W8635B
Equipment Interface Module

APPLICATION

The W8635B Equipment Interface Module (EIM) provides 24 Vac control of single or multistage heat pumps when used with a T8635L Microelectronic Communicating Thermostat. The W8635B can be used with up to 2 heat/1 cool heat pump applications.

Table 1. Description.

Model	Application	Stages	Terminals	Comments
W8635B	Single-stage or multi-stage heat pump	Up to 2 heat/ 1 cool	1, 2, 3, C, R, Rh, L, G, W1,Y1, Aux, E, O, B	Use with T8635L Communicating Thermostat

INSTALLATION

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 to prevent electrical shock or equipment damage.

Location

⚠ **CAUTION**
Mounting Location Hazard.
Mounting W8635B inside HVAC equipment can damage the EIM.
Mount the W8635B only on the outside of HVAC equipment.

1. Locate the W8635B in the equipment room near the HVAC equipment. See Fig. 1.
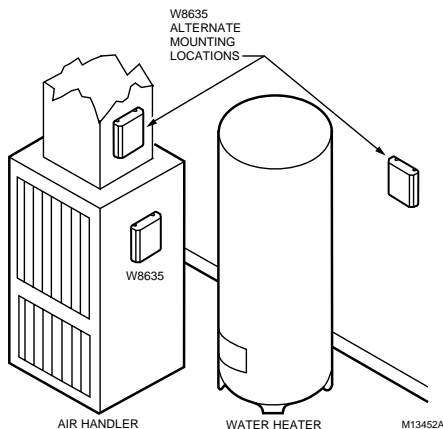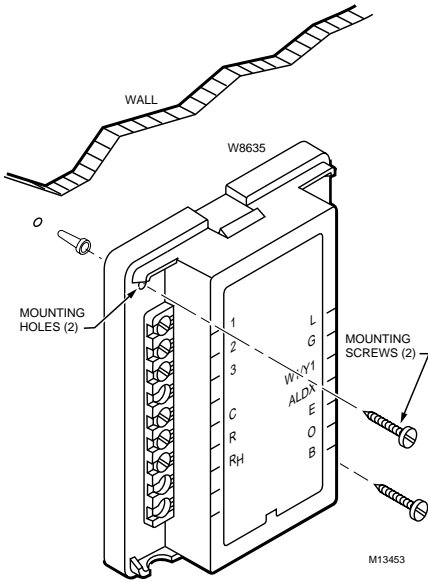

Fig. 1. Selecting W8635B Equipment Interface Module location.

2. Remove the cover from the W8635B by pulling it from the center or module corners.
3. Locate the two mounting holes. See Fig. 2.

Fig. 2. Mounting W8635A Equipment Interface Module.

4. Position the W8635B on the wall or the cold air return.
5. Level the W8635B 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 W8635B 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. Gently tap the anchors (provided) into the holes until flush with the wall.
9. When mounting on the cold air return, drill a pilot hole where marked.
10. Reposition the W8635B over the holes.
11. Loosely insert the screws into the holes and tighten the screws.

WIRING

All wiring must comply with local electrical codes and ordinances. See Fig. 4 through 7 wiring diagrams for specific applications. Refer to Table 2 for terminal designations.
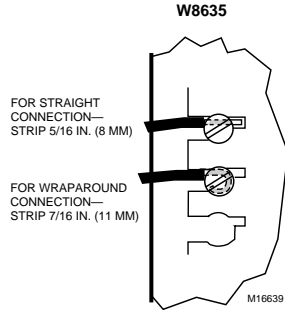
⚠ CAUTION

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

1. Loosen the terminal screws on the W8635B and connect the system wires. See Fig. 3.
2. Securely tighten each terminal screw.

Fig. 3. Wiring W8635B terminals.

Table 2. Terminal Designations.

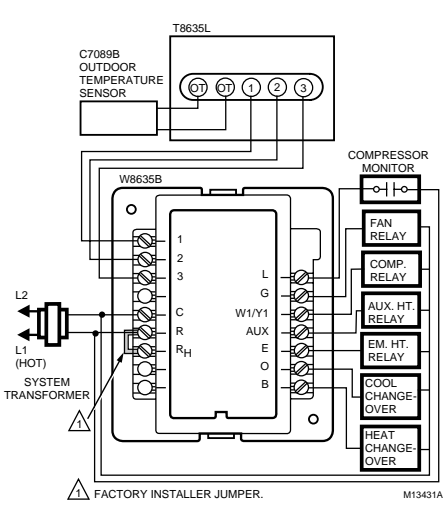| W8635B Terminal Designations	Function
1	To Communicating Thermostat Terminal 1
2	To Communicating Thermostat Terminal 2
3	To Communicating Thermostat Terminal 3
R	24 Vac System Transformer
Rh	24 Vac Transformer – use when adding separate transformer for communication bus
C	24 Vac Transformer Common
G	Fan Relay
W1/Y1	Compressor
Aux.	Auxiliary Heat Relay
E	Emergency Heat Relay
O	Changeover in Cooling
B	Changeover in Heating
L	Equipment Monitor
Red LED	Check LED – activated through L Terminal
Green LED	Indicates Data Communication

WIRING DIAGRAMS

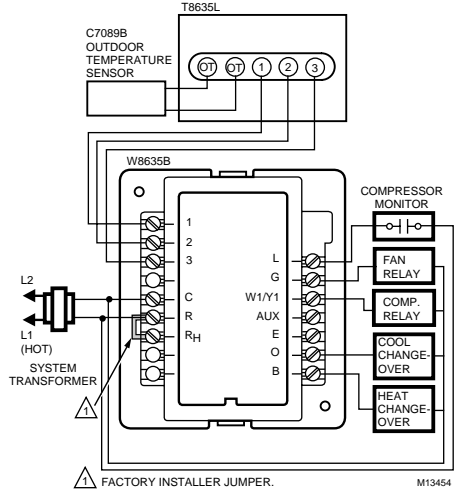**Fig. 4. 2H/1C heat pump with auxiliary heat.**

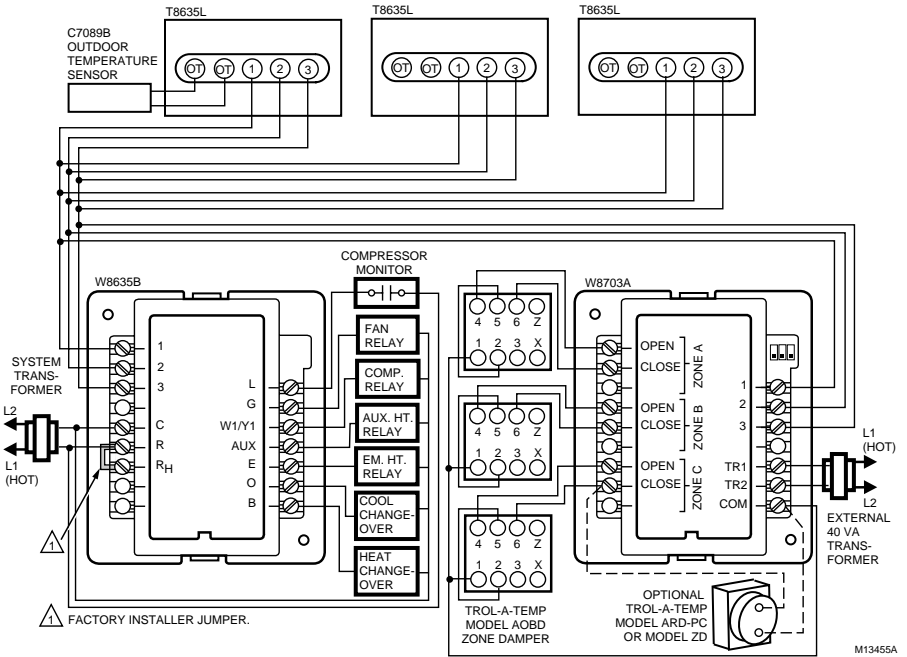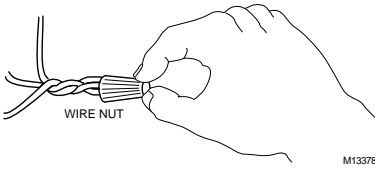**Fig. 5. 1H/1C single-stage heat pump.**

Fig. 6. T8635L/W8635B/W8703A.

WIRE NUT

M13378

Fig. 7. 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 W8635B are first installed and power is connected:
— The W8635B 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 W8635B and automatically sets the cycle rates and equipment types.

Stage Configuration

The W8635B automatically configures the T8635L for two stages of heat and one stage of cool. If using a single-stage heat pump, set Installer Setup No. 5 to 1 and Installer Setup No. 9 to 0.

NOTE: Em. Ht and Aux. Ht are not displayed when the T8635L is configured for single-stage heat pump.

Cycle Rate

The thermostat automatically sets the cycle rate based on the information it received during Discovery Mode. See Table 3.

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 through 12 cph.)

Table 3. Default Cycle Rate Settings.

Equipment Module	1st Stage Heat/Cool	Auxiliary Heat	Emergency Heat
W8635B	3 cph	6 cph	9 cph

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 W8635B EIM operation. Table 4 lists the available system tests.

Table 4. Installer System Tests.

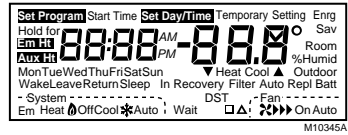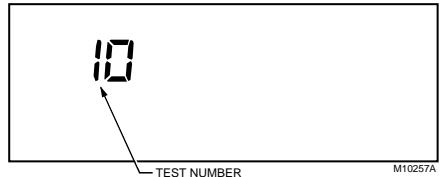| Test Number	System Test Description
10-12	Heating stages can be turned on and off in sequence.
20-21	Emergency Heating can be turned on and off.
30-32	Cooling can be turned on and off.
40-42	Fan and damper test.
60	Keyboard keys test.
70-74	Thermostat information including date code and software versions are displayed.

⚠ 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. 8 and 9.

Fig. 8. LCD segments display.

TEST NUMBER   M10257A

Fig. 9. Installer Setup number and setting display.

2.   Refer to Table 5 for directions on performing the Installer System Tests.

Table 5. Installer System Test Options.

Key to Press	Test Number	Description
Heating Equipment System Test		
Time ⌁	10	Enter Heating Equipment system test.
▲	11	First Stage Heat turns on.
▲	12	Auxiliary Heat turns on (if configured).
▼	11	Auxiliary Heat turns off.
▼	10	First Stage Heat turns off.
Emergency Heat System Test		
Time ⌁	20	Enter Emergency Heat Equipment system test.
▲	21	Emergency Heat turns on (if configured).
▲	20	Emergency Heat turns off.
Cooling Equipment System Test		
Time ⌁	30	Enter Cooling Equipment system test.
▲	31	Cool turns on.
▼	30	Cool turns off.
Fan and Damper Test (Damper Test available only when using W8703A)		
Time ⌁	40	Enter Fan and Damper test.
▲	41	Fan turns on; damper opens for this zone.
▲	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		
Time ⌁	60	Enter Key Operation test.
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 the Time ▲ arrow enters the next test.		
Thermostat Information		
Time ⌁	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		
Run Program		Thermostat returns to normal operating mode.

TROUBLESHOOTING GUIDE

Symptom	Possible Cause	Action
Display at thermostat does not come on.	Thermostat is not being powered.	Check if the thermostat is mounted and latched on the wallplate; if not: —mount and latch the thermostat on the wallplate. Check if the circuit breaker is tripped; if it is: —reset the circuit breaker. Check if the fuse at the fuse box is blown; if it is: —replace the fuse. Check if the power switch at the equipment is in the Off position; if it is: —set to the On position. Check for 24 Vac on terminals 2 and 3: —replace any broken wires. If 24 Vac is present, proceed with troubleshooting.
"1 COM", "2 COM" or "3 COM" is displayed.	Thermostat is unable to communicate with the W8635B.	Check the connection to terminal 1 at the thermostat and W8635B EIM: —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.	Manually run Discovery Mode. See Installer Setup. Manually configure heat and/or cool stages.
Heating does not come on. System on indicator (◊ = heat) displays.	Communication is not being completed. Heat load at W8635B is not connected correctly.	End and repeat the call for heat. Check the Flash COM OK LED on the W8635B EIM while the call is being made. If the Flash COM OK LED does not blink: —check communication bus wiring. If the Flash COM OK LED blinks: —check that 24 Vac is present on W1/Y1 terminal. If 24 Vac is not present: —check R to Rh connection. If the connection is good: —replace the W8635B EIM.
Cooling does not come on. System on indicator (✳ = cool) displays.	Communication is not being completed. Cool load at W8635B is not connected correctly.	End and repeat the call for cool. Check the Flash COM OK LED on the W8635B EIM while the call is being made. If the Flash COM OK LED does not blink: —check communication bus wiring. If the Flash COM OK LED blinks: —check that 24 Vac is present on W1/Y1 terminal. If 24 Vac is not present: —check R to Rh connection. If the R to Rh connection is good: —replace W8635B module.
"wait" is displayed, and the call for Heat or Cool has not started.	Compressor protection is in effect.	Compressor protection can be set from 0 to 5 minutes to prevent compressor damage due to rapid cycling. Wait until the compressor protection period has expired. To bypass the compressor protection during the installation phase, see the Installer System Test section.
Auxiliary heat does not energize.	Stage configuration is not set correctly to match the number of stages desired. Cool load at W8635B is not connected properly	Set the Stage configuration in Installer Setup for 2 stages of heat. Check that 24 Vac is present at Aux. terminal. If 24 Vac is not present, all connections are good and the thermostat is properly configured, replace the W8635B EIM.
Emergency heat does not energize.	Emergency heat load at W8635B is not connected correctly.	Check that 24 Vac is present at E terminal. If 24 Vac is not present, all connections are good and the thermostat is properly configured, replace the W8635B EIM.
Emergency heat can not be selected with the thermostat system switch.	Stage configuration is not set correctly to match the number of stages desired.	Set the stage configuration Installer Setup No. 9 for 1 stage of emergency heat.
Check LED is on.	Check LED. 24 Vac is present at the L terminal on the W8635B EIM.	Check heat pump manufacturer instructions.

Honeywell

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