

W8635A Equipment Interface Module

INSTALLATION INSTRUCTIONS

APPLICATION

The W8635A Equipment Interface Module (EIM) provides 24 Vac control of single or multistage conventional HVAC equipment when used with a T8635L Microelec-

tronic Communicating Programmable Thermostat. The W8635A can be used with up to 2 heat/2 cool conventional applications. See Table 1.

Table 1. Description.

Model	Application	Stages	Terminals	Comments
W8635A	Conventional gas, oil or electric heat	Up to 2 heat/ 2 cool	1, 2, 3, C, R, Rh, Rc, G, W1, W2, Y1, Y2	Use with T8635L Communicating Thermostat

INSTALLATION

1. Locate the W8635A in the equipment room near the HVAC equipment. See Fig. 1.

When Installing this Product...

1. Read these instructions carefully. Failure to follow these 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.

CAUTION

Voltage Hazard.
Can cause electrical shock or equipment damage.

Disconnect power before supply before beginning installation.

Location

CAUTION

Mounting Location Hazard.
Mounting W8635A inside HVAC equipment can damage the EIM.

Mount the W8635A only on the outside of HVAC equipment.

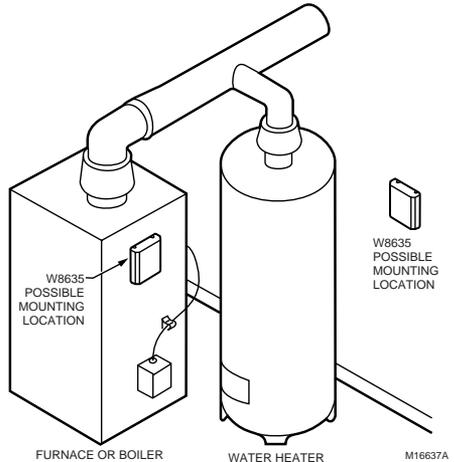


Fig. 1. Selecting W8635A Equipment Interface Module location.

2. Remove the cover from the W8635A by pulling on the edge of the module.
3. Locate the two mounting holes. See Fig. 2.



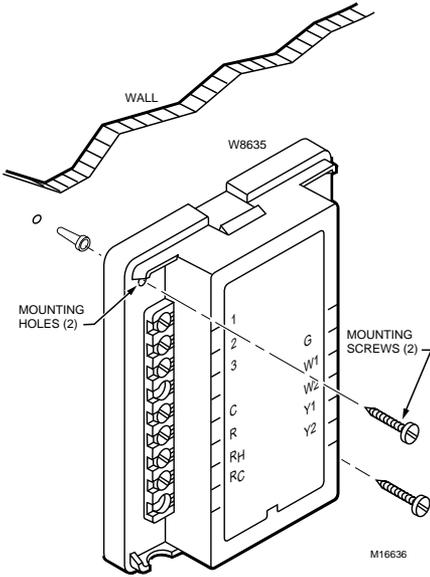


Fig. 2. Mounting W8635A Equipment Interface Module.

4. Position the W8635A on the wall or on the cold air return.
5. Level the W8635A for appearance only; the device functions properly even when not level.
6. Use a pencil to mark the position of the mounting holes on the wall or cold air return.
7. Remove the W8635A from the wall or cold air return and drill 3/16 in. holes in the wall (if drywall) where marked. For firmer materials such as plaster or wood, drill 7/32 in. holes.
8. When mounting on the cold air return, drill a pilot hole where marked.
9. Gently tap the anchors (provided) into the holes until flush with the wall.
10. Reposition the W8635A over the holes.
11. Loosely insert the screws into the holes and tighten each screw.

WIRING

All wiring must comply with local electrical codes and ordinances. See Fig. 4 through 6 wiring diagrams for specific equipment applications. Refer to Table 2 for terminal designations.

CAUTION

Voltage Hazard.
Can cause electrical shock or equipment damage.
 Disconnect power before beginning installation.

1. Loosen the terminal screws on the W8635A and connect the system wires. See Fig. 3.
2. Securely tighten each terminal screw.

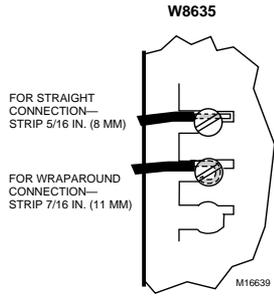


Fig. 3. Wiring the W8635A terminals.

Table 2. Terminal Designations.

W8635A Terminal Designations	Function
1	To Communicating Thermostat Terminal 1
2	To Communicating Thermostat Terminal 2
3	To Communicating Thermostat Terminal 3
R	24 Vac System Transformer
Rh	24 Vac Heating Transformer
Rc	24 Vac Cooling Transformer
C	24 Vac Transformer Common
G	Fan Relay
W1	Stage 1 Heat Relay
W2	Stage 2 Heat Relay
Y1	Stage 1 Cool Relay
Y2	Stage 2 Cool Relay
Green LED	Indicates Data Communication

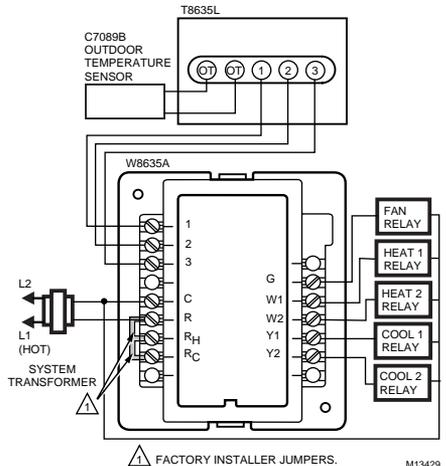


Fig. 4. 2H/2C single transformer.

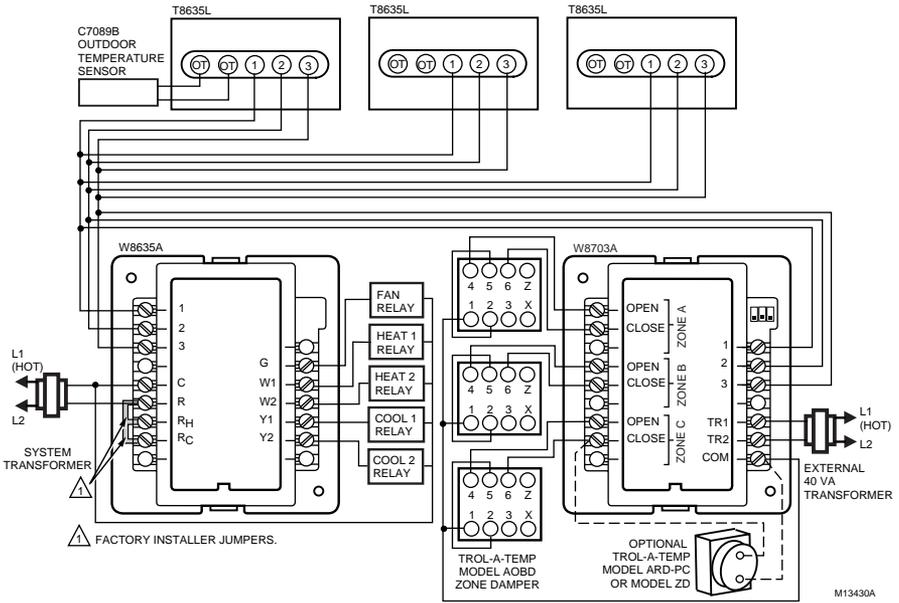


Fig. 5. Three zone configuration.

Table 3. Stage Combinations.

Heat Stages	Cool Stages
1	0
2	0
0	1
0	2
1	1
2	2

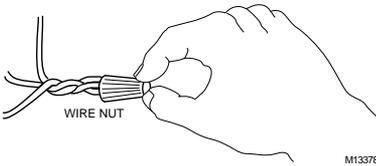


Fig. 6. Using wire nut to pigtail a connection when three or more wires are terminated at one terminal.

Discovery Mode

Discovery mode begins when the T8635L Thermostat and W8635 EIM are first installed and power is connected:

- The W8635 EIM transmits information to the T8635L Thermostat that indicates the maximum number of stages that are enabled and the type of EIM connected.
- The thermostat receives information from the W8635 and then sets the cycle rates and equipment types automatically.

Stage Configuration

The W8635A automatically configures the T8635L for two stages of heat and two stages of cool. If using the W8635A and the T8635L on a one heat/one cool application, set Installer Setup No. 5 and 8 to 1 when configuring the T8635L Communicating Thermostat.

For configuration combinations, see Table 3.

Cycle Rate

The thermostat automatically sets the cycle rate based on the information it received during Discovery Mode. See Table 4.

To change the default cycle rate settings:

- enter T8635L Thermostat Installer Setup and select the desired cycle rate settings for each stage. (All stages can be set between 1 and 12 cph.)

Table 4. Default Cycle Rate Settings.

W8635A Equipment Interface Module	1 st Stage Heat	2 nd Stage Heat	1 st Stage Cool	2 nd Stage Cool
	6 cph	6 cph	3 cph	3 cph

Electric Heat Setting

When using the W8635A on an electric heat application, set the T8635L Thermostat Installer Setup No. 4 to 1. This instructs the W8635A EIM to energize the fan with any call for heat.

Flash COM OK LED Description

LED blinks rapidly—indicates device is currently transmitting information on the communications bus.

LED blinks once—indicates device received and acknowledged a message.

LED on constantly—indicates device failure. Replace device.

LED off constantly—indicates a wiring problem if device is not functioning properly and there is no LED activity at least once a minute. Check wiring to communications bus terminals 1, 2 and 3.

NOTE: It is normal for LED to blink continuously during startup and discovery.

LED blinks continuously—indicates a wiring problem if device is not functioning properly and there is a continuous series of LED blinks. Check wiring to communications bus terminals 1, 2 and 3.

INSTALLER SYSTEM TEST

Use the Installer System Test to check the thermostat and W8635A EIM operation for each thermostat in the system. Table 5 lists the available system tests.

Table 5. Installer System Tests.

Test Number	System Test Description
10-12	Heating stages can be turned on and off in sequence
30-32	Cooling stages can be turned on and off in sequence
40-42	Fan and damper test
60	Keyboard keys test
70-74	Thermostat information including date code and software versions are displayed.

Table 6. Installer System Test Options.

Key to Press	Test Number	Description
Heating Equipment System Test		
	10	Enter Heating Equipment system test.
▲	11	First Stage Heat turns on.
▲	12	Second Stage Heat turns on.
▼	11	Second Stage Heat turns off.
▼	10	First Stage Heat turns off.
Cooling Equipment System Test		
	30	Enter Cooling Equipment system test.
▲	31	First Stage Cool turns on.
▲	32	Second Stage Cool turns on.
▼	31	Second Stage Cool turns off.
▼	30	First Stage Cool turns off.



CAUTION

Equipment Damage Hazard.
Minimum compressor off-time is bypassed during Installer System Test.

Do not allow compressor rapid cycling (on and off).
 Observe compressor protection period.

To start the Installer System Test:

1. Press and hold the T8635L Thermostat increase ▲ and decrease ▼ keys at the same time until 10 appears. All display segments display before the 10 appears. See Fig. 7 and 8.



Fig. 7. LCD segments display.

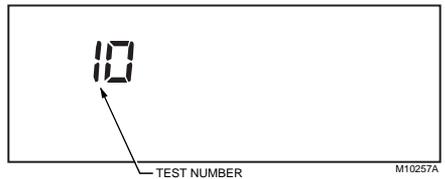


Fig. 8. Installer Test Number display.

2. Refer to Table 6 for Installer System Test option.

Table 6. Installer System Test Options. (Continued)

Key to Press	Test Number	Description
Fan and Damper Test (Damper Test available only when using W8703A)		
	40	Enter Fan and Damper test.
▲	41	Fan turns on; damper for this zone opens.
▲	42	Damper closes for this zone (if not already closed); fan stays on.
▼	41	Damper opens for this zone.
▼	40	Fan turns off.
Key Operation Test		
	60	Enter Key Operation test.
<i>Press any key to test if the key is functional. Each time a key is pressed, a different number is displayed. This indicates the key is functioning properly. Pressing  enters the next test.</i>		
Thermostat Information		
	70	Enter Thermostat Information mode.
▲	71	Production date code is displayed. The first two large digits are the month and the third digit is the last digit of the year (example: 031 = March 2001).
▲	72	Software identification code is displayed.
▲	73	Software revision number is displayed.
▲	74	EEPROM identification code is displayed.
Exit Installer Test Mode		
		Thermostat returns to normal operating mode.

TROUBLESHOOTING GUIDE

Refer to Table 7 for troubleshooting information.

Table 7. Troubleshooting Guide.

Symptom	Possible Cause	Action
Display does not come on at thermostat.	Thermostat is not being powered.	<ul style="list-style-type: none"> Check if the thermostat is mounted and latched on the wallplate; if not: <ul style="list-style-type: none"> —mount and latch the thermostat on the wallplate. Check if the circuit breaker is tripped; if it is: <ul style="list-style-type: none"> —reset the circuit breaker. Check if the fuse is blown; if it is: <ul style="list-style-type: none"> —replace the fuse. Check if the power switch at the equipment is in the Off position; if it is: <ul style="list-style-type: none"> —set to the On position. Check for 24 Vac on terminals 2 and 3: <ul style="list-style-type: none"> —replace any broken wires. If 24 Vac is present on terminals 2 and 3: <ul style="list-style-type: none"> —replace the thermostat.
"1 COM", "2 COM" or "3 COM" is displayed.	Thermostat is unable to communicate with the W8635A.	<ul style="list-style-type: none"> Check the connection to terminal 1 at the thermostat and W8635A EIM: <ul style="list-style-type: none"> —replace any broken wires. —cycle power.
System Switch setting displays "off only."	During Discovery Mode, the thermostat did not correctly set the number of heat or cool stages.	<ul style="list-style-type: none"> Manually run Discovery Mode; see Installer Setup. <ul style="list-style-type: none"> —manually configure heat and/or cool stages (Installer Setup 5 and 8).

Table 7. Troubleshooting Guide. (Continued)

Symptom	Possible Cause	Action
Heating does not come on. System on indicator ( = heat) displays.	<p>Communication is not being completed.</p> <p>Heat load at W8635A is not connected correctly.</p>	<p>End and repeat the call for heat. Check the Flash COM OK LED on the W8635A EIM while the call is being made.</p> <p>If the Flash COM OK LED does not blink: —check communication Bus wiring.</p> <p>If the Flash COM OK LED blinks: —check that 24 Vac is present at W1 terminal.</p> <p>If 24 Vac is not present: —check R to Rh connection.</p> <p>If the connection is good: —replace the W8635A EIM.</p>
Cooling does not come on. System on indicator ( = cool) displays.	<p>Communication is not being completed.</p> <p>Cool load at W8635A is not connected correctly.</p>	<p>End and repeat the call for cool. Check the Flash COM OK LED on the W8635A EIM while the call is being made.</p> <p>If the Flash COM OK LED does not blink: —check communication Bus wiring.</p> <p>If the Flash COM OK LED blinks: —check that 24 Vac is present at Y1 terminal.</p> <p>If 24 Vac is not present: —check R to Rh to Rc jumper connection.</p> <p>If the R to Rh to Rc connection is good: —replace the W8635A EIM.</p>
"wait" is displayed and the call for Cool has not started.	Compressor protection is in effect.	<p>Compressor protection can be set from 0 to 5 minutes to prevent compressor damage due to rapid cycling. Wait until the compressor protection period expires.</p> <p>To bypass compressor protection during the installation phase, see the Installer System Test section.</p>
2 nd stage heat or cool does not energize.	<p>Stage configuration not set correctly to match the number of selected stages.</p> <p>Cool load at W8635A is not connected correctly.</p>	<p>Set the Stage configuration in Installer Setup for two stages or heat and/or two stages of cool.</p> <p>Check that 24 Vac is present at Y2 or W2 terminal. If 24 Vac is not present, all connections are good and the thermostat is correctly configured, replace W8635A EIM.</p>
Fan does not come on with a call for electric heat.	<p>Electric heat setting is not configured.</p> <p>Fan load at W8635A is not connected correctly.</p>	<p>Set Installer Setup No. 4 to 1 for electric heat.</p> <p>Check that 24 Vac is present at G terminal. If 24 Vac is not present, all connections are good and the thermostat is configured, replace the W8635A EIM.</p>

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