

Q7300L Series 2000 Commercial Thermostat Subbases

TRADELINE®

INSTALLATION INSTRUCTIONS

APPLICATION

The Q7300L Thermostat Subbase is used with the T7300D,F Thermostat to provide electronic control of commercial 24 Vac single zone HVAC equipment. The T7300/Q7300L is designed for heat-cool applications using a valve and valve actuator combination for hydronic heating. See Table 1. It can also be used to control single-stage conventional heating systems. It provides two-speed fan control. Terminals are provided for the T7047 Remote Sensor or the T7147 Remote Sensor and Override Module. LEDs on the thermostat are wired and labeled to indicate heat and cool operation. See Fig. 9 and 10 for hookup drawings. Refer to form 63-4355 for installation and operation of the T7300/Q7300.

Table 1. Valve and Valve Actuator Combinations.

Valve Model	Valve Actuator Model
V5011A, C	ML7984A3019
V5011F, G	ML7984A3001
V5013A, C	ML7984A3019
V5013F	ML7984A3001

IMPORTANT

The valve will not close if the wrong valve and valve actuator combination is used.

Electrical Rating:

20 to 30 Vac, 50/60 Hz.

System Current :

6 VA maximum at 30 Vac, 50 or 60 Hz.

Output Relay Current:

See Table 2.

Table 2. Maximum Amps at 30 Vac.

Relay	Running (A)	Inrush (A)
Fan	1.6	3.5
Heat	1.6	3.5
Cool	1.6	7.5
Auxiliary (Economizer)	1.6	3.5

Temperature:

Ratings:

Operating Ambient: 40°F to 110°F (4°C to 43°C).

Shipping: -30°F to +150°F (-34°C to +65°C).

Display Accuracy:

±1°F (+0.5°C).

Setpoint:

Range: 45°F to 95°F (7°C to 35°C).

Differential: 2°F (1°C).

Humidity Ratings:

5% to 90% RH, noncondensing.



RECYCLING NOTICE

If this control is replacing a control that contains mercury in a sealed tube, do *not* place your old control in the trash

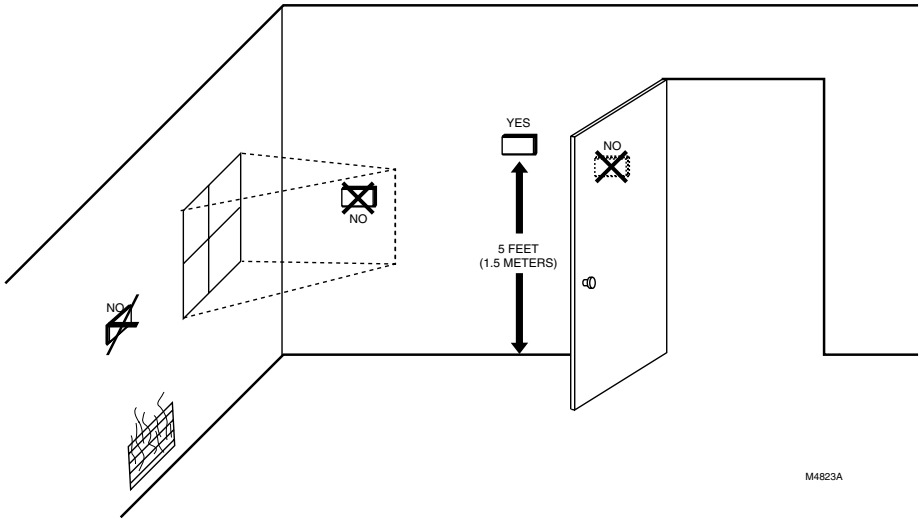
Contact your local waste management authority for instructions regarding recycling and the proper disposal of the old thermostat.

INSTALLATION

When Installing this Product...

1. Read these instructions carefully. Failure to follow the instructions can damage the product or cause a hazardous condition.
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 completing installation, use these instructions to check out the product operation.





M4823A

Fig. 1. Typical location of thermostat or remote-mounted sensor.

Location

Subbase without Remote-Mounted Temperature Sensor

Install the thermostat about 5 ft (1.5m) above the floor in an area with good air circulation at average temperature. See Fig. 1.

- Do not install the thermostat where it can be affected by:
- drafts, or dead spots behind doors and in corners.
 - hot or cold air from ducts.
 - radiant heat from sun or appliances.
 - concealed pipes and chimneys.
 - unheated (uncooled) areas such as an outside wall behind the thermostat.

Subbase with Remote-Mounted Temperature Sensor(s)

If only the remote-mounted temperature sensor(s) is used to sense and control room temperature, then install the thermostat in an area that is accessible for setting and adjusting the temperature and settings.

If both the subbase and remote-mounted temperature sensor(s) are used to sense and control room temperature, then install the subbase about 5 ft above the floor in an area with good air circulation.

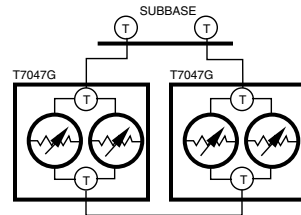
Install the remote-mounted sensor(s) about 5 ft (1.5m) above the floor in an area with good air circulation at average temperature. See Fig. 1.

- Do not mount the sensor(s) where it can be affected by:
- drafts, or dead spots behind doors and in corners.
 - hot or cold air from ducts.
 - radiant heat from sun or appliances.
 - concealed pipes and chimneys.
 - unheated (uncooled) areas such as an outside wall behind the thermostat.

If more than one remote sensor are required, they must be arranged in a temperature averaging network consisting of two, three, four, five or nine sensors. See Fig. 2 through 6.

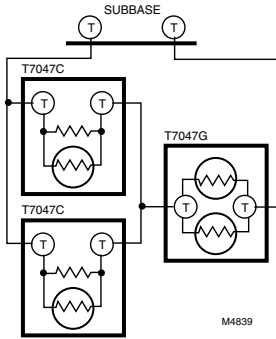
IMPORTANT

To avoid electrical interference, which can cause erratic performance, keep wiring runs as short as possible and do not run thermostat wires adjacent to the line voltage electrical distribution systems. Use shielded cable (Belden type 8762 or equivalent for 2-wire and Belden type 8772 or equivalent for 3-wire). The cable shield must be grounded only at the controlled equipment case.



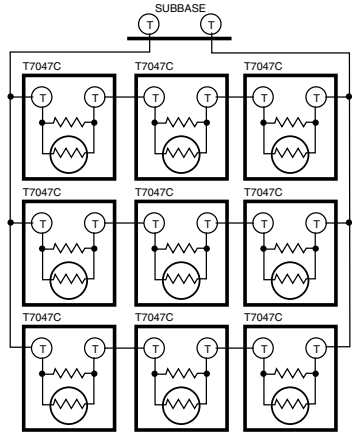
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Fig. 2. Two T7047G Sensors providing temperature averaging network for T7300/Q7300 Thermostat/Subbase.



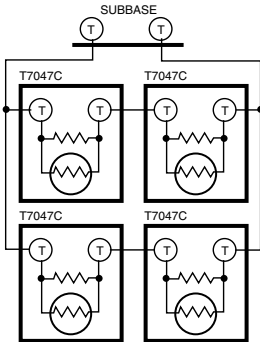
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Fig. 3. Two T7047C Sensors and one T7047G Sensor providing temperature averaging network for T7300/Q7300 Thermostat/Subbase.



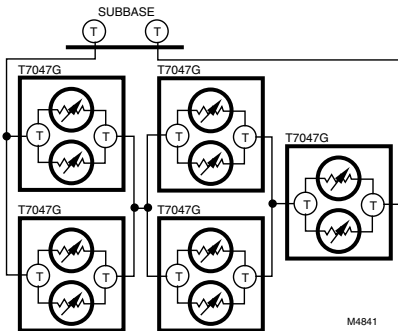
M4842

Fig. 6. Nine T7047C Sensors providing temperature averaging network for T7300/Q7300 Thermostat/Subbase.



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Fig. 4. Four T7047C Sensors providing temperature averaging network for T7300/Q7300 Thermostat/Subbase.



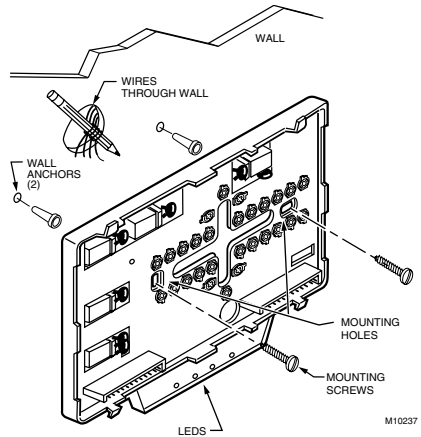
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Fig. 5. Five T7047G Sensors providing temperature averaging network for T7300/Q7300 Thermostat/Subbase.

Mounting Subbase

The subbase mounts horizontally on the wall or a 2 in. x 4 in. wiring box. Position the subbase horizontally on the wall or on a 2 in. x 4 in. wiring box.

1. Position and level the subbase or wallplate (for appearance only). The thermostat functions properly even when not level.
2. Use a pencil to mark the mounting holes. See Fig. 7.
3. Remove the subbase or wallplate from the wall and drill two 3/16 inch holes in the wall (if drywall) as marked. For firmer material such as plaster or wood, drill two 7/32 inch holes. Gently tap anchors (provided) into the drilled holes until flush with the wall.
4. Position the subbase over the holes, pulling wires through the wiring opening.
5. Loosely insert the mounting screws into the holes.
6. Tighten mounting screws.



M10237

Fig. 7. Mounting the subbase.

WIRING SUBBASE

All wiring must comply with local electrical codes and ordinances. Follow equipment manufacturer wiring instructions when available. Refer to Fig. 9 and 10 for typical hookups. A letter code is located near each terminal for identification. See Table 3 for terminal descriptions and system action.

Table 3. Terminal Descriptions and Conditions.

Standard Terminal Designations	Typical Connection	Function	Terminal Type
A1, A2	Damper Control Relay.	input, output	24V powered contact
BM	ML7984 Actuator connection. No call for heat, valve closed during occupied periods and open during unoccupied periods.	output	—
C1, C2, C3, C4, C5	Communication input for T7147.	—	—
FC	Fan control Transformer.	input	—
GH	High speed fan output. Activated during calls for cooling.	output	24V powered contact
GL	Low speed fan output. Activated on calls for heat and fan On selection.	output	24V powered contact
P1, P2	Pump Interlock Relay. Operates circulator pump in hydronic heat or energizes conventional heat system.	input, output	24V powered contact
R	24V System Transformer	input	—
RM	ML7984 Actuator connection. No call for heat, valve closed. Call for stage 1 heat, valve approximately one-half open. Call for stage 2 heat, valve fully open.	—	—
T, T	Remote sensor input for T7047 or T7147.	—	—
X	Heating transformer common	input	—
Y	Cool call	24V output on Y	—

CAUTION

Disconnect power before wiring to prevent electrical shock or equipment damage.

1. Loosen the terminal screws on the subbase and connect the system wires. See Fig. 8.

IMPORTANT

Use 18-gauge, solid-conductor color-coded thermostat cable for proper wiring. If using 18-gauge stranded wire, no more than ten wires can be used. Do not use larger than 18-gauge wire.

2. Securely tighten each terminal screw.
3. Push excess wire back into the hole.
4. Plug the hole with nonflammable insulation to prevent drafts from affecting the thermostat.

NOTE: After wiring, check that all connections are tight and secure. See Fig. 8. Loose or intermittent wire connections cause inconsistent system operation.

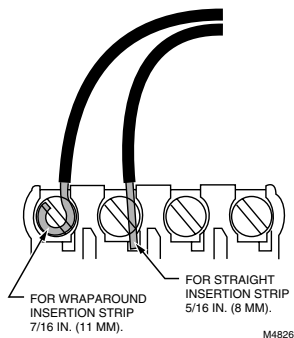


Fig. 8. Proper wiring technique.

Typical Wiring Hookups

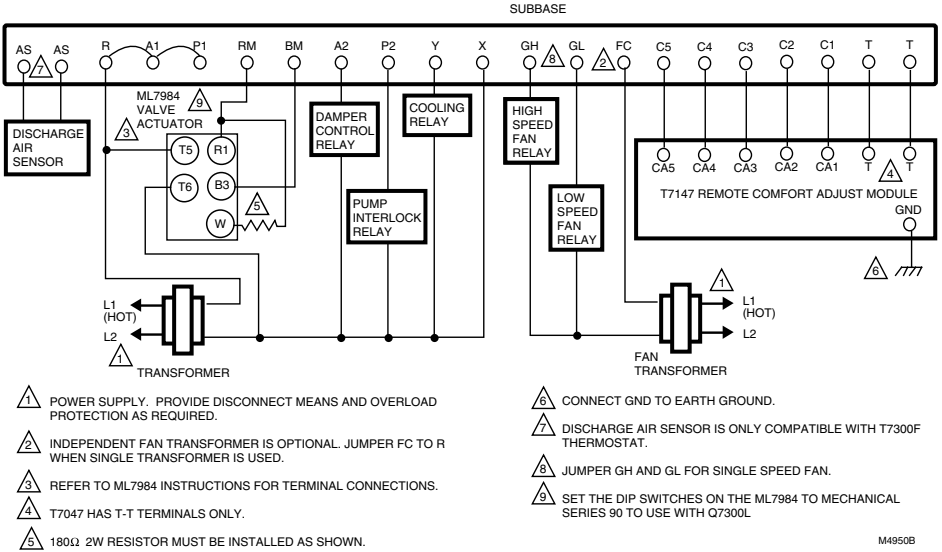


Fig. 9. Q7300L hookup for two-stage heating with three-position ML7984 Valve Actuator/V5013 Valve and one-stage cooling.

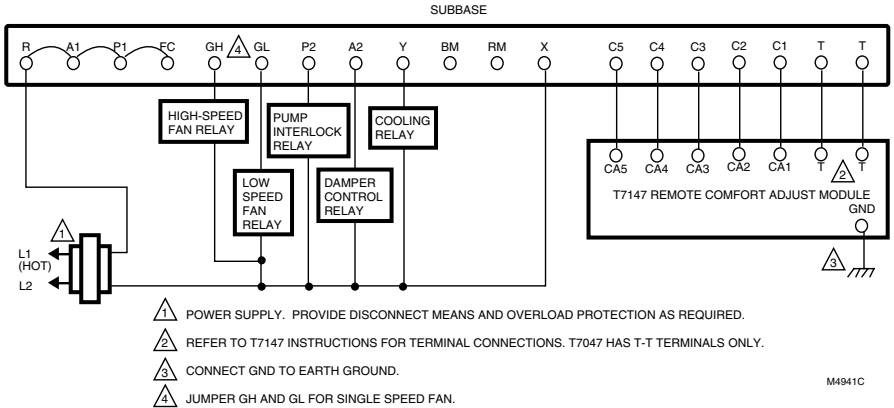


Fig. 10. Q7300L hookup for single-stage conventional heating systems with single-stage cooling.

Mounting Thermostat on Subbase

Mount the thermostat on the subbase after the subbase is installed.

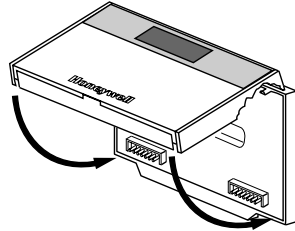
1. Engage tabs at the top of the thermostat and subbase. Fig. 11.
2. Press lower edge of case to latch.

NOTE: To remove the thermostat from the wall, first pull out at the bottom of the thermostat; then remove the top.

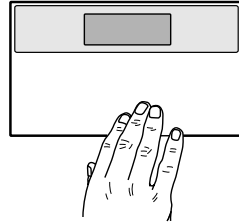
IMPORTANT

Refer to the thermostat installation instructions for *Installer Setup, Settings, Installer System Test and Troubleshooting information.*

A. ENGAGE TABS AT TOP OF THERMOSTAT AND SUBBASE OR WALLPLATE.



B. PRESS LOWER EDGE OF CASE TO LATCH.



M4824A

Fig. 11. Mounting thermostat on subbase.

OPERATION

Table 4. T7300 Thermostat/Q7300L Subbase Sequence of Operation.

Mode	System Setting	Fan Setting ^a	Equipment Call	Action	Loads Energized
Occupied	Any	Auto	—	Thermostat in Occupied mode. Damper control relay energized.	A2
Occupied	—	On	—	Depends on last system. If cool is the last system, then call is for high speed fan. When heat is the last system, then call is for low speed fan.	GL or GH
Occupied	Heat	Auto	Stage 1 heat	Heat LED activated. In hydronic applications, ML7984 approximately one-half open. Pump interlock relay activated to energize circulator pump. In conventional applications, stage 1 heat activated. Low speed fan activated.	A2, GL, RM, P2
Occupied	Heat	Auto	Stage 2 heat	In hydronic applications, ML7984 is fully open. In conventional systems, no action.	A2, GL, RM, BM, P2
Occupied	Cool	Auto	Stage 1 cool	Cool LED activated. Cooling relay activated. High speed fan activated.	A2, GH, Y
Unoccupied	Any	Any	—	Thermostat in Unoccupied mode. Damper control relay de-energized.	—
Unoccupied	Any	On	—	Thermostat in Unoccupied mode. System fan operates at appropriate speed with call for heat or cool equipment.	—

^a Low speed fan is activated in the heat mode and high speed fan is activated in the cool mode.

Remote Temperature Sensing and Override

The subbase can be used with the T7147 Remote Sensors to sense temperature and provide the Occupied mode. The subbase also can be used with the T7047 Remote Sensors if remote occupied control is not required.

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