LG
Life's Good

INSTALLATION MANUAL

AIR CONDITIONER

Please read this installation manual completely before installing the product.
Installation work must be performed in accordance with the national wiring standards by authorized personnel only.
Please retain this installation manual for future reference after reading it thoroughly.

Dry Contact for thermostat
Original instruction

MFL69265526
Rev.01_071619

www.lg.com

TABLE OF CONTENTS

Important Safety Instructions

READ ALL INSTRUCTIONS BEFORE USING THE APPLIANCE.

Always comply with the following precautions to avoid dangerous situations and ensure peak performance of your product.

⚠ WARNING

It can result in serious injury or death when the directions are ignored.

⚠ CAUTION

It can result in minor injury or product damage when the directions are ignored.

⚠ WARNING

· Installation or repairs made by unqualified persons can result in hazards to you and others.

· Installation work must be performed in accordance with the National Electric Code by qualified and authorized personnel only.

· The information contained in the manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.

- Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury and/or death.

Installation

- Be sure to request to the service center or installation specialty store when installing products. It will cause fire or electric shock or explosion or injury.
- Request to the service center or installation specialty store when reinstalling the installed product. It will cause fire or electric shock or explosion or injury.
- Do not disassemble, fix, and modify products randomly. It will cause fire or electric shock.
- Be sure to turn off power before installation. It will cause electric shock.
- Installation work must be performed in accordance with the national wiring standards by authorized personnel only.
- Always perform grounding. Otherwise, it may cause electrical shock.
- You need to use a safely insulated power supply which follows IEC61558-2-6 anc NEC Class2. If you do not follow, It may

cause fire, electric shock, explosion or injury.

- Securely attach the electrical part cover to Module. If the electric part cover of Module is not attached securely, it could result in a fire or electric shock due to dust, water, etc.
- Make the connections securely so that the outside force of the cable may not be applied to the terminals. Inadequate connection and fastening may generate heat and cause a fire.

In-use

- Do not place flammable stuffs close to the product. It will cause fire.
- Do not allow water to run into the product. It will cause electric shock or breakdown.
- Do not give the shock to the product. It will cause breakdown when giving the shock to the product.
- Request to the service center or installation specialty store when the product becomes wet. It will cause fire or electric shock.
- Do not give the shock using sharp and pointed objects. It will cause breakdown by damaging parts.

- Do not touch the board when the power is connected. It can cause a fire, electric shock, explosion, injury and problem to the product.
- Unplug the unit if strange sounds, smell, or smoke comes from it. Otherwise, it may cause electrical shock or a fire.
- The appliance must only be supplied at safety extra low voltage corresponding to the marking on the appliance.
- This appliance is not intended to be accessible to the general public.

⚠ CAUTION
In-use

- Do not clean using the powerful detergent like solvent but use soft cloths. It will cause fire or product deformation.
- Do not press the screen using powerful pressure or select two buttons. It will cause product breakdown or malfunction.
- Do not touch or pull the lead wire with wet hands. It will cause product breakdown or electric shock.
- This appliance is not intended for use by persons (including children) with reduced

physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

Overview

LG Dry Contact is a solution for automatic control of air conditioning system at the owner's behest.

In simple words, it's a switch which can be used to turn the unit On/Off after getting the signal from external sources like key-in lock, door or window switch etc specially used in Hotel rooms.

It's a small PCB that either can be fit inside the control box of Indoor unit or can be outside the unit in a plastic case if there is no sufficient space inside the Indoor unit.

Apart from simple installation, it can also be linked to Central Controller via Indoor unit PI485 pcb. For this, all connecting wires & an additional small pcb for looping is also provided along with Dry Contact.

Dry Contact can be used in two ways.

1. It can be used to actually turn On/Off the system on receiving the signal from the source.
   In this case, user doesn't need to use remote controller anymore to turn On/Off the system.
   However all the further settings like temperature, fan speed, mode etc can be done through remote controller only.
2. Other way is almost similar as above but in this case, after getting the On signal from the external source, user has to turn On the system from remote controller only. Dry contact just activates the system.
   However system can be turned Off directly from the external source. So only On mode is different here.

So in both of above conditions, system can't be operated without signal from external source which prevents unnecessary use of system & facilitates its operation only when its required.

These settings can be selected from the remote controller whose details have been explained in the later part of this manual

So depending upon the requirement, Dry Contact offers a variety of applications to suit the customer's requirement in the best possible way.

❈ If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

❈ Means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.

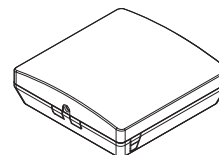❈ Qualified service technician is only possible to access to product.

Minimum cross-sectional area of conductors

Rated current of appliance A			Nominal cross-sectional area mm²
		≤0.2	Tinsel cord [a]
>0.2	and	≤3	0.5 [a]
>3	and	≤6	0.75
>6	and	≤10	1.0 (0.75)[b]
>10	and	≤16	1.5 (1.0)[b]
>16	and	≤25	2.5
>25	and	≤32	4
>32	and	≤40	6
>40	and	≤63	10

Part Descripton

Front Case

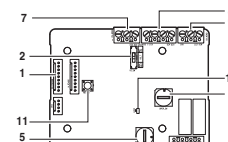**Rear Case**

ISO View

PCB
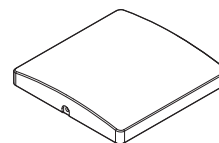
Side

Side

Cable(1 EA)
(For Connecting with indoor unit)
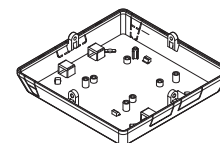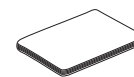
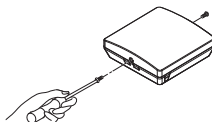**Installation Manual**

* Others :
Screw 4 EA(For installation)

DRY CONTACT FOR THERMOSTAT
1. CN_INDOOR : Connector for indoor unit
2. VS_SW : Switch to select External Voltage or Non Voltage for input contact signal
3. CN_OUT(O1,O2) : Output terminal to show whether the indoor unit is operating (Relay contact)
4. CN_OUT(E3,E4) : Output terminal to show whether there is an error with the indoor unit (Relay contact)
5. TEMP_SW : Switch to set the desired temperature of the indoor unit
6. OPER_SW : Switch to select whether to use set function of Dry contact
7. CN_OPER : Input terminal for thermo & operation signal
8. CN_MODE : Input terminal for Mode signal
9. CN_WIND : Input terminal for Wind signal
10. LD01 : LED to display the status of Dry contact Module
11. RST_SW : Reset switch

ENGLISH

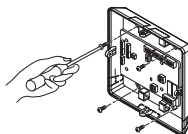## Installation
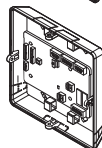
1) Loosen and remove two screws that secure the product.

2) Position the rear case to the direction towards to the connector for convenient cable arrangement.
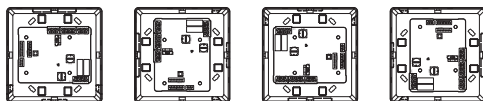
3) Secure the rear case on the installation place using the supplied fixing screws.

4) Remove knock out shapes on the rear case (4-sided) according to the connector's size and direction.

5) Connect the connection wires properly according to the connection method. (Refer to the instruction and set-up description)
6) Set the switch according to the setting method. (Refer to the instruction and set-up description)
7) Tighten the fixing screws on the top and bottom of the case.
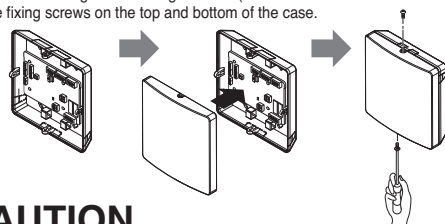
⚠ CAUTION

1. Install the product on flat surface and install anchoring screws at more than 2 places. Otherwise the central controller may not be anchored properly.
2. Do not tighten anchoring screws too tightly. It may cause deformation of the case.
3. Do not deform the case at random. It may cause malfunction of the central controller.

Setting and using method

After change any Dry contact setting, then you must press RESET switch to reflect the setting.

Power supply and indoor unit connection

■ When using the Dry contact for communication independently

Indoor unit PCB

CN-CC

CN_INDOOR

ENGLISH
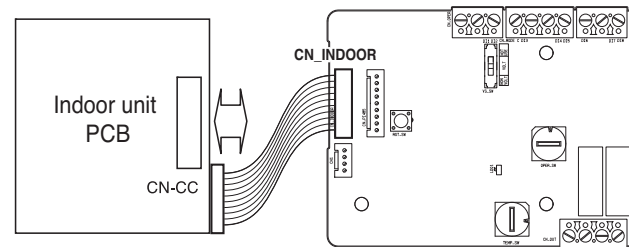
Setting of Contact Signal Input

■ For input contact closure only(No power input)

Thermostat
LG does not
supply this section
(Field supply)

Notes
Do not input the voltage signal in
"NON VOLT" setting mode otherwise
it will cause serious damage

■ For input contact voltage : DC 12 V, AC 24 V

Connect separate
External voltage of
DC 12 V, AC 24 V

Thermostat
LG does not
supply this section
(Field supply)

Setting of 'OPER_SW'

■ Using 'OPER_SW' , select the Option of control Function as described below

OPER_SW

<OPER_SW Function>

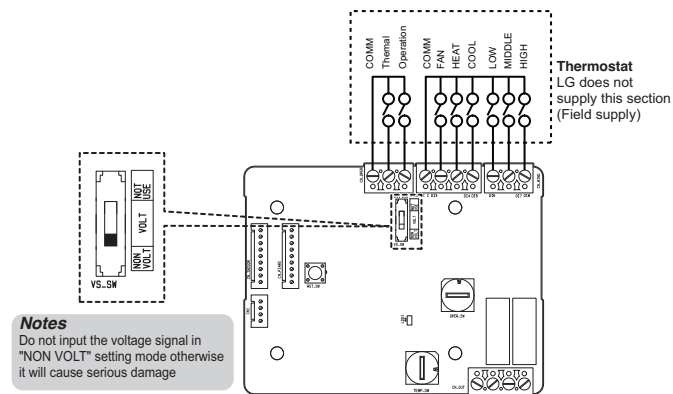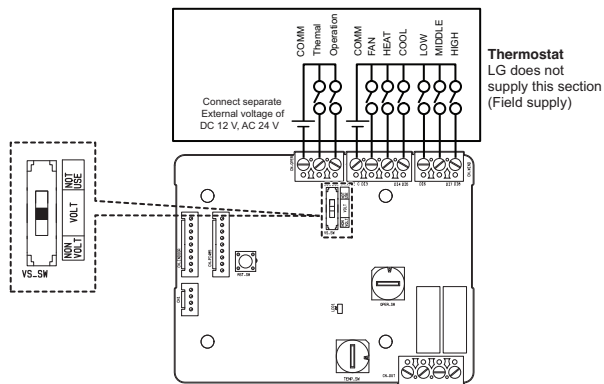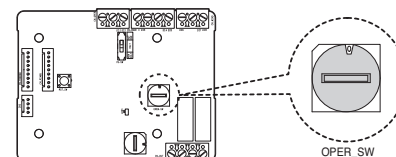| No.	WIND Signal en/disable	Thermal en/disable	Oper Mode en/disable	Dry Contact Control Priority
0	Disable	Disable	Disable	Disable
1	Disable	Disable	Disable	Enable[4]
2	Disable	Disable	Enable[3]	Disable
3	Disable	Disable	Enable	Enable
4	Disable	Enable[2]	Disable	Disable
5	Disable	Enable	Disable	Enable
6	Disable	Enable	Enable	Disable
7	Disable	Enable	Enable	Enable
8	Enable [1]	Disable	Disable	Disable
9	Enable	Disable	Disable	Enable
A	Enable	Disable	Enable	Disable
B	Enable	Disable	Enable	Enable
C	Enable	Enable	Disable	Disable
D	Enable	Enable	Disable	Enable
E	Enable	Enable	Enable	Disable
F	Enable	Enable	Enable	Enable

1) Enable CN_WIND signal – Amount of wind flow (Low, Middle, High) signal enable
2) Enable Thermo ON/OFF input signal
   - Desired Temperature 18 °C in cooling mode
   - Desired Temperature 30 °C in heating mode
   - No function in FAN mode
3) Enable CN_MODE signal – Operation mode (Cool, Heat, Fan) signal enable
4) Enable Thermostat priority control mode – Indoor's remote-controller signal will be disregarded

Notes
· Information of 'OPER_SW' is sensed only initial step by Dry contact module therefore , once the configuration changed , Reset of Dry contact module is required.
· After power input or unit's reset , wait 25~30 seconds(Display LED 10 times blinking) for unit stabilization then Dry contact module will operate normally.

■ Flow Chart for 'OPER_SW'

-. When not using WIND signal
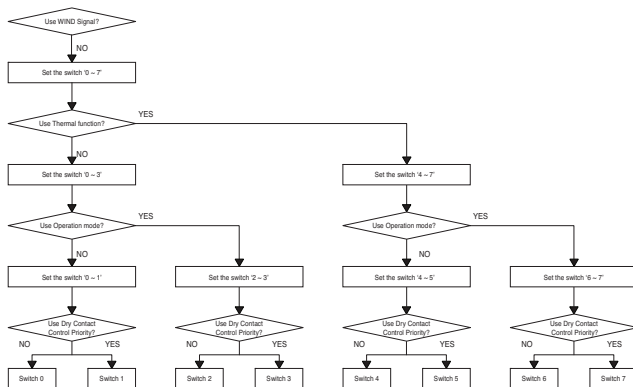
-. When using WIND signal

Notes

• When you change a function with remote control without setting Dry_contact control priority the display condition between remote control and controller can be different.

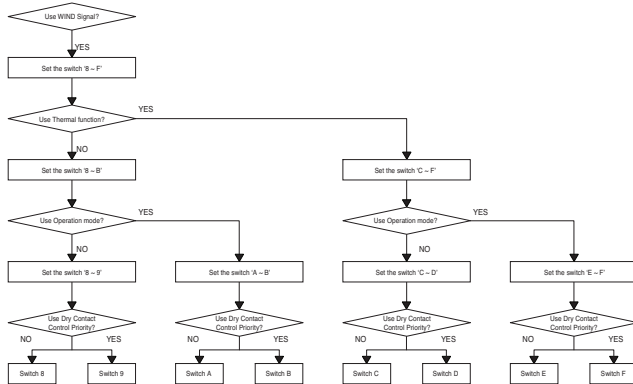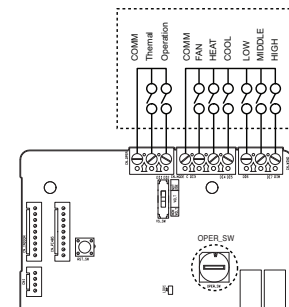## ■ Function table for the selection of 'OPER_SW' and the input signal

OPER_SW	CN_MODE input			Function
	FAN	HEAT	COOL	
2,3,6,7,A,B,E,F	0	0	0	NA
	0	0	1	COOL
	0	1	0	HEAT
	0	1	1	NA
	1	0	0	FAN
	1	0	1	NA
	1	1	0	NA
	1	1	1	NA
Others	-	-	-	NA

OPER_SW	CN_WIND input			Function
	Low	Middle	High	
8,9,A,B,C,D,E,F	0	0	0	NA
	0	0	1	High
	0	1	0	Middle
	0	1	1	NA
	1	0	0	Low
	1	0	1	NA
	1	1	0	NA
	1	1	1	NA
Others	-	-	-	NA

OPER_SW	CN_OPER		Function
	Thermal	Operation	
4,5,6,7,C,D,E,F	0	0	Thermal Off + Stop
	0	1	Thermal Off + Run
	1	0	Thermal On + Stop
	1	1	Thermal On + Run
Others	-	-	NA

Notes

1) Thermal On : This input will change automatically desired temperature
              Desired Temperature 18 °C In cooling mode
              Desired Temperature 30 °C In heating mode
              No function In FAN mode

Setting of 'TEMP_SW'

■ When setting the desired temperature of the Dry contact Module

: When operating the indoor unit using Dry contact module's desired temperature, set the desired temperature according to the 'TEMP_SW' setting.
If Thermostat priority control mode is disabled, the desired temperature can be reset by other controller
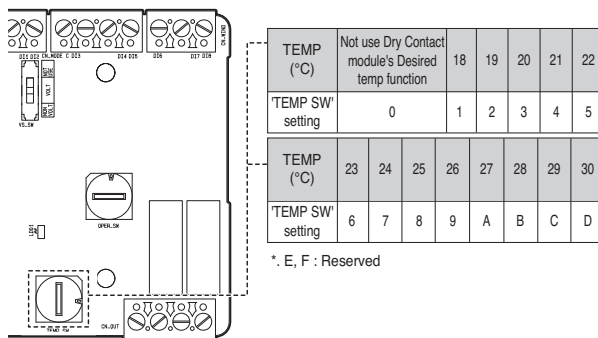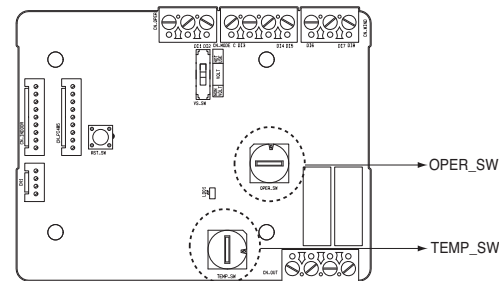
- Use the 'TEMP_SW' to set the temperature as shown below.

TEMP (°C)	Not use Dry Contact module's Desired temp function	18	19	20	21	22
'TEMP SW' setting	0	1	2	3	4	5

TEMP (°C)	23	24	25	26	27	28	29	30
'TEMP SW' setting	6	7	8	9	A	B	C	D

*. E, F : Reserved

Installation of thermostat

■ When interlocking with thermostat, select the option of control function as described below.

→ OPER_SW

→ TEMP_SW

<Switch Function>

TEMP_SW	OPER_SW	Thermostat mode	WIND Signal en/disable
F	0	Conventional AC Unit Thermostat	Disable
	1		Enable
	2	Heat Pump Thermostat_O Terminal	Disable
	3		Enable
	4	Heat Pump Thermostat_B Terminal	Disable
	5		Enable

1) When interlocking with thermostat, set TEMP_SW to F.

2) Enable CN_WIND signal – Amount of wind flow(Low, Middle, High) signal enable

Notes

· Information of 'OPER_SW' is sensed only initial step by Dry contact module therefore , once the configuration changed , Reset of Dry contact module is required.

· After power input or unit's reset , wait 25~30 seconds(Display LED 10 times blinking) for unit stabilization then Dry contact module will operate normally.

· Do not use desired temperature setting function when interlocking with thermostat.

■ Details of Installation for thermostat

1) In case of Occupancy sensor,

- When motion is detected by the sensor, Indoor unit is enabled.
- Otherwise, Indoor unit is disabled.

2) In case of Emergency Stop or Security option.

- When emergency condition occurs, Indoor unit is disabled.
- Otherwise, Indoor unit is enabled.

AC 24 V

Security

Emergency Stop

Occupancy Sensor

Reference Cases
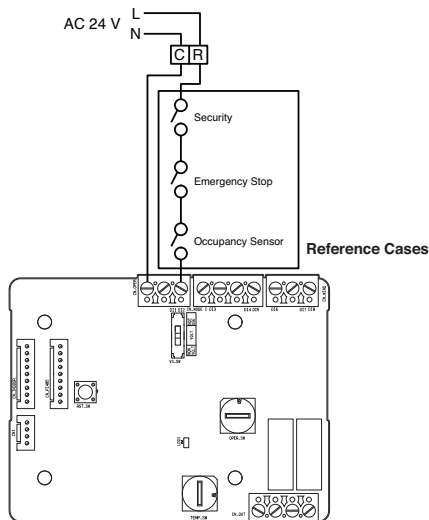
■ For conventional thermostat signal input

Thermostat
LG does not supply this section
(Field supply)

AC 24 V

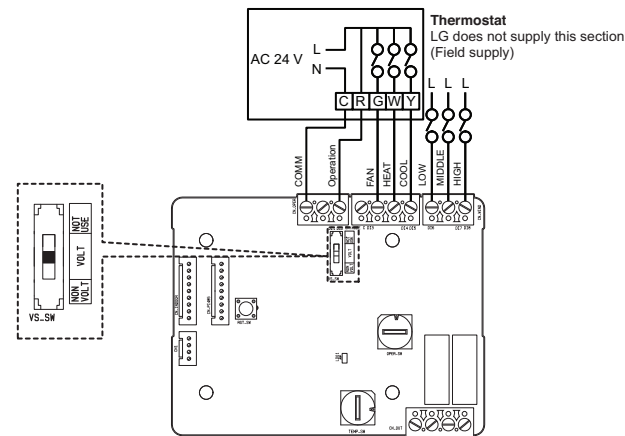| Thermostat Fan & System Switch			Input				IDU Response
FAN [Auto / On]	MODE [Cool / Heat / Off]		Operation	FAN [G]	HEAT [W]	COOL [Y]	[Mode / Thermal / Fan]
-	-	-	0	-	-	-	Disable Operation
Auto	OFF	-	1	0	0	0	Off
	Cool	RT > SP	1	1	0	1	Cool / On / On
		RT < SP	1	0	0	0	Enable
	Heat	RT < SP	1	1	1	0	Heat/ On/On
		RT > SP	1	0	0	0	Off
ON	FAN	-	1	1	0	0	Fan/ Off/ On
	Cool	RT > SP	1	1	0	1	Cool/ On/ On
		RT < SP	1	1	0	0	Fan/ Off/ On
	Heat	RT < SP	1	1	1	0	Heat/ On/ On
		RT > SP	1	1	0	0	Fan/ Off/ On

※ RT : Room Temperature
※ SP : Set Point

Notes

· IDU Fan logic, depending on model selected, may delay IDU fan operation momentarily during a cold start heat call. This function allows IDU coil to warm up prior to operating fan in some IDU models.

· Thermostats that use resistive anticipation are not supported at this time.

· Verify documentation of desired thermostat so that the logic is same as shown in the table above.

■ For heat pump thermostat with O terminal signal input

Thermostat
LG does not supply this section
(Field supply)

Thermostat Fan & System Switch			Input				IDU Response [Mode / Thermal / Fan]
FAN [Auto / On]	MODE [Cool / Heat / Off]		Operation	Thermal [Y]	FAN [G]	COOL [O]	
-	-	-	0	-	-	-	Disable Operation
Auto	OFF	-	1	0	0	0	Off
Auto	Cool	RT > SP	1	1	0	1	Cool / On / On
Auto	Cool	RT < SP	1	0	0	1	Off
Auto	Heat	RT < SP	1	1	0	0	Heat/ On/On
Auto	Heat	RT > SP	1	0	0	0	Off
ON	FAN	-	1	0	1	0	Fan/ Off/ On
ON	Cool	RT > SP	1	1	1	1	Cool/ On/ On
ON	Cool	RT < SP	1	0	1	1	Fan/ Off/ On
ON	Heat	RT < SP	1	1	1	0	Heat/ On/ On
ON	Heat	RT > SP	1	0	1	0	Fan/ Off/ On

※ RT : Room Temperature
※ SP : Set Point

Notes
- Thermostats that close contacts "O" or "B" during Cool or Heat call only have not been verified. "O" and/or "B" contact closure must be maintained during respective cycle / mode selection.
- IDU Fan logic, depending on model selected, may delay IDU fan operation momentarily during a cold start heat call. This function allows IDU coil to warm up prior to operating fan in some IDU models.
- Thermostats that use resistive anticipation are not supported at this time.
- Verify documentation of desired thermostat so that the logic is same as shown in the table above.

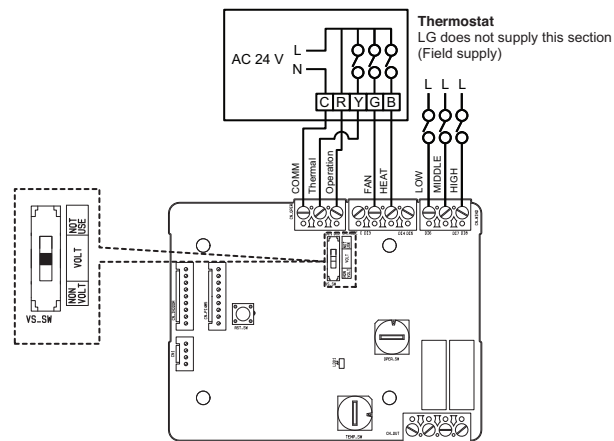## ■ For heat pump thermostat with B terminal signal input

Thermostat
LG does not supply this section
(Field supply)

| Thermostat Fan & System Switch			Input				IDU Response [Mode / Thermal / Fan]
FAN [Auto / On]	MODE [Cool / Heat / Off]		Operation	Thermal [Y]	FAN [G]	HEAT [B]	
-	-	-	0	-	-	-	Disable Operation
Auto	OFF	-	1	0	0	0	Off
Auto	Cool	RT > SP	1	1	0	0	Cool / On / On
Auto	Cool	RT < SP	1	0	0	0	Off
Auto	Heat	RT < SP	1	1	0	1	Heat/ On/On
Auto	Heat	RT > SP	1	0	0	1	Off
ON	OFF	-	1	0	1	0	Fan/ Off/ On
ON	Cool	RT > SP	1	1	1	0	Cool/ On/ On
ON	Cool	RT < SP	1	0	1	0	Fan/ Off/ On
ON	Heat	RT < SP	1	1	1	1	Heat/ On/ On
ON	Heat	RT > SP	1	0	1	1	Fan/ Off/ On

※ RT : Room Temperature
※ SP : Set Point

Notes
- Thermostats that close contacts "O" or "B" during Cool or Heat call only have not been verified. "O" and/or "B" contact closure must be maintained during respective cycle / mode selection.
- IDU Fan logic, depending on model selected, may delay IDU fan operation momentarily during a cold start heat call. This function allows IDU coil to warm up prior to operating fan in some IDU models.
- Thermostats that use resistive anticipation are not supported at this time.
- Verify documentation of desired thermostat so that the logic is same as shown in the table above.

Indoor unit monitoring

■ **Monitoring whether the indoor unit is operating: Refer to below and connect to the control device that you want to control.**
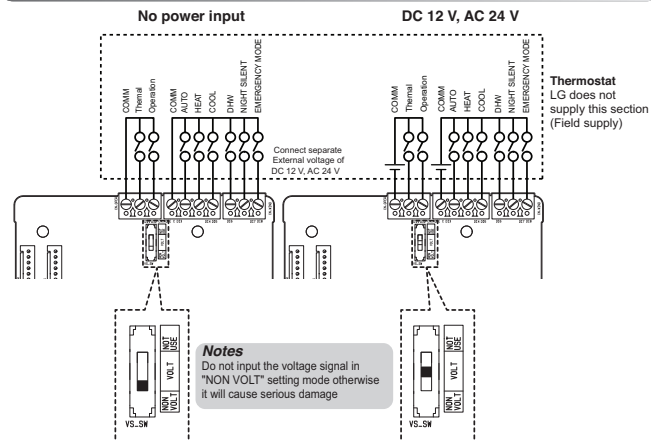

Field Supply

Operation Display

Power AC or DC

(Depends on Operation display power type)
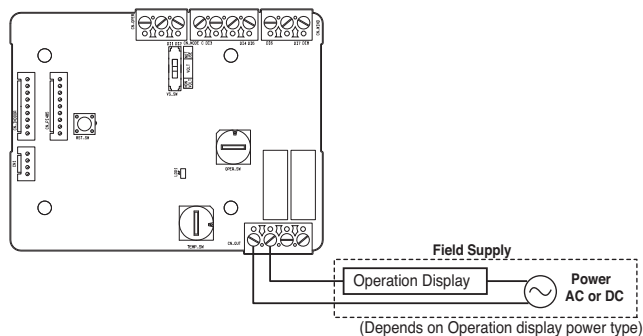
■ **Monitoring indoor unit error: Refer to below and connect to the control device that you want to control.**

Field Supply

Error Display

Power AC or DC

(Depends on Error display power type)
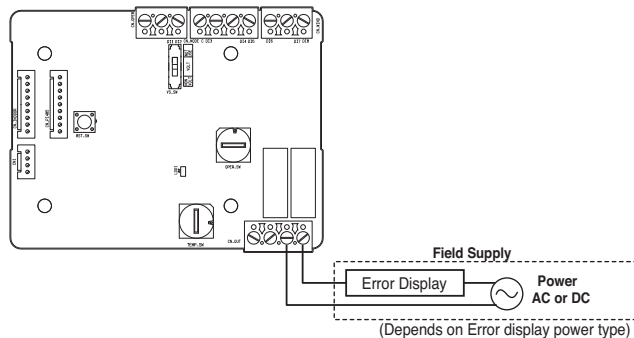
⚠ CAUTION

Field supply power should not use more than DC 12 V (0.5 A), AC 24 V (0.5 A).

Function table for the input signal (For AWHP Indoor unit)

No power input **DC 12 V, AC 24 V**

Connect separate External voltage of DC 12 V, AC 24 V

Thermostat LG does not supply this section (Field supply)

Notes
Do not input the voltage signal in "NON VOLT" setting mode otherwise it will cause serious damage

CN_OPER		CN_MODE			Function
Operation	Thermal	AUTO	HEAT	COOL	
1	1	0	0	0	NA
1	1	0	0	1	COOL
1	1	0	1	0	HEAT
1	1	0	1	1	NA
1	1	1	0	0	AUTO
1	1	1	0	1	NA
1	1	1	1	0	NA
1	1	1	1	1	NA

※ If Operation input was 0(Operation stop), Thermal input and CN_MODE input don't work.

※ If Thermal input was 0(Thermal Off), CN_MODE input doesn't work.

CN_WIND	Function
DHW	On
	Off
NIGHT SILENT	On
	Off
EMERGENCY MODE	On
	Off

※ If both Operation input and DHW input were 0(Stop, Off), Night silent input and Emergency mode input don't work.

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