

Q7740A,B FTT Repeater



INSTALLATION INSTRUCTIONS

BEFORE INSTALLATION

The Q7740A,B Free Topology Transceivers (FTT) Repeaters can interconnect from two to four LonWorks® Bus FTT network segments.

NOTES:

- LonWorks® Bus appears as E-Bus on device labels and devices.
- The Q7740 Repeater is not compatible with TPT E-Bus segments.

This increases the network wiring length in an E-Bus network. The repeaters are designed to be installed in a standard 4 by 4 junction box (field supplied).

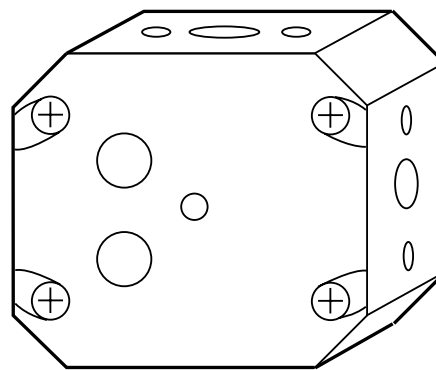
There are two versions of the FTT Repeater; the Q7740A 2-way Repeater interconnects two network segments (see Fig. 1). The Q7740B 4-way Repeater interconnects up to four network segments (see Fig. 2). For example, a singly terminated FTT network segment can have up to 64 nodes, and up to 1640 ft (500m) network length. A properly placed 2-way repeater can double the network length to 3280 ft (1000m). A 4-way repeater can quadruple the network length to 6560 ft (2000m). Doubly terminated networks allow for even greater network length, refer to *E-Bus Wiring Guidelines form, 74-2865* for a complete description of network topology rules. No more than one repeater can exist in a E-Bus, without adding routers.

On-board slide switches provide three options for network termination of each repeater segment:

- (0) no termination, the installer provides the terminations.
- (I) an internal circuit provides all of the requirements for a singly terminated network.
- (II) an internal circuit provides all of the requirements for a doubly terminated network (the installer must supply the second termination at the other end of the segment).

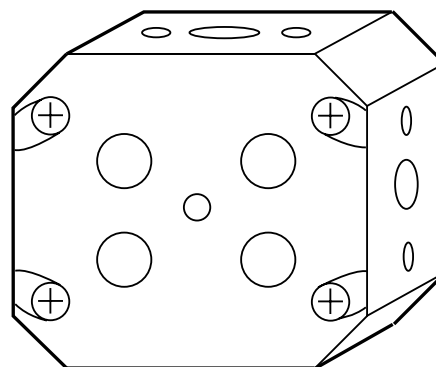
To allow access to each repeater segment, the 2-way repeater has two network jacks, and the 4-way repeater has four network jacks. Power to the repeater is indicated by an LED. The LED and the network jacks are visible and accessible when the repeater is installed.

Repeaters increase the length of the network, but not bandwidth. Relying on repeaters in large networks to increase length can cause degradation of network bandwidth; bandwidth can be increased by the addition of routers. Routers and/or topology changes can be used to reduce network traffic congestion.



M10841

Fig. 1. Q7740A 2-way FTT repeater.



M10842

Fig. 2. Q7740B 4-way FTT repeater.

INSTALLATION

FTT networks are very flexible and convenient for installation and maintenance. However it is imperative to carefully plan the network layout, and create and maintain accurate layout documentation.

Unknown or inaccurate wire run lengths, node to node distances, node counts, total wire length, and misplaced or missing terminators can cause poor network performance.

The FTT Repeater is compatible for use on an FTT-10A network, it must adhere to all the same wiring rules as any similar device on the network. Refer to *E-Bus Wiring Guidelines, form 74-2865* for a complete description of network topology rules.

Repeater wiring must comply with LonWorks® FTT-10A network system and transmission specifications.
Approved cable types for E-Bus communications wiring are:
— 22 AWG (0.34 mm²) plenum or non-plenum rated, nonshielded, twisted pair, solid conductor or Echelon® approved cable.

The repeaters are designed to be mounted in a standard 4 by 4 junction box (field provided). A standard 4 by 4 junction box cover is included with the repeater (see Fig. 3).

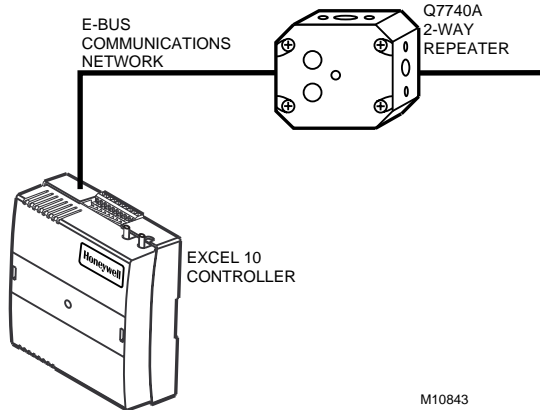


Fig. 3. FTT repeater typical installation.

See Fig. 4 for a typical 2-way FTT repeater wiring application.

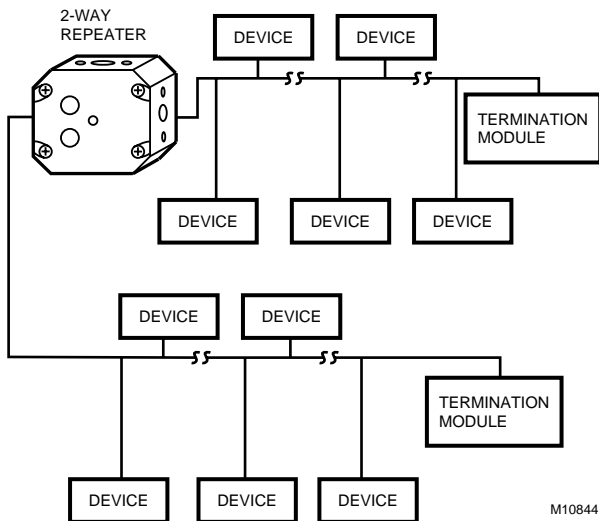


Fig. 4. Q7740A 2-way FTT repeater typical doubly terminated wiring application.

See Fig. 5 for a typical 4-way FTT repeater wiring application.

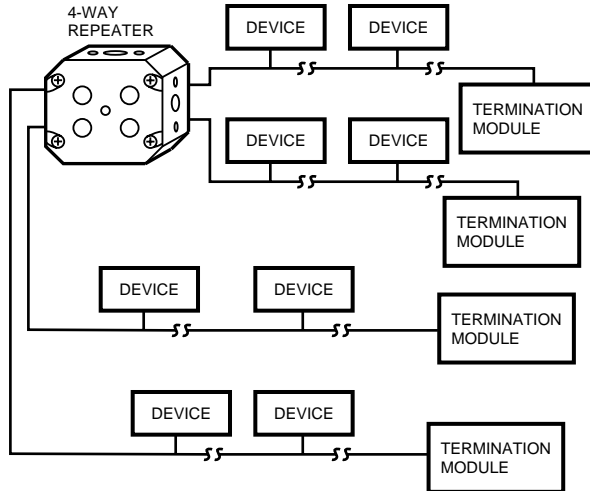


Fig. 5. Q7740B 4-way FTT repeater typical doubly terminated wiring application.

Wiring

All wiring must comply with applicable electrical codes and ordinances or as specified on installation wiring diagrams.



CAUTION

Keep wiring at least one ft (305 mm) away from large inductive loads such as motors, line starters, lighting ballasts and large power distribution panels. Failure to follow these wiring practices can introduce electromagnetic interference (EMI) noise that can cause erratic system operation. During installations, try to avoid these areas of high EMI noise.

IMPORTANT

Power must be off prior to connecting 24 Vac lead wires and E-Bus wires.

Power

24 Vac power from an energy limited Class II Power Source must be provided to the repeater. To conform to Class II restrictions, transformers must not be larger than 100 VA. A CE certified transformer meeting Low Voltage Device (LVD) requirements must be used in Europe for all installations of this product.

The repeater power usage is 2 VA MAX. at 24 Vac. The repeater does not require a dedicated transformer. It can get power from any convenient location in the 24 Vac power circuit. Connect the repeaters black 24 Vac Com lead wire to the 24 Vac common field wire, and the red 24 Vac lead wire to the 24 Vac field wire.

Communications

Use wire nuts to connect an E-Bus segment to the repeater. As with other E-Bus connections, polarity is not important.

NOTE: The Q7740 Repeater is not compatible with the TPT E-Bus segments.

NOTES:

- A separate E-Bus 209541B FTT Terminator Module, will need to be installed at the opposite end of a segment, when the E-Bus segment requires double termination. Double termination is only applicable when a network is wired in a daisy-chain topology and the total wire length is greater than 1640 ft (500m).
- Unswitched 24 Vac power wiring can be run in the same conduit as the E-Bus cable.

Refer to the *E-Bus Wiring Guidelines form, 74-2865* and the job drawings to determine which type of terminator is required for each E-Bus segment. In most FTT segments, single termination is used. Double termination is only applicable when a network is wired in a daisy-chain topology and the total wire length is greater than 1640 ft (500m).

Refer to the *Excel 10 FTT Termination Module Installation Instructions, form 95-7554* for information on individual network terminators.

Repeater Internal Terminations

For each repeater channel, there is a 3-position channel switch on the circuit board which enables/disables on-board terminators. When a E-Bus segment requires no terminator at the repeater, slide the channel switch to (0). When an E-Bus segment is singly terminated, slide the channel switch to (I). When a E-Bus segment is doubly terminated, slide the channel switch to (II).

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