

## INNCOM e528 Thermostat Installation Guide

### Overview

INNCOM's e528.4G\* (the e528) thermostats utilize a CC2520 2.4 Ghz IEEE 802.15.4 RF transceiver in their role as part of the Integrated Room Automation System (IRAS). The integration of the radio on-board the PCBA, along with other component changes, makes for a simpler, more efficient, and more cost-effective device. (Note that the legacy e528 and e528.4G are very similar in look and feel. If in doubt, check the bottom of the unit—the 4G has a photosensor located there.)



Figure 1 E528.4G

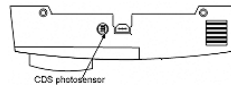


Figure 2 E528.4G

### Features

The e528 thermostat provides

- Accurate temperature measurement +/- 1 degree F
- Multiple load actuating options from 24VAC-277VAC
- Motion sensor for occupancy detection
- RF transceiver for wireless 2.4Ghz guestroom and backhaul network communications
- IR transceiver for guestroom network communications
- RS485 for wired backhaul network communications
- External temperature sensor support

### Installation

#### CAUTION! ⚠

Disconnect the power supply before beginning installation to prevent electrical shock or equipment damage. All wiring must comply with local codes and ordinances.

1. Read instructions carefully. Failure to follow them could damage the product or create a hazard.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check product operation as indicated in instructions.
5. For variations of these systems, refer to the installation instructions of the controlled equipment.

### Location

Select a location about 1.5m (5ft.) above the floor with good air circulation at average temperature. Do not mount thermostat where it may be affected by

- Drafts or dead spots behind doors or in corners
- Hot or cold air from ducts
- Radiant heat from sun or appliances
- Concealed pipes or chimneys

\* "2G," "3G," and "4G" are internal INNCOM product designations used for convenience to differentiate individual hardware configurations. No difference in device capability or effectiveness is implied. Due to end-of-life for certain 2G and 3G components, the e528.4G is now the standard INNCOM install, but 2G and 3G installations are still supported.

- Unheated (un-cooled) areas behind the thermostat
- If RF equipped, do not install near other RF sources/transmitters

When the thermostat is equipped with PIR, consider view angle, range characteristics, and mounting position for proper coverage.

### Mounting

INNCOM's DDC thermostats typically mount on a standard double-gang (4 x 4) junction box. If mounted on a single-gang box, the left side (display side) of the e528 overlaps the wall area to the left of the junction box. A low-voltage mounting plate, mud ring, or low-voltage caddy may be used for mounting 24 volt applications.

1. Remove the two small screws at the base of the e528.
2. Pull the bottom of the back-mounting plate slightly away from the front housing, then pull the back-mounting plate down.
3. Position the back plate insulator within the mounting plate as shown in Figure 3 below.
4. Feed wires through the insulator to minimize airflow.
5. Attach the mounting plate to the junction box using the mounting screws provided. Ensure that the plate is mounted with the raised arrow pointing UP.

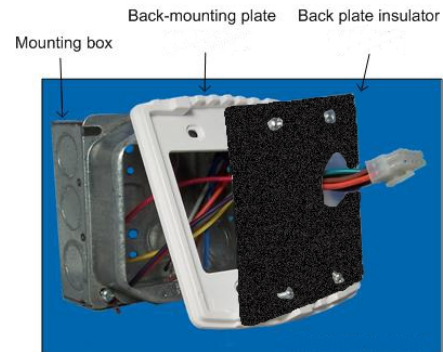


Figure 3 E528 Back Assembly

### Wiring

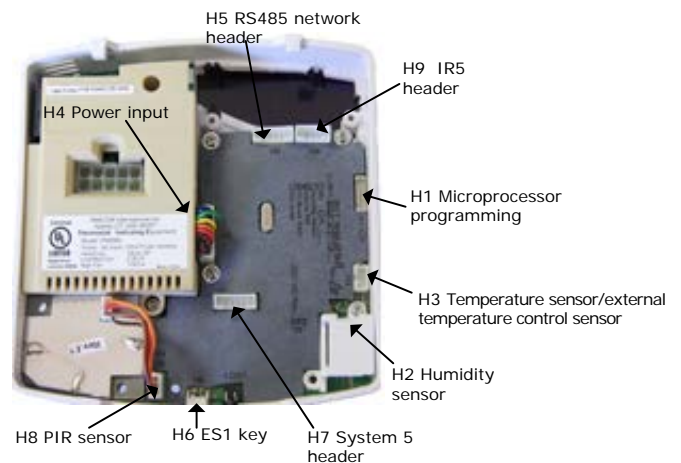


Figure 4 E528 Headers

**E528.4G Headers and Connectors**  
**Low-voltage Connections Table**

(P/N 62-1467) Pinout

Wire Color	Female Connector	Male Connector	Function	Comment
Brown	1	1	Common	
Red	2	2	12VDC Out/In	12VDC Supply
Orange	3	3	S5 Bus Data Tx/Rx or IN 2	Door, Window, PIR, Other
Yellow	4	4	IN 1	Door, Window, PIR, Other
Green	5	5	NC	
Blue	6	6	NC	

*Line Voltage Connection Tables*

**24VAC Harness (INNCOM P/N 62-1464 R) Color Code, Pinout, and Typical Functions**

Pin	Color	Typical Function
1	Green	Ground
2	Red	24VAC
3	Black	Common
4	Blue	High Fan
5	Brown	Medium Fan or Second Stage Heat
6	Yellow	Cold Water Valve (FCU) or Compressor Signal (Heat Pump)
7	White	Hot Water Valve (FCU) or Reversing Valve (Heat Pump)
8	Grey	Valve Power
9	Violet	Fan Power
10	Orange	Low Fan

**100-277VAC Harness (INNCOM P/N 62-1455) Color Code, Pinout, and Typical Functions**

Pin	Color	Typical Function
1	Green	Ground
2	Black	Line
3	White	Neutral
4	Yellow	High Fan
5	Orange	Medium Fan or Second Stage Heat
6	Red	Cold Water Valve (FCU) or Compressor Signal (Heat Pump)
7	Brown	Hot Water Valve (FCU) or Reversing Valve (Heat Pump)
8	Grey	Valve Power
9	Violet	Fan Power
10	Blue	Low Fan

**E528.4G Retrofit Installation**

The e528.4G can be used to retrofit an application where a legacy e528 was used. Follow the procedure below:  
**4G to 2G Standalone application: with/without door switch input (no backhaul network)**



- Using the adapter (P/N 203-013) connect the harness from the wall box (P/N 62-1462) previously connected to the thermostat being replaced to H1 of the adapter.

**4G to 2G RS485 Networked Application: with or without door switch input**

- Connect the harness of 203-013 to H7 on e528.4G
  - Using the adapter (P/N 203-251) connect the harness from the wall box (P/N 62-1462) previously connected to the thermostat being replaced) to H1 of the adapter.
  - Connect the harness H3 (rainbow) of 203-251 to H7 of the e528.4G
  - Connect the harness H2 (Black) of 203-251 to H5 of the e528.4G
- NOTE: Take care to not reverse the connections to the e528.4G!**

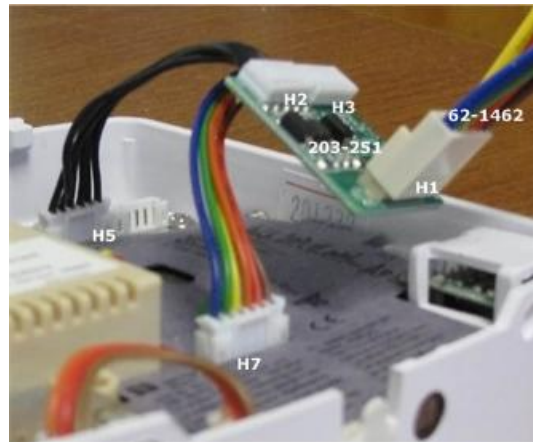


Figure 5 4G to 2G RS485 Networked Application

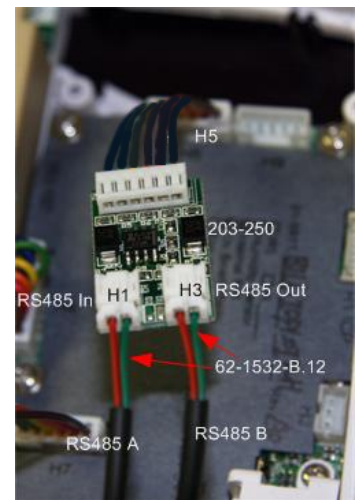
**E528 New Installation**

**Stand alone application with/without door switch input**

- Using the harness (P/N 62-1467), make the appropriate wire connections, then plug the harness into H7 of the e528. Refer to low-voltage connections diagram.

**RS485 Networked Application with/without door switch input**

- Using the harness (P/N 62-1467), make the appropriate wire connections, then plug the harness into H7 of the e528. Refer to low-voltage connections diagram.
- Using the adapter (P/N 203-250) and P/N 62-1532-B.12 cables, connect the RS485 incoming pair to two pin header H1 and the out-going pair going to the next thermostat to header H3.
- Connect the harness of 203-250 to H5 of the e528.



## E528 RF Installation

- Typically only a wired door switch contact would be required for this application (can also use wireless door switch contact) or possibly a remote temperature sensor. In this case, using the harness (P/N 62-1467), refer to low-voltage communications connections table.
- Connect harness (P/N 62-1467) to H5 of e528.

## Power and Actuator Connections

Refer to line voltage connections table

- Use wire nuts to connect the 10-pin Molex wiring harness to the power and valve/fan control signal wires within the electrical box. See pre defined commissioning document which describes the specific wire connections for the application
- Plug the pre-wired 10-pin connector into the female receptacle at the back of the e528. Note: this will connect the unit to the input power and relays to the loads.

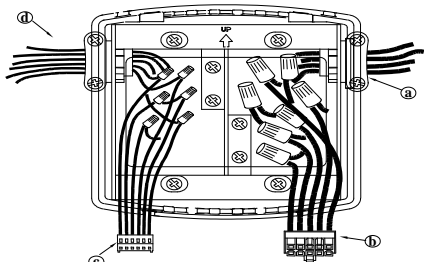


Figure 7 E528.4G Connections

**Note: When using mixed voltage, voltage separation must be maintained. Line voltage must reside in the right side of the gang box. Low voltage must reside in the left side of the gang box.**

- Hook the tabs at the top rear of the e528 housing into the matching depressions at the top of the mounting plate and rotate the bottom of the housing toward the wall until it snaps into place on the mounting plate.
- Secure the housing to the mounting plate with the two small screws removed in Step 1 of the Mounting section.
- Apply power to the e528 by closing the applicable supply breaker. Verify that the e528 powers up. Values should begin appearing on the LCD display.

## Commissioning

The e528 digital thermostat requires configuration to work effectively. The most basic configuration is “binding” the room to the Room ID (usually the room number) to avoid cross communication between devices. (For commissioning of complex systems, please refer to the property specific commissioning document). Room IDs are 5 digit numbers (X YY ZZ, with zeros as placeholders where needed) ranging from 1 to 65535. To set Room ID

- Enter Service Mode:
  - Press and hold °F/°C
  - Press and release OFF/AUTO
  - Press and release DISPLAY
  - Release °F/°C
- Go to **r d** (Room ID)

- Press OFF/AUTO. Default Room ID 65535 will scroll
- Set highest digit (0–6) using the UP/DOWN arrows. Press DISPLAY
- Set middle 2 digits (0–99). Press DISPLAY
- Set lowest 2 digits (0–99). Press DISPLAY. The new number will scroll across LCD. The e528 will return to the menu list

## Technical Specifications

Power Requirements	24 VAC at 50/60 Hz, 2.4 VA (e528-9xx) 100–277 VAC at 50/60 Hz, 2.4 VA (e528-8xx)
Relay Contact Rating	See table below
Triac Relay Contact Rating	50m at minimum, 250m at maximum (e528-4xx)
Recommended Wire Size	18 gauge
Thermostat Measurement Range	33–99 °F (1–37 °C)
Outdoor Air Temperature	0–99 °F (-18–37 °C)
Display Resolution	Whole degree F, 0.5 °C (0.1 °F in test mode)
Standard Deadband	2 °F (1 °C) between heating and cooling
°C/°F Display	Toggle Button located on front display
Ambient Operating	41–149 °F (5–65 °C), 0–95% RH noncondensing
Ambient Storage	33–149 °F (1–65 °C)
Dimensions	(H×W×D) 4.7×4.7×1.2in. (120×120×30mm)
Shipping Weight	0.6lb (0.27kg)
Approvals	UL listed #873, CAN/CSA C22.2 No. 24-93 File #E202540/Part 15 of the FCC Rules

## Load Specifications

MODEL	e528-A3L6	e528-B1L6
Voltage	24VAC	100-277VAC
Heat Relay K4-5	3 amps 125-277VAC General purpose	240 VA PD
Cool Relay K4-5	3 amps 125-277VAC General purpose	240 VA PD
High Fan Relay K1	3 amps 125-277VAC General purpose	3.6 FLA 21.6 LRA
Medium Fan Relay K2-3	3 amps 125-277VAC General purpose	2.2 FLA 13.2 LRA
Low Fan Relay K2-3	3 amps 125-277VAC General purpose	2.2 FLA 13.2 LRA

## FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The following statements are required in the final product user manuals:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

All Final Products containing the INNCOM TXR 02-9994 should keep a safe distance of at least 20cm from all persons. The final product cannot be co-located with any other antenna or transmitter.