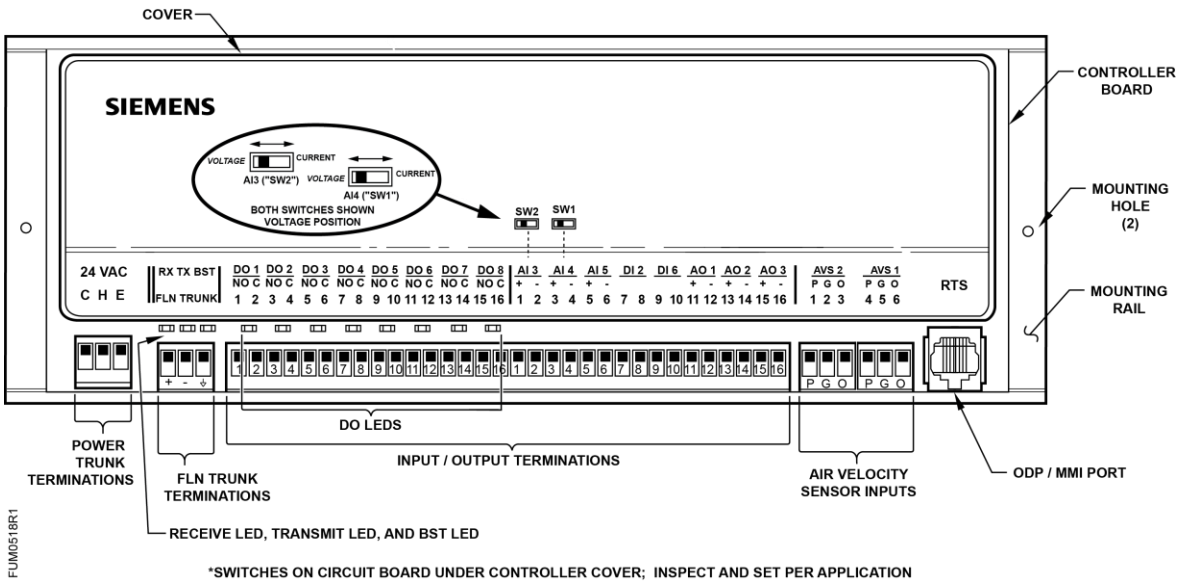
SIEMENS

Installation Instructions
Document No. 570-136
October 26, 2016

Smoke Control Listed BACnet Fume Hood Controller



Generic Controller I/O Layout. See Wiring Diagram for application specific details.

Control Applications

6740, 6741 and 6742

Product Description

These instructions explain how to field install or replace the Fume Hood Controller (FHC).

This BACnet Fume Hood Controls a Fast-acting Damper or Venturi Air Valve to maintain control of a chemical fume hood with up to 2 sashes. It uses fast-acting electronic actuators (shipped separately) to control the exhaust control device.

	⚠ WARNING
	The application cannot detect a broken wire to the analog input for the second sash. An external sash aggregating device should be used to calculate the face area for all fume hoods with more than one sash.

This controller supports up to two Offboard AVS signals. Offboard Air Module(s) (OAM) house AVS transducers and send signals to the AVS input(s) on the controller board. The controller can operate stand-alone, with a field panel, or as part of a network.

Product Numbers

Fume Hood Controller Applications 6740,6741,6742	570-00701PKA
This controller requires Offboard Air Module(s) (ordered and shipped separately	
Offboard Air Module – two required, order separately	550-819B
Operator Display Panel II (ODP II)	575-820A
Power Module	AQM2200
Siemens fast-acting Lab Electronic Actuator(s) – order and ship separately)	GNP191.1U

Shipping carton includes a controller assembly, a mounting rail, and two self-tapping/drilling screws.

⚠ CAUTION

Keep the unit in its static-proof bag until installation.

Otherwise you run the risk of damage to the PCA from electrostatic discharge.

⚠ ATTENTION

Ne pas retirer la carte de son emballage avant son installion.

Autrement, une décharge électrostatique peut endommager la carte équipée.

Accessories

Room Sensor Cable 25 ft.	588-100A
Room Sensor Cable 50 ft.	588-100B
Vertical Sash Sensor	
50 inch range	546-04000
80 inch range	546-04001

Parts for Smoke Control Compliance

Smoke Control Listed Large Equipment Controller Enclosure (Long board and ATEC controllers).	550-002K
UL Listed Class 2 transformer with 120/240/277/480 Vac 50/60 HZ 0.5A primary with hub, and 24 Vac 96VA secondary w/ hub and circuit breaker.	TR100VA004

NOTE:
For smoke control application, primary rating is only 120V/60 Hz.

Warning/Caution Notation

⚠ WARNING

Personal injury/loss of life may occur if you do not follow the procedures as specified.

⚠ CAUTION

Equipment damage or loss of data may occur if you do not follow the procedures as specified.

⚠ AVERTISSMENT

Risques de blessures graves ou mortelles, si vous ne suivez pas les procédures indiquées.

⚠ ATTENTION

Risques de dommages ou de pertes de données, si vous ne suivez pas les procédures indiquées.

Required Tools and Equipment

- Small flat blade screwdriver
- 3/8-inch open end wrench
- Needle nose pliers
- 1/4-inch poly tubing

Prerequisites

- Wiring conforms to NEC and local codes and regulations. For further information see the *Wiring Guidelines Manual*.
- 24 Vac Class II power available.
- Supply power to the unit is OFF.
- Any application specific hardware or devices installed.
- Fume Hood Controller Enclosure is mounted and wiring has been roughed-in.
- Operator Display Panel is installed and cable pulled to location of controller.

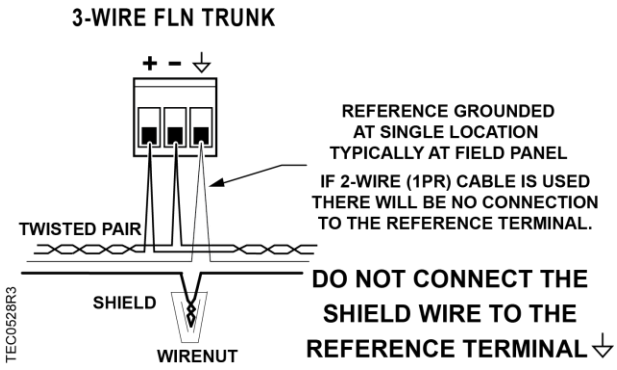
Expected Installation Time

30 minutes

Installation Instructions

NOTE:
All wiring must conform to national and local codes and regulations (NEC, CE, etc.).

1. Secure the mounting rail in the controller's desired location.
2. Place the ESD wrist strap on your wrist and attach it to a good earth ground.
3. Remove the controller from the static proof bag and snap it into place on the mounting rail.
4. If the controller will be used with a field panel, disconnect the field level network (FLN) trunk from the field panel.
5. Wire the FLN trunk to the controller. After all controllers are connected to the FLN, reconnect the FLN trunk to the field panel.



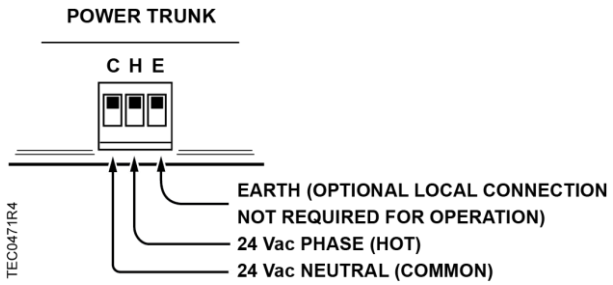
6. If the controller requires Offboard Air Modules, install them now following the appropriate Installation Instructions (see *Product Numbers*).
7. Connect the point wiring (see *Wiring Diagrams*).

⚠ CAUTION

DO Wiring – Each DO provides a Normally Open (NO) terminal and a Common (C) terminal.

To reduce noise and the potential for ground loops, both connections of a 24 Vac load must be wired directly to the DO terminal on the controller board.

8. Plug the operator display cable into the ODP port.
9. Connect the power trunk. DO NOT apply power to the controller without first consulting the specialist.



	⚠ CAUTION
	It is important that the neutral that supplies the TEC must be earth grounded at the source of the 24 Vac power. Possible erratic equipment operation or damage if neutral is not grounded.

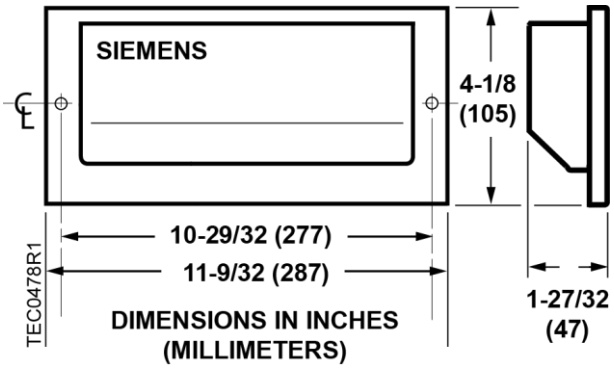
	⚠ ATTENTION
	Il est très important que le neutre qui alimente le TEC soit mis à la terre à la source de l'alimentation 24 Vca. Risque de fonctionnement incohérent de l'équipement ou de dégats si le neutre n'est pas mis à la terre.

10. For a Fast Acting Lab Electronic Actuator, verify that the switches are set as shown in Figure *Switch Settings for the Fast Acting Lab Electronic Actuator*.

Damper Venturi Air Valve

Switch Settings for the Fast Acting Lab Electronic Actuator.

The installation is complete.



Dimensions.

Smoke Control Compliance

The following instructions and information apply if used for smoke control sequence.

1. Install Smoke Control Listed products, enclosure and transformer. See the *Product Numbers* and *Accessories* sections for more information.

2. Input Rating:

   – 24V 60 Hz 60 VA maximum

3. Digital Output (DO) are the only I/O authorized for smoke control applications.
   Digital Output (DO) Electrical Ratings:

   – 5 VA per DO/ maximum 40 VA total

4. The room temperature sensor (RTS) is installed in the same area as the TEC.

5. Connection from the TEC to the field panel is a maximum 4000 feet, 24 AWG minimum.

6. Wiring Range:

   – Transformer: primary 14 AWG
   – 24 Vac Input Power: 14 to 18 AWG
   – DO: AI: 18 to 20 AWG
   – DI: 18 AWG
   – LAN: 20 to 24 AWG
   – RST: 24 AWG

   All circuits are power limited; FLN is RS-485, RTS is RS-232. Digital Inputs (DI) are dry contacts.

   See the following documents for more information on configuring smoke control applications:

   - *Smoke Control Systems Application and Engineering Manual (*125-1806)
   - *Smoke Control System Application Guide (*125-1816)
   - *NFPA and UL Standards Relevant to Smoke Control System Application Guide (*125-1817)

NOTE:
The 24 Vac relay module is not applicable for smoke control application.

Regulatory

FCC Statement Part 15.19

This Device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation

FCC Part 15.21, Information to user

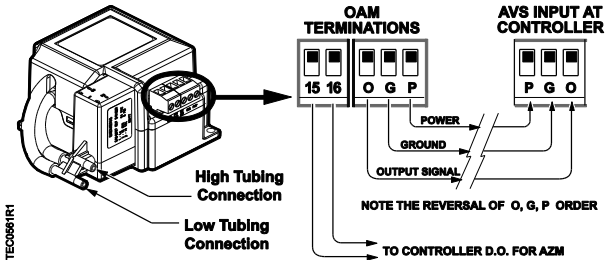
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Part 15.105, Information to user

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Wiring Diagrams



Offboard Air Module Wiring.

⚠ CAUTION

The FHC-OAVS has two terminal blocks with terminations numbered identically (terminations 1 through 16). DO NOT get these mixed up with each other.

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

⚠ ATTENTION

Le LCM-OAVS est muni de deux bornes dont les contacts sont numérotés à l'identique (contacts 1 à 16). NE PAS les confondre.

SI le LCM-OAVS n'est pas connecté comme indiqué, il n'est pas protégé contre les surtensions électriques. Il est également susceptible à des interférences émises par d'autres périphériques.

⚠ CAUTION

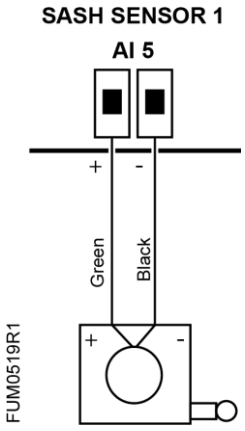
A separate power supply is required if a 4-20 mA sensor is used.

Failure to follow wiring precautions will result in equipment damage.

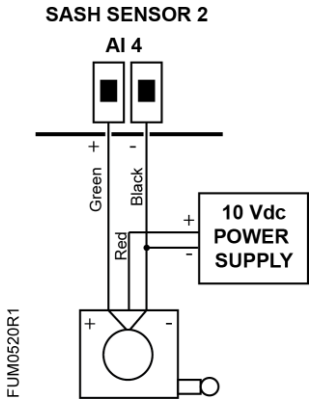
⚠ ATTENTION

Une alimentation séparée est nécessaire, si un capteur 4…20 mA est utilisé.

Risque de dégâts matériels, si les précautions de câblage ne sont pas respectées.



Wiring for AI5: Sash Sensor 1.



Wiring for AI4: Sash Sensor 2.

⚠ WARNING

The application cannot detect a broken wire to the analog input for the second sash.

An external sash aggregating device should be used to calculate the face area for all fume hoods with more than one sash.

⚠ AVERTISSMENT

L'application ne peut pas détecter un fil rompu allant à une entrée analogique pour le second châssis.

Un dispositif externe de cumulation de châssis devrait être utilisé pour calculer la surface à l'entrée de toutes les hottes de laboratoire munies de plus d'un châssis.

⚠ WARNING

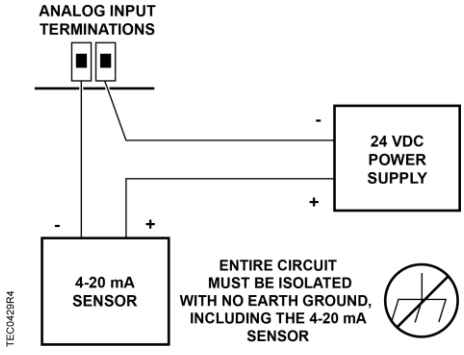
Must use external 10 Vdc power supply.

Do not power AI from an onboard AO that is forced to 10 volts.

⚠ AVERTISSMENT

Doit utiliser une alimentation externe de 10 V.

Ne pas alimenter un AI à partir d'un AO forcé à 10 volts.



Wiring for AI with a 4 to 20 mA Sensor.

⚠ CAUTION

Each 4-20 mA sensor requires a SEPARATE dedicated power limited 24 VDC power supply.

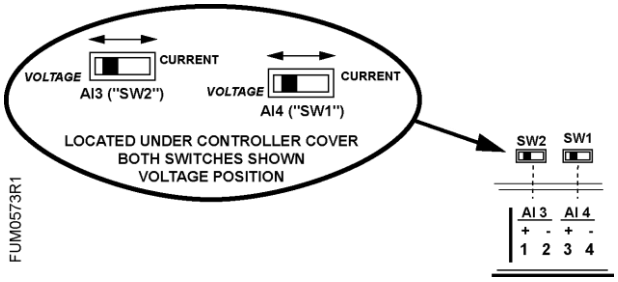
DO NOT use the same transformer to power both the sensor and the controller.

⚠ ATTENTION

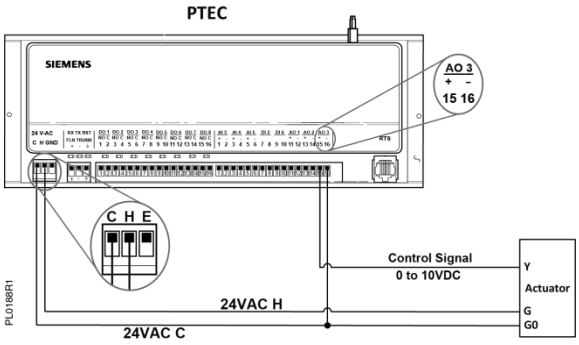
Chaque capteur 4-20 mA nécessite un source d'alimentation SÉPARÉE limitée à 24 VDC.

NE PAS utiliser le même transformateur pour alimenter le capteur et le contrôleur.

NOTE:
If the voltage/current switch is set to current and a 4 to 20 mA sensor is connected to an AI, then special wiring requirements must be followed.



NOTE:
When wiring any actuator that uses a 0 to 10V control signal and ties AC neutral to DC common, an additional wire **must** connect the actuator AC neutral to the DC common of the PTEC/TEC AO being used to control the actuator.

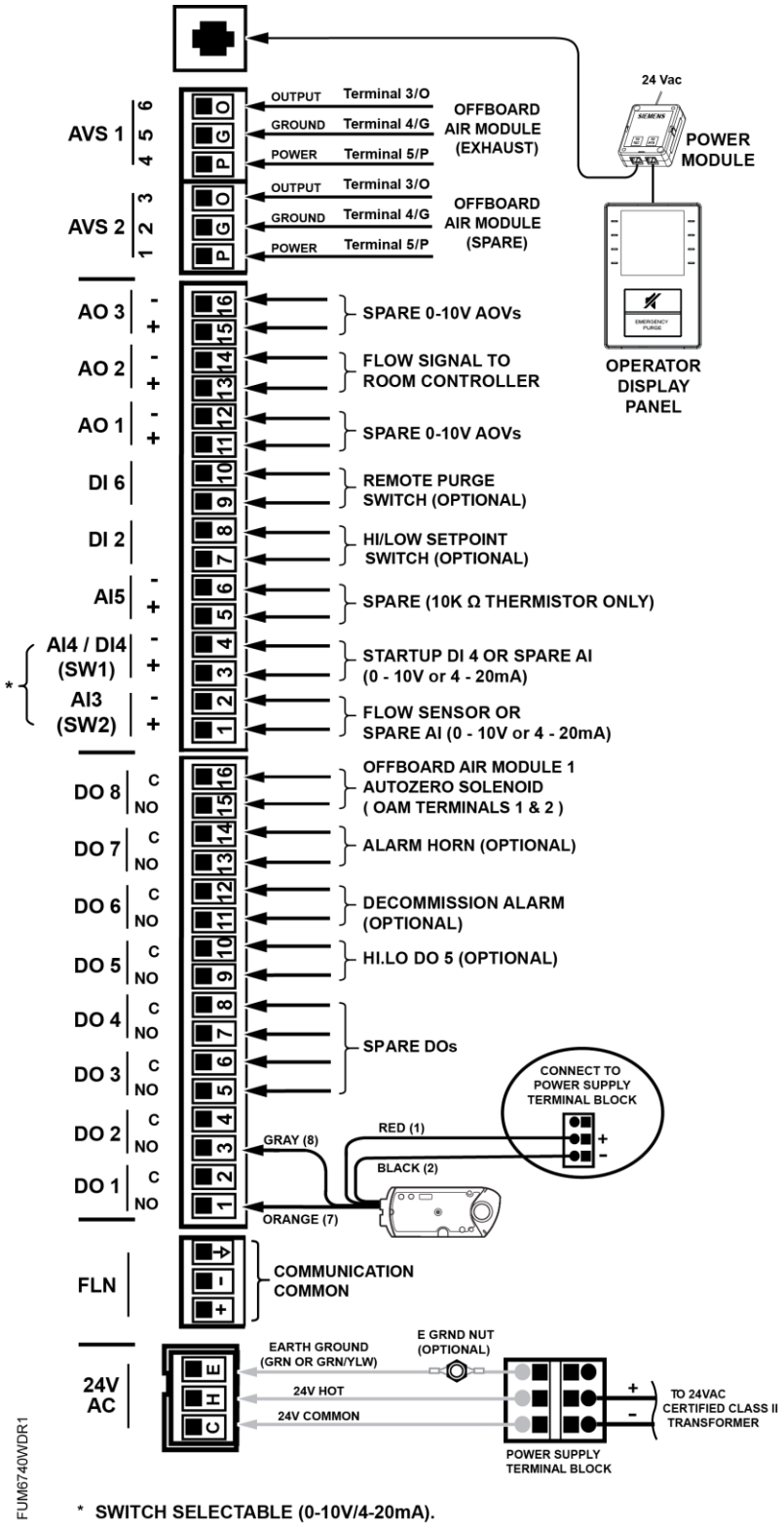


24 Vac Modulating Control.

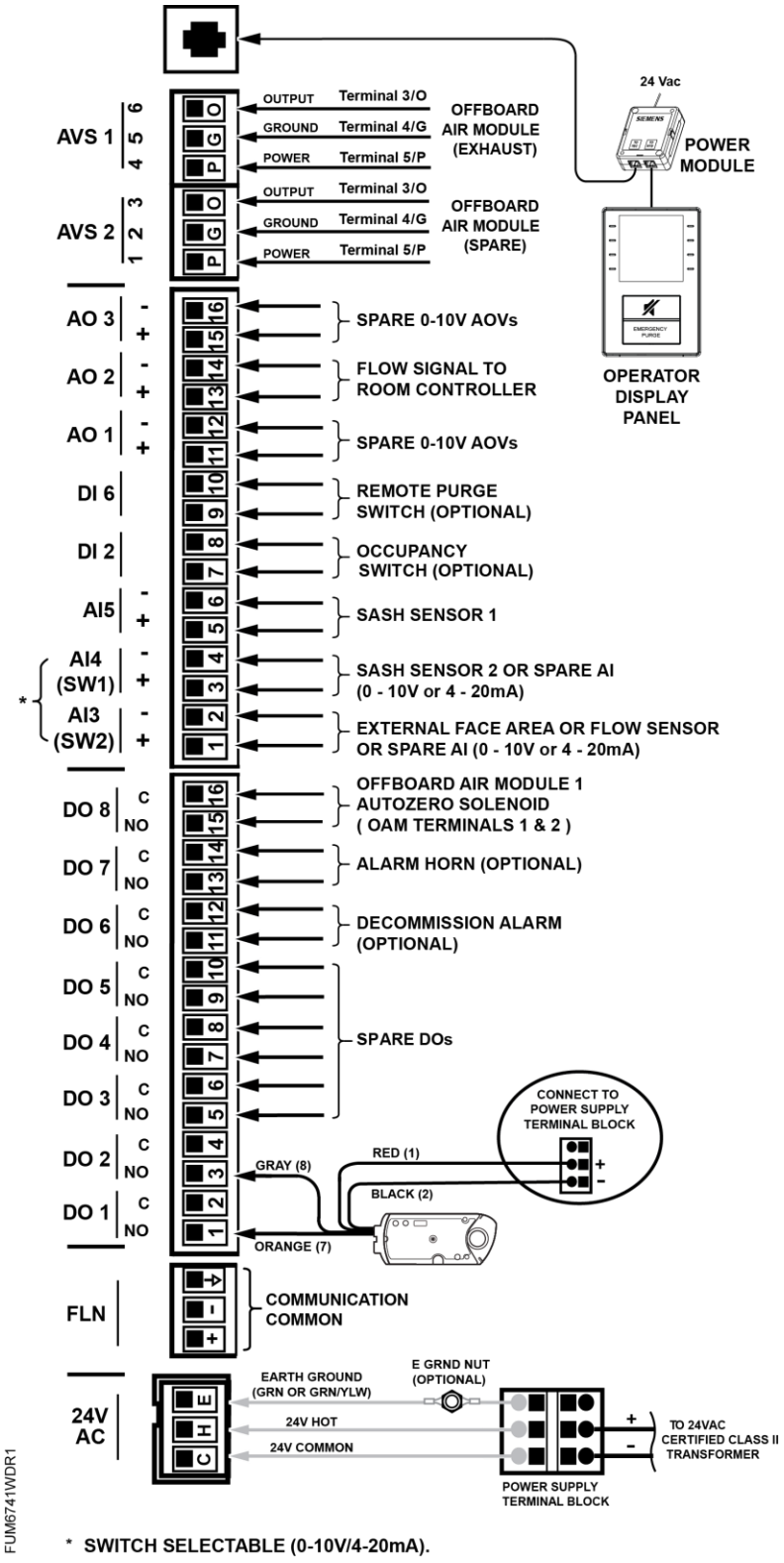
Actuator Symbol	TEC Connection	Function	Terminal Connection	Standard Color
1	H	Supply (SP)	G	Red
2	C	Neutral (SN)	G0	Black
8	AO3 – 15 (+)	0 to 10V input signal	Y	Gray
--	C to AO3 16 (-)	Common jumper	--	--

NOTE:
The controller's DOs control 24 Vac loads only. The maximum rating is 12 VA for each DO. An external interposing relay is required for any of the following:

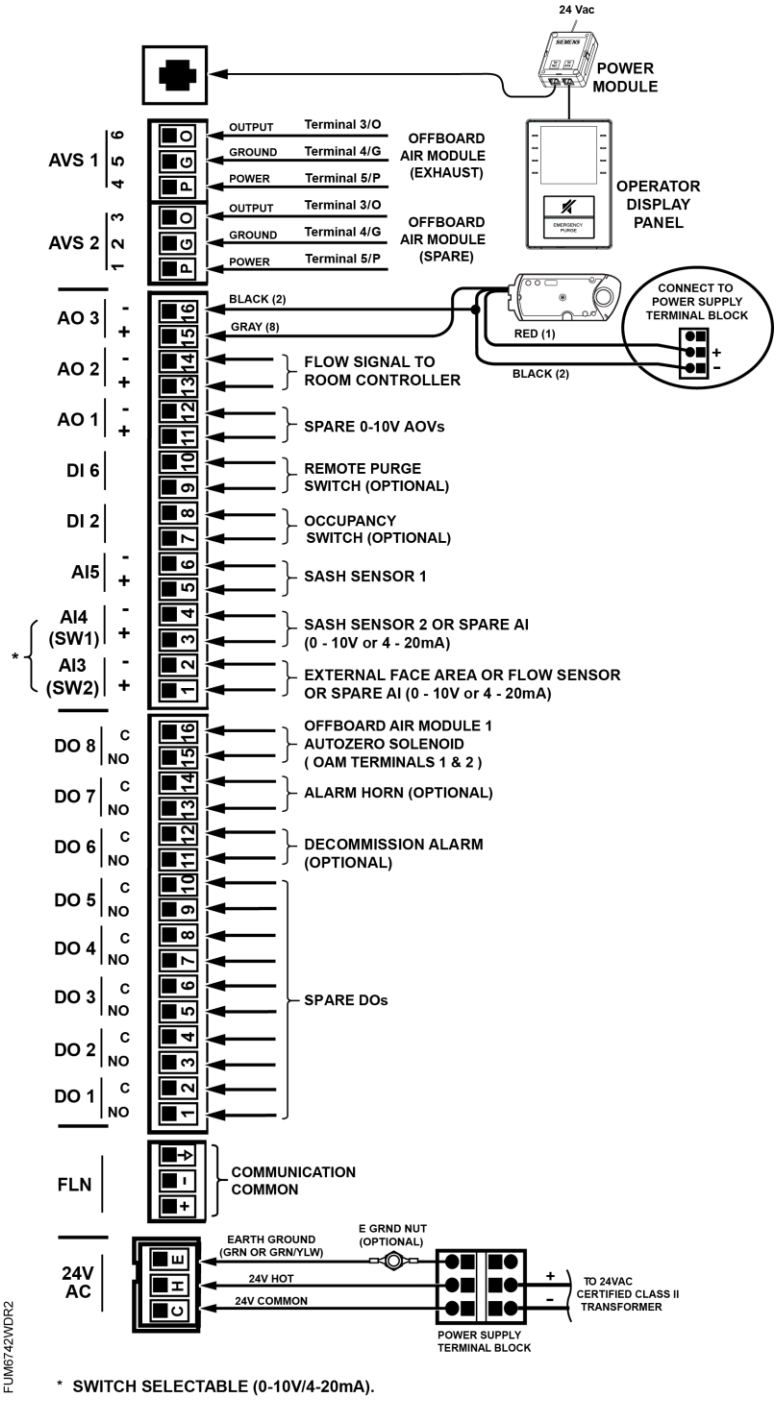
- VA requirements higher than the maximum
- 110 or 220 Vac requirements
- DC power requirements
- Separate transformers used to power the load
(for example, part number 540-147, Terminal Equipment Controller Relay Module)



Application 6740 Wiring Diagram.



Application 6741 Wiring Diagram.



Application 6742 Wiring Diagram.

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