

## Excel 15 S7760A COMMAND DISPLAY



### INSTALLATION INSTRUCTIONS

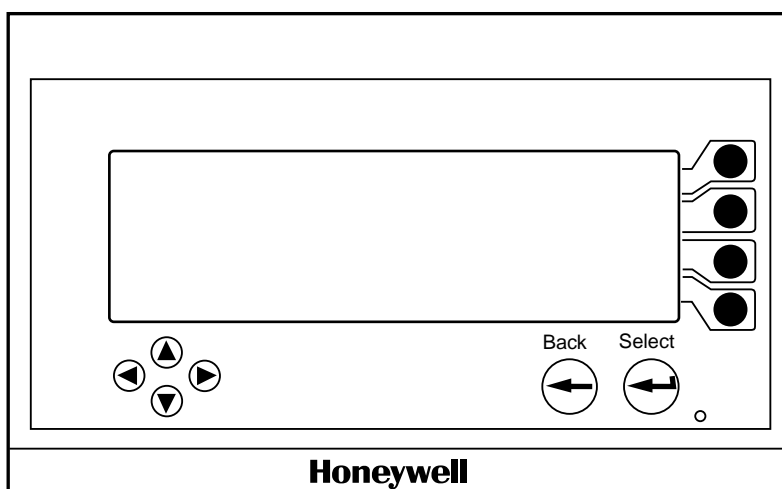
#### PRODUCT DESCRIPTION

The S7760A Command can be used to monitor and control HVAC equipment, lighting, and other miscellaneous loads in a distributed network. See Fig. 1.

The S7760A Command Display communicates via the 78 kilobaud LonWorks® Network.

#### INSTALLATION

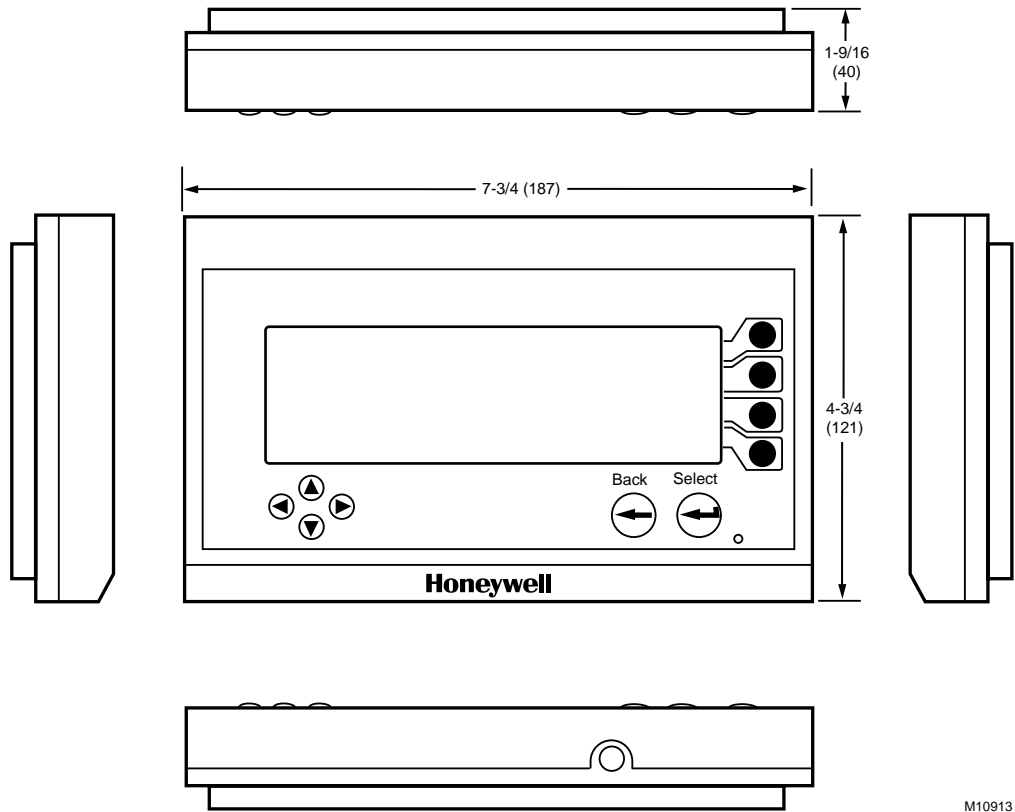
Mount the S7760A in a position that allows clearance for wiring, servicing and ease of use. Avoid mounting the S7760A in areas where acid fumes or other deteriorating vapors can attack the metal parts of the device, or in areas where escaping gas or other explosive vapors are present. See Fig. 2 and Fig. 3 for mounting dimensions.



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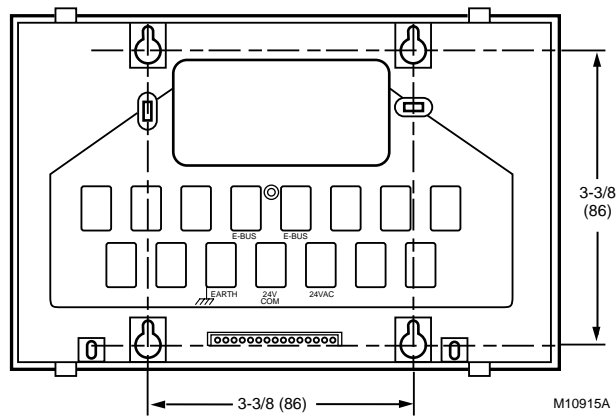
Fig. 1. Excel 15 S7760A Command Display.





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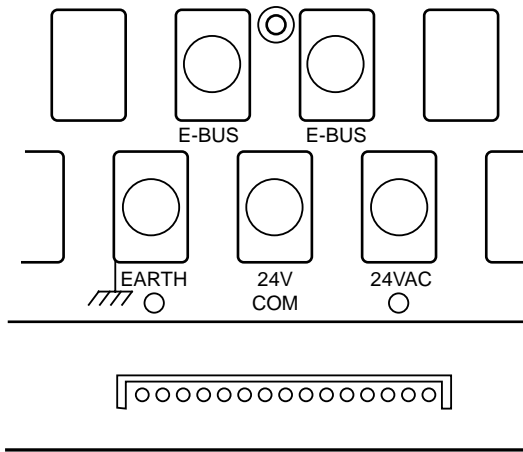
Fig. 2. S7760A mounting dimensions in in. (mm).



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Fig. 3. S7760A Subbase mounting dimensions in in. (mm).

The S7760A enclosure is constructed of a plastic subbase (with wiring terminals) and a plastic snap-on cover (containing electronics). Mount the subbase using four screws on a standard 4 in. x 4 in. junction box, wall or panel. Use appropriate screws for the mounting surface.



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Fig. 4. S7760A Subbase wiring terminals.

## Wiring

**All wiring must comply with applicable electrical codes and ordinances.** Refer to the job site engineering drawings for additional wiring information. S7760A wiring is terminated to the screw terminals located on the wiring subbase. Refer to Fig. 4 for the 24 Vac and LonWorks® terminal locations.

### NOTES:

- For multiple devices operating from a single transformer, connect the same side of the transformer secondary to the same power input terminal in each device. Connect the ground terminal (Earth on the S7760A) to a verified earth ground for each device in the group. See System Engineering, form 74-2969, for power wiring recommendations.
- Keep the earth ground connection wire run as short as possible.

## Power

Provide 24 Vac power from an energy-limited Class II Power Source to each S7760A Command Display. To conform to Class II restrictions (US only), use transformers 100 VA or smaller. More than one S7760A Building Manager or S7760A Command Display can be powered with a single transformer. See Fig. 5 for power wiring details for a single device and Fig. 6 for multiple devices using one transformer.

### IMPORTANT

*Use the heaviest gauge wire available based on a maximum of 14 AWG (2.0 sq mm) and a minimum of 18 AWG (1.0 sq mm), for all power and earth ground wiring.*

*Screw type terminal blocks are designed to accept only one 14 AWG (2.0 sq mm) conductor. Two or more wires of 14 AWG (2.0 sq mm) can be connected with a wire nut. Include a pigtail in this wire group and attach the pigtail to the terminal block.*

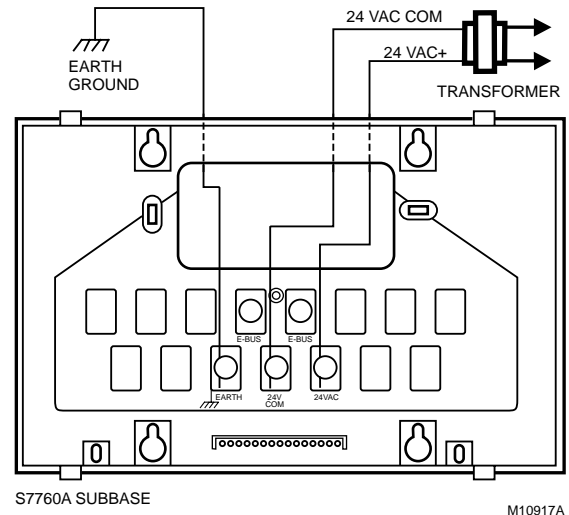


Fig. 5. One S7760A power wiring detail (per transformer).

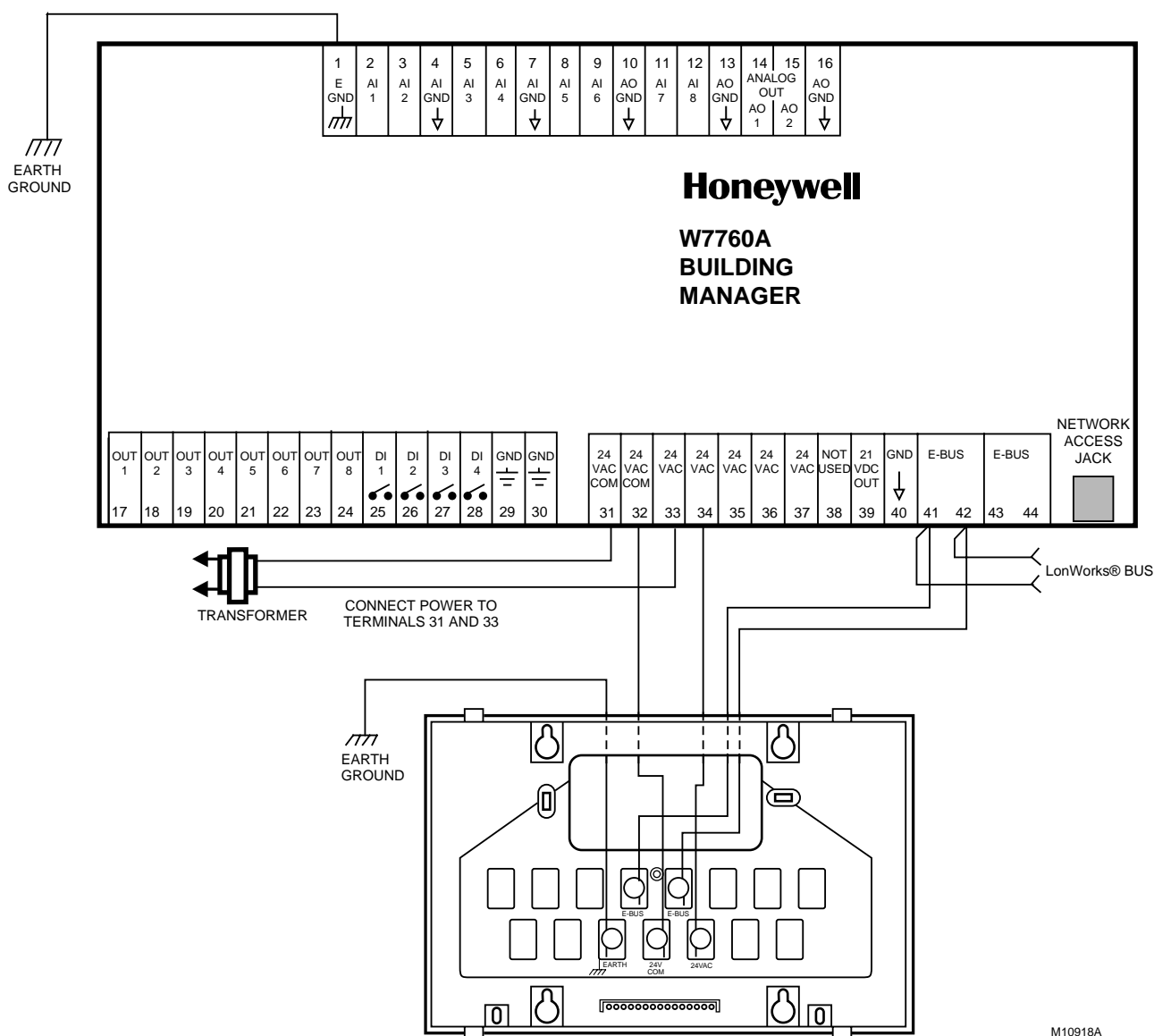


Fig. 6. W7760A, S7760A power wiring details (per transformer).

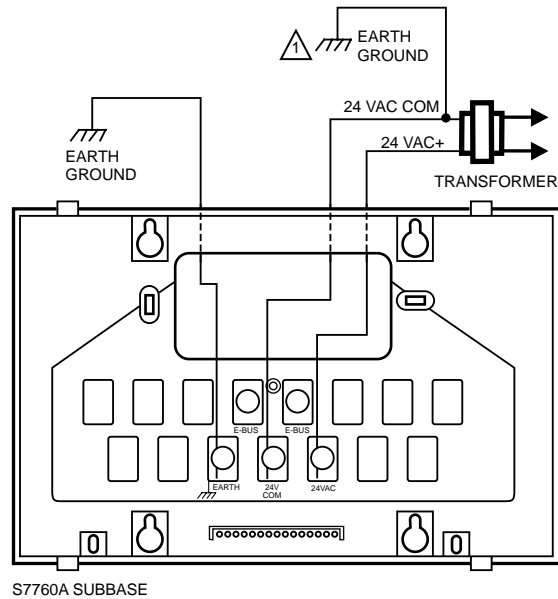
NOTES:

- Unswitched 24 Vac power wiring can be run in the same conduit as the LonWorks® Bus cable.

See the following **IMPORTANT** information on Heating and Cooling Equipment (UL 1995, US only).

**IMPORTANT**

*If the S7760A Command Display is used on Heating and Cooling Equipment (UL 1995, US only) and the transformer primary power is more than 150 volts, connect the transformer secondary to earth ground, see Fig. 7. For this application, each transformer can power only one S7760A Command Display.*



**1** IF THE S7760A COMMAND DISPLAY IS USED ON HEATING AND COOLING EQUIPMENT (UL 1995, US ONLY) AND THE TRANSFORMER PRIMARY IS MORE THAN 150 VOLTS, CONNECT THE TRANSFORMER SECONDARY TO EARTH GROUND. EACH TRANSFORMER CAN POWER ONLY ONE S7760A COMMAND DISPLAY.

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**Fig. 7. Transformer power wiring details for one S7760A used in UL 1995 equipment (US only).**

## Communications

Approved cable types for LonWorks® Bus communications wiring are Level IV, 22 AWG (0.325 sq mm) plenum or non-plenum-rated unshielded, twisted pair, solid conductor wire. For non-plenum areas, use US part AK3781 (one pair) or US part AK3782 (two pair). In plenum areas, use US part AK3791 (one pair) or US part AK3792 (two pair). Also use Echelon® approved shielded cable. Run communications wiring in a conduit, if needed, with *non-switched* 24 Vac or sensor wiring. The Free Topology Transceiver (FTT) communications bus supports a polarity insensitive, free topology wiring scheme that supports star, loop, and/or bus wiring.

LonWorks® Bus networks can be configured in a variety of ways, refer to the E-Bus FTT Network Wiring Guidelines, form 74-2865, for complete description of network topology rules and maximum wire length. If longer runs are required, add a Q7740A 2-way or Q7740B 4-way repeater to extend the length of the LonWorks® Bus.

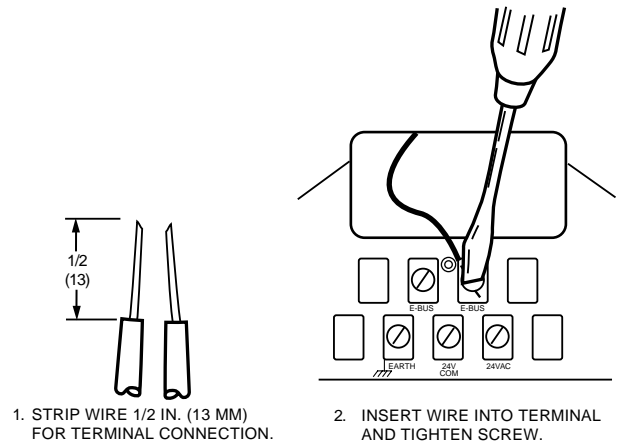
Pull the cable to each device on the LonWorks® Bus and connect to the S7760A Subbase LonWorks® Bus terminals. Refer to Fig. 4 through 6 for terminal location.

### Notes on Communications Wiring:

- **All field wiring must conform to local codes and ordinances.**
- Do not bundle output wires with sensor, digital input or communications bus wires.
- Do not use different wire types or gauges on the same LonWorks® segment. The step change in line impedance characteristics would cause unpredictable reflections on the network.
  - In noisy (high EMI) environments, avoid wire runs parallel to noisy power cables, motor control centers, or lines containing lighting dimmer switches, keep at least 3 in. (76 mm) of separation between noisy lines and the LonWorks® cable.
  - Make sure that neither of the LonWorks® wires is grounded.

### Wire the terminal blocks as follows:

1. Strip 1/2 in. (13 mm) insulation from the conductor.
2. Insert the wire in the required terminal location and tighten the screw to complete the termination.
3. Pull on each wire in all terminals to check for secure connections.



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**Fig. 8. Attach wires at terminal blocks.**

## CHECKOUT

### Step 1. Check installation and wiring.

- a. Inspect all wiring connections at the S7760A terminals and verify compliance with the job site engineering drawings.
- b. If any wiring changes are required, *first* be sure to remove power from the device *before* starting work.
- c. Pay particular attention to:
  1. 24 Vac power connections. Verify that multiple devices powered by the same transformer are wired with the transformer secondary (i.e. 24 Vac HOT to 24 Vac HOT of each device) connected to the same input terminals on each device. See Fig. 6. See System Engineering, form 74-2969, for power wiring recommendations.
  2. Device wiring. Be sure that the Earth terminal on the S7760A is wired to a verified earth ground using a wire run as short as possible with the heaviest gauge wire available based on a maximum of 14 AWG (2.0 sq mm) and a minimum of 18 AWG (1.0 sq mm). See Fig. 4.

**NOTE:** All wiring must comply with applicable electrical codes and ordinances. Refer to job or manufacturer drawings for details.

### Step 2. Verify Termination module placement.

The job site engineering drawings should indicate 209541B Termination Module locations on each LonWorks® segment (refer to the E-Bus FTT Network Wiring Guidelines, form 74-2865). Attach the FTT LonWorks® 209541B Termination Module to the network at a controller node, a wall module, or at a wiring junction. (Refer to the E-Bus FTT Network Wiring Guidelines, form 74-2865, for guidelines on termination module placement.)

### Step 3. Startup.

#### To check for proper command display operation:

1. Remove the primary power and install the S7760A Command Display cover.
2. Make sure the S7760A is aligned properly before tightening the two retaining screws.
3. Connect the primary power and verify that the initial screen with copyright notice and firmware version is displayed.

#### If there is no initial screen and the display is blank:

1. Turn off the power to the S7760A and remove the cover.
2. Restore the power to the subbase and use a meter to measure for 24 Vac (between 24V COM and 24 Vac on the subbase).
3. If 24 Vac is missing or less than 22 Vac, check the transformer for proper operation.

**NOTE:** Before installing the cover, remove power and carefully align the cover pins with the subbase connector.

4. Install the S7760A cover.
5. Connect the primary power and verify that the initial screen is displayed.



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