

## Laboratory Room Controller Electronic Application 2458 VAV with BTU Compensation on OAVS

### Product Description

The Laboratory Room Controller (LRC) with BTU Compensation on OAVS is an equipment controller that provides Direct Digital Control (DDC) for a laboratory room with a single fume hood controller, or up to four fume hood controllers through a flow averaging device. The LRC with BTU Compensation on OAVS controls room temperature and pressurization, and can operate stand-alone with a field panel, or as part of a network.


Shipping carton contains a controller assembly (controller board and cover), a mounting rail, and two self-tapping screws.

**NOTE:** Keep the controller in its static-proof bag until installation.

### Product Numbers

Product	Description
550-767J	LRC Electronic VAV with BTU Compensation on OAVS
550-818A	Offboard Air Module (two required—order separately)

### Installation Conventions

<b>CAUTION</b>		Equipment damage or loss of data may occur if user does not follow procedure as specified.
----------------	---	--

### Required Tools

- Electro-Static Discharge (ESD) wrist strap
- Small and medium flat-blade screwdrivers
- Electric drill

Additional tools if not using self-tapping option:

- 1/4-inch nut driver
- 1/8-inch (3 mm) bit

### Prerequisites

- Wiring conforms to NEC and local codes and regulations.
- Floor level network (FLN) with 24-volt wiring.
- Supply power to the unit OFF.
- Any necessary hardware installed: terminal unit, actuator(s), sensor(s), etc.
- Room Temperature Sensor (RTS) installed (optional). Note: a low-cost temporary RTS (P/N 540-658P25) is available that plugs into the RTS port on the LRC, providing temperature input and actual space control until a permanent RTS is installed.

### Expected Installation Time

New controller installation	10 min.
Replacement with removable terminal blocks	6 min.
Replacement without removable terminal blocks	16 min.

**NOTE:** You may require additional time for database work at the field panel.

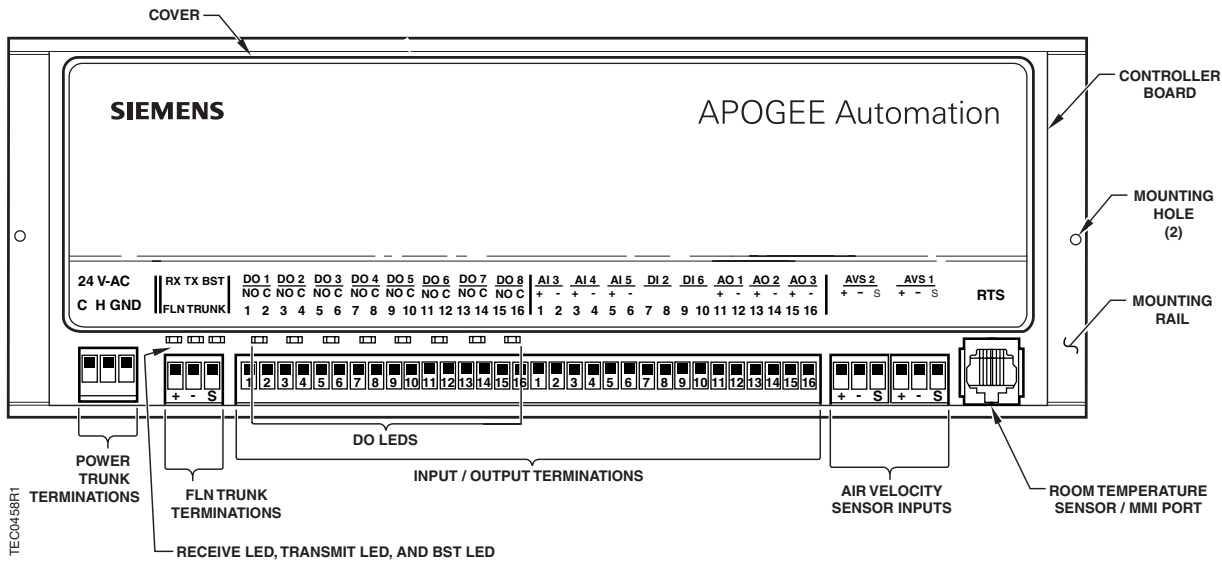


Figure 1. LRC Electronic with BTU Compensation on OAVS.

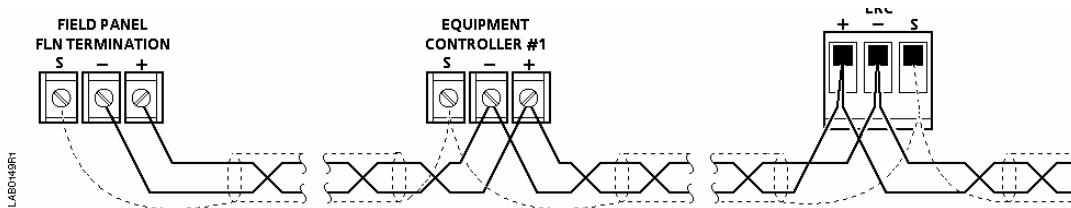


Figure 2. FLN Trunk Wiring.

## Installation Instructions

**NOTE:** Follow all safety regulations and local codes when installing this equipment.

1. Using the mounting rail as a template (Figure 1), mark the screw holes where you will install the LRC.
2. Do **one** of the following:
  - If using self-tapping screws, fasten the mounting rail using a drill and hex nut bit.
  - If not using self-tapping screws, drill two 1/8-inch (3 mm) pilot holes, then fasten the mounting rail with No. 6 or No. 8 screws.
3. With the ESD wrist strap attached to your wrist and a good earth ground, remove the controller from the anti-static bag and snap it securely into place on the mounting rail.

4. If the LRC will be used with a field panel, disconnect the floor level network (FLN) trunk from the field panel.
5. Wire the FLN trunk to the LRC (Figure 2). After all controllers are connected to the FLN, reconnect the FLN trunk to the field panel.
6. Install the Offboard Air Modules following the installation instructions (Document Number 550-819).
7. Connect the point wiring. See Figure 5.

**NOTE:** Each DO provides a Normally Open (NO) and a Common (C) terminal. Terminate both connections of a 24 Vac load directly to the board.



### CAUTION:

The LRC DOs control 24 Vac loads only. The maximum rating is 12 VA for each DO. Use an interposing 220V relay module for VA requirements

higher than the maximum, 110 or 220 Vac requirements, DC power requirements, or whenever a separate transformer is used to power the load.

8. For each AO-E module, verify that the switches are set as in Figure 3.

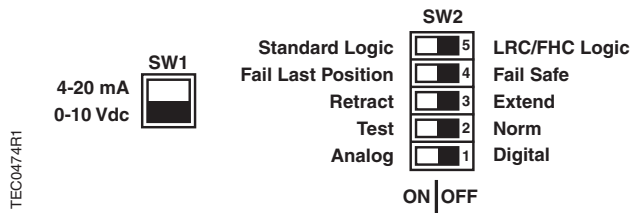


Figure 3. Switch Settings for the AO-E Modules.

**NOTE:** A three-wire power trunk must be run from the transformer to the AO-E module. The 'E'

terminal of connector block J1 must be connected to ground. See Figure 5).

**NOTE:** The preferred configuration for shared power trunks is one trunk for the flow averaging module and FHC (including the Fume Hood's actuator), and another trunk for the room level actuator(s) and LRC. The Lab Controls Electronic Actuator Assemblies can be on the same power trunk as the FHC or LRC, or they can be on a separate transformer.

9. Plug the room temperature sensor cable into the RTS port on the controller (Figure 1).
10. Connect a certified 24 Vac Class II power source to the LRC's power supply terminal block. See Figure 5.

The installation is complete.

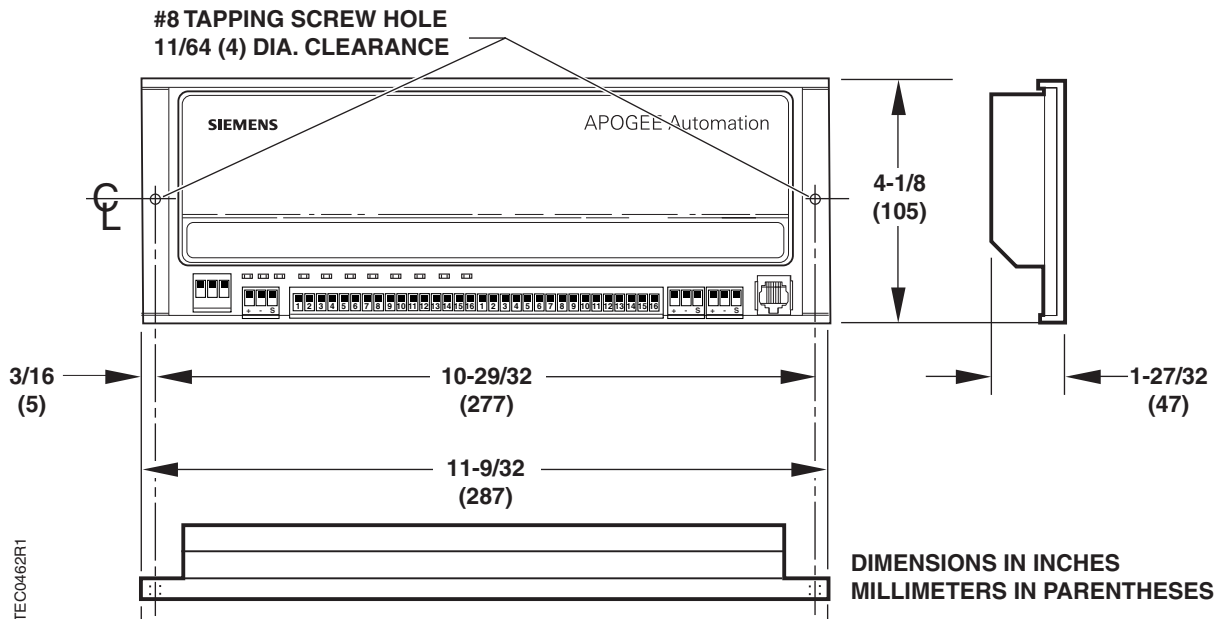


Figure 4. Dimensions for LRC Electronic with BTU Compensation on OAVS.

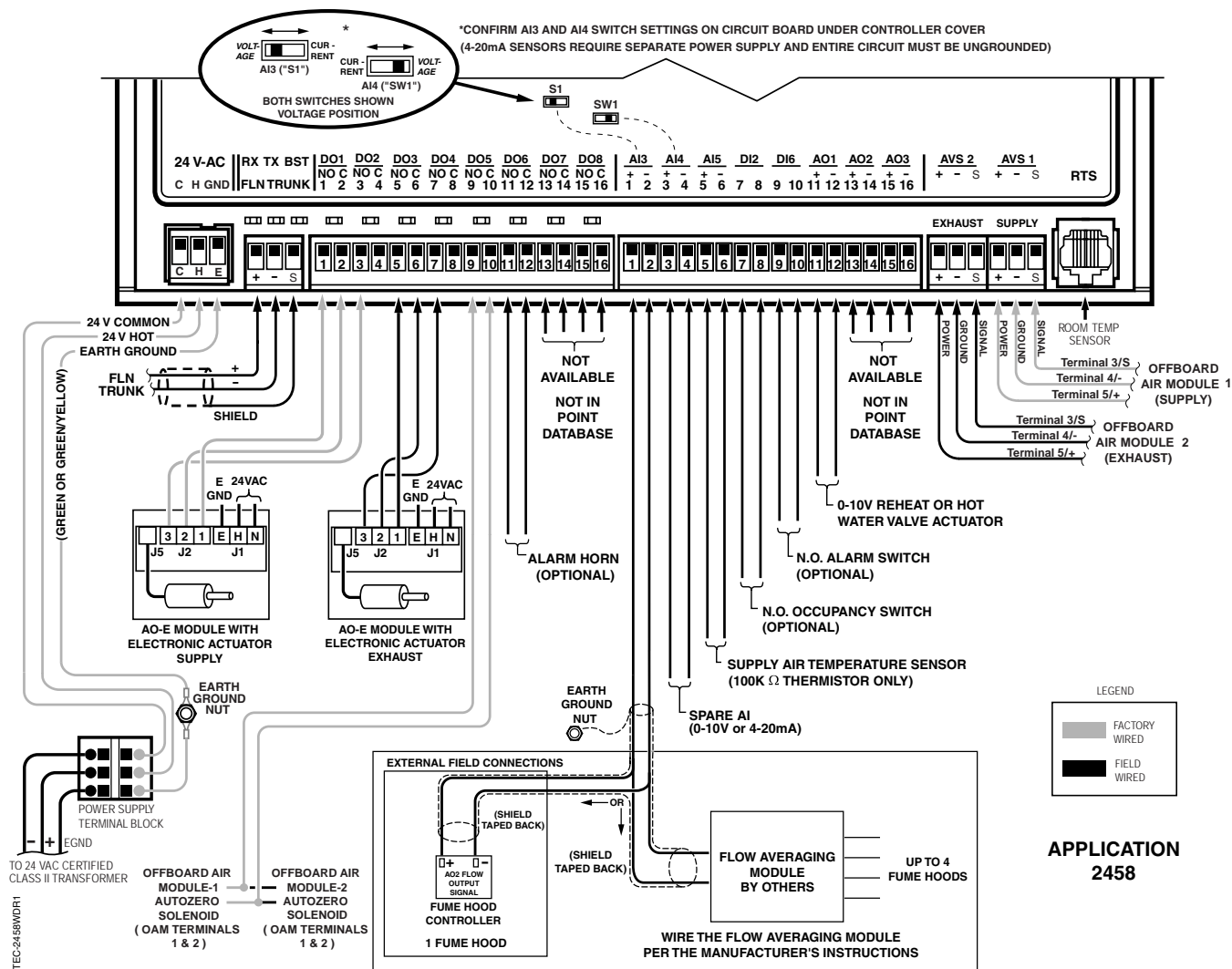
## Wiring Diagrams



**CAUTION:**

The LRC DOs control 24 Vac loads only. The maximum rating is 12 VA for each DO. Use an interposing 220V 4-relay module for any of the following: VA requirements higher than the maximum; 110 or 220 Vac requirements; DC power requirements; separate transformers used to power the load.

**NOTE:** Consult with the local representative if terminations are missing or are different.



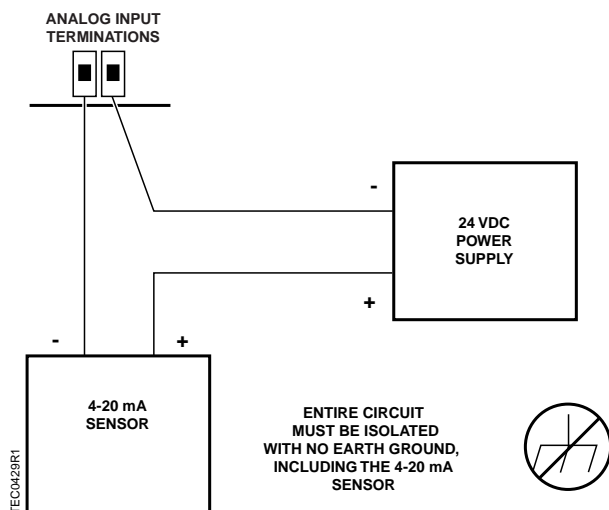
See Figure 6 for how to wire a 4-20mA sensor at AI 4 (optional).

**Figure 5. Application 2458 Wiring Diagram for LRC Electronic, VAV with BTU Compensation on OAVS.**



**CAUTION:**

If the LRC is not connected as shown, it is not resistant to electrical surges. It is also susceptible to interference from other equipment.



**CAUTION:**

A **SEPARATE** power supply is required if a 4-20 mA sensor is used. Failure to follow wiring precautions will result in equipment damage.

**NOTE:** Each 4-20mA sensor requires a SEPARATE, dedicated 24 VDC power supply. You can NOT use the same transformer to power both the sensor and the controller.

**Figure 6. Wiring of Optional 4-20 mA Sensor.**

Information in this publication is based on current specifications. The company reserves the right to make changes in specifications and models as design improvements are introduced. Other product or company names mentioned herein may be the trademarks of their respective owners. © 2005 Siemens Building Technologies, Inc.

**Siemens Building Technologies, Inc.**  
1000 Deerfield Parkway  
Buffalo Grove, IL 60089-4513  
U.S.A.

Your feedback is important to us. If you have comments about this document, please send them to [technical.editor@siemens.com](mailto:technical.editor@siemens.com)

Document No. TEC-0659.10  
Printed in the U.S.A.

**Page 5 of 5**