. 11 FROST PREVENTION TEMP Change of indoor heat exchanger temperature to start frost prevention control. <u>temp high</u> Temp low 12 FROST PREVENTION CONTROL Working only with the Single split series. FAN CONTROL ON Fan Control OFF 0 To control frost prevention, the indoor fan tap is raised. 13 DRAIN PUMPLINK Drain pump is run during cooling and dry. Drain pump is run during cooling, dry and heating. \bigcirc \$0 AND >> © AND≫AND © AND © AND © Drain pump is run during cooling, dry, heating and fan. Drain pump is run during cooling, dry and fan. 14 SPAN REMAINING NO REMAINING After cooling is stopped or cooling thermostat is OFF, the fan does not perform extra operation. 0.5 HOUR After cooling is stopped or cooling thermostat is OFF, the fan perform extra operation for half ar After cooling is stopped or cooling thermostat is OFF, the fan perform extra operation for half ar 1 HOUR 6 HOUR After cooling is stopped or cooling thermostat is OFF, the fan perform extra operation for six hou 15 🕸 FAN REMAINING NO REMAINING After heating is stopped or heating thermostat is OFF, the fan does not perform extra operation. 0 After heating is stopped or heating thermostat is OFF, the fan perform extra operation for half ar After heating is stopped or heating thermostat is OFF, the fan perform extra operation for two ho 0.5 HOUR 2 HOUR 6 HOUF After heating is stopped or heating thermostat is OFF, the fan perform extra operation for six ho 16 🕸 FAN INTERNITTENCE NO REMAINING During heating is stopped or heating thermostat is OFF, the fan perform intermittent operation 20minOFF sminON minutes with low fan speed after twenty minutes' OFF. During heating is stopped or heating thermostat is OFF, the fan perform intermittent operation sminOFF sminON minutes with low fan speed after five minutes' OFF. ON/OFF button (finished)

| 6 Cor | ntrol mode | switching | | |
|-------|----------------|--|--|--|
| ●Th | ne control con | tent of indoor units can be switched in following way. (is the default setting) | | |
| Г | Switch No. | control content | | |
| | SW1 | Indoor unit address (tens place) | | |
| | SW2 | Indoor unit address (ones place) | | |
| | SW3 | Outdoor unit address (tens place) | | |
| | SW4 | Outdoor unit address (ones place) | | |
| | SW5-1 | ON Fixed previous version of Super Link protocol | | |
| | | OFF Automatic adjustment of Super Link protocol | | |
| | SW5-2 | Indoor unit address (hundreds place) | | |
| | SW6-1~4 | Model capacity setting | | |
| | SW7-1 | ON Operation check, Drain motor test run | | |
| | | OFF Normal operation | | |
| | | | | |



5.3 Installation manual for wired remote controller (Option parts)



PJA012D728A

| Connect termina Connect with the (X and Y Wiring r depend) The wiring the shear the period Pulling | t the remote controlle block. t the terminal of remo- terminal of indoor ur Y are no polarity) oute is as shown in t ing on the pulling out ing inside the remote eath should be peeler eling-off length of eac 1 out from upper left | er cord to the ote controller (X,Y) nit (X,Y). he right diagram direction. controller case sh d off inside the rem ch wire is as below Pulling out from un | Low n case of pu uppould be winote control | Pper Sheath Upper case or Wiring Ulling out from er left thin 0.3mm ² (recco oller case. | Upper S Board Source Lower In case of pulling upper cei | heath Upper case Wiring g out from nter 0.5mm ² . |
|--|--|--|---|---|--|---|
| | wiring : 215mm wiring : 195mm | X wiring : 170 Y wiring : 190 | Omm Omm | | ne peeling-off length of sheath | |
| Install the screet In case | ne upper case as bef ws. of exposing cord, fix | ore so as not to ca the cord on the wa | atch up the all with cor | remote controller d clamp so as not | cord, and tigh to slack. | ten with |
| Installation U Wiring C Maximu If the pr But, wir of the c connect 100 - 20 Under C Under C Under C | Installation and wiring of remote controller ① Wiring of remote controller should use 0.3mm ² × 2 core wires or cables. (on-site configuration) ② Maximum prolongation of remote controller wiring is 600 m. If the prolongation is over 100m, change to the size below. But, wiring in the remote controller case should be under 0.5mm ² . Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section. Be careful about contact failure. 100 - 200m | | | | | ation) outside |
| Master/ slav | e setting when mor | e than one remot | e controll | ers are used | | |
| A maximum | of two remote contro | llers can be conne | cted to on | e indoor unit (or o | ne group of inc | loor units.) |
| Inc | door units | Switch SW1 | Setting M S | Contents Master remote co Slave remote co | s ontroller ntroller | |
| Remote SW1 " | Remote c Controller Master' SW1 'Slav | ontroller cord (no polarity) | SV | Master ↓ Slave V1 | Board Lower | |
| Set SW1 to Note: The se control The ai maste | "Slave" for the sla tting "Remote contro ler in the position wh r conditioner operatic r/ slave setting of it. | ve remote contro iller thermistor ena iere you want to ch in follows the last o | bller. It wa bled" is on neck room operation o | Is factory set to Iy selectable with temperature. If the remote cont | "Master" for s the master rer roller regardles | shipment. note ss of the |
| The indication when power source is supplied When power source is turned on, the following is displayed on the remote controller until the communication between the remote controller and indoor unit settled. Master remote controller : "@WAIT@ M" Slave remote controller : "@WAIT@ S" | | | | | | |
| At the same This is the so | time, a mark or a nur oftware's administrati <u>了上 </u> | nber will be displat on number of the r * The left mark is or example. Other m | yed for two remote cor nly an arks may | o seconds first. Itroller, not an erro | or cord. | |
| When remote appear. Check wiring | e controller cannot co | appear. communicate with th nd the outdoor unit | ne indoor u etc. | nit for half an hou | r, the below in | dication will |
| INSPE | CT 1/U | | | | | |

The range of temperature setting





5.4 Installation of outdoor unit

MITSUBISHI HEAVY INDUSTRIES, LTD. MULTI AIR CONDITIONER OUTDOOR UNIT FOR BUILDINGS

KX SERIES INSTALLATION MANUAL

PCB012D015C **Outdoor unit capacity**

©This installation manual deals with outdoor units and general installation specifications only. For indoor units, please refer to the respective installation manuals supplied with your

units. Please read this manual carefully before you set to installation work and carry it out according to the instructions contained in this manual.

Precautions for safety

| result in a : The meanii | serious consequence depending on the circumstances. Please observe all these instructions, because they in ings of "Marks" used here are as shown on the right: Never do it under any circumstances . | clude in D P | nportant points concerning safety. Always do it according to the instruction. |
|--|--|--|--|
| When you I care of the This unit co For outdoo For outdoo | have completed installation work, perform a test run and make sure that the installation is working properly. a ir-conditioner according to the user's manual. Please ask the customer to keep this installation manual toge omplies with EN61000-3-3. or unit, EN61000-3-12 is not applicable as consent by the utility company or notification to the utility company or unit, EN61000-3-12 is not applicable as consent by the utility company or notification to the utility company or unit, EN61000-3-12 is not applicable as consent by the utility company or notification to the utility company | Then, ex ether wit s given l is giver | plain the customer how to operate and how to t th the user's manual. before usage. (Only 224, 280) i before usage. (Only 335) |
| | | \frown | |
| Carry ou Imprope Ask you Improper Always: A failure When a build-up If refrige Install the Imprope Warap th An imprope Warap th An imprope Warap th An imprope Electric accordir A defect Advest Subject Imprope In stall f you ru, heat ger In sin that If you ru, Neatty a heat ger In install If you ru, Neatty a A failure Output f In stall f you ru, Neatty a Neatty | Ut installation work properly according to this installation manual. It installation work can result in a water leak, an electric shock, a fire, or injury from a fall of the unit. It dealer or a specialized service provider to install the unit. It is installed in owork can result in a water leak, an electric shock, a fire or injury from a fall of the unit. It is installed in owork can result in a meletric shock. In indoor unit is installed in a small room, it is necessary to take some safety precaution to keep refrigerant gas from pup beyond the upper limit, please consult with the dealer. Erant leaks and its concentration builds up beyond the upper limit, it can cause a lack-of-oxygen accident. He unit secure you no a structure that is strong enough to sustain its weight. Erant leaks and its concentration builds up beyond the upper limit, it can cause a lack-of-oxygen accident. He unit secure you no a structure that is strong enough to sustain its weight. Erant leaks and its concentration builds up beyond the upper limit, it can cause a lack-of-oxygen accident. He unit security onto a structure that is strong enough to sustain its weight. Erant leaks and its concentration builds up beyond the upper limit, it can cause a lack-of-oxygen accident. He unit work can cause a drop or fall of the unit and resultant death or major injury. It is tablation work can cause a fall of the unit and resultant death or major injury. Y parts supplied with the unit and approved supply parts for installation work. It caeser on specialized service provider to install them. It reaker or a specialized service provider to install them. It reaker or a specialized service provider to install them. It reaker or a specialized service provider to install them. It reaker or a specialized service provider to install them. It reaker and specialized service provider to install them. It nower supply circuits such as insufficient capacity or improper installation can cause an electrical shock or fire. It is specialized so | • | Secure a service space for inspection and maintenant specified in the manual. An insufficient service space can result in a fall from installation point and resultant injury. When the outdoor unit is installed on a roof top or elevated position, provide permanent ladders handralls along the access path and fences or hand sale shang the access path and fences or hand installation work properly according to installation manual. Improper installation work properly according to installation manual. When refrigerant pipe installation is completed, c. When refrigerant gas leak in a small room and exit the upper limit concentration, it can cause abnormal vibration increased noise generation. When refrigerant gas leak in a small room and exit the upper limit concentration, it can caus tack-of-oxygen accident. Press the refrigerant piping with a heat insult material to prevent condensation. Improper heat insulation given to refrigerant pipin condensation prevention can result in leaking or drip water soaking household effects. Install an earth leakage breaker: A failure to install an earth leakage breaker can caus a freo electric shock. Instruct that the unit is properly grounded. Do connect the grounding wire to a gas pipe, a water a lightning rod, the grounding wire to a gas pipe, a water a lightning rod, the grounding wire to a gas pipe. Never connect the grounding wire to a gas pipe a water a lightning rod, the grounding wire to a gas pipe. A water a lightning rod, the grounding wire to a gas pipe. Never connect the grounding wire to a gas pipe a water a lightning rod, the grounding wire to a gas pipe. A water a lightning rod, the grounding wire to a gas pipe. Never connect the grounding wire to a gas pipe because leactic shocks or fire when any trouble or earth leak cause. Never connect the grounding wire to a gas pipe. A water a lightning rod, the grounding wire to a gas pipe. A water a lightning rod, the gr |
| Init use such as Tighten refrigerer which c; In carryi If you d air rinto to If refriger When in Merginger When in If refriger In install In install In install In install In install In install | The refrigeration cycle rupture or injury. a flare nut to a specified torque with two torque wrenches used together as a set. Over-tightening a flare nut can cause a and tgas leak from flare nut breakage after years of operation. If a flare gets loose or breaks off, refrigerant gas will leak, an cause a lack-of-oxygen accident. If a flare gets loose or breaks off, refrigerant gas will leak, and cause a lack-of-oxygen accident. If a flare gets loose or breaks off, refrigerant gas will leak, and cause a lack-of-oxygen accident. If a flare gets loose or breaks off, refrigerant gas will leak, and cause a lack-of-oxygen accident. If a flare gets loose or breaks off, refrigerant gas will leak, and cause a lack-of-oxygen accident. If a flare gets loose or breaks off, refrigerant gas will leak, and cause a lack-of-oxygen accident. If a flare gets loose or breaks off, refrigerant gas leaks thering installation work, ventilate the room. The compressor, which can result in pipe rupture or injury. erant gas leaks during installation work, ventilate the room. The cause indo contact with bare fire, can cause the generation of a toxic gas. Istallation work is completed, check the system for refrigerant gas leaks. erant gas leaks indoors and comes into contact with bare fire such as of a fan heater, stove or cooking stove, it can cause eration of a toxic gas. Use the operation valves (both for gas and fluid) till the refrigerant piping work, air tightness test and air purge are ted. cause frostbite or injury due to sudden leakage of refrigerant. The toring erant to a toxic gas flowing back into the room. This can also cause the corrosion of the indoor unit and a resultant ure or refrigerant leak. If a ir or other foreign matters gets into the refrigerant cycle, an abnormal pressure build-up will occur, are suft in our purgers in purger. | 0 | nous, animas or pains, precision devices of object art. the could deteriorate the quality of stored items. Oo not install the outdoor unit in a place where sanimals are likely to inhabit. If they enter the unit and touch electrical parts in they may cause a unit failure, smoke generatio ignition. Please ask the customer to keep surroundings clean. Do not handle the package by holding a packing bar Oo not handle the package by holding a packing bar hands. Do not install the unit in a place with a risinflammable gas leaks or where an inflamm material exists. It can cause a fire where an inflammas flows flows or unit or stagnates or where c fibers are suspended in the air. Do not possible the outdoor unit where its fan w directly hit an animal or plant. Fan winds can a daversely to the plant etc. Do not operate the outdoor unit with any article plon it, or you may incur property damage or permingur from a tall of the article. |

Notabilia as a unit designed for R410A

 Notabilita as a unit designed for H41UA

 • Do not use any refrigerant other than R410A. R410A will rise to pressure about 1.6 times higher than that of a conventional refrigerant.

 • A unit designed for R410A has adopted a different size outdoor unit service valve charge port and a different size check joint provided in the unit to prevent the charging of a wrong refrigerant by mistake. The processed dimension of the flared part of a refrigerant pipe and a flare nut's parallel side measurement have also been altered to raise strength against pressure. Accordingly, you are required to arrange dedicated R410A tools listed in the table on the right before installing or servicing this unit.

 • Do not use a charge cylinder. The use of a charge cylinder will cause the refrigerant composition to change, which results in performance degradation.

 • In charging refrigerant, always take it out from a cylinder in the liquid phase.

 • All indoor units must be models designed exclusively for R410A. Please check connectable indoor unit models in a catalog, etc. (A wrong indoor unit, if connected into the system, will impair proper system operation)

 a) Gauge manifold b) Charge hose
 c) Electronic scale for refrigerant charging
 d) Torque wrench
 e) Flare tool f) Protrusion control copper pipe gauge
 g) Vacuum pump adapter

h) Gas leak detecto

Caution

If superlink I (previous superlink) is selected, all the range of usage and limitations, not only the limitations of connectable indoor capacity and connectable number of indoor unit but also of the piping length, operating temperature range and etc., become same as those of KX4 (See technical manual '07 · KX · KXR-T-114). In addition to above limitations, all of new functions for KX6 such as automatic address setting function for multiple refrigerant systems and etc. will be cancelled

1. BEFORE BEGINNING INSTALLATION (Check that the models, power supply specifications, piping, wiring are correct.)

Caution

- Be sure to read this manual before installation to follow the proper installation methods.
- •When installing the indoor unit, read the installation manual of indoor unit.
- Optional distribution parts are required for the piping (Branch pipe set, header set). For details, refer to the catalog, etc.
- Make sure to install the earth leakage breaker. (Select a product compatible with high frequency.)
- •There is risk of damaging the compressor if the unit is operated while the discharge pipe thermistor, suction pipe thermistor, pressure sensor, etc. are removed. Never attempt to operation in such condition.

Accessorv

| Nai | me | Quantity | Location of use | |
|------------------|------|----------|--|---|
| Wire | B | 2 | Insert this in CNG on the outdoor unit PCB when using the silencing mode or forced cooling mode | Secured in the control box with adhesive tape. |
| Edging | | 1 | Use it for protection of a knock-out hole. | It is attached to the bracket with an adhesive tape in the proximity of the service valve. |
| Attached wire | | 1 | Use this when connecting gas pipe. | Attached on the base below the operation valve. |
| Instruction mar | nual | 1 | When the installation work is completed, give instructions to the customer and ask him/her to keep it. | Attached on the base below the operation valve. |

Combination pattern

• Combination pattern of outdoor units, number of indoor units connected and capacity of connection are as show in the table at right.

It can be used in combination with the following indoor unit.

| Indoor unit | Remote controller | Connection OK/NO |
|-------------|-------------------|------------------|
| FDOAAKXE6 | RC-E3(2 cores) | OK |
| FDOAAAKXE4 | RC-E1R(3 cores) | OK |

| Outdoor unit | | | Indoor unit |
|--------------|---------------------|----------------------------------|---|
| Capacity | Combination pattern | Number of units connected (unit) | Range of total capacity of connected indoor units |
| 224 | Single | 1~15 | 112~336 |
| 280 | Single | 1~19 | 140~420 |
| 335 | Single | 1~22 | 167~502 |

[Items sold separately]

Refrigerant pipe distribution parts, which are not contained in the package, will be required for installation.

As for refrigerant pipe distribution parts, we offer branching pipe sets (Model type: DIS) and header sets (Model type: HEAD) as parts used on the indoor side of piping. Please select one suiting your application. In selecting distribution parts, please also refer to "4. REFRIGERANT PIPING." Where the state of outdoor air temperature below 0°C may continue for more than 12 hours, it is necessary to install the drain pan heater (optional item). If you are not sure which parts to select, please consult with your dealer or the manufacturer.

If you are not sure which parts to select, please consult with your dealer or the manufacture.

Use refrigerant branching pipe sets and header sets designed exclusively for R410A without fail.

2. INSTALLATION LOCATION (Obtain approval from the customer when selecting the installation area.)

2-1. Selecting the installation location

O Where any object does not prevent inlet or outlet air. O Out of the heat range of other heat sources

O Where strong winds will not blow against the outlet air.

- O Where air is not trapped. \odot Where the installation fittings can be firmly installed.
- O A place where stringent regulation of electric noises is applicable.
- Where it is safe for the drain water to be discharged.
 Where noise and hot air will not bother neighboring residents.
- O Where snow will not accumulate.
- \odot A place where no TV set or radio receiver is placed within 5m. (If electrical interference is caused, seek a place less likely to cause the problem)

Please note

- a) If there is a possibility of a short-circuit, then install a flex flow adapter.
- b) When installing multiple units, provide sufficient intake space so that a short-circuit does not occur.
- c) In areas where there is snowfall, install the unit in a frame or under a snow hood to prevent snow from accumulating on it. (Inhibition of collective drain discharge in a snowy country)
- d) Do not install the equipment in areas where there is a danger for potential explosive atmosphere.
- b) Install the equipment in a location that can sufficiently support the weight of the equipment.
 f) If a unit is installed into a special environment as shown below, there will be a danger that the corrosion of the outdoor unit or its malfunctioning is caused. If this is the case, please consult with the distributor from whom you have purchased the unit.
 - Where corrosive gas is generated (such as a hot-spring resort area). Where the unit is subject to sea breezes (coastal area).
 - · Where the unit is subject to oil mists.
 - · Where equipment generating electromagnetic waves exists in the vicinity.
- g) When strong winds occur
 - Where it is likely that the unit is subjected to strong winds, provide wind guards according to the following guidelines.
 - Strong winds can cause performance degradation, an accidental stop due to a rise of high pressure and a broken fan.

· Place the unit outlet pipe perpendicular

to the wind direction. When installing units side by side, install the flex flow adaptor. (This is not required if a distance of 1,500 mm may be secured between the blowing outlet and the wall.)



· Please install so the direction of the air from the blowing outlet will be perpendicular to the direction of the wind.



· When the foundation is not level, use wires to tie down the unit.



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Please leave sufficient clearance around the unit without fail.

Otherwise, a risk of compressor and/or electric component failure may arise.

2-2. Installation space (Ex. servicing space)

a) Minimum installation space

- (Please select an installation point with due attention to the direction of installation of the refrigerant pipe) (If the installation conditions shown in this drawing are not satisfied, please consult with your dealer or the manufacturer.)
- b) When units are installed side by side, leave a 10 mm or wider service space between the units.
 c) Don't install at a place where it will be surrounded with walls in four directions.
- Even when it is not surrounded with walls in four directions and it is met the installation conditions as shown by this figure, if there is risk of short-circuit, install the flex flow adaptor to prevent the short-circuit.
- d) There must be a 1-meter or larger space in the above.
- e) A barrier wall placed in front of the exhaust diffuser must not be higher than the unit.

3. Unit delivery and installation

▲ Caution Attach the ropes on the unit and carry it in avoiding displacement of gravity center. Improper slinging may cause the unit to lose balance and fall.

3-1. Delivery

•Deliver the unit in the packing to the specified installation place.

•To hoist the unit, attach a pair of textile ropes with cushion materials attached to protect it. Request

Put cushion materials between the unit and the ropes to avoid damages.

3-2. Cautions for installation

- Make sure to lock the fixing legs of outdoor unit with 4 pieces of anchor bolt (M10). Best margin of protrusion for bolt above the floor is 20 mm.
- When installing the unit, make sure to lock its legs with the following bolts.





Wooden base

(Unit : mm) _ Sample Ш Ш Size | 1 1500(500 Open Open ∟2 300 5 Open ∟3 300 300 300 | 4 5 5 5 Figure in () shows the value applicable

when the flex flow adaptor is installed.



Wear plate

- The protrusion of an anchor bolt on the front side must be kept within 15 mm.
- Securely install the unit so that it does not fall over during earthquakes or strong winds, etc.
 Refer to the above illustrations for information regarding
- Refer to the above illustrations for information regarding concrete foundations.
- Install the unit in a level area. (With a gradient of 5 mm or less.)
- Improper installation can result in a compressor failure, broken piping within the unit and abnormal noise generation.

In case that the unit operates in cooling mode, when the outdoor temperature is -5°C or lower, please equip a flex flow adapter and a snow guard hood (option) on the unit.

... 130 m or less

.. 90 m or less

50 m or less

... 18 m or less

4. REFRIGERANT PIPING

4-1. Determination of piping specifications (Please select from the following matrix according to indoor unit specifications and installation site conditions)

(1) Limitation on use of pipes

than 185 m)

Length of main pipe.

When arranging pipes, observe the restrictions on use concerning the longest distance of (1), total piping length, allowable pipe length from initial branching and allowable difference of height (difference between heads).
 Avoid any trap () or bump () in piping as they can cause fluid stagnation.
 Maximum length (To the furthest indoor unit) ... Actual length Less than 160 m (Actual length less

Difference in pipe lengths between indoor units, however, is 40 m or less.

(b) When an outdoor unit is positioned at a lower place 40 m or less

(d) Difference of heights between initial branching and indoor unit ... 18 m or less

(a) When an indoor unit is positioned at a higher place

Allowable pipe length from initial branching

(c) Difference of heights between indoor units in a system

Allowable difference in height (Difference of heads)

CAUTION

Make sure to install within the range of limitation. Otherwise, resulting malfunction of compressor may not be warranted. Observe always the limitation of use during installation.

(2) Selection of pipe material

Use pipes with the inside clean and free from any harmful sulfur, oxides, dirt, chips & oil, or moisture
 (contamination).
 Height difference

Use following refrigerant pipes.

- Material ... Phosphate deoxidation treated seamless pipe (C1220T-O, 1/2H, JIS H3300) C1220T-1/2H for O.D. Ø19.05 or more, or C1220T-O for Ø15.8 or less •Wall thickness and size - Select according to the guide for pipe size selection
- (This product uses R410A. Since, in case of pipes in the size of ø19.05 or more, materials of -O lacks sufficient capacity to withstand pressure, make sure to use pipes of 1/2H material and thickness larger than the minimum thickness.)
- When a pipe is branched, make sure to use our branching set or header set.
- When setting branching pipes, take care of the mounting direction and consult carefully with the instruction manual.
- Regarding the handling of operation valve, refer to 4-3 (1) Operating method of operation valve.

(3) Pipe size selection

(a) Main pipe (Between branch at outdoor unit side - initial branch at indoor unit side): Section A in Fig. 1 When the maximum length (to the furthest indoor unit from outdoor unit) is 90 m or more (actual length), change the size of main pipe as shown by the following table.

| Outdoor unit | Main pipe si | ze (Ordinary) | Pipe size for actual length longer than 90 m | | |
|--------------|--------------------|---------------|--|-------------|--|
| | Gas pipe | Liquid pipe | Gas pipe | Liquid pipe | |
| 224 | ø19.5×t1.0 | a0 52,410 9 | ø22.22×t1.0 | | |
| 280 | ø22.22×t1.0 | 09.32×10.6 | a 25 / (a 29 59) ut 0 | ø12.7×t0.80 | |
| 335 | ø25.4(ø28.58)×t1.0 | ø12.7×t0.8 | 025.4(026.56)×11.0 | | |
| | | | | | |

Make sure to use the attached pipes in the length as shown at left.

For ø19.05 or larger, use C1220T-1/2H material.

(b) Between initial branch at indoor unit side- indoor unit side: Section B in Fig. 1

Select from following table based on the total capacity of indoor units connected at the downstream side. However, it should never exceed the size of main pipe (Section A in Fig. 1).

| Total capacity of indoor units | Gas pipe | Liquid pipe |
|--------------------------------|----------------|-------------|
| Less than 70 | ø12.7 ×t1.0 | a 9 52×t0 8 |
| 70 - 180 | ø15.88×t1.0 | 0.02×10.0 |
| 180 - 371 | ø19.05×t1.0 *1 | Ø12.7×t0.8 |
| 371 - 540 | ø19.05×t1.0 | ø15.88×t1.0 |

For ø19.05 or larger, use C1220T-1/2H material.

*1: When connecting indoor units of 280 at the downstream and the main gas pipe is of ø22.22 or larger, use the pipe of ø22.22x t1

(c) Between branching at indoor unit side - indoor unit side: Section C in Fig. 1

According to the table of pipe size for indoor unit. However, it should never exceed the size of main pipe (Section A in Fig. 1).

| Capacity | | Gas pipe | Liquid pipe |
|-------------|---------------------------|-------------|-------------|
| | 22,28 | ø 9.52×t0.8 | 06 25×+0 9 |
| Indoor unit | 36, 45, 56 | ø 12.7×t0.8 | 90.33×10.8 |
| | 71, 80, 90, 112, 140, 160 | ø15.88×t1.0 | |
| | 224 | ø19.05×t1.0 | ø9.52×t0.8 |
| | 280 | ø22.22×t1.0 | |

For ø19.05 or larger, use C1220T-1/2H material.

depending on he number of units connected.

branch is provided at the downstream side.

(4) Selection of the branch set for indoor unit side

(a) Selection of the branch pipe set

- Size of branch pipe varies depending on the capacity of connected indoor units (total capacity at downstream). Select it from the table at right.
- Request
- Adjust the indoor unit and the size of branch pipe at the indoor unit side according to the size of pipe connected to indoor unit.
- Install the branch joint (both of gas and fluid) so that it will become "Horizontal branching" or "Vertical branching".

Request

Floor surface

(b) Selection of the header set

Connect a plugged pipe (field provided) at the branch point (indoor unit connecting side)

• Adjust the header and indoor unit pipes to the size of pipes for connected indoor units. Install the header at the gas side to be "Horizontal branching" and, at the fluid side, that the

Ο

Branch pipe set

DIS-22-1

DIS-180-1

DIS-371-1

Hoor surface

| Total capacity at downstream | Header set model | Number of branches |
|------------------------------|------------------|--------------------|
| Less than 180 | HEAD4-22-1 | Max. 4 branches |
| 180 - 371 | HEAD6-180-1 | Max. 6 branches |
| 371 - 540 | HEAD8-371-1 | Max. 6 branches |

Header is not allowed to receive indoor units of 224 or 280.

Gas side

For the size of plugged pipe, refer to the header set (optional item).

| otal capacity at downstream | Header set mod |
|-----------------------------|----------------|
| Less than 180 | HEAD4-22-1 |
| 180 - 371 | HEAD6-180-1 |
| 371 - 540 | HEAD8-371-1 |

I

surface

L

- Floor surface

Total capacity at downstream

Less than 180

180 - 371

371 - 540

4-2. Piping work

(1) Pipe connecting position and pipe outgoing direction

- First remove the five screws (X mark) of the service panel and push it down into the direction of the arrow mark and then remove it by pulling it toward you.
- The pipe can be laid in any of the following directions: side right, front, rear and downward.
- Remove a knock-out plate provided on the pipe penetration to open a minimum necessary area and attach an edging material supplied as an accessory by cutting it to an appropriate length before laying a pipe
- . In laying pipes on the installation site, cut off the casing's half blank that covers a hole for pipe penetration with nippers.
- If there is a risk of small animals entering from the pipe penetration part, close the part with some sealing material or the like (to be arranged on the installer's part).
- In the case of an installation using a collective drain system, use a port other than the bottom one to take out cables and pipes. If the bottom port is used, seal it thoroughly so that drain water may not spill out.
- Use an elbow (to be arranged on the user's part) to connect control valves to the piping.
 In anchoring piping on the installation site, give 1.5m or a longer distance between an outdoor unit and an anchoring point where the piping is secured as illustrated below. (A failure to observe this instruction may result in a pipe fracture depending on a method of isolating vibrations employed.)

CAUTION

outdoor unit.

If you tighten it without using double spanners, you may deform the

service valve, which can cause an inflow of nitrogen gas into the

(2) Field piping work

Important

- Please take care so that installed pipes may not touch components within a unit.
- During the pipe installation at site, keep the service valves shut all the time.
- Give sufficient protections (compressed and brazed or by an adhesive tape) to pipe ends so that any water or foreign matters may not enter the pipes.
- In bending a pipe, bend it to the largest possible radius (at least four times the pipe diameter). Do not bend a pipe repeatedly to correct its form.
- An outdoor unit's pipe and refrigerant piping are to be flare connected. Flare a pipe after engaging a flare nut onto it. A flare size for R410A is different from that for conventional R407C. Although we recommend the use of flaring tools developed specifically for R410A, conventional flaring tools can also be used by adjusting the measurement of protrusion B with a protrusion control gauge.
- Be sure to use the accessory pipe for connection to the gas operation valve. For details, refer to the installation manual of the accessory pipe.
- Tighten a flare joint securely with two spanners. Observe flare nut tightening torque specified in the table below.

For operation valves both at the fluid and gas sides, fix the valve body and tighten to adequate torque as shown at right.

| Operation valve size (mm) | Tightening torque (N•m) | Tightening angle (°) | Recommended length of tool handle (mm) |
|------------------------------|----------------------------|-------------------------|---|
| Ø6.35 (1/4") | 14~18 | 45~60 | 150 |
| Ø9.52 (3/8") | 34~42 | 30~45 | 200 |
| Ø12.7 (1/2") | 49~61 | 30~45 | 250 |
| Ø15.88(5/8") | 68~82 | 15~20 | 300 |
| Ø19.05 (3/4") | 100~120 | 15~20 | 450 |

• Do not apply any oil on a flare joint.

- Blazing must be performed under a nitrogen gas flow. Without nitrogen gas, a large quantity of foreign matters (oxidized film) are created, causing a critical failure from capillary tube or expansion valve clogging.
- . Brazing of the service valve and the pipes should be performed while cooling the valve body with a wet towel.
- Perform flushing. To flush the piping, charge nitrogen gas at about 0.02MPa with a pipe end closed with a hand. When pressure inside builds up to a sufficient level, remove the hand to flush. (in flushing a pipe, close the other end of the pipe with a plug).

Operation procedure

- 1 During the pipe installation at site, keep the service valves shut all the time.
- 2 Blazing must be performed under a nitrogen gas flow. Without nitrogen gas, a large quantity of foreign matters (oxidized film) are created, causing a critical failure from capillary tube or expansion valve clogging.

Plug the end of the pipe with tape, or other

③ Give sufficient protections (compressed and brazed or with an adhesive tape) so that water or foreign matters may not enter the piping.

0.02MPa

4 Perform flushing. To flush the piping, charge nitrogen gas at about 0.02MPa with a pipe end closed with a hand. When pressure inside builds up to a sufficient level, remove the hand to flush. (in flushing a pipe, close the other end of the pipe with a plug).

4-3. Air tightness test and air purge

(1) Air tightness test

- ① Although an outdoor unit itself has been tested for air tightness at the factory, please check the connected pipes and indoor units for air tightness from the check joint of the service valve on the outdoor unit side. While conducting a test, keep the service valve shut all the time.
- (2) Since refrigerant piping is pressurized to the design pressure of a unit with nitrogen gas for testing air tightness, please connect instruments according the drawing below. Under no circumstances should chlorine-based refrigerant, oxygen or any other combustible gas be used to pressurize a system

Keep the service valve shut all the time. Do not open it under any circumstances. Be sure to pressurize all of the liquid, gas pipes.

- ③ In pressurizing the piping, do not apply the specified level of pressure all at once, but gradually raise pressure.
- a) Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes or more to see if the pressure drops.
- b) Then raise the pressure to 1.5 MPa, and stop. Leave it for five more minutes to see if the pressure drops.
- c) Then raise the pressure to the specified level (4.15 MPa), and record the ambient temperature and the pressure.
- d) If no pressure drop is observed with an installation pressurized to the specified level and left for about one day, it is acceptable. When the ambient temperature

►Pin type

- e) If a pressure drop is observed in checking e) and a) d), a leak exists somewhere. Find a leak by applying bubble test liquid to welded parts and flare joints and repair
- (4) Always pull air from the pipes after the airtightness test.

Allen wrench type

· Open the valve stem till it hits the stopper. No need to apply . irce more than that

· After the adjustment, replace the blind nut as it was

Standard torgue at sections on operation valve

Station valve

Nitrogen

qas

| Operation valve size (mm) | Shaft tightening torque (N•m) | Cap tightening torque (N•m) | Check joint blind nut tightening torque (N • m) |
|------------------------------|----------------------------------|--------------------------------|---|
| Ø9.52 (3/8") | 6~8 | 20~30 | 10~12 |
| Ø12.7 (1/2") | 14~16 | 25~35 | 10~12 |
| Ø19.05 (3/4") | 3 | 25~35 | 12~14 |

Securely tighten the cap and the blind nut after the adjustment.

Avoid applying any excessive force when operating the shaft or when tightening the cap or blind nut. Otherwise, it could cause malfunction or leakage from the shaft, cap or blind nut.

Remove the cap and adjust as shown below

After the adjustment, replace the cap as it

CAUTION

Relief valve

Applying excessive pressure can cause an

inflow of nitrogen gas into an outdoor unit.

changes 1°C, the pressure also changes approximately 0.01 MPa. The pressure, if changed, should be compensated for

it. After repair, conduct an air-tightness test again.

-190 -

(2) Air purae

Perform the air purge from both the operation check joints at fluid side and gas side.

When the needle pointer of vacuum gauge has crept up, it means that there is moisture in or leakage from the system. Identify and repair the leaking position and then perform the air purge again

This product uses R410A. Take care of the following points.

O To avoid contamination with different type of oil, use separate tools depending on the type of refrigerant. It is prohibited especially to use the gauge manifold and the charge hose for different types of refrigerant (R22, R407C).

O Use a reverse flow prevention adaptor to prevent the contamination of refrigerant system with vacuum pump oil.

4-4. Additional charge of refrigerant

Refrigerant must be in the state of fluid when charging.

Make sure to use a measuring device when charging the refrigerant.

- When it cannot charge whole required quantity because the outdoor unit is stopped, operate the unit in the test run mode and charge. (See Section 8 for the method of test run.) Operating the unit for a long period of time with insufficient quantity of refrigerant could cause malfunction on the compressor. (When charging while operating the unit, especially, complete the charge within 30 minutes.)
- This unit contains 11.5 kg of refrigerant.

Calculate necessary quantity of additional charge with the following formula, and record the quantity of additionally charged refrigerant on the refrigerant quantity list provided on the back of service panel.

• Charge the additional refrigerant depending on the size and length of fluid pipe. Determine the quantity of additional charge by rounding the second place after decimal point, which means in the unit of 0.1 kg

Additional charge quantity (kg) = 2.5+ (L3×0.17) + (L4×0.11) + (L5×0.054) + (L6×0.022)

Standard additional refrigerant quantity | Charge quantity for the refrigerant piping

| otanida a additional romgorant quan |
|--|
| Make sure to charge this quantity in addition |
| to the charge quantity for the remigerant piping |

L3: Tot al length of ø15.88 pipes (m), L4: Total length of ø12.7 pipes (m) L5: Total length of ø0.952 pipes (m), L6: Total length of ø6.35 pipes (m)

- This product uses R410A. Take care of the following points.
- To avoid contamination with different type of oil, use separate tools depending on the type of refrigerant. It is prohibited especially to use the gauge manifold and the charge hose for different types of refrigerant (R22, R407C).
- Type of refrigerant is indicated with the color painted on the container (Yellow for R140A). Sufficient care must be taken to use correct refrigerant only Never use a charge cylinder. Otherwise, the composition of refrigerant may change when introducing R410A into the cylinder.
- Make sure to charge the refrigerant in the state of fluid.

Request

Record the refrigerant quantity calculated based on the piping length in the refrigerant quantity list provided on the back of service panel.

CAUTION Make sure to enter the data. The data is required at maintenance or service.

ø12.7

0.11

ø9.52

0.054

ø6.35

0.022

Remark

Exterior tape

Gas piping

Refrigerant pipe size | ø15.88 |

0.17

Additional charge quantity(kg/m)

by

Liquid pi

Band (aci

mmA

4-5. Heat insulation and moisture condensation proof

- (1) Dress refrigerant pipes (both gas and liquid pipes) for heat insulation and prevention of dew condensation.
- Improper heat insulation/anti-dew dressing can result in a water leak or dripping causing damage to household effects, etc. (2) Use a heat insulating material that can withstand 120° C or a higher temperature. Poor heat insulating capacity can cause Wires for connect and outdoor units heat insulation problems or cable deterioration.
- All gas pipes must be securely heat insulated in order to prevent damage from dripping water that comes from the condensation formed on them during a cooling operation or personal injury from burns because their surface can reach quite a high temperature due to discharged gas flowing inside during a heating operation.
- Wrap indoor units' flare joints with heat insulating parts (pipe cover) for heat insulation (both gas and liquid pipes). • Give heat insulation to both gas and liquid side pipes. Bundle a heat insulating material and a pipe tightly together so that
- no gaps may be left between them and wrap them together with a connecting cable by a dressing tape.
- Although it is verified in a test that this air conditioning unit shows satisfactory performance under JIS condensation test conditions, both gas and liquid pipes need to be dressed with 20mm, or over, heat insulation materials additionally above the ceiling where relative humidity exceeds 70%.

5. Drainage

- Where water drained from the outdoor unit may freeze, connect the drain pipe using optional drain elbow and drain grommet.
- Outdoor unit has 4 drain outlets on the bottom.
- . When guiding drain water to a scupper, etc, install the parts on a flat stand (optional item), blocks, or other.
- · Connect the drain elbow as shown by the figure. Seal remaining holes with grommets.
- When draining water collectively, use holes for wires and pipes opened other than on the bottom. When this is
 impracticable, sufficiently seal the drain pipe to prevent water leakage.

6. Electric wiring

Electrical installation work must be performed by an electrical installation service provider gualified by a power provider of the country.

- Electrical installation work must be executed according to the technical standards and other regulations applicable to electrical installations in the country.
- Please install an earth leakage breaker without fail. The installation of an earth leakage breaker is compulsory in order to prevent electric shocks or fire accidents.

(Since this unit employs inverter control, please use an impulse withstanding type to prevent an earth leakage breaker's false actuation.)

Please note

- a) Use only copper wires.
- bio on tuse any supply cord lighter than one specified in parentheses for each type below.
 braided cord (code designation 60245 IEC 51), if allowed in the relevant part 2;
- ordinary tough rubber sheathed cord (code designation 60245 IEC 53);
- flat twin tinsel cord (code designation 60227 IEC 41)
 ordinary polyvinyl chloride sheathed cord (code designation 60227 IEC 53).
- Please do not use anything lighter than polychloroprene sheathed flexible cord (cord designation 60245 IEC57) for supply cords of parts of appliances for outdoor use.
- b) Use separate power supplies for the indoor and outdoor units.
 c) The power supplies for indoor units in the same system should turn on and off simultaneously.
- d) Ground the unit. Do not connect the grounding wire to a gas pipe, water pipe, lightning rod or telephone grounding wire. A grounding wire must be connected before connecting the power cable. Provide a grounding wire longer than the power cable.
- If improperly grounded, an electric shock or malfunction may result.
- e) The installation of an impulse with standing type earth leakage breaker is necessary. A failure to install an earth leakage breaker can result in an accident such as an electric shock or a fire. Do not turn on the power until the electrical work is completed. Be sure to turn off the power when servicing.
- f) Please do not use a condensive capacitor for power factor improvement under any circumstances. (It does not improve power factor, while it can cause an abnormal overheat accident)
- g) For power supply cables. use conduits.
- h) Please do not lay electronic control cables (remote control and signaling lines) and other high current cables together outside the unit. Laying them together can result in malfunctioning or a failure of the unit due to electric nois
- i) Power cables and signaling lines must always be connected to the terminal block and secured by cable fastening clamps provided in the unit.
- j) Fasten cables so that they may not touch the piping, etc.
- (k) When cables are connected, please make sure that all electrical components within the electrical component box are not free or not loose on the terminal connection and then attach the cover securely. (Improper cover attachment can result in malfunctioning or a failure of the unit, if water penetrates into the box.)

6-1. Wiring system drawing

(1) Method of leading out cables

As shown on the drawing in Section 4-2, cables can be laid through the front, right, left or bottom casing

 In wiring on the installation site, cut off a half-blank covering a penetration of the casing with nippers.
 In the case of an installation using a collective drain system, use a port other than the bottom one to take out cables and pipes. If the bottom port is used, seal it thoroughly so that drain water may not spill out

(2) Notabilia in connecting power cables

• Connect the ground wire before you connect the power cable. When you connect a grounding wire to a terminal block, use a grounding wire longer than the power cable so that it may not be subject to tension. Do not turn on power until installation work is completed. Turn off power to the unit before you service the unit.

- Bensure that the unit is properly grounded.
 Always connect power cables to the power terminal block.
 To connect a cable to the power terminal block, use a round crimp contact terminal. If two cables are to be connected to one terminal, arrange cables in such a manner that you put their crimp contact terminals together back to back. Further, put the thinner cable above the thicker one in arranging cables for such connection. • Use specified wires in wiring, and fasten them securely in such a manner that the terminal blocks are not subject to external
- force.
- In fastening a screw of a terminal block, use a correct-size driver.
- Fastening a screw of a terminal block with excessive force can break the screw.
- When electrical installation work is completed, make sure that all electrical components within the electrical component box are free of loose connector coupling or terminal connection

(3) Outdoor unit power supply specification: 380/415V 3N~ 50Hz 380V 3N~ 60Hz

| | | Cable size for | Wire length | Moulded-case | e circuit breaker (A) | | Ear | th wire |
|--------------------|----------------------------------|---------------------------------|-------------|---------------|-----------------------|--------------------------------|-------------------------|------------|
| Model | Power source | power source (mm ²) | (m) | Rated current | Switch capacity | Earth leakage breaker | Size (mm ²) | Screw type |
| 224KXE6 280KXE6 | Three-phase | 5.5 | 28 | 30 | 30 | 30A, 30mA less than 0.1 sec | 2 | M5 |
| 335KXE6 | 380/415V 50Hz 5KXE6 380V 60Hz | 8 | 36 | 30 | 30 | 30A, 30mA less than 0.1 sec | 2 | M5 |

Please note a) The method of laying cables has been determined pursuant to the Japanese indoor wiring regulations (JEAC8001).

- b) Wire length in the regulations in effect in each country)
 b) Wire length in the table above is the value for when the indoor unit is connect to the power cable in series also the wire size and minimum length when the power drop is less than 2% are shown. If the current exceeds the value in the table above, change the wire size according to the indoor wiring regulations. (Please adapt it to the regulations in effect in each country) c) For details, please refer to the installation manual supplied with the indoor unit.

(4) Indoor unit power source (Outdoor unit is another power source.) & signal line Request

| Combined total capacity | Cable size for | Wire lageth(m) | Moulded-case c | ircuit breaker (A) | Farth lookana hroakar | Signal line (mm ²) | |
|-------------------------|--------------------------------|----------------|----------------|--------------------|--------------------------|--------------------------------|---------------|
| of indoor units | power source(mm ²) | wire length(m) | Rated current | Switch capacity | Lai li i icanaye uicanci | outdoor-indoor | indoor-indoor |
| less than 7A | 2 | 21 | 20 | | 20A, 30mA | | |
| less than 11A | 3.5 | 21 | 20 | 20 | less than 0.1 sec | 2 | 0.75 💥 |
| less than 12A | 5.5 | 33 | 20 | 30 | 30A, 30mA | | 0.75 % |
| less than 16A | 5.5 | 24 | 30 | | less than 0.1 sec | | |

* Please use a shielded cable.

Round crimp Wire contact termina

If the earth leakage breaker is exclusively for ground fault protection, then you will

need to install a circuit breaker for wiring

CAUTION

work

- (a) Table at left shows the standard specification. Use the power supply of single phase 220/240V.
 (b) Distance in the table shows the value obtained when indoor units are connected in series. The table shows the wire size and the distance provided voltage drop is within 2% for each total current of indoor unit. Where the current exceeds the values in the table, change the wire size according to the extension wiring regulations.
- (c) Wires connected to indoor units are allowed up to 5.5 mm2. For 8 mm2 or more, use a dedicated pull box and branch to indoor units with 5.5 mm2 or less. (d) Values in the table don't include electric heaters. When any electric heater is assembled, both the power supply
- specification and the wiring specification become different.
- (e) ③ terminal on the terminal block is specified to connect only an optional auxiliary heater (power supply for heater).

6-3. How to connect signal cables

The communication protocol can be choosen from following two types. One of them is the conventional Superlink (hereinafter previous SL) and the other is the new Superlink II (hereinafter new SL). These two communication protocols have the following advantages and restrictions, so please choose a desirable one meeting your installation conditions such as connected indoor units and centralized controller. When signal cables are connected into a network involving outdoor units, indoor units or centralized control equipment that do not support new SL, please select communications in the previous SL mode, even if the refrigerant system is separated from theirs.

| Communication protocol | Conventional communication protocol (previous SL) | New communication protocol (new SL) |
|--|--|---|
| Outdoor unit setting (SW5-5) | ON | OFF (Factory default) |
| No. of connectable indoor units | Max. 48 | Max. 128 |
| No. of connectable outdoor unitsin a network | Max. 48 | Max. 32 |
| No. of connectable outdoor units | Up to 1000m | Up to 2,000 m for wires other than shielding wire Up to 1,500 m for 0.75 mm ² shielding wire (MVVS) Up to 1,000 m for 1.25 mm ² shielding wire (MVVS) |
| Signal cable (furthest length) | Up to 1000m | Up to 1000m |
| Connectable units to a network | Units not supporting new SL (FDOACKXE4 series) Units supporting new SL (FDOCKXE6 series) Can be used together. | Units supporting new SL (FD) |

Note: For FDT224 and 280 models, calculate the number of units taking 1 indoor unit as 2 units for the sake of communication.

Signal cables are for DC 5 V. Never connect wires for 220/240 V or 380/415 V. Protective fuse on the PCB will trip.

 ${
m D}$ Confirm that signal cables are prevented from applying 220/240 V or 380/415 V

Ø Before turning the power on, check the resistance on the signal cable terminal block. If it is less than 100Ω, power supply cables may be connected to the signal cable terminal block

Standard resistance value = 46,000/(Number of FD $\Delta\Delta\Delta KXE4$ Series units connected \times 5) + (Number of FD $\Delta\Delta KXE6$ Series units connected x 9). If the resistance value is less than 100 Ω , disconnect the signal cables temporarily to divide to more than one network, to reduce the number of indoor units on the same network, and check each network

Indoor and outdoor units signal cables

- Connect the signal line between indoor unit and outdoor unit to A1 and B1.
- · Connect the signal line between outdoor units to A2 and B2.
- Please use a shielded cable for a signal line and connect a shielding earth at all the indoor units and outdoor units.

OIndoor and outdoor signal lines do not have a polarity. Any of the connections in the following illustration can be made.

(1) The signal lines can also be connected using the method shown below.

Power cable and signal cable connection

Outdoor unit Outdoor unit Outdoor unit

🕂 Important

(2) When plural outdoor units are used

OLoop wiring prohibited.

Wiring clamp

- · Fix the cables not to exert external force to the terminal connection.
- Give adequate slack to cables in fastening them.
 Fix power cables separately from signal cables.
- Outgoing cable direction
- As like the refrigerant pipe, it can be let out in any of 4 directions of right-hand side, front, rear and bottom.

Wire size

0.5 m m²

0.75 m m²

1.25 m m²

Wiring label

• The wiring label is attached on the back of the service panel.

Request

Lenath (m)

Within 100 - 200

Within - 300

Within - 400

- When connecting to the power supply terminal block, use the crimp terminals for M5 as shown at right.
- When connecting to the signal terminal block, use
- the crimp terminals for M3.5 as shown at right.

| 12.5 mm or less | $\bigcirc \square$ |
|-----------------|--------------------|
| 7 mm or less | $\bigcirc \square$ |

Remote controller wiring specifications

- For the remote controller the standard wire is 0.3 mm². The max. length is up to 600 m. When the wire is more than 100 m long, use the wire shown in the table.
- Use 3-core wires for FD◯A△△KXE4 or 2-core wires for FD◯△△KXE6.

7. CONTROLLER SETTINGS

7-1. Unit address setting

This control system controls the controllers of more than one air conditioner's outdoor unit, indoor unit and remote control unit through communication control, using the microcomputers built in the respective controllers. Address setting needs to be done for both outdoor and indoor units. Turn on power in the order of the outdoor units and then the indoor units.

Use 1 minute as the rule of thumb for an interval between them.

The communication protocol can be chosen from following two types. One of them is the conventional communication protocol (previous SL) and the other is the new communication protocol (new SL). These two communication protocols have their own features and restrictions as shown by Table 6-3. Select them according the indoor units and the centralized control to be connected. When signal cables are connected into a network involving outdoor units, indoor units or centralized control equipment that do not support new SL, please select communications in the previous SL mode, even if the refrigerant system is separated from theirs.

When communication is established after setting addresses, check the communication protocol with the 7 segment display panel of the outdoor unit.

Address setting methods

The following address setting methods can be used. The procedure for automatic address setting is different from the conventional one.

| | Please use the automatic address setting function after reading this manual carefully. | | | | | | | | |
|--|--|--|-----------------|----|----|-------------|--------|--|--|
| | Communication protocol | | | | | previous SL | | | |
| | Address setting method A | | | | | Automatic | Manual | | |
| When plural refrigerant systems are linked with signal lines (e.g., to implement centralized control) | Case 1 | 1 When signal lines linking plural refrigerant systems are provided between outdoor units. (When the network connector is disconnected, refrigerant systems are separated each other) | | ОК | × | ОК | | | |
| | Case 2 | When signal lines linking plural refrigerant systems are provided between indoor units. | × ^{₩2} | ОК | × | ОК | | | |
| | When only one refrigerant system is involved (signal lines do not link plural refrigerant systems) | | | | 0K | ОК | ОК | | |

%1 Do not connect the signal line between outdoor units to A1 and B1. This may interrupt proper address setting. (Case 3)

Do not connect the signal line between indoor unit and outdoor unit to A2 and B2. This may interrupt proper address setting. (Case 4) %2 In Case 2, automatic address setting is not available. Set addresses manually.

Address No. setting

Set SW1 through 4 and SW5-2 provided on the PCB and SW1 & 2 provided on the outdoor unit PCB as shown in the drawings below.

| | SW1, 2 (blue) | For setting indoor No. (The ten's and one's) |
|-------------|----------------|---|
| Indoor PCB | SW3, 4 (green) | For setting outdoor No. (The ten's and one's) |
| | SW5-2 | Indoor No. switch (The hundred's Place) [OFF : 0, ON : 1] |
| Outdoor PCB | SW1, 2 (green) | For setting outdoor No. (The ten's and one's) |
| | | |

0

Î

G

ω

By inserting a flat driver (precision screw driver) into this groove and turn the arrow to point a desired number

•Summary of address setting methods (figures in [] should be used with previous SL)

| | Units supporting new SL | | | Units NOT supporting new SL | | | |
|--|-------------------------|--------------------|------------------------------|-----------------------------|------------------------------|--------------------|--|
| | Indoor unit ad | dress setting | Outdoor unit address setting | Indoor unit ad | Outdoor unit address setting | | |
| | Indoor No. switch | Outdoor No. switch | Outdoor No. switch | Indoor No. switch | Outdoor No. switch | Outdoor No. switch | |
| Manual address setting (previous SL/new SL) | 000~127[47] | 00~31[47] | 00~31[47] | 00~47 | 00~47 | 00~47 | |
| Automatic address setting for single refrigerant system installation (previous SL/new SL) | 000 | 49 | 49 | 49 | 49 | 49 | |
| Automatic address setting for multiple refrigerant systems installation (with new SL only) | 000 | 49 | 00~31 | × | × | × | |

Do not set numbers other than those shown in the table, or an error may be generated.

Note: When units supporting new SL are added to a network using previous SL such as one involving FD_AAAKE4 series units, choose previous SL for the communication protocol and set addresses manually. Since the models FDT224 and 280 have 2 PCBs per unit, set different indoor unit No. and SW on each PCB.

• An outdoor unit No., which is used to identify which outdoor unit and indoor units are connected in a refrigerant system, is set on outdoor unit PCB and indoor unit PCB. Give the same outdoor unit No. to all outdoor unit and indoor units connected in same refrigerant system.

An indoor unit No. is used to identify individual indoor units. Assign a unique number that is not assigned to any other indoor units on the network.

Unless stated otherwise, the following procedures apply, when new SL is chosen for the communication protocol. When previous SL is chosen, use figures shown in [] in carrying out these procedures

Manual address setting Generally applicable to new SL/previous SL, use figures in [] with previous SL.

- ① Outdoor unit address setting
- Set as follows before you turn on power. Upon turning on power, the outdoor unit address is registered. Set the Outdoor Unit No. switch to a number 00 - 31 [in the case of previous SL: 00 - 47]. Set a unique number by avoiding the numbers assigned to other outdoor units on the network
- (2) Indoor unit address setting
 - Set as follows before you turn on power. Upon turning on power, the indoor unit address is registered.
 - Set the Indoor Unit No. switch to a number 000 127 [in the case of previous SL: 00 47].
 - Set the Outdoor Unit No. switch to the outdoor unit No. of the associated outdoor unit within the range of 00 31 [in the case of previous SL: 00 47]. Set a unique number by avoiding the numbers assigned to other indoor units on the network.
- ③ Turn on power in order from the outdoor unit to indoor units. Give a one-minute or longer interval for them When there are some units not supporting new SL connected in the network, set SW5-5 to ON to choose the previous SL communication mode. In the case of previous SL, the maximum number of indoor units connectable in a network is 48.

Automatic address setting Generally applicable to new SL/previous SL, use figures in [] with previous SL.

With new SL. you can set indoor unit addresses automatically even for an installation involving multiple refrigerant systems connected with same network, in addition to the conventional automatic address setting of a single refrigerant system installation.

However, an installation must satisfy some additional requirements such as for wiring methods, so please read this manual carefully before you carry out automatic address setting.

(1) In the case of a single refrigerant system installation (Generally applicable to new SL/previous SL, use figures in [] with previous SL.)

- ① Outdoor unit address setting
- Set as follows before you turn on power.
- Make sure that the Outdoor Unit No. switch is set to 49 (factory setting)
- 2 Indoor unit address setting
 - Set as follows before you turn on power
 - Make sure that the Indoor Unit No. switch is set to 000 [in the case of previous SL: 49] (factory setting)
- Make sure that the Outdoor Unit No. switch is set to 49 (factory setting).
 (3) Turn on power in order from the outdoor unit to indoor units. Give a one-minute or longer interval for them. Unlike the procedure set out in (2) below, you need not change settings from the 7 segment display panel.
- ④ Make sure that the number of indoor units indicated on the 7 segment display panel agrees with the number of the indoor units that are actually connected to the refrigerant system.

(2) In the case of a multiple refrigerant systems installation (Applicable to new SL only. In the case of previous SL, set addresses with some other method.)

(This option is available when the interconnection wiring among refrigerant systems is on the outdoor side and new SL is chosen as the communication protocol.)

Address setting procedure (perform these steps for each outdoor unit)

[STEP1] (Items set before turning on power)

① Outdoor unit address setting

Set as follows before you turn on power.

- Set the Outdoor Unit No. switch to a number 00 31. Set a unique number by avoiding the numbers assigned to other outdoor units on the network.
- Indoor unit address setting
- Set as follows before you turn on power.
- Make sure that the Indoor Unit No. switch is set to 000 (factory setting)
- Make sure that the Outdoor Unit No. switch is set to 49 (factory setting)
- ③ Isolate the present refrigerant system from the network.

Disengage the network connectors (white 2P) of the outdoor units. (Turning on power without isolating each refrigerant system will result in erroneous address setting.)

[STEP2] (Power on and automatic address setting)

(4) Turn on power to the outdoor unit

- Turn on power in order from the outdoor unit to indoor units. Give a one-minute or longer interval for them.
- (5) Select and enter "1" in P31 on the 7 segment display panel of each outdoor unit to input "Automatic address start."
- (6) Input a starting address and the number of connected indoor units.
- Input a starting address in P32 on the 7 segment display panel of each outdoor unit.
- Twhen a starting address is entered, the display indication will switch back to the "Number of Connected Indoor Units Input" screen.
- Input the number of connected indoor units from the 7 segment display panel of each outdoor unit. Please input the number of connected indoor units for each outdoor unit. (You can input it from P33 on the 7 segment display panel.)When the number of connected indoor units is entered, the 7 segment display panel indication will switch to "AUX" and start flickering.

[STEP3] (Automatic address setting completion check)

(8) Indoor unit address determination

- When the indoor unit addresses are all set, the 7 segment display panel indication will switch to "AUE" and start flickering.
- If an error is detected in this process, the display will show "A \bigcirc
- Check the 7 segment display panel of each outdoor unit.
- Depending on the number of connected indoor units, it may take about 10 minutes before the indoor unit addresses are all set.

[STEP4] (Network definition setting)

9 Network connection

- When you have confirmed an "AUE" indication on the display of each outdoor unit, engage the network connectors again.
- 10 Network polarity setting
- After you have made sure that the network connectors are engaged in (8), select and enter "1" in P34 on the 7 segment display panel of any outdoor unit (on only 1 unit) to specify network polarity
- 1 Network setting completion check

When the network is defined, "End" will appear on the 7 segment display panel. An "End" indication will go off, when some operation is made from the 7 segment display panel or 3 minutes after.

| | STEP1 | STEP2 | STEP3 | STEP4 |
|---------------------------------------|--|---|---|---|
| Indoor unit power source | @0FF | (4)ON | - | _ |
| Outdoor unit power source | ①0FF | (4)ON | - | _ |
| Indoor unit (indoor/outdoor No.SW) | ②indoor000/outdoor 49 (factory setting) | _ | _ | _ |
| Outdoor unit (outdoor No.SW) | ①01,02(Ex) | _ | - | _ |
| Network connectors | ③Disconnect(each outdoor unit) | _ | _ | |
| Start automatic address setting | | (5) Select "Automatic Address Start" on each outdoor unit. | | |
| Set starting address | | ⑥outdoor 01:[01](Ex) outdoor 02:[04](Ex) | - | - |
| Set the number of indoor unit | | <pre>⑦outdoor 01:[03](Ex) outdoor 02:[03](Ex)</pre> | - | _ |
| Polarity setting | | _ | _ | 10 Set in P34 on the 7 segment display panel of any outdoor unit. |
| 7 segment display | | ⑦ [AUX] (Blink) | 8 "AUE"(blink), or "AOO" in error events. | 1) [End] |

• Within a refrigerant system, indoor units are assigned addresses in the order they are recognized by the outdoor unit. Therefore, they are not necessarily assigned addresses in order from the nearest to the outdoor unit first as depicted in drawings above.

· Make sure that power has been turned on to all indoor units.

• When addresses are set, you can have the registered indoor unit address No.'s and the outdoor unit address No. displayed on the remote control unit by pressing its Inspection switch.

Automatic address setting can be used for an installation in which prulal indoor units are controlled from one remote control unit.

Once they are registered, addresses are stored in microcomputers, even if power is turned off.

• If you want to change an address after automatic address setting, you can change it from the remote control unit with its "Address Change" function or by means of manual setting. Set a unique address by avoiding the address assigned to other indoor unit on the network when the address is changed.

Do not turn on power to centralized control equipment until automatic address setting is completed.

• When addresses are set, be sure to perform a test run and ensure that you can operate all indoor and outdoor units normally. Also check the addresses assigned to the indoor units.

Address change (available only with new SL)

"Address Change" is used, when you want to change an indoor unit address assigned with the "Automatic Address Setting" function from a remote control unit. Accordingly, the conditions that permit an address change from a remote control unit are as follows.

| | Indoor unit add | ress setting | Outdoor unit address setting | |
|---|-----------------|---------------|------------------------------|--|
| | Indoor No.SW | Outdoor No.SW | Outdoor No.SW | |
| Automatic address setting forsingle refrigerant system installation | 000 | 49 | 49 | |
| Automatic address setting for multiple refrigerant systems installation | 000 | 49 | 00~31 | |

If "CHANGE ADD. \checkmark " is selected with some addresses falling outside these conditions, the following indication will appear for 3 seconds on the remote controller "INVALID OPER".

Operating procedure

(1) When single indoor unit is connected to the remote controller.

| | Item | Operation | Display |
|---|--|--|---|
| 1 | Address change mode | ① Press the AIR CON No. switch for 3 seconds or longer. | [CHANGE ADD.▼] |
| | | $\textcircled{2}$ Each time when you press the \clubsuit switch, the display indication will be switched. | [CHANGE ADD.▼] ⇔[MASTER I/U▲] |
| | | ③ Press the Set switch when the display shows "CHANGE ADD. ▼" and then start the address change mode, changing the display indication to the "Indoor Unit No. Setting" screen from the currently assigned address. | [//U 001 0/U 01] (1sec) →[♦ SET I/U ADD.] (1sec) →[I/U 001 ♦] (Blink) |
| 2 | To set a new indoor unit No. | ④ Set a new indoor unit No. with the | [//∪ 000▲] ⇔[//∪ 001 ♠] ⇔[//∪ 002 ♠] ⇔ · · · · ⇔[//∪ 127▼] |
| | | ⑤ After selecting an address, press the Set switch, and then the indoor unit address No. is defined. | [I/U 002] (2sec) |
| 3 | To set a new outdoor unit No. | (6) After showing the defined indoor address No. for 2 seconds, the display will change to the "Outdoor Address No. Setting" screen. The currently assigned address is shown as a default value. | [//U 002] (2sec Lighting) →[♦SET 0/U ADD.] (1sec) →[0/U 01 ♦] (Blink) |
| | ⑦Set a new outdoor unit No. with the ♦ switch. A number indicated on the display will increase or decrease by 1 upon pressing the ▲ or ▼ switch respectively. | | $ \begin{array}{c} [0/U\ 00 \blacktriangle] \\ \Leftrightarrow [0/U\ 01 \blacklozenge] \\ \Leftrightarrow [0/U\ 02 \diamondsuit] \\ \Leftrightarrow & \cdot & \cdot \\ \Leftrightarrow [0/U\ 31 \blacktriangledown] \end{array} $ |
| | | | [//U 002 0/U 02] (2sec Lighting) →[SET COMPLETE] (2sec Lighting) →Returns to normal condition. |

(2) When plural indoor units are connected to the remote controller. When plural indoor units are connected, you can change their addresses without altering their cable connection.

| | ltem | Operation | Display |
|---|--|--|---|
| 1 | Address change mode | ① Press the AIR CON Unit No. switch for 3 seconds or longer. | [CHANGE ADD▼] |
| | | (2) Each time when you press the \blacklozenge switch, the display indication will be switched. | [CHANGE ADD▼] ⇔[MASTER I/U▲] |
| | | ③ Press the Set switch when the display shows "CHANGE ADD. ▼" The lowest indoor unit No. among the indoor units connected to the remote control unit will be shown. | [♦SELECT I/U] (1sec) →[I/U 001 0/U 01▲] (Blink) |
| 2 | Selecting an indoor unit to be changed address | ④ Pressing the | [//∪ 001 0/∪ 01▲] ⇔[//∪ 002 0/∪ 01 ♠] ⇔[//∪ 003 0/∪ 01 ♠] ⇔ · · · · |
| | | ⑤ Then the address No. of the indoor unit to be changed is determined and the screen switches to the display " ♦ SET I/U ADD." | [♦ SET I/U ADD.] (1sec) → [I/U 001 ♦](Blink) |
| 3 | Setting a new indoor unit No. | (6) Set a new indoor unit No. with the ♦ switch. A number indicated on the display will increase or decrease by 1 upon pressing the ▲ or ▼ switch respectively. | [//∪ 000▲] ⇔[//∪ 001 ♠] ⇔[//∪ 002 ♣] ⇔ • • • ⇔[//∪ 127▼] |
| | | T After selecting an address, press the Set switch. Then the address No.of the indoor unit is determined. | [I/U 002] (2sec) |
| 4 | Setting a new outdoor unit No. | (®) The display will indicate the determined indoor address No. for 2 seconds and then switch to the " ◆ SET 0/U ADD." screen. A default value shown on the display is the current address. | [//U 002] (2sec lighting) ⇔[♦ SET 0/U ADD.](1sec) ⇔[0/U 01 ♦] (Blink) |
| | | ③ Set a new outdoor unit No. with the ♦ switch. A number indicated on the display will increase or decrease by 1 upon pressing the ▲ or ▼ switch respectively. | $ \begin{array}{ccc} [0/U & 00 \blacktriangle] \\ \Leftrightarrow [0/U & 01 \diamondsuit] \\ \Leftrightarrow [0/U & 02 \diamondsuit] \\ \Leftrightarrow & \ddots \\ \Leftrightarrow [0/U & 31 \blacktriangledown] \end{array} $ |
| | | ① After selecting an address, press the Set switch. Then the address of the indoor unit and outdoor unit are determined. | [//U 002 0/U 02](2sec lighting) → [♦ SELECT](1sec lighting) → [I/U SELECTION▼](lighting) |
| | | ① If you want to continue to change addresses, return to step ④. | [Press the ♦switch](1sec) →[SET COMPLETE] (2~10sec lighting) |
| 5 | Ending the session | (2) If you want to end the session (and reflect new address settings) In Step (0), press the ▼ switch to select "END ▲." If you have finished changing addresses, press the Set switch while "END ▲" is shown. While new settings are being transmitted, "SET COMPLETE" will be indicated. Then the remote controller display will change to the normal state. | [END▲] →[SET COMPLETE] (2~10sec lighting) →Normal state |
| | | (3) If you want to end the session (without reflecting new address settings) Before you complete the present address setting session, press the "ON/OFF" switch. Then the display is change to exit from this mode and switch the display to the normal state. All address settings changed in the session will be aborted and not reflected. | [OWOFF] →Forced termination |

The \$switch will continuously change the display indication to the next one in every 0.25 seconds when it is pressed for 0.75 seconds or longer. If the Reset switch is pressed during an operation, the display indication returns to the one that was shown before the last Set switch operation. Even if an indoor unit No. is changed in this mode, the registered indoor unit No. before address change mode is displayed when [I/U SELECTION] is shown. When "SET COMPLETE" is shown, indoor unit No.'s are registered.

NOTICE Turn on power to centralized control equipment after the addresses are determined. Turning on power in wrong order may result in a failure to recognize addresses.

• 7 segment display indication in automatic address setting

Items that are to be set by the customer

| Code | Contents of a display | | |
|------|---|--|--|
| P30 | Communication protocol 0: Previos SL mode 1: New SL mode (The communication plotocol is displayed ; display only) | | |
| P31 | Automatic address start | | |
| P32 | Input starting address Specify a starting indoor unit address in automatic address setting. | | |
| P33 | Input number of connected indoor units Specify the number of indoor units connected in the refrigerant system in automatic address setting. | | |
| P34 | Polarity difinition 0: Network polarity not defined. 1: Network polarity defined. | | |

7 segment display indication in automatic address setting.

| Code | Contents of a display | |
|------|--|--|
| AUX | X During automatic address setting. X: The number of indoor units recognized by the outdoor unit. | |
| AUE | Indoor unit address setting is completed normally. | |
| End | Polarity is defined. (Automatic address) Completed normally. | |

Address setting failure indication

| Code | Contents of a display | Please check |
|------|---|---|
| A00 | Unable to find any indoor unit that can be actually communicated with. | Are signal lines connected properly without any loose connections? Is power for indoor units all turned on? |
| A01 | The number of the indoor units that can be actually communicated with is less than the number specified in P33 on the 7 segment display panel. | Are signal lines connected properly without any loose connections? Input the number of connected indoor units again. |
| A02 | The number of the indoor units that can be actually communicated with is more than the number specified in P33 on the 7 segment display panel. | Are signal lines connected properly without any loose connections? Are the network connectors coupled properly? Input the number of connected indoor units again. |
| A03 | Starting address (P32) + Number of connected indoor units (P33) > 128 | Input the starting address again. Input the number of connected indoor units again. |
| A04 | While some units are operating in the previous SL mode on the network, the automatic address setting on multiple refrigerant systems is attempted. | Perform manual address setting. Separate old SL setting unit from the network Arrange all units to operate in the new SL. |

Error indication

| Code | Contents of a display | Cause | |
|-------------------------------------|--|--|--|
| E2 Duplicating indoor unit address. | | Incorrect manual address setting | |
| E3 | Incorrect pairing of indoor-outdoor units. | An outdoor unit number that does not exist in the network is specified No master unit exists in combination outdoor unit. | |
| E11 | Address setting for plural remote controllers. | Indoor unit address is set from plural remote controllers. | |
| E12 | Incorrect adderess setting of indoor units. | Automatic address setting and manual address setting are mixed. | |
| E31 | Duplicating outdoor unit address. | Plural outdoor units are exist as same address in same network. | |
| E46 | Incorrect setting. | Automatic address setting and manual address setting are mixed. | |

7-2. Selection of controls

Controls of outdoor unit may be selected as follows using the dip switches on the PCB and POO on the 7-segment. To change POO on the 7-segment, hold down SW8 (7-segment display increment up: 1-digit), SW9 (7-segment increment up: 10-digit) and SW7 (Data write/Enter).

| Control selecting method | | Content of control | |
|---|---|---|--|
| SW setting on PCB | POO on 7-segment | | |
| SW3-7 to ON=1 *1 | Set external input function allocation to "2" *1 | Forced cooling mode (It can be fixed at cooling with external input terminals opened, or at heating with them closed.) | |
| SW5-1 to ON + SW5-2 to ON | - | Cooling test run | |
| SW5-1 to ON + SW5-2 to OFF | — | Heating test run | |
| Close the fluid operation valve on outdoor unit and set as follows: (1) SW5-2 on PCB to ON (2) SW5-3 on PCB to ON (3) SW5-1 on PCB to ON | _ | Pump down operation | |
| SW4-5:OFF, SW4-6:OFF*1 80% (Factory default) SW4-5:ON, SW4-6:OFF*1 60% SW4-5:OFF, SW4-6:ON*1 40% SW4-5:ON, SW4-6:ON*1 00% | Set allocation of external input function to "1" *1 | Inputting signals to external input terminals selects the demand mode. (J13 short-circuited: Level input, J13 open: Pulse input) | |
| SW5-5 | - | Communication method selection ON: Previous SL communication, OFF: New SL communication | |
| J13: Closed (Factory default), J13: | — | External input selection (CnS1, CnS2 only) Closed: Level input, Opened: Pulse input) | |
| J15: Closed (Factory default), J15: Opened | — | Defrost selection Closed: Normal defrosting, Opened: Forced defrosting | |
| - | P01 | Operation priority selection 0: First push priority (at shipping) 1: Last push priority | |
| - | P02 | Outdoor unit fan snow protection control 1: Control disabled (at shipping) 1: Control enabled | |
| - | P03 | Outdoor unit fan snow protection control ON time setting - 30 sec (at shipping) 10, 30-600 sec | |
| - | P04 | Energy saving mode *2 OFF: Disabled (at shipping) 000, 040, 060, 080 [%] | |
| - | P05 | Silencing mode setting 0 (at shipping) - 3: Larger values for larger effect | |
| - | P06 | Allocation of external output (CnZ1) | |
| - | P07 | Allocation of external input (CnS1) | |
| _ | P08 | Allocation of external input (CnS2) | |
| | P09 | Allocation of external input (CnG1) | |
| _ | P10 | Allocation of external input (CnG2) | |
| _ | P11~ | Spare | |

*1 Control is switched when both the allocation of external input function (P07-10) and SW are changed.

(Example: To use CnS1 for the input of forced cooling mode, set P07 at 2 and SW3-7 atON.) *2 In the energy saving mode, the capacity restriction becomes effective even if no signals are input at external input terminals.

| Setting value for allocation of external input function | With external input terminals closed | With external input terminals opened | | |
|---|--------------------------------------|--------------------------------------|--|--|
| "0" : External operation input | Invalid | Valid | | |
| "1" : Demand input | Invalid | Valid | | |
| "2" : Cooling/heating forced input | Valid | Invalid | | |
| "3" : Silent mode input | Valid | Invalid | | |
| "4" : Spare | | | | |
| "5" : Outdoor fan snow guard control input | Valid | Invalid | | |
| "6" : Test run external input 1 (equivalent to SW5-1) | Test run start | Normal | | |
| "7" : Test run external input 2 (equivalent to SW5-2) | Cooling | Heating | | |
| "8" : Silent mode 2 | Valid | Invalid | | |
| "9" : Spare | | | | |

By changing the allocation of external input functions (P07-19) on the 7-segment, functions of external

The external output function of CnZ1 can be changed by changing the setting in P06 on the 7 segment display panel.

| | "0" : Operation output | |
|--------------------|----------------------------|--|
| "1" : Error output | | |
| | "2" : Compressor ON output | |
| | "3" : Fan ON output | |
| | "4-9" : Spare | |

7-3. External input and output terminals specifications

| Name | Purpose (Factory default) | Specification | Operating side connector |
|---|---|-------------------------------|---------------------------------|
| External input CnS1 | External operation input (Closed at shipping) | Non-voltage contactor (DC12V) | NICHIATSU B02B-XAMK-1 (LF) (SN) |
| External input CnS2 | Demand input (Closed at shipping) | Non-voltage contactor (DC12V) | NICHIATSU B02B-XARK-1 (LF) (SN) |
| External input CnH1 | Cooling / Heating forced input (Opened at shipping) | Non-voltage contactor (DC12V) | NICHIATSU B02B-XAEK-1 (LF) (SN) |
| External input CnG2 Silencing mode input (Opened at shipping) | | Non-voltage contactor (DC12V) | NICHIATSU B02B-XASK-1 (LF) (SN) |
| External output CnZ1 | Spare output (External output) | DC12V output | MOLEX 5566-02A-RE |
| External output CnH | Operation output | DC12V output | MOLEX 5286-02A-BU |
| External output CnY | Error output | DC12V output | MOLEX 5266-02A |
| | | | |

8. TEST OPERATION AND TRANSFER

8-1. Before starting operation

(1) Make sure that a measurement between the power supply terminal block and ground, when measured with a 500V megger tester, is greater than 1 M Ω .

(2) When the resistance of the signaling line terminal block is 100Ω or less before turning the power on, the power cables may be connected to the signaling line terminal block. Check the wiring referring to the standard resistance value of 6-3.

(3) Be sure turn ON the power supply to supply power to the crank case heater 6 hours before operation.

After supplying the power to the crank case heater, the compressor may not start unless the time mentioned above elapses. (For protection of compressor) In such occasion, the 7-segment LED shows "dLOOOO". Wait till the temperature in the compressor rises sufficiently after turning power on to the crank case heater, before starting the test run.

- (4) Make sure that the bottom of the compressor casing is warm.
- (5) Be sure to fully open the service valves (liquid, gas) for the outdoor unit.

Operating the outdoor unit with the valves closed may damage the compressor.

(6) Confirm that the power is supplied to all indoor units. It could cause trouble if there is any indoor unit which is not powered.

CAUTION

Please make sure that the service valves (gas, liquid) are full open before a test run. Conducing a test run with any of them in a closed position can result in a compressor failure.

8-2. Test run

(1) Test run from an outdoor unit.

Whether CnS1 is set to 0N or 0FF, you can start a test run by using the SW5-1 and SW5-2 switches provided on the outdoor unit PCB. Select the test run mode first.

Please set SW5-2 to ON for a cooling test run or OFF for a heating test run. (It is set to OFF at the factory for shipment)

- Turning SW5-1 from OFF to ON next will cause all connected indoor units to start.
- When a test run is completed, please set SW5-1 to OFF.

Note: During a test run, an indoor unit cannot be operated from the remote control unit (to change settings). ("Under centralized control" is indicated)

(2) Method of starting a test run for a cooling operation from an outdoor unit: please operate a remote control unit according to the following steps.

(a) Start of a cooling test run

- $\bigcirc \mbox{Operate}$ the unit by pressing the $\fbox{START/STOP}$ button.
- Oselect the "COOLING" mode with the MODE button.
- OPress the TEST RUN button for 3 seconds or longer.
- The screen display will be switched from "Select with ITEM \clubsuit " \rightarrow "Determine with SET " \rightarrow "Cooling test run $\mathbf{\nabla}$."
- OWhen the SET button is pressed while "Cooling test run▼" is displayed, a cooling test run will start. The screen display will be switched to "COOLING TEST RUN."

(b) Termination of a cooling test run

○When the START/STOP button or the "TEMP SET ☑ △" button is pressed, a cooling test run will be terminated.

8-3. Transfer

- After completing the installation and test run, explain methods of use and maintenance to the customer, referring to the Instruction Manual. Ask the customer to keep the installation manual safely together with the Instruction Manual.
- Instruct the customer that the power should not be turned off even if the unit is not to be used for a long time. This will enable operation of the air conditioner any time. (Since the compressor bottom is warmed by the crank case heater, seasonal compressor trouble can be prevented.)

9. CAUTIONS FOR SERVICING (for R410A and compatible machines)

- (1) To avoid mixing of different types of oil, use separate tools for each type of refrigerant.
- (2) To avoid moisture from being absorbed by the ice machine oil, the time for when the refrigerant circuit is open should be kept as short as possible. (Within 10 min. is ideal.)

(3) For other piping work, airtighteness testing , vacuuming, and refrigerant charging, refer to section 4, REFRIGERANT PIPING.

(4) Diagnostic Inspection Procedures

For the meanings of failure diagnosis messages, please refer to the technical manual

(5) 7-segment LED indication

Data are indicated when so chosen with the indication selector switch. For the details of indication, please refer to the technical manual.

5.5 Instructions for installing the branch pipe set

This manual describes the specifications of branching pipe set and header set installation. For outdoor unit installation and indoor unit installation, please refer to the respective installation manuals supplied with your outdoor unit and indoor unit.
 Before you set about installation work, please read this manual carefully so that you can carry out installation work according to the instructions contained herein.
 Please read the safety instructions contained in the installation manual supplied with your outdoor unit carefully and carry out installation.

installation work unerringly.

When installation work is completed, conduct a test run to check the installation for any anomaly. Please also give the customer necessary instructions as to the operation and maintenance of the unit pursuant to the instruction manual (supplied with the indoor unit).
 Please ask the customer to keep the installation manual on the customer's part together with the instruction manual.

PARTS LIST

| Branching pipe set type | Gas side | liquid side | Different diameter pipe joint |
|--|--|---|---|
| DIS-22-1 | 235 66/01 442 500 51 6/01 500 500 500 500 500 500 500 500 500 500 | 25.8% 10% 25.8% 10% 25.8% 10% 25.8% 10% 25.8% 10% 25.8% 10% 25.8% 10% 25.8% 10% 25.8% 10% 25.8% 10% 25.8% 10% 25.8% 25.8% 10% 25.8% | - None |
| DIS-180-1 | 10,415,888 10,415,688 10,415,68610,415,686 10,415,68610,415,686 10,415,68610,415,686 10,415,68610,415,686 | 35:69401 7:21:401 7:24:620 7:24:7200 7:24:7200 7:24:72000000000000000000000000000000 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ |
| DIS-371-1 | 0,0,425,4 0,428,55 0,428,55 0,428,55 0,428,55 0,428,55 0,428,55 0,428,55 0,437,55 0,437,550,550,550,550,550,550,550,550,550,55 | 25:09/01 109/15/28 7.27/01 109/15/28 109/15/28 109/15/28 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ |
| DIS-540-2 | 908140 92.11540 97.1540 97.1540 97.1540 97.1540 97.1540 97.1540 97.1540 97.1540 97.1540 97.1540 98.88540 99.815400 99.815400 99.815400 99.815400 99.815400 99.815400 99.815400 99.815400 99.815400 99.815400 99.815400 99.815400 99.815400 99.8154000 99.8154000 99.8154000 99.8154000000000000000000000000000000000000 | 10,412,7 10,412,7 10,413,68 10,413,005 10,413,005 10,413,005 10,413,005 10,413,005 10,413,005 10,413,005 10,413,005 10,413,005 10,412,7 10,412, | $\begin{array}{c} 0.0; \phi : 30 \\ P - 3 \\ 100 \\ P - 4 \\ 100 \\ P - 9 \\ P - 9 \\ 100 \\ P - 9 \\ P - 9 \\ 100 \\ P - 9 \\ P - 9 \\ 100 \\$ |
| DOS-2A-1 (Outdoor units used in combination) | 87.156401 418 1.064811 418 1.064814 1.064814 418 1.064814 | 2 21 50 88 21 50 88 21 50 100 100 100 100 100 100 100 1 | None |
| HEAD4-22-1 | 35 + + 01 5E 8 #01 5E 8 #01 5E 8 #01 | 99 88 52 40 6 99 40 99 415 → 415 → | None |
| HEAD6-180-1 | 88 55 86 52 86 87 54 56 10 10 4 15.88 10 4 15.88 | 88 51 540 135 105 105 105 105 105 105 105 10 | $\begin{array}{c} P-1 \\ 27275 \\ 2$ |

INSTALLATION PROCEDUCE

1. Please select an appropriate branching pipe set model and a pipe size by consulting with the installation manual of the indoor unit or other relevant technical documents.

Attention

①Use a pipe conforming to a pipe size specified for indoor unit connection for the section between an indoor unit and a branching pipe. ②Use a pipe conforming to a pipe size specified for outdoor unit connection for the section between an outdoor branching pipe and an outdoor unit.

2. Cut a branching pipe set or a different diameter joint with a pipe cutter to make it fit for a selected pipe size before application.

- In cutting pipes, always use a pipe cutter. Remove burrs from a cut end when you cut a pipe. In doing so, keep a cut end downward so that no chips or burrs may enter the pipe.
- Use pipe cutter to cut pipes.
- 2) Take utmost care so that no foreign matter such as dust or water may enter piping during installation work.
 Please cover all the open ends of piping until installation work is completed. Particularly, any openings in the section of piping laid outdoors should be sealed stringently.

 \cdot In the case of a branching pipe set (model type DIS)

(4) Always apply nitrogen gas when soldering joints. If nitrogen gas is not applied, a large amount of film oxide will be formed which could lead to a critical failure in the unit. Use caution to prevent moisture or any foreign matters from entering the pipe when connecting pipe ends.

For the method of air tightness testing and pulling air, please refer to the installation manual of the outdoor unit.

(5) Do not leave piping with any open ends uncovered to prevent water or foreign matters from entering inside.

3. Please dress it with an attached insulation sheet for heat insulation. (Please dress both liquid and gas sides)

Attention

- ① Apply an attached insulation sheet along a pipe, tape the joining line with a joint tape (to be procured on the installer's part) for complete sealing, and wrap the pipe and insulation sheet entirely with a tape.
- (2) Dress both liquid and gas pipes with attached insulation sheets for heat insulation.
- ③ Ensure that the liquid pipe is given the heat insulation as good as that of the gas pipe. The absence of heat insulation can cause dripping water from dew condensing on the pipe or performance degradation.

4. How to select a branching pipe

(1) How to select a branching pipe set

- An appropriate branching pipe size varies depending on the capacity of connected indoor units (combined total capacity connected downstream), so please choose from the table below.
- In the case of a 140/160 (5/6HP) outdoor unit, however, select DIS-22-1. (Even if the capacity of connected indoor units reaches 180 or higher, select DIS-22-1.)

| Total capacity downstream | Branching pipe set model type |
|-------------------------------|-------------------------------|
| less than 180 | DIS-22-1 |
| 180 or higher – less than 371 | DIS-180-1 |
| 371 or higher – less than 540 | DIS-371-1 |
| 540 or more | DIS-540-2 |

Attention

① Use a pipe conforming to a pipe size specified for indoor unit connection for the section between an indoor unit and an indoor unit side branching pipe.

② A branching joint (for both gas and liquid) must always be positioned in such a way that it branches either horizontally or vertically.

(2) How to select a header set

- Depending on the number of units connected, connect plugged pipes (to be procured on the installer's part) at a branching point (on the indoor unit connection side).
- For the size of a plugged pipe, please refer to the documentation for a header set (optional part).
- In the case of a 140/160 (5/6HP) outdoor unit, however, select HEAD4-22-1. (Even if the capacity of connected indoor units reaches 180 or higher, select HEAD4-22-1.)

| Total capacity downstream | Header set model type | Number of branches |
|-------------------------------|-----------------------|--------------------|
| less than 180 | HEAD4-22-1 | Up to 4 branches |
| 180 or higher – less than 371 | HEAD6-180-1 | Up to 6 branches |
| 371 or higher – less than 540 | HEAD8-371-1 | Up to 8 branches |
| 540 or more | HEAD8-540-2 | Up to 8 branches |

Attention

① Use a pipe conforming to a pipe size specified for indoor unit connection for the section between a header and an indoor unit.

2 Always position a header (both gas and liquid headers) in such a way that it branches horizontally.

③ No 224 or 280 indoor unit is connectable to a header.

5. Example of piping

Example 1: Branching type configuration

Connected capacity: 294

Example 2: Header type configuration

Connected capacity: 272

Example 3: Branching + Header mixed type configuration Connected capacity: 1394

Selection of a branching pipe set

| Mark | Selection procedure | Branching pipe set |
|---------------|--|--------------------|
| Branch pipe 1 | Combined total capacity of indoor units connected downstream (22+140+160+90+45+112+224+36 +80+56+160+45+28+56+140)=1394 | DIS-540-2 |
| Branch pipe 2 | Combined total capacity of indoor units connected downstream (140+160+90+45+112+224+36+80 +56+160+45+28+56+140)=1372 | DIS-540-2 |
| Branch pipe 3 | Combined total capacity of indoor units connected downstream (112+224+36+80+56+160+45+28 +56+140)=937 | DIS-540-2 |
| Branch pipe 4 | Combined total capacity of indoor units connected downstream (224+36+80+56+160+45+28+56 +140)=825 | DIS-540-2 |

Selection of a header set

| Mark | Selection procedure | Header set |
|----------|--|-------------|
| Header 1 | Combined total capacity of indoor units connected downstream (140+160+90+45)=435 | HEAD8-371-1 |
| Header 2 | Combined total capacity of indoor units connected downstream (36+80+56+160+45+28+56+140)=601 | HEAD8-540-2 |

Selection of a branching pipe set

| Mark | Selection procedure | Branching pipe set |
|---------------|---|--------------------|
| Branch pipe 1 | Combined total capacity of indoor units connected downstream (80+90+56+40+28)=294 | DIS-180-1 |
| Branch pipe 2 | Combined total capacity of indoor units connected downstream (56+40+28)=124 | DIS-22-1 |
| Branch pipe 3 | Combined total capacity of indoor units connected downstream (40+28)=68 | DIS-22-1 |

Selection of a header set

| Mark | Selection procedure | Header set |
|----------|--|-------------|
| Header 1 | Combined total capacity of indoor units connected downstream (71+90+45+22+22+22)=272 | HEAD6-180-1 |

INVERTER DRIVEN MULTI-INDOOR-UNIT CLIMATE CONTROL SYSTEM

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