Digital Room Thermostat II
INSTALLATION MANUAL

APPLICATION

The DG Series of Digital Room Thermostat II provides single stage temperature control of air conditioners, heat pumps and fan coil units. Table 1 shows all the available models. All models can be provided with 24, 120, 220 Vac.

Model	Operation	Cooling / Heating	Compressor delay
01	cool + sweep	Compressor	yes
02	cool + sweep	Chilled water	no
03	cool – fan – dry	Compressor	yes
04	cool – fan – dry	Chilled water	no
05	cool – fan – dry – heat – auto	Compressor / Heat pump	yes
06	cool – fan – dry – heat – auto	Compressor / Electric heater	yes, only for cool
07	cool – fan – dry – heat – auto	Hot / Chilled water	no

Table 1. Digital Room Thermostat II models.

These thermostats are mercury free and require no battery. All set points are kept permanently by non-volatile memory.
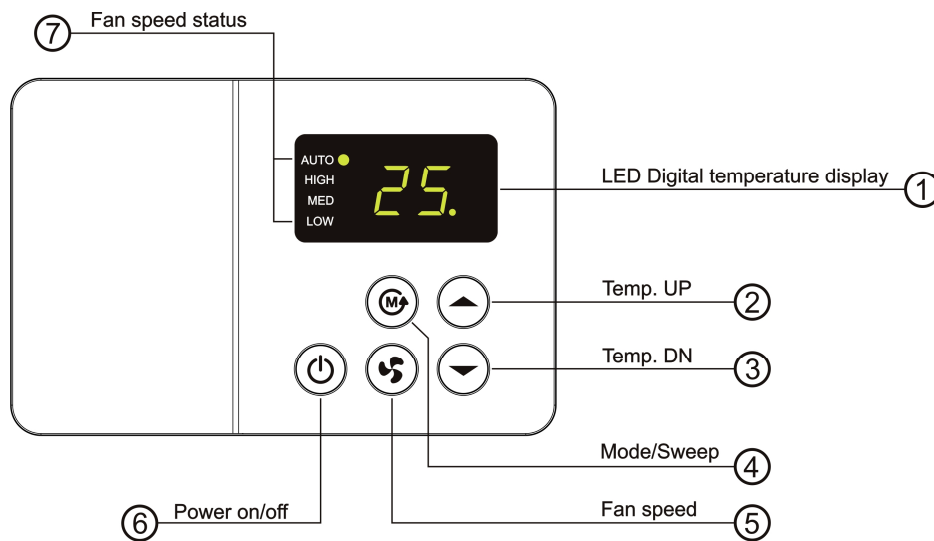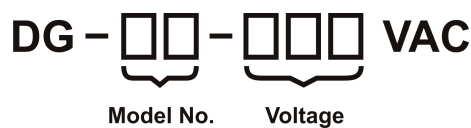

Fig. 1. Digital Room Thermostat II.

Model No. Legend

When ordered, put all the information in the Model No. Legend.

Voltage supply : 24, 120, 220 Vac.

SPECIFICATIONS

POWER SUPPLY	
24 VAC system	18 – 30 VAC, 50/60 Hz
120 VAC system	96 – 144 VAC, 50/60 Hz
220 VAC system	198 – 250 VAC, 50/60 Hz
TEMPERATURE :	
Temperature accuracy	± 1 °C
Storage temperature	0 – 70 °C
Ambient temperature	10 – 50 °C
Setting temperature range	15 – 30 °C (58 – 88 °F)
FAN RELAY, HEAT and COOL RELAY : (P1-P5)	
Rating (inductive load)	
• *Maximum switching capacity*	2 A @ 240 VAC
	4 A @ 120 VAC
REMOTE SETBACK INPUT (optional for 24 VAC model)	
• *Minimum current*	10 mA @ 5 VDC
EXTERNAL SENSOR (optional for 24 VAC model)	
NTC type 6.8 kohm @ 25 °C	

Mounting Location

Mount the thermostat approximately 5 ft. (1.5m) above the floor in a location that is free from direct sunlight, heat from appliances, hot or cold air from ducts, concealed pipes and chimneys, and drafts or dead spots behind doors or in corners. Do not mount on exterior wall, if possible. Failure to locate thermostat mounting as indicated will result in poor temperature control.
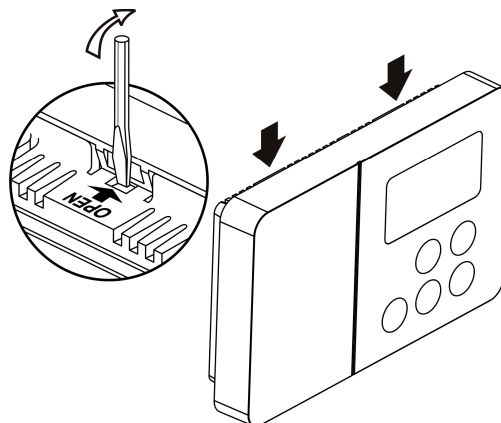
Note : Level thermostat mounting is for appearance only and is not required for proper thermostat operation.

INSTALLATION

Read these instructions thoroughly before installing product. Failure to follow these instructions could damage the product or cause a hazardous condition. Check the voltage and current ratings on the product to ensure that it is suitable for your application. Installer must be a trained, experienced service technician. Check product for proper operation after installation.
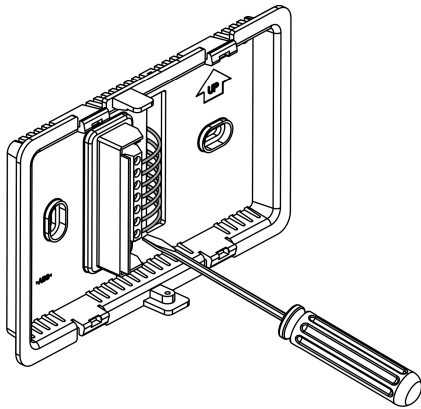
⚠ **CAUTION**

Damage to cooling system may occur. Disconnect power from the equipment at the main breaker/fuse block while installing the thermostat.
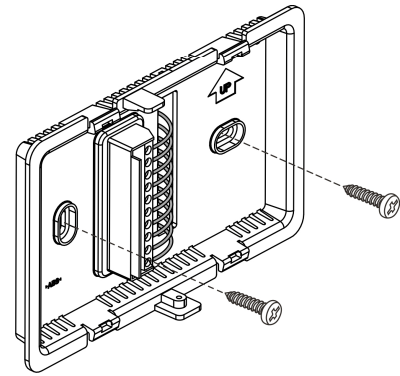

1. Lift and open top side using screwdriver.
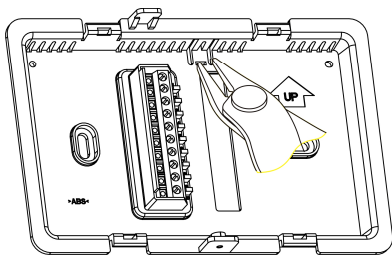
Installation A (wires through wall)

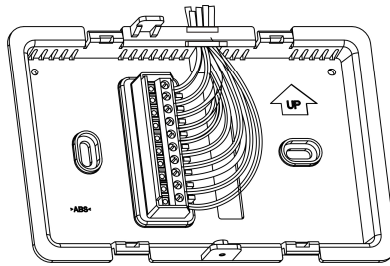1.1. Use cable size 0.5-1 sq. mm connect the wires into terminals.

1.2 Installing back plate into the wall with screws.
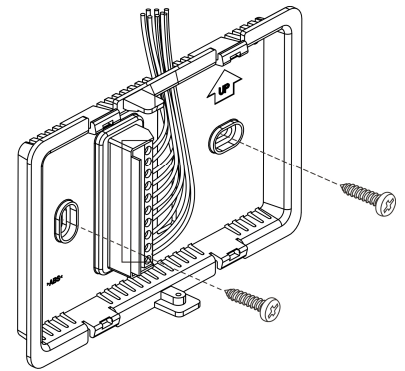
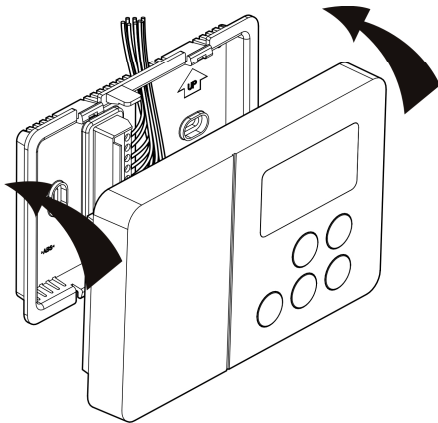**Installation B (wires on wall)**

1.1 Cut the plastic and open the hole with pliers.
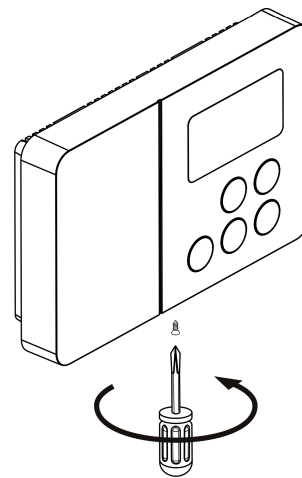

1.2 Use cable size 0.5-1 sq. mm connect the wires into terminals.
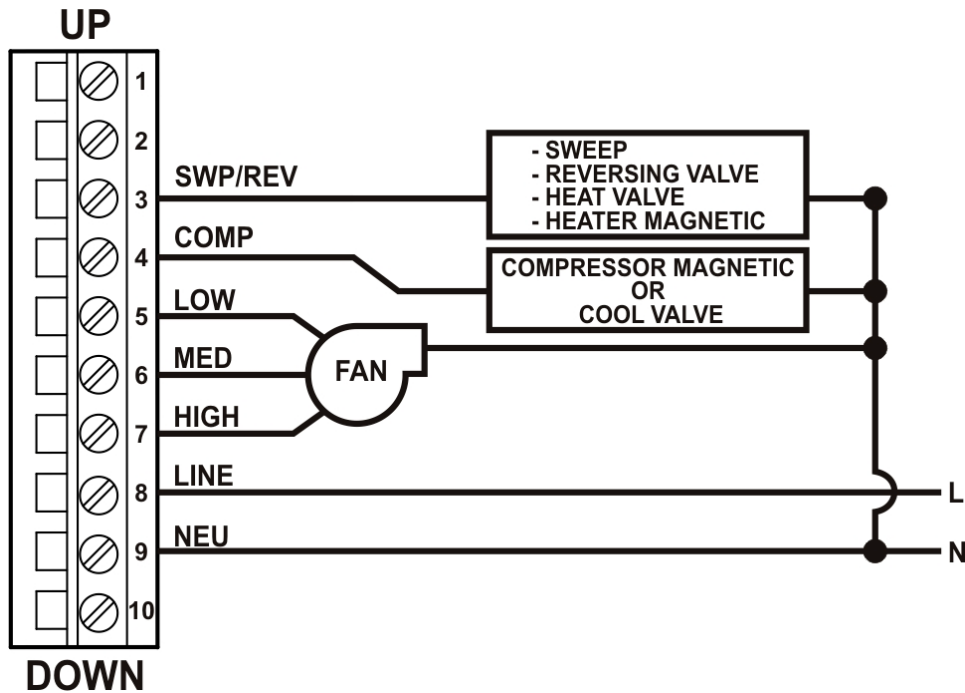

1.3 Installing back plate into the wall with screws.

2. Install the front case, carefully inspect wiring as per diagram before mounting thermostat.
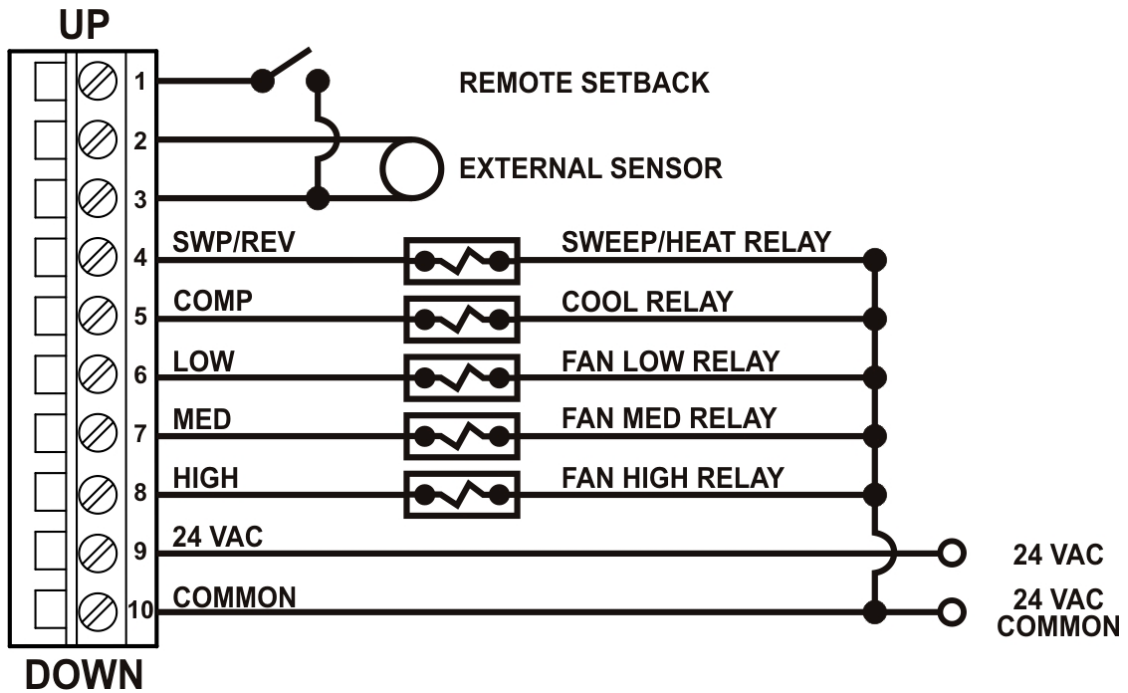

3. Tighten the screw firmly.

WIRING DIAGRAM

UP

	⊘	1
	⊘	2
SWP/REV	⊘	3
COMP	⊘	4
LOW	⊘	5
MED	⊘	6
HIGH	⊘	7
LINE	⊘	8
NEU	⊘	9
	⊘	10

- SWEEP
- REVERSING VALVE
- HEAT VALVE
- HEATER MAGNETIC

COMPRESSOR MAGNETIC
OR
COOL VALVE

FAN

L

N

DOWN

For 120 or 220 VAC system

UP

	⊘	1
	⊘	2
	⊘	3
SWP/REV	⊘	4
COMP	⊘	5
LOW	⊘	6
MED	⊘	7
HIGH	⊘	8
24 VAC	⊘	9
COMMON	⊘	10

REMOTE SETBACK

EXTERNAL SENSOR

SWEEP/HEAT RELAY

COOL RELAY

FAN LOW RELAY

FAN MED RELAY

FAN HIGH RELAY

24 VAC

24 VAC
COMMON

DOWN

For 24 VAC system

SET UP

All thermostats are factory set up according to the Model No. Legend listed on the back side of the plastic casing. However it can be alternated by the programming.

⚠ WARNING

Failure to set up according to the application may damage the heating and cooling system.

Set up mode

Press and hold ⌃ and 🌀 buttons at the same time for 3 seconds, the display will show the existing set up as per Table 2.

Display	Steady	Flashing
P1	Heat /Cool	Cool
P2	Electric heater	No electric heater
P3	°F	°C
P4	No compressor delay	Compressor delay
P5	Sweep	No sweep
P6	No offset	Room temp offset -2°C (default)

Table 2. Set up table.

Example 1 : the display shows $P\ l$ steady means the set up is now for Heat / Cool version.

Change the set up

a) While in set up mode, press ⌃ or ⌄ button to the required set up program.
b) To change the set up to the other version as listed in Table 2, press 🌀 button.
c) Repeat (a) & (b) for the next set up.
d) Press ⓜ button to exit from the set up mode.

Note : If POWER button is pressed before exiting from the set up mode, the system will exit from the existing mode without changing the setup program.
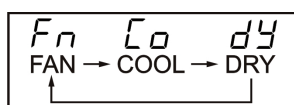
OPERATION

Power on/off

Press ⓞ to turn on/off the air conditioner. When turn on, it will operate according to the last program setting.
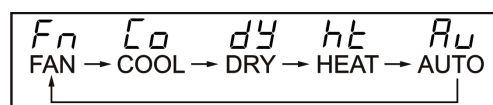
Mode/Sweep

For Cool + Sweep version, button ④ is a SWEEP button used to turn on/off the sweep motor.

For other versions, this is a MODE button used to select the operation mode.
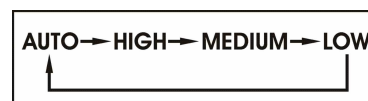
```
 Fn  Co  dY
FAN → COOL → DRY
```

Cool only model.

```
 Fn  Co  dY  ht  Au
FAN → COOL → DRY → HEAT → AUTO
```

Heat/Cool mode.

- ❑ Cool Mode : 7 segment will flash CO for 5 seconds
- ❑ Dry Mode : 7 segment will flash dY for 5 seconds
- ❑ Fan Mode : 7 segment will flash FO for 5 seconds
- ❑ Heat Mode : 7 segment will flash ht for 5 seconds

   - ▪ HP flashing for 5 seconds if the Heat Pump version is ordered.
   - ▪ Ht flashing for 5 seconds if the Electric Heater version is ordered.
   - ▪ Ho flashing for 5 seconds if the Hot water pipe version is ordered.

- ❑ Auto Mode : 7 segment will flash Au for 5 seconds. The system will automatically switch from Cool to Heat mode or vice versa.

Fan

Press Ⓢ button to select the fan speed in the following sequence. LED at ⑦ will show the status of the fan speed.

AUTO → HIGH → MEDIUM → LOW

Auto mode

The speed will be adjusted according to the difference between the room and the setting temperature.

- ❑ If the difference is 3°C or more, the fan will run at high speed.
- ❑ If the difference is 2°C, the fan will run at medium speed.
- ❑ If the difference is 1°C, or lower, the fan will run at low speed.

Temperature setting

Press ⏶ or ⏷ button for setting the temperature in a range of 15 - 30°C or 58 - 88 °F.

7 segment display will show the new setting for 5 seconds.

Compressor delay

In a model with compressor delay feature, there will be 3 minutes time delay before the compressor can restart.

Compressor/Valve/Heater status

If the compressor or valve or heater is ON, the dot after the second digit of the 7-segment display will be lit.

Sensor Error Alarm

If the room sensor is open/short circuit, the controller will stop the compressor or any heating equipment and dot on 7-segment will blink.

Auto Restart

All the setting parameters are kept in the non volatile memory. When there is a power failure and back to normal, the system will resume its operation with the same setting parameters.

Remote setback (optional for 24 VAC model)

Thermostat can be connected with external dry contact for energy saving purpose. If contact is open circuit, thermostat will operate in Remote setback mode, the display will show rS and all buttons will be disabled.

External Sensor (optional for 24 VAC model)

External temperature sensor can be connected externally to measure temperature at air return side, the internal sensor will be disabled automatically.