KSACN0301AAA

Wired Controller for Ducted and Cassette Ductless Systems

Owner's Manual

NOTE: Read the instruction manual before starting the installation.

SAFETY CONSIDERATIONS

Installing, starting up, and servicing air−conditioning equipment can be hazardous due to system pressures, electrical components, and equipment location (roofs, elevated structures, etc.).

Only trained, qualified installers and service mechanics should install, start−up, and service this equipment.

Untrained personnel can perform basic maintenance functions such as cleaning coils. All other operations should be performed by trained service personnel.

When working on the equipment, observe precautions in the literature and on tags, stickers, and labels attached to the equipment.

Follow all safety codes. Wear safety glasses and work gloves. Keep quenching cloth and fire extinguisher nearby when brazing. Use care in handling, rigging, and setting bulky equipment.

Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements. Recognize safety information.

This is the safety−alert symbol ⚠. When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand these signal words: **DANGER**, **WARNING**, and **CAUTION**. These words are used with the safety−alert symbol. **DANGER** identifies the most serious hazards which **will** result in severe personal injury or death. **WARNING** signifies hazards which **could** result in personal injury or death. **CAUTION** is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. **NOTE** is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.

⚠ WARNING

ELECTRICAL DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Do not install the wired controller in an area subjected to excessive steam, oil or sulfide gas. Doing so may cause the controller to to deform and/or fail.

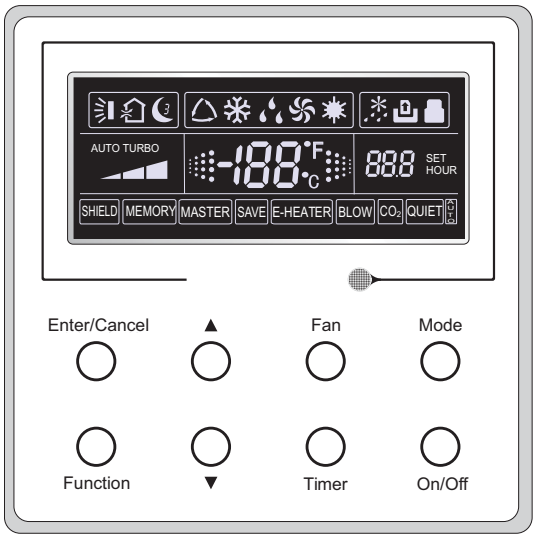

Fig. 1 — Wired Controller

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WIRED REMOTE CONTROLLER (KSACN0301AAA)

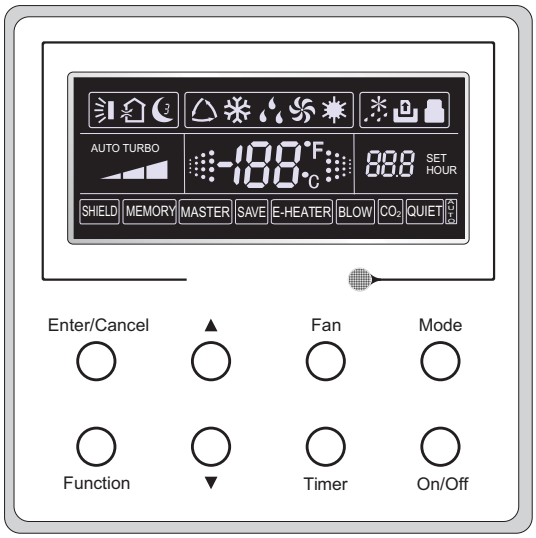

Fig. 2 – Wired Remote Controller

WIRED REMOTE CONTROLLER LCD DISPLAY

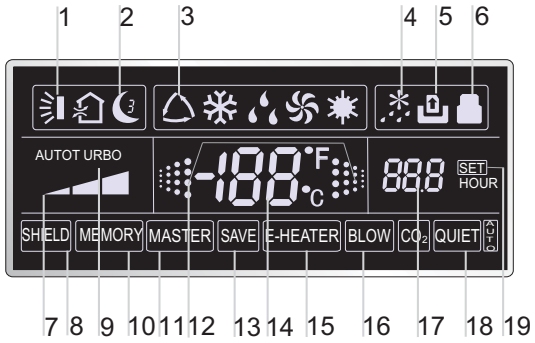

Fig. 3 – LCD Display

LCD DISPLAY ICON DESCRIPTIONS

Table 1—Icon Descriptions

No.	Symbols	Description
1		Swing function
2		Sleep function (Only sleep 1)
3		Indoor unit running modes (COOLING, DRY, FAN and HEATING)
4		Defrosting function for the outdoor unit
5		Gate-control function (Not Available on these units)
6		Lock function
7		High, middle, low or auto fan speed of the indoor unit
8	SHIELD	Shield functions (buttons, temperature, On/Off or Mode is shielded by the remote monitor)
9	TURBO	Turbo function
10	MEMORY	Memory function (the indoor unit resumes the original setting condition following a power failure)
11	MASTER	Master wired remote controller (Not Available on these units)
12		It blinks under the unit's On state without pressing any button
13	SAVE	Energy-saving function (Not Available on these units)
14	-188 °F °C	Ambient/preset temperature value
15	E-HEATER	Electric auxiliary heating function (Not Available on these units)
16	BLOW	Blow function
17	88.8	Timing value
18	QUIET	Quiet function (two types: quiet and auto quiet) (Not Available on these units)
19	SET	It appears under the debugging mode

WIRED REMOTE CONTROLLER BUTTONS

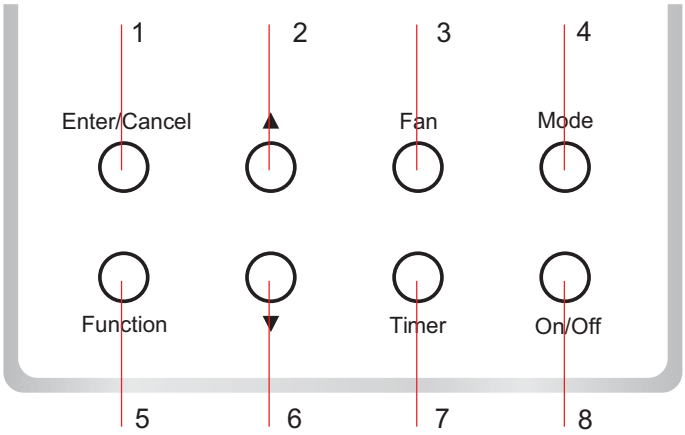

Fig. 4 — Wired Remote Controller Buttons

WIRED REMOTE CONTROLLER BUTTON FUNCTIONS

Table 2—Controller Button Functions

No.	Name	Function
1	Enter/Cancel	Function selection and cancellation
2	▲	① Running temperature setting of the indoor unit, range: 60.8°F~86°F(16°C~30°C) ② Timer setting, range:0.5-24 hr
6	▼	
3	Fan	Setting of the high/middle/low/auto fan speed
4	Mode	Setting of the Cooling/Heating/Fan/Dry/Auto mode of the indoor unit
5	Function	Switchover among the functions of Turbo/Save/E-heater/Blow etc.
7	Timer	Timer setting
8	On/Off	Turn on/off the indoor unit
4+2	▲+Mode	Press for 5s under the unit's OFF state to Enter/Cancel the Memory function (If the memory is set, the indoor unit after a power failure and power recovery resumes the original setting state. If not, the indoor unit defaults to OFF after a power recovery. MEMORY OFF is the default prior to delivery).
3+6	Fan+▼	Press at the same time under the unit's OFF state, appears on the wired remote controller for the COOLING ONLY unit, while appears on the wired remote controller for the cooling and heating unit.
2+6	▲+▼	Upon unit startup (without malfunction) or under the unit's OFF state, press both at the same time for 5s to enter the lock state, in which case, no other buttons will respond if pressed. Press them again together for 5 secs to exit the mode.
4+6	Mode+▼	If there is a preference for °F rather than °C (default), under OFF state press and hold MODE and decrease temp. set point buttons together for 5 secs.
5+7	Function+Timer	Under the OFF state, the user can select the commissioning status by pressing FUNCTION and TIMER for five secs. 00 appears on the temp. display when MODE is pressed, then adjust the options shown in the timer area by pressing▲and▼. There are four options: ① Indoor ambient temperature is sensed by the return air temperature sensor (01 displayed on the timer area). ② Indoor ambient temperature is sensed by the wired controller (02 displayed on the timer area). ③ The return air temperature sensor is selected under the cooling, dry, or fan mode; while the wired controller temperature sensor is selected under the heating or auto mode (03 is displayed on the timer area). ④ The wired controller temperature sensor is selected under the cooling, dry, or fan mode; while the return air temperature sensor is selected under the heating mode. (04 is displayed on the timer display area).
5+7	Function+Timer	Under the OFF state, users can access the commissioning status by pressing FUNCTION and TIMER for five secs. Press MODE until "01" appears in the temperature display area. The setting status appears in the timer area. Press▲and▼to adjust. The two options are: ① Three low levels (01) ; ② Three high levels (02).

OPERATION INSTRUCTIONS

ON/OFF

Press **ON/OFF** to turn on the unit. Press **ON/OFF** again to turn it off.

NOTE: Fig.5 displays the unit's **OFF** state after power on. Fig.6 displays the unit's **ON** state after power on.

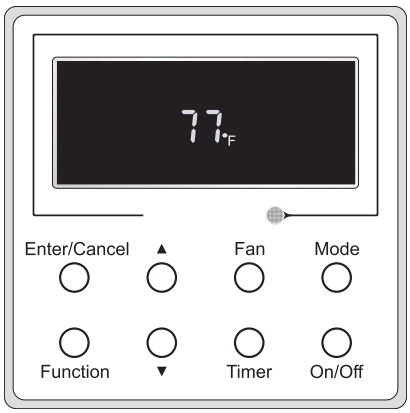

Fig. 5 — OFF state

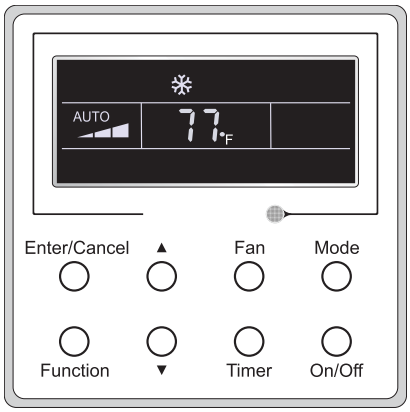

Fig. 6 — ON state

MODE SETTING

Under the unit's **ON** state, press **MODE** to switch between the operation modes in the following sequence:

Auto−Cooling−Dry−Fan−Heating

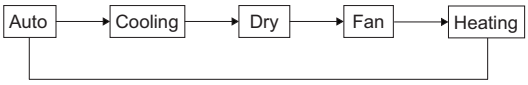

Fig. 7 — MODE Setting

TEMPERATURE SETTING

Press ▲ or ▼ to increase or decrease the temperature. If these buttons are pressed continuously, the temperature either increases or decreases by 1.8°F (1°C) every 0.5s (see Fig. 8).

In the **COOLING**, **DRY**, **FAN** or **HEATING** mode, the temperature setting range is 60.8°F ~ 86°F (16°C~30°C). In the **AUTO** mode, the setting temperature can not be adjusted.

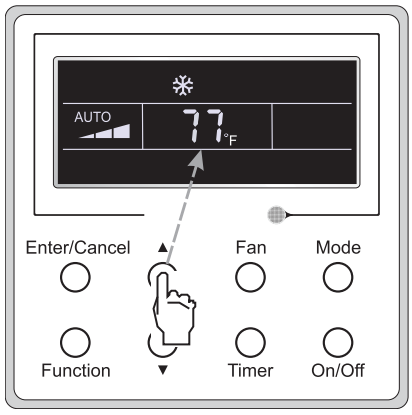

Fig. 8 — Temperature Mode

FAN SETTING

Under the **ON/OFF** state, press **FAN** and the indoor unit's fan speed changes circularly (see Fig. 10).

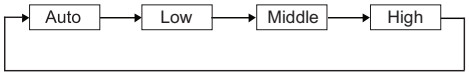

Fig. 9 — Fan Mode

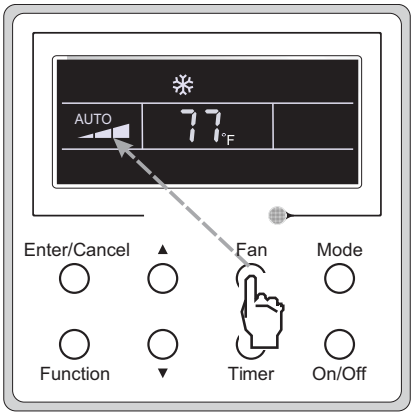

Fig. 10 — Fan Mode

TIMER SETTING

Under the **ON/OFF** state, press **TIMER** to set **TIMER OFF/ON.**

- **TIMER ON** mode: Press **TIMER** and the LCD displays **xx.x hour**, with "hour" blinking. Press ▲ or ▼ to adjust the timing value. Next, press **ENTER/CANCEL** to confirm.
- **TIMER OFF** mode: Press **TIMER**, if LCD does not display **xx.x hour**, it means the timer setting was cancelled (Fig. 11 displays the **TIMER OFF** setting, under the **ON** state).

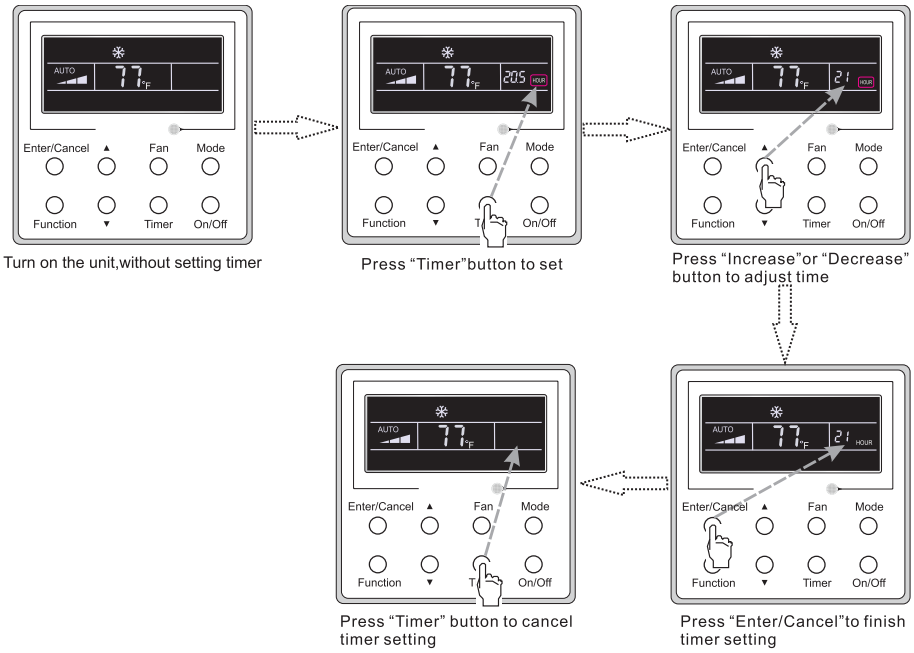

Fig. 11 — Timer off Setting under the unit's ON state

Timer range: 0.5−24 hours

Every press of ▲ or ▼ increases or decreases the set time by 0.5 hour, If either of the arrows are pressed continuously, the set time will increase or decrease by 0.5 hour ever 0.5 seconds.

SWING MODE

- **SWING ON**: Press **FUNCTION** under the unit's **ON** state to activate the **SWING** function and blinks. Next, press **ENTER/CANCEL** to confirm.
- **SWING OFF**: When the **SWING** function is on, press **FUNCTION** to enter the **SWING** setting interface . Next, press **ENTER/CANCEL** to cancel the function (see Fig. 12).

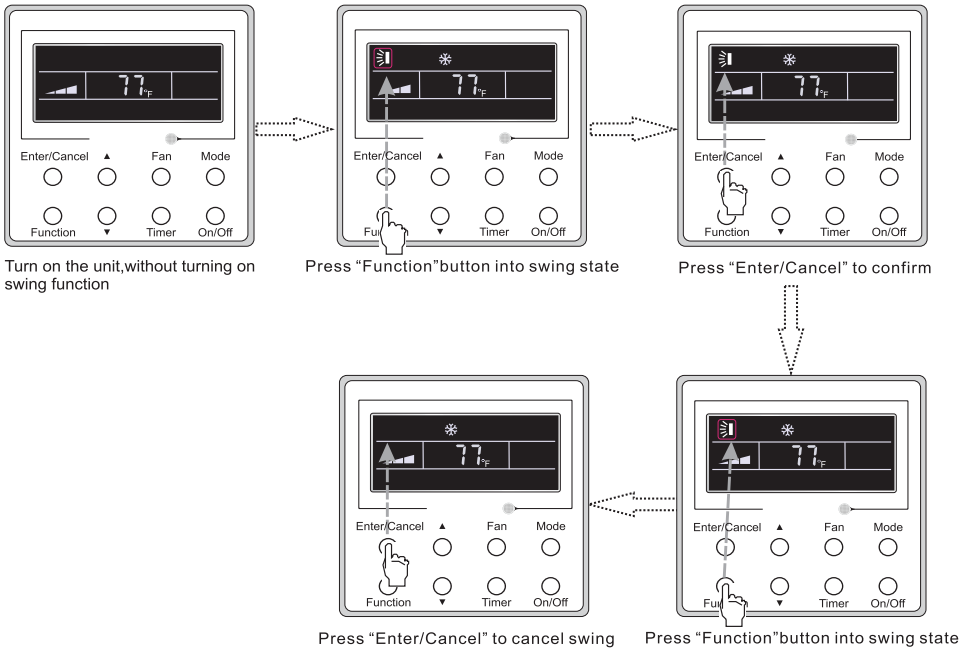

Fig. 12 — Swing mode

NOTES:

The **SLEEP, TURBO** or **BLOW** mode is the same as the **SWING** mode.

After the setting is made, the user must press **ENTER/CANCEL** to revert to the setting status or the unit stops operating automatically five seconds later.

SLEEP MODE

- **SLEEP ON**: Press **FUNCTION** under the unit's ON state until the unit enters the **SLEEP** mode. Press **ENTER/CANCEL** to confirm.
- **SLEEP OFF**: When the **SLEEP** function is activated, press **FUNCTION** to enter the **SLEEP** mode. Next, press **ENTER\CANCEL** to exit the function.

In the **COOLING** or **DRY** modes, the temperature increases by 1.8°F (1°C) after the unit runs under the **SLEEP** mode for 1 hour and 1.8°F (1°C) after another hour. Afterwards, the unit will continue to run at this temperature.

In the **HEATING** mode, the temperature decreases by 1.8°F (1°C) after the unit runs under **SLEEP 1** for one hour and 1.8°F (1°C) after another hour. Afterwards, the unit runs at this temperature (see Fig. 13).

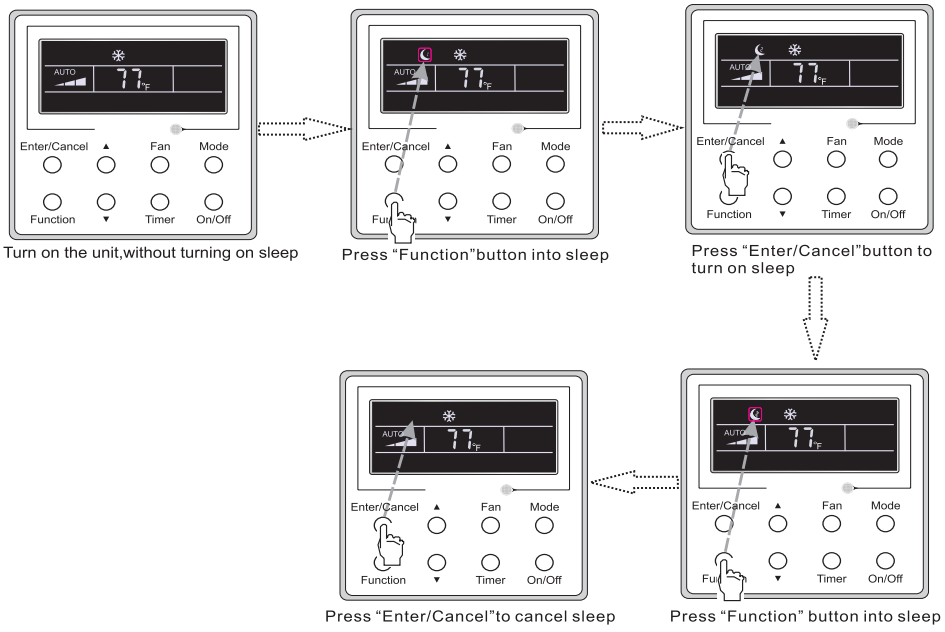

Fig. 13 — Sleep mode

TURBO SETTING

- **TURBO**: The unit on the high fan speed generates quick cooling or heating so the room temperature can quickly approach the setting value.

In the **COOLING** or **HEATING** mode press **FUNCTION** until the unit enters the **TURBO** mode then press **ENTER/CANCEL** to confirm.

When the **TURBO** function is activated, press **FUNCTION** to enter the **TURBO** mode and then press **ENTER/CANCEL** to cancel (see Fig. 14).

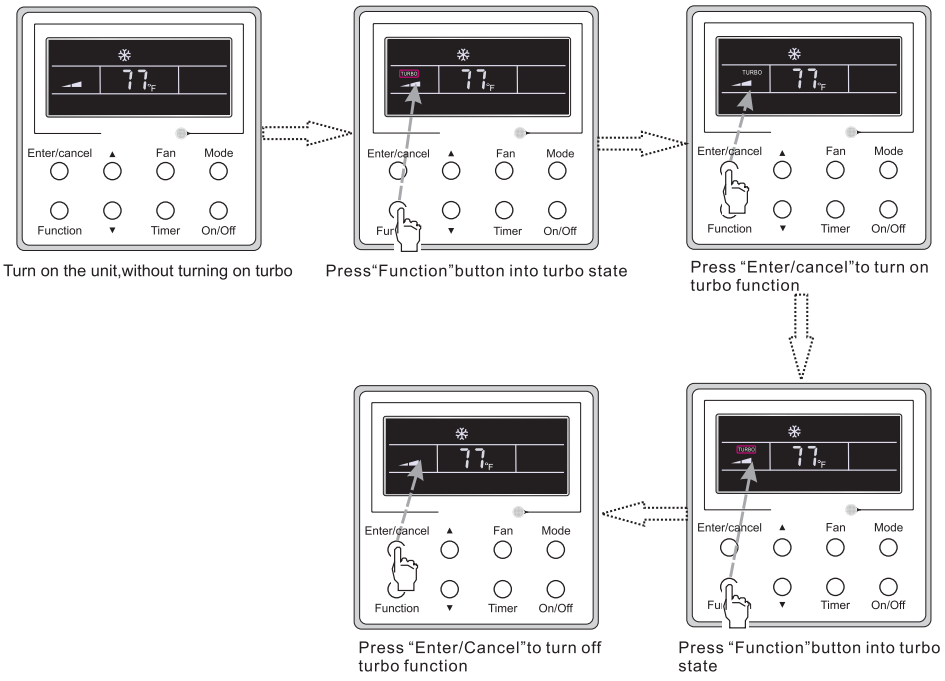

Fig. 14 — Turbo mode

BLOW SETTING

- **BLOW** Function: After the unit turns off, the water in the indoor unit's evaporator automatically evaporates to avoid mildew.

In the **COOLING** or **DRY** modes, press **FUNCTION** until the unit enters the **BLOW** mode and then press **ENTER/CANCEL** to activate the function.

When the **BLOW** function is activated, press **FUNCTION**, under the **BLOW** mode interface, then press **ENTER/CANCEL** to cancel the function (see Fig. 15).

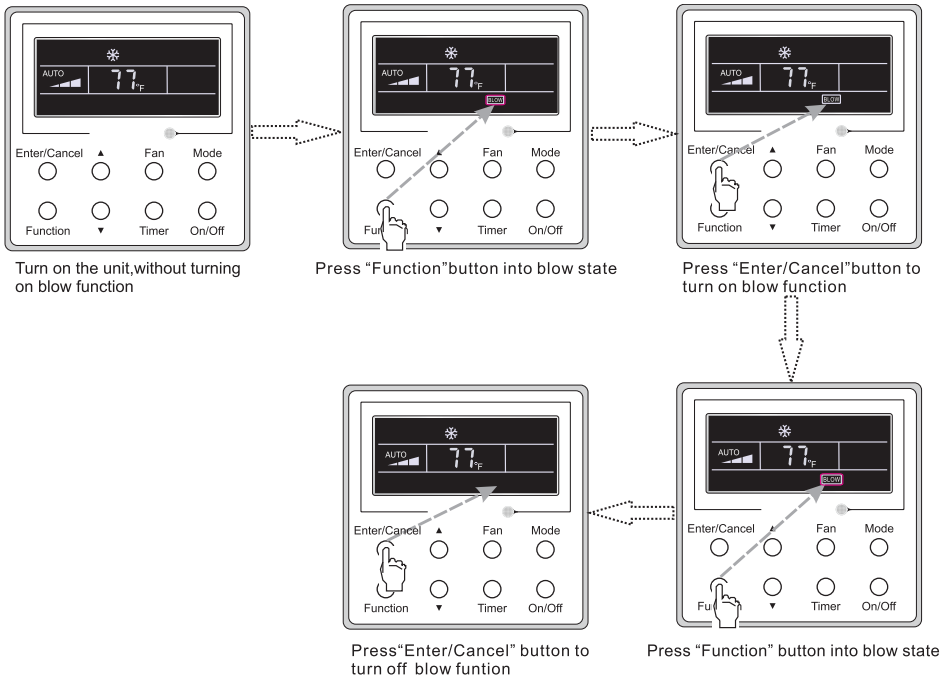

Fig. 15 — Blow mode

NOTE:

When **BLOW** is activated and the user turns off the unit by pressing **ON/OFF** or with the remote controller, the indoor fan will run at low speed for 2 minutes, and "**BLOW"** appears on the LCD. If **BLOW** is deactivated, the indoor fan turns off. The **BLOW** function is unavailable in the **FAN** or **HEATING** mode.

OTHER FUNCTIONS

1. **LOCK**: Upon start−up, without malfunction or under the unit's **"OFF"** state, press ▲ and ▼ at the same time for 5 seconds until the wired remote controller enters the **LOCK** state and the LCD displays 🔒. Next, press ▲ and ▼ together for 5 seconds to exit this function. Under the **LOCK** function, all buttons are inactive.
2. **Memory**:

- **Memory Switchover: U**nder the unit's **OFF** state, press **MODE** and ▲ at the same time for 5 seconds to switch the memory states between **MEMORY ON** and **MEMORY OFF**. When this function is activated, **MEMORY** appears. If this function is not set, the unit remains under the **OFF** state after a power failure and the subsequent power recovery.
- **Memory Recovery:** If this function has been set for the wired remote controller, the controller, after power failure, resumes its original running state upon power recovery.
- **Memory Contents: ON/OFF, MODE,** set temperature set fan speed and **LOCK** function.

3. **Temperature Sensor Selection**: Under the unit's **OFF** state, press both **FUNCTION** and **TIMER** for five seconds to enter the commissioning status. Under this status, use **MODE** to adjust the display in the temperature display area to **"00"** and then adjust the temperature sensor option in the timer display area with either ▲ or ▼.

(1.) Indoor ambient temperature is sensed at the return air inlet (01 in the timer display area).

(2.) Indoor ambient temperature is sensed at the wired controller (02 in the timer display area).

(3.) Select the temperature sensor ar the return air inlet under the **COOLING**, **DRY**, and **FAN** modes.

(4.) Select the temperature sensor at the wired controller under the **COOLING**, **DRY**, and **FAN** modes and select the temperature sensor at the return air inlet under the **HEATING** and **AUTO** modes (04 displayed in the timer display area). The factory default setting is #3.

After the setting, press **ENTER/CANCEL** to confirm and exit the setting status.

NOTE: Users can use **ON/OFF** to exit the commissioning status however the set data will not be kept.

NOTE: Under the commissioning status, if there is no operation requested within 20 seconds after the last button was pressed, the system reverts to the previous state without retaining the current data.

4. **Fan Speed Selection**: Under the **OFF** state, press **FUNCTION** and **TIMER** together for five seconds to enter the commissioning status and adjust the display in the temperature display area to **01** using **MODE**. Next, adjust the fan speed setting which has two options:
   (1.) Three low fan speeds
   (2.) Three high fan speeds

After the setting, press **ENTER/CANCEL** to confirm and exit the setting status.

NOTE: Users can use **ON/OFF** to exit the commissioning status however the set data will not be kept.

NOTE: Under the commissioning status, if there is no operation requested within 20 seconds after the last button was pressed, the system reverts to the previous state without retaining the current data.

CONNECTION TO THE CASSETTE OR DUCTED INDOOR UNIT

Consult the installation instructions of each indoor unit for proper installation. Connect the 4−core wire shipped with the unit to CN9 on the indoor board and CN1 on the wired controller board.

INSTALLATION AND DISASSEMBLY

WIRED REMOTE CONTROLLER SIGNAL LINE CONNECTION

- Open the indoor unit's electrical control box cover.
- Run the signal line of the wired remote controller through the rubber ring.
- Connect the wired remote controller's signal line to the indoor unit PCB's 4−pin socket.
- Tighten the signal wire with ties.
- The communication distance between the main board and the wired remote controller can extend up to 65.62 feet (20 meters) (the standard distance is 26 feet (8 meters)).

WIRED REMOTE CONTROLLER INSTALLATION

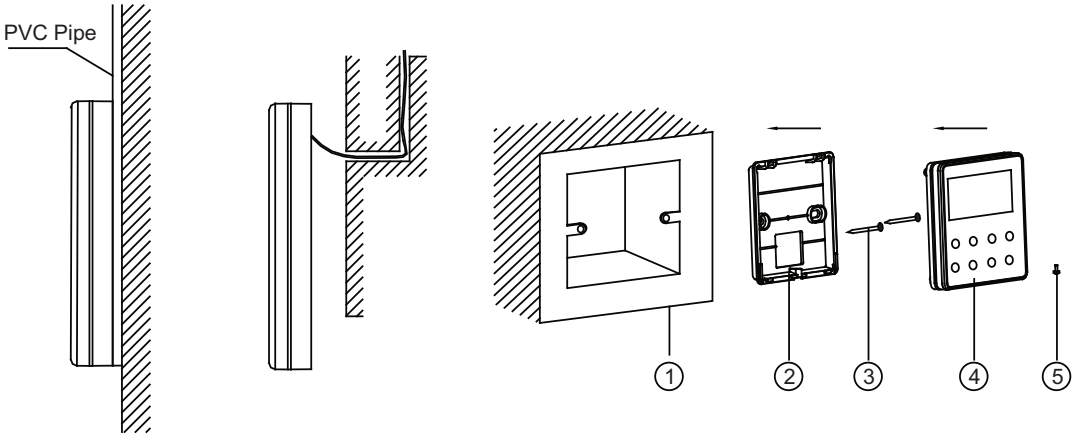

Fig. 16 — Wired Remote Controller Accessories

Table 3—Accessories

No.	1	2	3	4	5
Name	Socket box embedded in wall	Wired remote controller wall plate	Screw (M4X25)	Wired remote controller front panel	Screw (ST2.9X6)

Figure 17 displays the wired remote controller installation steps.

NOTE: There are several issues that require the installer's attention.

1. Prior to the installation, cut off the power supply to the wire buried in the installation hole.
2. Remove the four−core twisted pair line from the installation holes and run them through the rectangular hole behind the wired remote controller plate.
3. Secure the wired remote controller plate to the wall, over the installation hole, and then secure the plate with the screws (M4X25).
4. Insert the four−core twisted pair line into the wired remote controller slot and then buckle the front panel and the plate of the wired remote controller together.
5. Secure the front panel and the wired remote controller plate tightly with the screws (ST2.9X6).

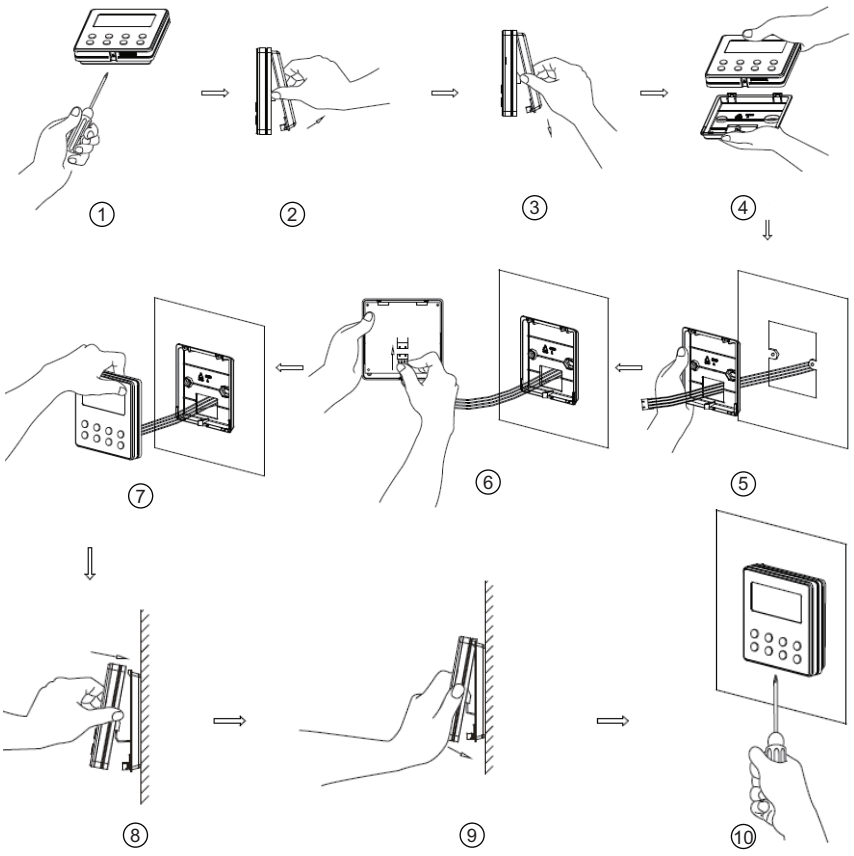

Fig. 17 – Installation Steps

⚠ CAUTION

Please pay special attention to the following directions during the connection to avoid air conditioning malfunction due to electromagnetic interference.

1. Separate the wired remote controller signal and communication lines from the power cord and connection lines between the indoor and outdoor unit, with a minimum interval of .66 feet (20cm), otherwise the unit's communication will probably malfunction.
2. If the air conditioning unit is installed within close proximity to an electromagnetic interference, the signal and the wired remote controller communication lines must be shielded by twisted pair lines.

DISASSEMBLY OF THE WIRED REMOTE CONTROLLER

Figure 18 displays the disassembly of the wired remote controller.

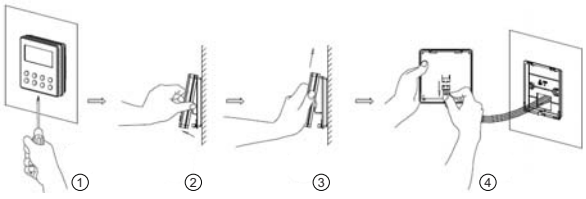

Fig. 18 – Disassembly of the Wired Remote Controller

ERROR DISPLAY

If there is an error occurring during the operation of the system, the error code appears on the LCD (see Fig. 19).

NOTE: In event of an error, turn off the unit and have unit serviced by trained service personnel.

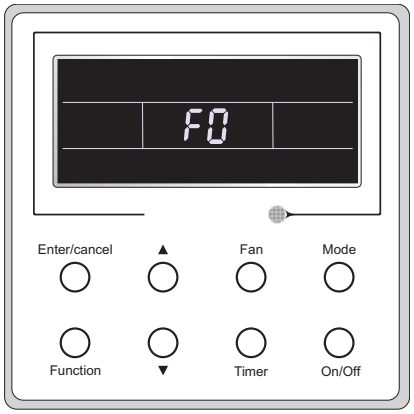

Fig. 19 — Error Display

Table 4—Error Description

Error	Error Code	Error	Error Code
Return air temperature sensor open/short circuited	F1	Drive board communication error	P6
Evaporator temperature sensor open/short circuited	F2	Compressor overheating protection	H3
Indoor unit liquid valve temperature sensor open/short circuited	b5	Indoor and outdoor units unmatched	LP
Indoor gas valve temperature sensor open/short circuited	b7	Communication line misconnected or expansion valve error	dn
IPM temperature sensor open/short circuited	P7	Running mode conflict	E7
Outdoor ambient temperature sensor open/short circuited	F3	Pump-down	Fo
Outdoor unit condenser mid-tube temperature sensor open/short circuited	F4	Defrost or oil return	
Discharge temperature sensor open/short circuited	F5	Forced defrosting	H1
Indoor and outdoor communication error	E6	Compressor startup failure	Lc
DC bus under-voltage protection	PL	High discharge temperature protection	E4
DC bus over-voltage protection	PH	Overload protection	E8
Compressor phase current sensing circuit error	U1	Whole unit over-current protection	E5
Compressor demagnetization protection	HE	Over phase current protection	P5
PFC protection	Hc	Compressor desynchronizing	H7
IPM Temperature Protection	P8	IPM Current protection	H5
Over-power protection	L9	Compressor phase loss/reversal protection	Ld
System charge shortage or blockage protection	F0	Frequency restricted/reduced with whole unit current protection	F8
Capacitor charging error	PU	Frequency restricted/reduced with IPM current protection	En
High pressure protection	E1	Frequency restricted/reduced with high discharge temperature	F9
Low pressure protection	E3	Frequency restricted/reduced with anti-freezing protection	FH
Compressor stalling	LE	Frequency restricted/reduced with overload protection	F6
Over-speeding	LF	Frequency restricted/reduced with IPM temperature protection	EU
Drive board temperature sensor error	PF	Indoor unit full water error	E9
AC contactor protection	P9	Anti-freezing protection	E2
Temperature drift protection	PE	AC input voltage abnormal	PP
Sensor connection protection	Pd	Whole unit current sensing circuit error	U5
DC bus voltage drop error	U3	4-way valve reversing error	U7
Outdoor fan 1 error protection	L3	Motor stalling	H6
Outdoor fan 2 error protection	LA	PG motor zero-crossing protection	U8

Edition Date: 08/17

Catalog No:KSACN0301AAA—02OM

Replaces: KSACN0301AAA—01OM