SIEMENS

Installation Instructions
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Laboratory Exhaust Air Terminal

Product Description

The Laboratory Exhaust Terminal (LGE) is a one-piece flow control device used to vary airflow through an exhaust duct. See Figure 1 and Figure 2. The terminal consists of a duct section, flow sensor, and a damper blade.

NOTE: The terminal's 90° damper does not have a gasket seal.

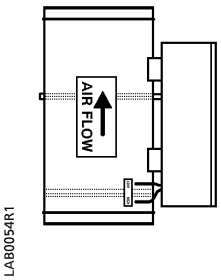

Figure 1. Slip Ends Exhaust Terminal.

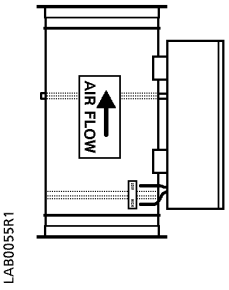

Figure 2. Flanged Ends Exhaust Terminal.

Options

- Sizes 4", 6", 7", 8", 9", 10", 11", 12", 14", 16", 18"
- Galvanized/90, without seal; 316L stainless steel/90, without seal
- Slip or flange end fittings
- 316L Stainless steel and Teflon™ coated construction:
  - Solid stainless steel shaft on Teflon bearings
  - Orifice plate SP300
- Galvanized Construction:
  - 1/2-inch (1.276 m) zinc plated shaft
  - Orifice plate or SP300 airflow measurement sensor

Product Numbers

Contact your Siemens Industry, Inc. representative for detailed parts information.

Warning Notation

WARNING	⚠	Personal injury/loss of life may occur if you do not follow a procedure as specified.

Electronic Actuation

- Control packages including an Electronic Actuator assembly with mounting bracket, and a differential pressure transmitter (optional). These parts are included in an enclosure that is factory-mounted to the outside of the terminal.

Pneumatic Actuation

- Control packages including one or all of the following: Analog Output–Pneumatic (AO–P) Transducers, No. 3 pneumatic actuator, and one differential pressure transmitter (optional). These parts can be included in an optional enclosure that is factory-mounted to the outside of the terminal.

Required Tools

- Small flat blade screwdriver
- 3/8-inch open end wrench
- Needle nose pliers
- Duct tape
- Sealant
- Sheet metal screws
- 1/4-inch poly tubing

Expected Installation Time

30 minutes

Prerequisites

- Terminal ductwork free of debris
- Construction filters in place
- One duct diameter of rigid straight ductwork upstream of terminal. See Figure 3.
- Air lines installed (for pneumatic applications)
- Exhaust ductwork installed

NOTE: Terminals should be located so that they do not come in contact with rigid conduit, sprinkler piping, Greenfield metal covering, or rigid pneumatic tubing. Do not install terminals tight against concrete slabs or columns because vibrations are amplified through these structures. Also, allow clearance for service access to controls.

Instructions

Installation instructions for the LGEs are presented in the following two sections:

1. Section 1 applies to mounting the terminal unit.
2. Section 2 applies to actuation.

Section 1 – Mounting

1. Move the terminal to the installation area. Remove the terminal from the shipping package. Do not carry the terminal by the orifice sensor. Terminal measurements are included in Table 1.
2. Connect the exhaust ductwork to the exhaust terminal's inlet collar using the accepted trade practice of welding or bolting the exhaust terminal to the ductwork.
3. Connect the exhaust ductwork to the exhaust terminal's outlet collar using the accepted trade practice of welding or bolting the exhaust terminal to the ductwork.
4. Seal all ductwork and check that the exhaust duct connections are airtight.

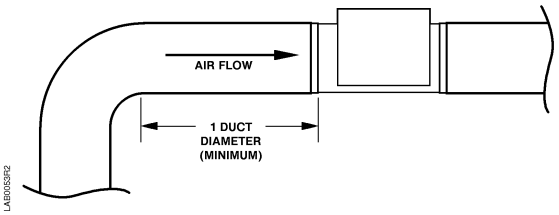

Figure 3. Exhaust Terminal Properly Installed after an Elbow Duct Section.

NOTE: Always mount the equipment enclosure on the side of the duct (vertically) (Figure 4). Mounting the equipment enclosure on the top or bottom of the duct (horizontally) will adversely affect the measurement accuracy.

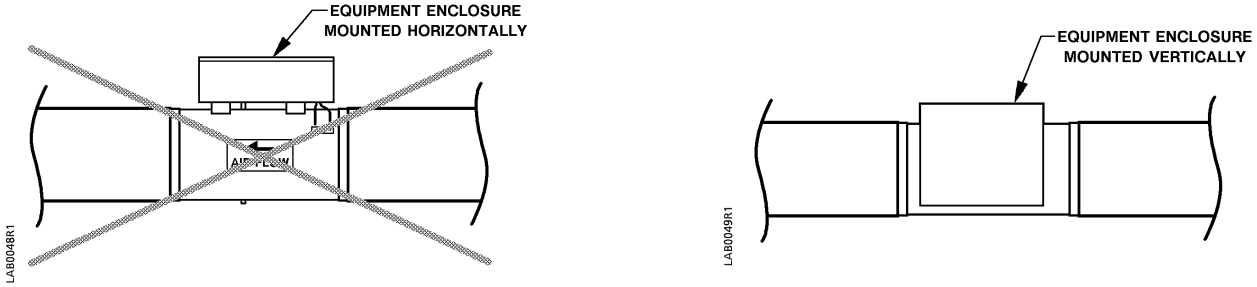

Figure 4. FHET Installed Properly.

Table 1. LGE Dimensions by Unit Size.

Duct Size	Length (L) Inches (mm) ±0.06 (1.5)	Slip End Outside Diameter (OD) or Flange End Inside Diameter (ID) Inches (mm)	Flange Bolt Hole Circle Size Inches (mm)
4	16.00 (406.4)	3.88 (98.6)	5.25 (133.4)
6	16.00 (406.4)	5.88 (149.4)	7.25 (184.2)
7	16.00 (406.4)	6.88 (174.8)	8.25 (209.6)
8	16.00 (406.4)	7.88 (200.2)	9.25 (234.95)
9	19.50 (495.3)	8.88 (225.6)	10.25 (260.4)
10	19.50 (495.3)	9.88 (251.0)	11.25 (285.8)
11	20.50 (520.7)	11.88 (301.8)	13.25 (336.6)
12	20.50 (520.7)	11.88 (301.8)	13.25 (336.6)
14	23.00 (584.2)	13.88 (352.6)	15.75 (400.1)
16	25.00 (635.0)	15.88 (403.4)	17.75 (450.9)
18	25.001 (635.0)	17.88 (454.2)	19.75 (501.7)

1. Provide a minimum of 1 duct diameters of straight rigid duct directly upstream.
2. Flanged connection is 1.0” (25.4 mm) for 4” through 10” sizes. OD = OD + 2.0” (50.8 mm). Bolt hole quantity = 6, Bolt hole size = 0.375”.
3. Flanged connection is 1.5” (38.1 mm) for 11” through 16” sizes. OD = OD + 3.0” (76.2 mm). Bolt hole quantity = 8, Bolt hole size = 0.4375”.

Section 2 – Actuation

For application specific actuator wiring, reference the appropriate controller installation instructions. For actuator wiring, reference the appropriate actuator Technical Instructions.

Field Panels and Unitary Controllers (UCs)

NOTE: For field panels and UCs, the AO–P Transducer used in these steps is P/N 545-113.

Tubing Connections

Several pneumatic connections must be made from the field panel or UC to the terminal box to operate the AO-P Transducer and pneumatic damper actuator.

For damper, actuator and valve controls mounted inside the controls enclosure. Connect the 1/4-inch poly tubing from the 20 to 30 psi supply line to the port labeled “Supply Air 20–30 psi” on the side of the controls enclosure (Figure 5).

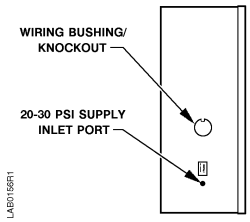

Figure 5. Exhaust Terminal Pneumatic Piping Connections.

Wiring Connections

Several electrical connections must be made from the field panel or UC to the terminal to operate the AO-P Transducer and the differential pressure transmitter.

3. Connect a two-conductor 20 AWG cable to the Field Panel’s 0 to 10V output or UC’s universal output. Connect it to the AO–P Transducer connected to the exhaust damper or through the wiring bushing/knockout on the terminal enclosure (Figure 5) to the AO–P Transducer inside the enclosure.
4. The wire bushing can be removed and a standard 1/2-inch conduit knockout fitting may be installed. Connect the cable to the AO–P Transducer (Figure 6).

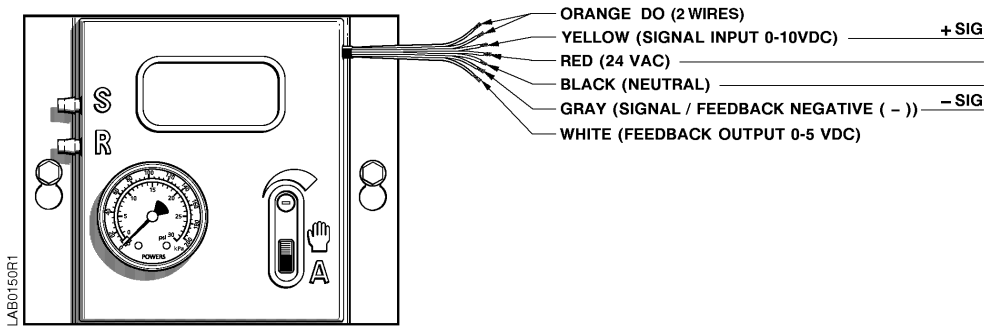

Figure 6. AO-P Transducer Wiring Connections.

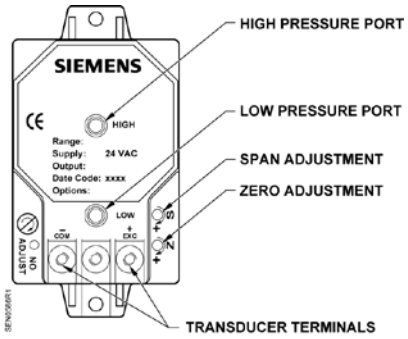

Figure 7. Differential Pressure Transmitter Wiring Connections.

5. Connect a two-conductor 20 AWG cable to the field panel's 4 to 20 mA input or UC's universal input. Connect it to the differential pressure transmitter or through the wiring bushing/knockout on the controls enclosure to the differential pressure transmitter inside the enclosure. Connect the cable to the differential pressure transmitter (Figure 7).

Fume Hood Controllers (FHCs)

Provision of the 18 to 30 psi Supply Air Connection

One supply air connection must be made to the FHET to operate the pneumatic damper.

1. Use 1/4-inch OD poly tubing for an 18 to 30 psi supply air line to the FHET equipment enclosure.
2. Connect the supply air line to the barbed supply inlet port on the side of the equipment enclosure (See Figure 8).

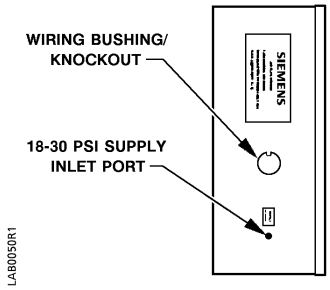

Figure 8. FHET Pneumatic Piping Connection.

Wiring the AO-P Module and Differential Pressure Transmitter to the Fume Hood Controller Board.

1. Remove the equipment enclosure cover by loosening the quick release butterfly fasteners. The butterfly fasteners will remain attached to the cover.
2. With the equipment enclosure cover removed, locate the Lab AO-P module and the differential pressure transmitter. (Figure 9).

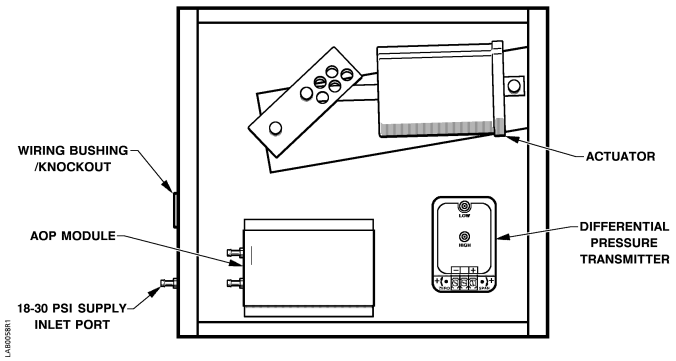

Figure 9. Equipment Locations.

3. Connect a three conductor 20 AWG cable for the Lab AO-P Module through the wiring bushing/knockout. (Figure 9). If desired, the wiring bushing can be removed and a standard 1/2-inch conduit fitting may be installed in its place. See Figure 10 for the wiring connections to the Lab AO-P Module from the Fume Hood Controller Board.

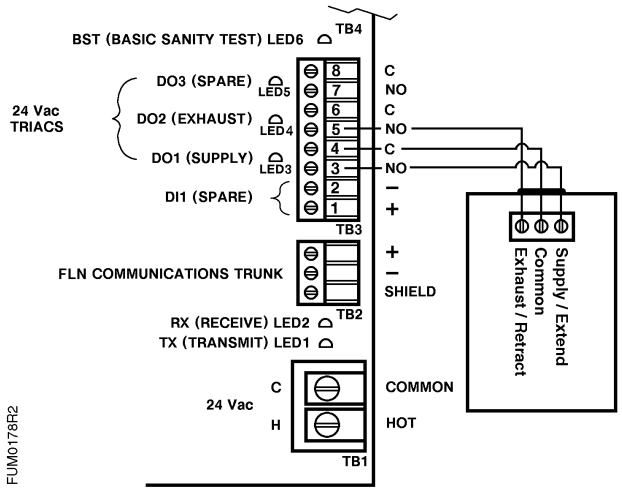

Figure 10. AO-P Module Wiring Connections.

4. Connect a two conductor 20 AWG cable to the Fume Hood Controller for the differential pressure transmitter. See Figure 11 for wiring connections to the differential pressure transmitter from the Fume Hood Controller Board.

The installation is now complete.

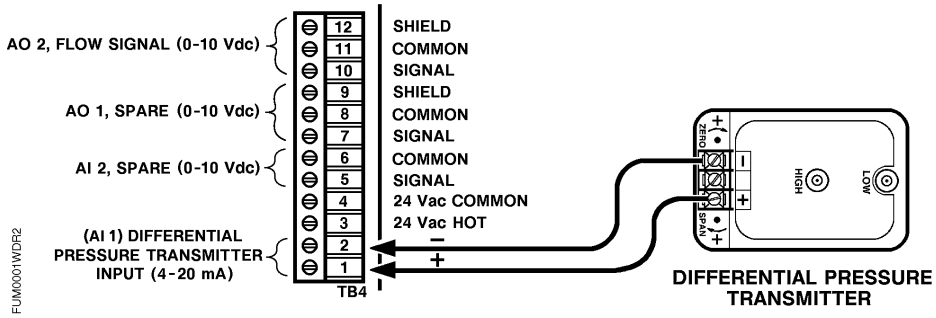

Figure 11. Differential Pressure Transmitter Wiring Connections

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