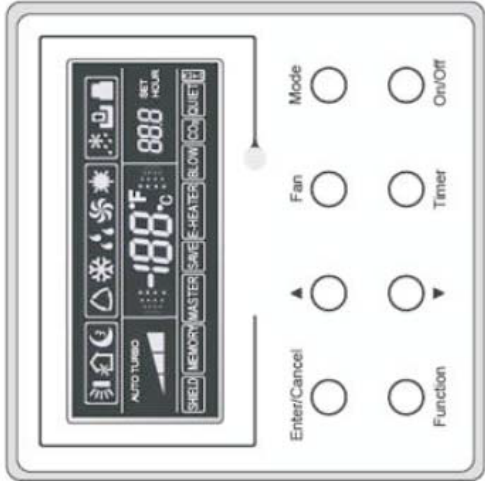


High Wall Mini / Multi-Split Simple Wired Controller



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MS-SVN040E-EN 17 Jun 2020

Supersedes MS-SVN40D-EN (October 2018)

June 2020



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MS-SVN040E-EN

Safety Precautions

Warnings, Cautions and Notices: Warnings, cautions and notices appear at appropriate intervals throughout this manual. Warnings are provided to alert installing contractors to potential hazards that could result in serious injury or death. Cautions are designed to alert personnel to conditions that could result in minor to moderate injury. Notices alert to the possibility of equipment and/or property damage.

Your personal safety and the proper operation of this device depend upon the strict observance of these precautions.

 WARNING	This mark indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	This mark indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.
NOTICE	This mark indicates a situation which could result in equipment and/or property damage.

 WARNING	
This information is intended for use by individuals possessing adequate backgrounds of electrical and mechanical experience. Any attempt to repair a central air conditioning product may result in personal injury and/or property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.	
LIVE ELECTRICAL COMPONENTS! During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.	
 CAUTION	
This equipment is to be serviced by professionally trained personnel only. To install or remove this wired controller, please contact your installing/servicing dealer.	
NOTICE	
1. Do not install the wired controller in a damp place or in direct sunlight.	
2. Do not beat, toss or frequently assemble/disassemble the wired controller.	
3. Do not operate the wired controller with wet hands and do not let any liquid spill or drip into it.	

NOTE:

- This wired controller is applicable to various models. Some specific functions are unavailable for the mini/multi split units and will not be covered in this manual. Refer to Product Data Guide or Product Reference Guide for applicability.
- Before operating the unit, please read this manual carefully and keep it for future reference.

Contents

1 Display	5
1.1 Appearance of the Wired Controller	6
1.2 Instructions for LCD Display Symbols	6
1.3 LCD of the Wired Controller	6
2 Buttons	7
2.1 Function Identification and Instructions	7
2.2 Button Graphics.....	7
3 Operation Instructions and Functions.....	8
3.1 On/Off	8
3.2 Mode Setting	8
3.3 Temperature Setting	8
3.4 Fan Setting	9
3.5 Timer Setting	9
3.6 Louver (Swing) Setting	10
3.7 Sleep Setting	10
3.8 Turbo Setting	11
3.9 Blow (Coil Dry) Setting (X-Fan)	11
3.10 Change Between Fahrenheit and Celsius	12
3.11 Lock Setting	12
3.12 Memory Setting	12
3.13 Service Mode Function.....	13
4 Installation Instructions	14
4.1 Parts and Dimensions of the Wired Controller	14
4.2 Installation Requirements	14
4.3 Connecting the Communication Line of the Wired Controller at the Indoor Unit	15
4.4 Disassembly of the Wired Controller	15
4.5 Mounting the Wired Controller to the Wall	15
5 Error Display	16
5.1 Error Codes	17

Considerations:

Thank you for purchasing this control for your ductless system. Prior to using the system we would like to share these key operational characteristics with you.

Key Operations:

Auto Mode - System has two set points. 77°F Cooling and 68°F Heating. The indoor fan is placed into the auto-fan mode. Temperature and fan settings may not be manipulated while system is in Auto Mode

Cool Mode - System allows the customer to raise and lower the set point between 61°F and 86°F. Keep in mind, the system should not be allowed to operate below 68°F in cooling, otherwise, the indoor coil could potentially freeze or the control logic may place the system into a protective function. The indoor fan speed may be set to Auto Fan, Low, Medium or High while the system is in cool mode.

Dry Mode - Same as cool mode, except the control logic places the indoor fan into low speed (or ultra low) in order to remove as much moisture from the air as possible.

Fan Mode - Indoor fan is operational and speeds are selectable. The system is neither in heat or cool mode.

Heat Mode - System allows the customer to raise and lower the set point between 61°F and 86°F. Keep in mind, the system should not be allowed to operate much above 78°F to 80°F while heating, otherwise, control logic may place the system into a protective function. The indoor fan speed may be set to Auto Fan, Low, Medium or High while the system is in heat mode. The control logic, however, may lock the fan into a specific speed based on conditions incurred by the system.

1 Display

1.1 Appearance of the Wired Controller



Fig. 1 Appearance of the wired controller

High Wall Mini / Multi-Split Simple Wired Controller

1.2 Instructions for LCD Display Symbols

No.	Symbols	Description
1		Swing function
2		Sleep function (Available sleep modes will vary based on system)
3		Running modes of the indoor unit (Cooling, Dry, Fan, Auto and Heating)
4		Defrost function for the outdoor unit
5		Gate control function (Not available)
6		Lock function
7		Fan speed of the indoor unit
8	SHIELD	Shield function (Not available)
9	TURBO	Turbo function
10	MEMORY	Memory function (The indoor unit resumes the original setting state after power failure and recovery)
11	MASTER	Master wired controller (Not available)
12		Blinks when unit is on and no functions are selected on the controller
13	SAVE	Energy-save function (Not available)
14		Set temperature value
15	E-HEATER	Not available
16	BLOW	Blow function
17		Timer value
18	QUIET	Quiet function (Not available)
19	SET	Displayed only in service mode



1.3 LCD of the Wired Controller



Fig. 2 LCD of the wired controller

2 Buttons

2.1 Function Identification and Instructions

No.	Button Name	Button Functions
1	Enter/Cancel	Function selection and cancellation
2	▲	1. Running temperature/set point of the indoor unit, range: 61-86°F (16-30°C) 2. Timer setting, range: 0.5-24 hr
6	▼	
3	Fan	Sets the High/Medium/Low/Auto fan speed of the indoor unit
4	Mode	Sets the Cooling/Heating/Fan/Dry/Auto operating mode of the indoor unit
5	Function	Accesses and sets the settings of Swing/Sleep/Turbo/Blow, etc.
7	Timer	Timer setting
8	On/Off	Turn on/off the indoor unit
4+2	▲ + Mode	With the unit turned “Off” press both buttons (▲ + Mode) for 5 seconds to enter/cancel the Memory setting. (If memory is set, after power failure and recovery the indoor unit will resume the original setting state. If not, the indoor unit is defaulted to be off after power recovery. Memory off is default before delivery.)
3+6	Fan + ▼	With the unit turned “Off” (Fan + ▼) hold both buttons to show whether the system is a heat pump or air conditioner system.  will be displayed on the wired controller for a cooling only unit, while  will be displayed on the wired controller for a heat pump.
2+6	▲ + ▼	Upon successful startup of the unit or while the unit is turned “Off”, press both buttons (▲ + ▼) at the same time for 5 seconds to turn on the Lock setting. This disables the button functions. Hold both buttons for 5 seconds again to unlock the controller.
4+6	▼ + Mode	With the unit turned “Off” press and hold both buttons (▼ + Mode) for 5 seconds to toggle between Celsius and Fahrenheit on the display.
5 + 7	Function + Timer	Service Mode Functions

2.2 Button Graphics

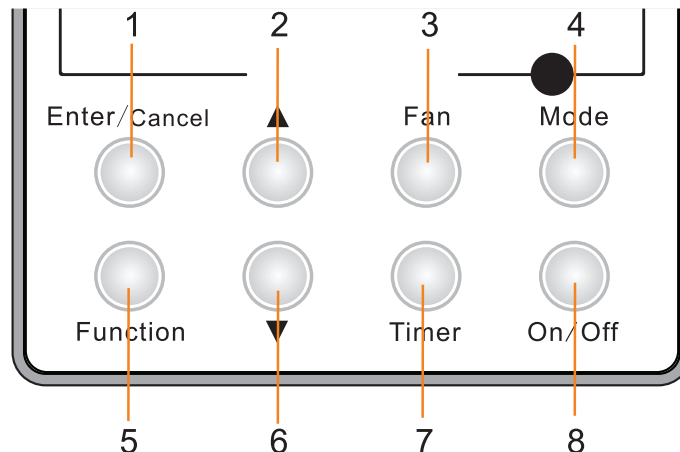


Fig. 2 Button Graphics

3 Operation Instructions and Functions

3.1 On/Off

Press On/Off to turn on the unit and turn it off by pressing again.

Note: The state shown in Fig.4 indicates the “Off” state of the unit when power is being supplied. The state shown in Fig.5 indicates the “On” state of the unit when power is being supplied.



Fig. 4 OFF State

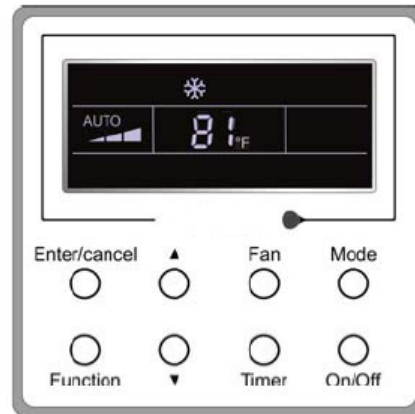
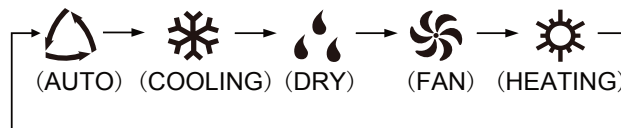


Fig. 5 ON State

3.2 Mode Setting

When the unit is ON, press MODE to switch the operation modes in the following sequence: Auto-Cooling-Dry-Fan-Heating.



3.3 Temperature Setting

Press ▲ or ▼ to increase/decrease the set temperature. By holding the button, the temperature will be increased or decreased by 1°F every 0.5 seconds as shown in Fig.6.

In COOLING, DRY and HEATING mode, the temperature setting range is 61°F-86°F (16°C-30°C).

In AUTO mode, the temperature setting is not adjustable. The cooling setpoint is 77°F (25°C); the heating setpoint is 68°F (20°C).

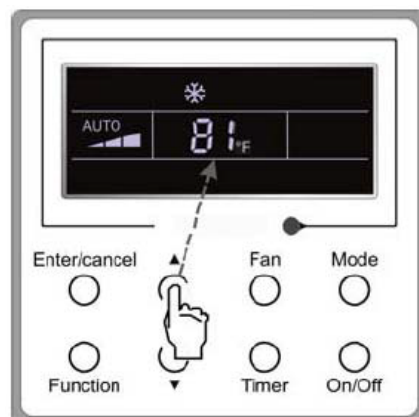


Fig. 6 Temperature Setting

3.4 Fan Setting

When the unit is on, press FAN and the fan speed of the indoor unit will cycle and display as shown in Fig. 7.

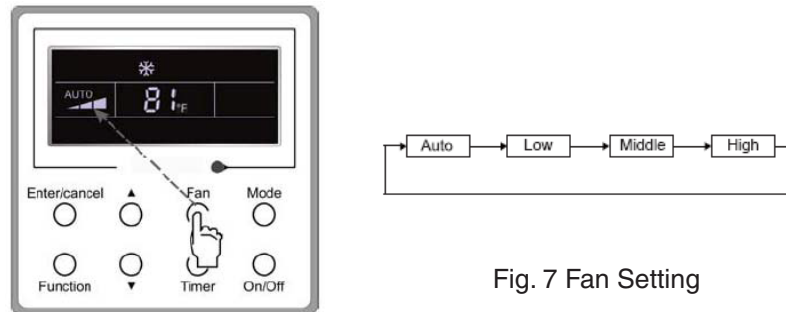


Fig. 7 Fan Setting

3.5 Timer Setting

When the unit is on, press Timer to set timer off/on.

Timer On setting: press Timer, the LCD will display “xx.x hour”, with “hour” blinking. Press ▲ or ▼ to adjust the timing value. Press Enter/Cancel to confirm the setting.

Timer Off setting: press Timer, if the LCD doesn't display xx.x hour, it indicates the timer setting is canceled.

Timer range: 0.5-24hr. Every press of ▲ or ▼ will make the set time increase or decrease by 0.5 hour. By holding both ▲ and ▼ continuously, the set time will increase/ decrease by 0.5 hour every 0.5 seconds.

Timer off setting when the unit is ON is shown in Fig.8

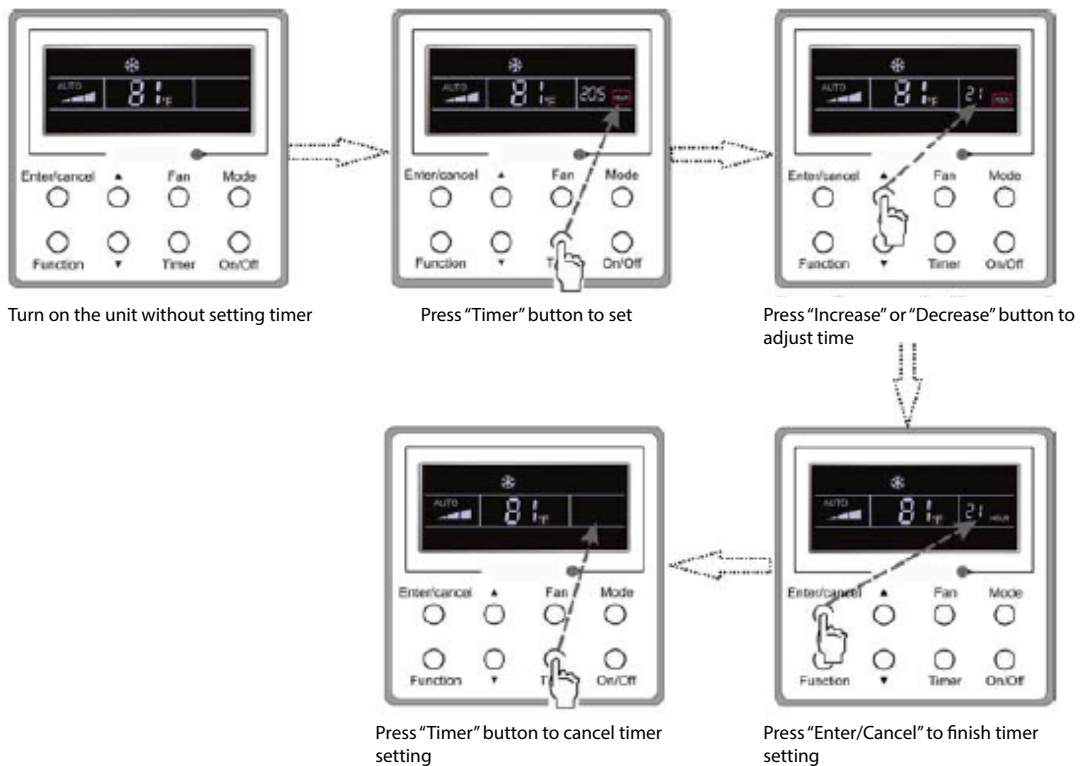




Fig. 8 Timer Setting

High Wall Mini / Multi-Split Simple Wired Controller

3.6 Louver (Swing) Setting

Swing On: Press Function while the unit is “On” to activate the swing setting. In this case,  will blink. Press Enter/Cancel to confirm the setting.

Swing Off: When the Swing setting is on, press Function to enter the Swing setting interface, with  blinking. Press Enter/Cancel to cancel this setting. See Fig. 9.

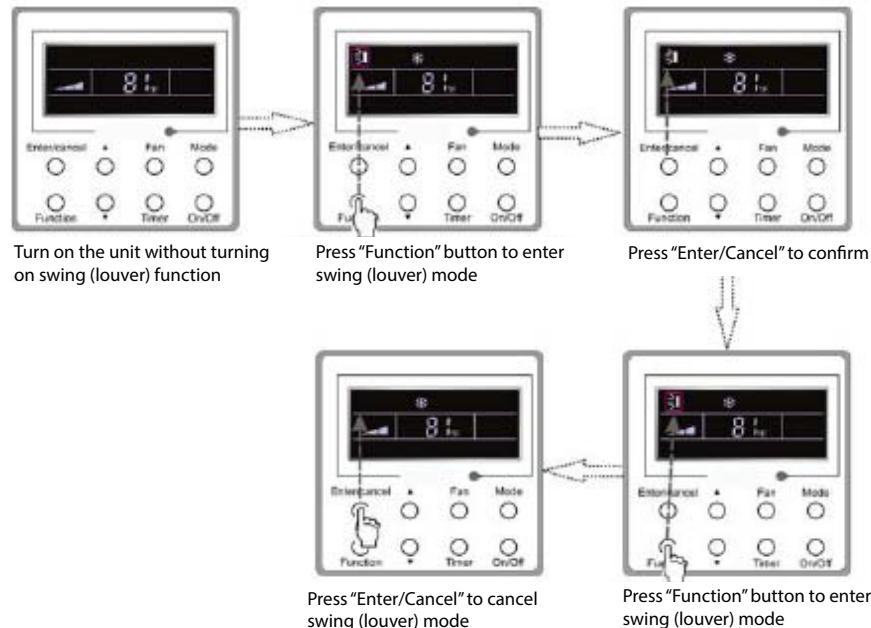


Fig. 9 Louver (Swing) Setting

3.7 Sleep Setting

Sleep On: Press Function while the unit is “On” until the unit enters the Sleep setting interface. Press Enter/Cancel to confirm the setting.

Sleep Off: When the Sleep function is activated, press Function to enter the Sleep setting interface. Press Enter/Cancel to cancel this function. See Fig.10.

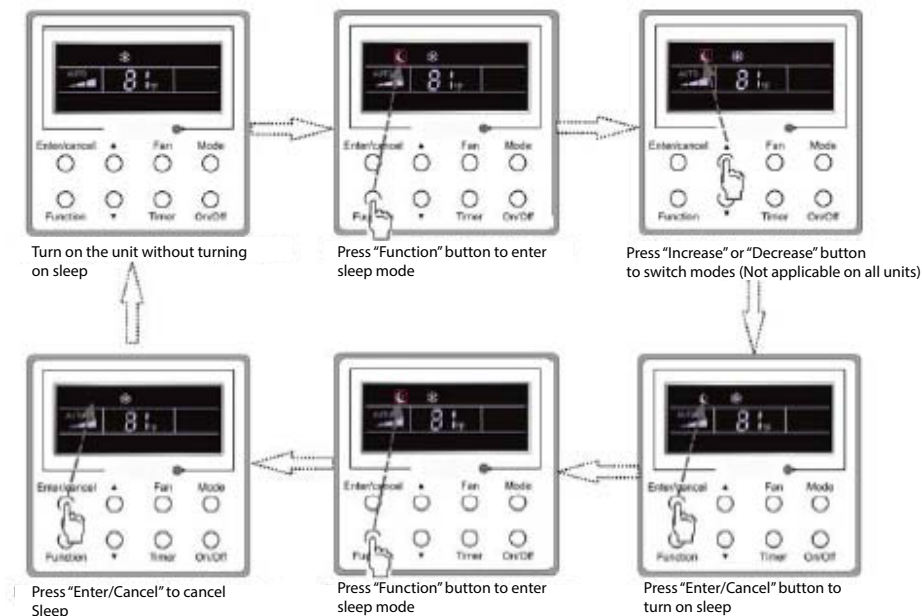


Fig. 10 Sleep Setting

In Cooling or Dry mode, the temperature will increase by 1°F after the unit runs under Sleep mode for 1hr and 1°F after another 1hr. After that, the unit will run at this temperature.

In the Heating mode, the temperature will decrease by 1°F after the unit runs under Sleep mode for 1hr and 1°F after another 1hr. After that, the unit will run at this temperature.

Notes:

While in the sleep menu, if Function is pressed down or there is not any operation within 5 seconds, the sleep curve setting will be canceled.

3.8 Turbo Setting

Turbo setting: The unit operates at the highest fan speed to enable quick cooling or heating so that the room temperature can quickly approach the desired temperature setting.

In the Cooling or Heating mode, press Function until the unit enters the Turbo setting interface, then press Enter/Cancel to confirm the setting. When the Turbo setting is activated, press Function to enter the Turbo setting interface, then press Enter/Cancel to cancel this setting. See Fig.11.

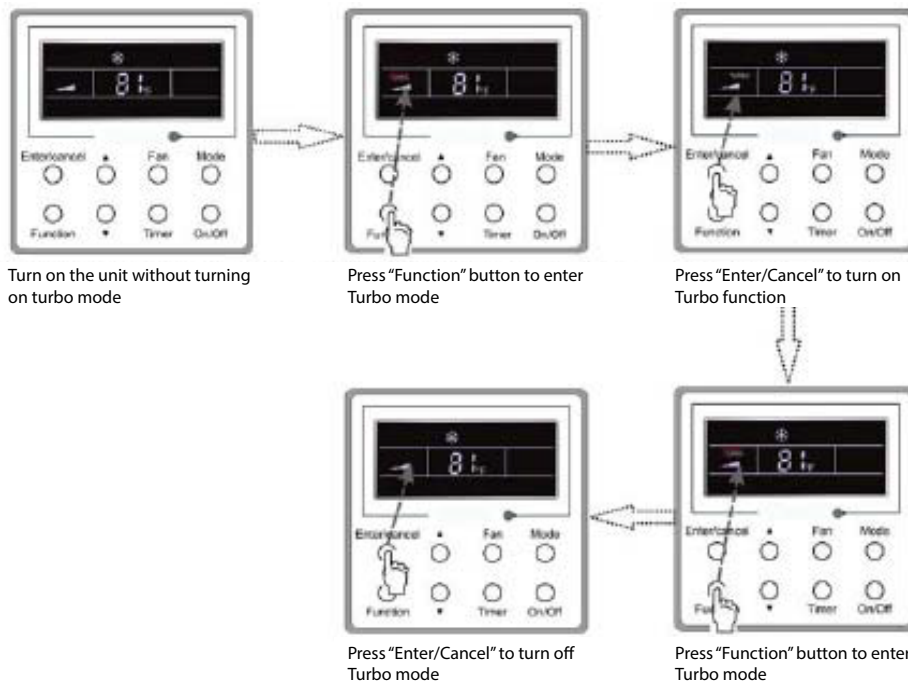


Fig. 11 Turbo Setting

3.9 Blow (Coil Dry) Setting (X-Fan)

Blow (X-Fan) Setting: If enabled, when the user presses on/off button to turn off the system, the indoor fan will continue to blow, for a period of time, in order to dissipate any moisture in the evaporator. In Cooling or Dry mode, press Function until the unit enters the Blow (Coil Dry) setting interface then press Enter/Cancel to activate this setting. When the Blow (Coil Dry) setting is activated, press Function to enter the Blow (Coil Dry) setting interface, then press Enter/Cancel to cancel this setting. See Fig.12.

Notes:

1. The indoor fan will run at low fan speed for 2 minutes, with "BLOW" displayed on the LCD. If the Blow (Coil Dry) setting is deactivated, the indoor fan will be turned off immediately.
2. Blow (Coil Dry) setting is unavailable in Fan or Heating mode.

High Wall Mini / Multi-Split Simple Wired Controller

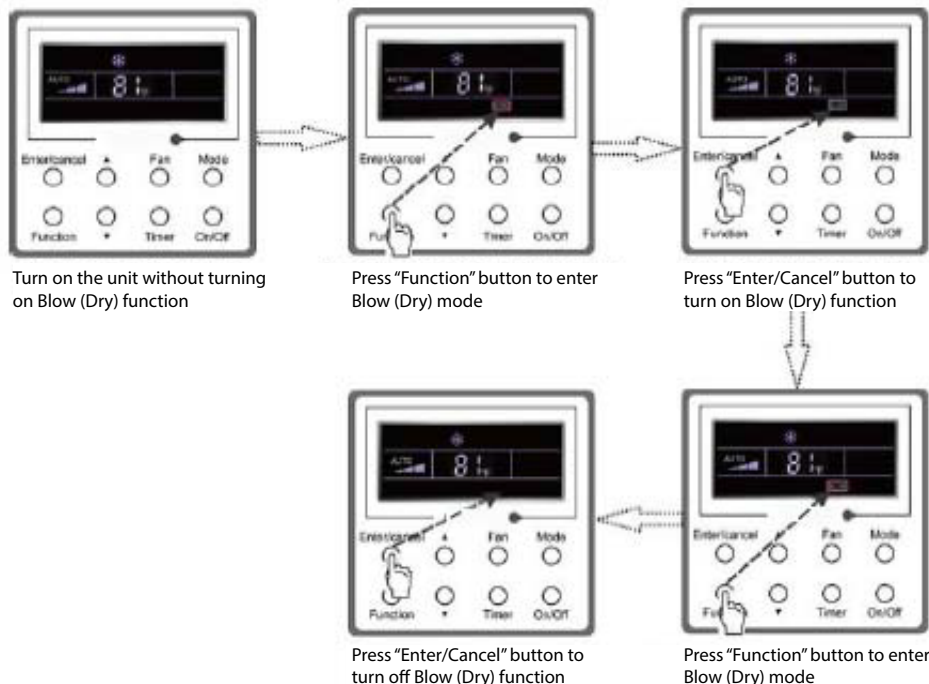



Fig. 12 Blow (Coil Dry) Setting (X-Fan)

3.10 Change Between Fahrenheit and Celsius

With the unit turned "Off" press and hold the Mode and ▼ buttons at the same time for 5 seconds to toggle between Celsius and Fahrenheit on the display.

3.11 Lock

Upon successful startup or while the unit is "Off", press ▲ and ▼ at the same time for 5 seconds until the wired controller enters the Lock setting. The LCD will display the  symbol. Press the ▲ and ▼ buttons again at the same time for 5 seconds to quit this setting. When the keys are locked, the controller buttons are disabled.

3.12 Memory

Memory Setting: When the unit is "Off", press Mode and ▲ at the same time for 5 seconds to switch memory states between memory on and memory off. When this setting is activated, "Memory" will be displayed. If this setting is not set, the unit will be in the "Off" state after power failure and power recovery.

Memory recovery: If this setting has been set for the wired controller, after power failure the wired controller will resume its original running state upon power recovery. Memory setting retains information for: On/Off, Mode, set temperature, set fan speed, Save setting and Lock setting.

3.13 Service Mode Function

Enter the “service” function:

Turn the system off at the wired controller

Press the Function and Timer buttons simultaneously for 5s to access the “service” menu.

Press Mode button to adjust the setting options.

Press “▲ or ▼” button to adjust the settings.

3.13.1 Selecting the indoor ambient temperature sensor (dual ambient temperature sensors function)

Under “service” mode, press the Mode button until “00” is displayed.

Press “▲ and ▼” button to adjust the settings.

Four settings are available:

Setting #1

The air temperature sensor located inside the indoor unit is set as indoor ambient temperature sensor (timer zone displays 01).

Setting #2

The temperature sensor located inside the wired controller is set as indoor ambient temperature sensor (timer zone displays 02).

Setting #3

The temperature sensor located inside the indoor unit controls the system during cooling, dry and fan mode; the temperature sensor in the wired controller controls the system in heating and auto mode (timer zone displays 03).

Setting #4

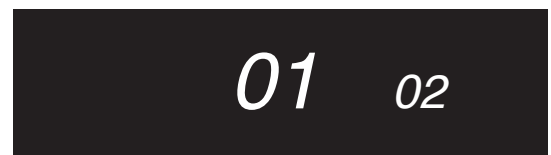
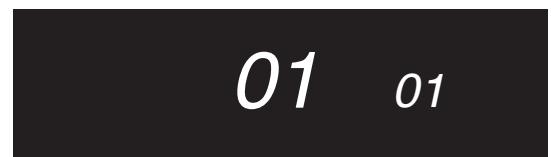
The temperature sensor located inside the wired controller controls the system during cooling, dry and fan mode; the temperature sensor located in the indoor unit controls the system in heating and auto mode (timer zone displays 04).



3.13.2 Selecting Fan Speed Options:

With the unit turned “Off”, the service mode can be activated by pressing “Function” and “Timer” for five seconds. Press the “Mode” button until “01” is shown in the temperature display area. The setting status will be shown in the timer area. Press “▲ and ▼”. There are two options as follows:

1. Three low fan speed levels (01)
2. Three high fan speed levels (02)

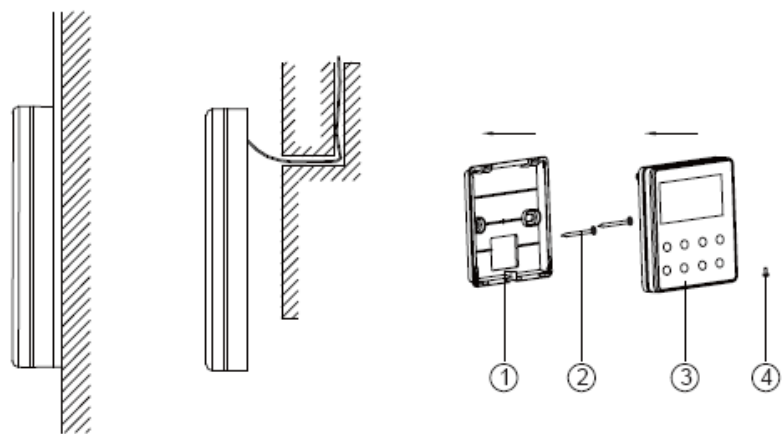


Saving Changes :

Press Enter/Cancel button to save changes and return to normal operation. System must be powered on at the control to begin operation. If no selection is detected within 20 seconds, the mode will be cancelled without saving any selections.

4 Installation Instructions

4.1 Parts and Dimensions of the Wired Controller



No.	1	2	3	4
Name	Mounting Plate of the Wired Controller	Screw M4X25	Front Panel of the Wired Controller	Screw ST2.9X6

NOTE: The dimension of the wired remote is 3.5" x 3.5" x 5/8". (8.9 x 8.9 x 1.6 cm)
The dimension of the mounting plate is 3.5" x 3.5" x 3/8" (8.9 x 8.9 x 0.9 cm).

4.2 Installation Requirements

**CAUTION**

Check that the power is off before installing the wired controller to avoid the risk of electric shock. Power to the unit must remain off until all installation steps are complete.

- 1. Do not install the wired controller in a damp place or in direct sunlight, such as directly opposite a window.
- 2. Do not install the wired controller close to a high-temperature object or in a place where the wired controller is likely to be exposed to water spray.
- 3. Do not install near electrical lines within the walls.
- 4. To avoid abnormal operation caused by electromagnetic interference or other causes, please note the following during wiring.
 - a. Be sure the communication line is wired into the correct port, otherwise it would result in a communication fault.
 - b. The communication line for the wired controller and the power line must be separated with a minimal distance of 12 inches.
 - c. If extended beyond the shipped cable length the communication line to the wired controller must be at least 18 AWG stranded, twisted, shielded, paired communication wiring.

4.3 Connecting the Communication Line of the Wired Controller at the Indoor Unit

1. Open the cover of the electrical control box of the indoor unit.
2. Insert the communication line of the wired controller through the rubber ring.
3. Connect the communication line of the wired controller to the 4-pin socket of the indoor unit PCB.
4. Tighten the communication line with ties.

Note: The recommended distance between the indoor unit and the controller is 26 feet (8m), but can be up to 65 feet (19.8m). The total communication line length cannot exceed 65 feet, otherwise poor signal strength may occur resulting in communication errors. Use 18 AWG four conductor, twisted pair, shielded cable. When splicing cable to extend length, connections shall be soldered and insulated.

4.4 Disassembly of the Wired Controller

1. Remove the screws securing the controller body front panel to the mounting plate of the wired controller (ST2.9X6).
2. Disconnect the controller body from the mounting plate.
3. Lift the controller body upward and outward from the mounting plate.
4. Disconnect the communication line from the back of the controller body.

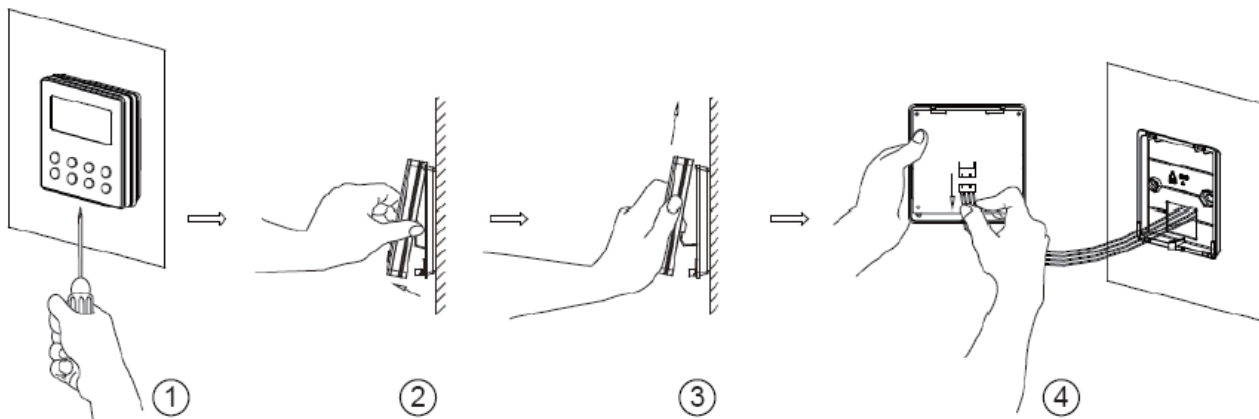


Fig. 14 Removal of the wired controller

4.5 Mounting the Wired Controller to the Wall

1. Remove the mounting plate from the back of the wired controller body.
2. Pull the communication line of the wired controller through the access opening in the wall.
3. Seal the wall opening around the control wire to eliminate air leakage behind the controller.
4. Pull the communication line through the rectangular opening in the mounting plate.
5. Place the mounting plate of the wired controller onto the wall over the access opening.
6. Check the mounting plate for level, then affix it with the supplied mounting screws (M4X25).
7. Insert the communication line into the slot of the wired controller, then affix the wired controller body to the mounting plate.
8. Secure the controller body front panel to the mounting plate using screws. (ST2.9X6)

High Wall Mini / Multi-Split Simple Wired Controller

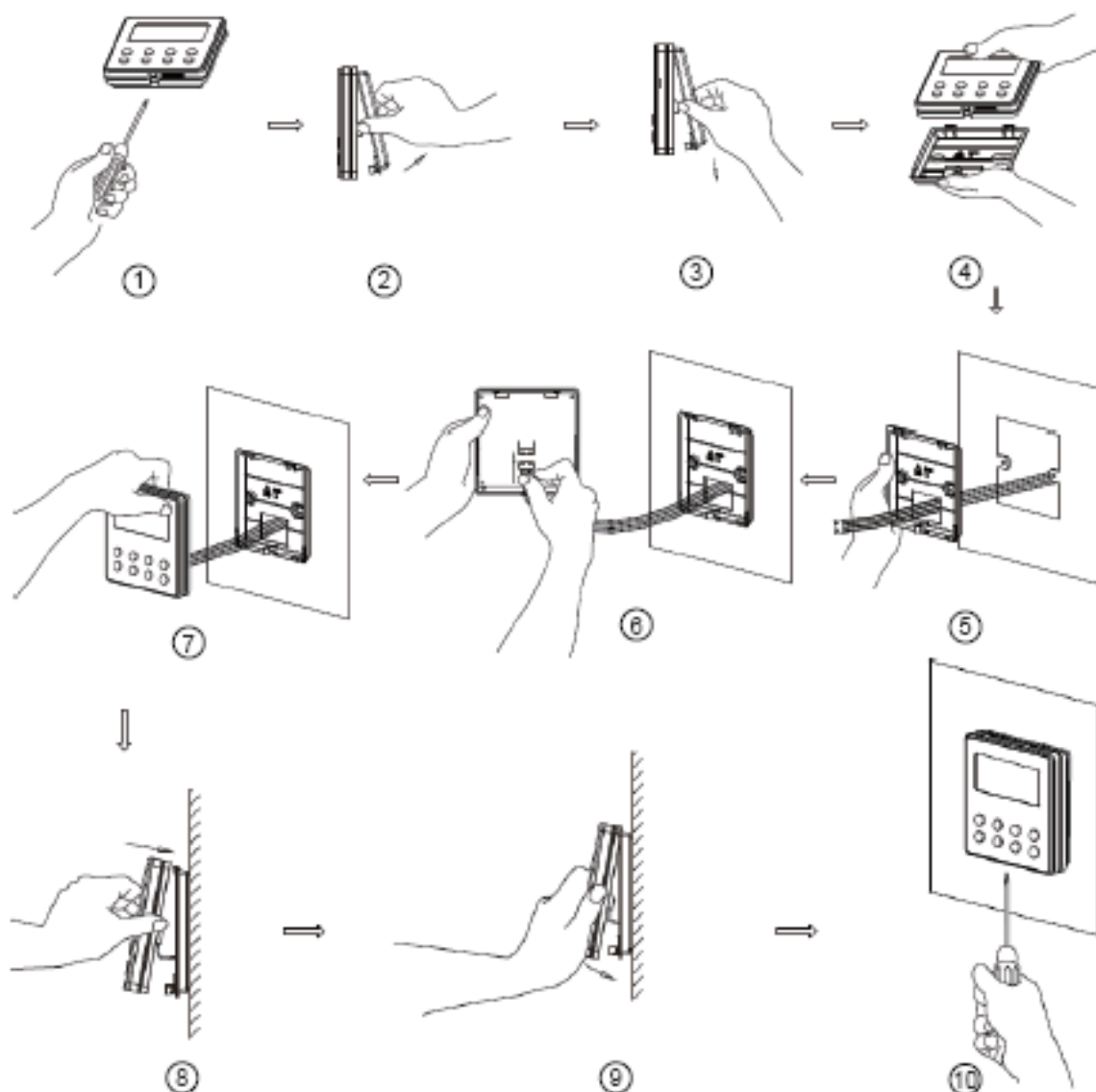


Fig. 15 Installation diagram for wired controller

5 Error Display

If an error occurs during the operation of the system, the error code will be displayed on the LCD, as shown in Fig.17. If multiple errors occur at the same time, their codes will be displayed circularly.

Note: In event of any error, please turn off the unit and contact the installing/servicing dealer.

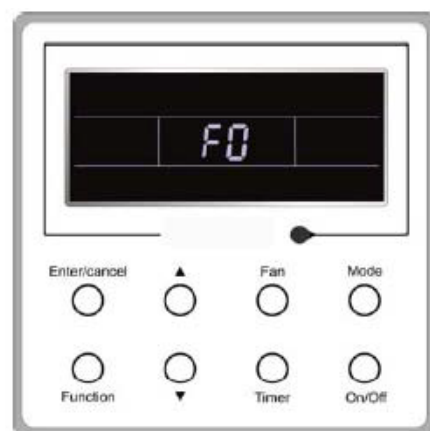


Fig. 16 Error Display

High Wall Mini / Multi-Split Simple Wired Controller

5.1 Error Codes

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