TRC-8546 Getting Started

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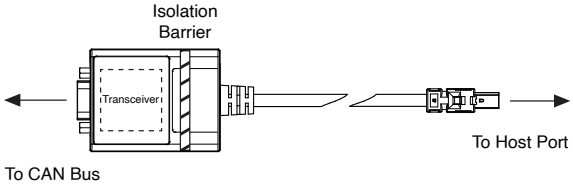
TRC-8546 Hardware Overview

The TRC-8546 has one full-featured LIN port that is isolated from the host it is plugged into. The port has an NXP TJA1028 LIN transceiver that is fully compatible with the LIN 1.3/2.0/2.1/2.2 standard and supports baud rates up to 20 kb/s.

Figure 1. TRC-8546 Hardware Overview



Mounting the TRC-8546

Mounting the TRC-8546

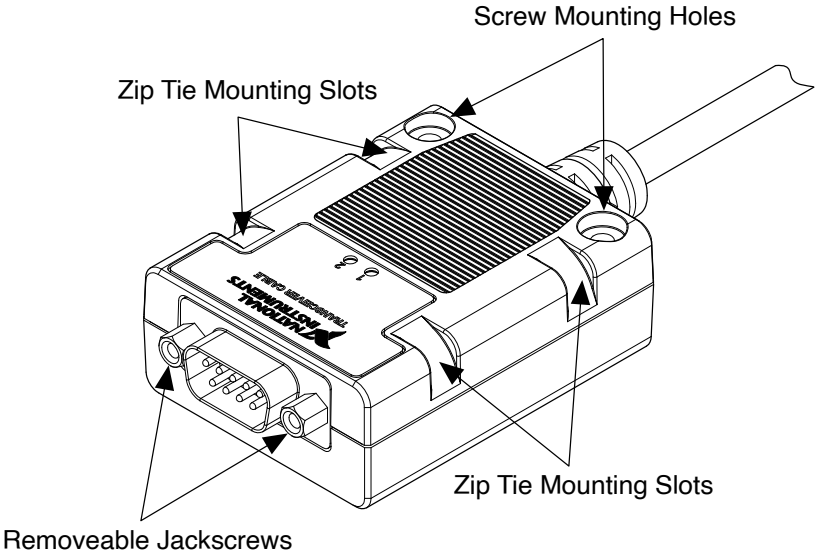
Notice The TRC-8546 is a thermally active product that dissipates heat. Refer to the user manual of the host this product directly connects to for specific information regarding thermal management. Not following mounting requirements may affect the system ambient temperature and/or the measurement accuracy of modules in the system.

Notice To meet thermal management requirements, do not zip tie more than six cables in a bundle, and allow for air flow around the bundle. If used with a CompactRIO or CompactDAQ chassis, mount all cables at least 152 mm (6.0 in.) from the chassis and do not mount more than six cables directly beneath the chassis.

You can route and strain relieve the TRC-8546 similarly to ordinary cables. You also can panel mount it using its removable jackscrews, zip tie, or screw mount it. The screw mounting holes support #6 and M3 screws spaced 35.56 mm (1.400 in.) center-to-center, with minimum length of 23 mm (7/8 in.). The TRC-8546 supports zip ties up to 5.33 mm (0.210 in.) wide.

The following figure shows jackscrews, zip tie mounting slots, and screw mounting holes on the TRC-8546.

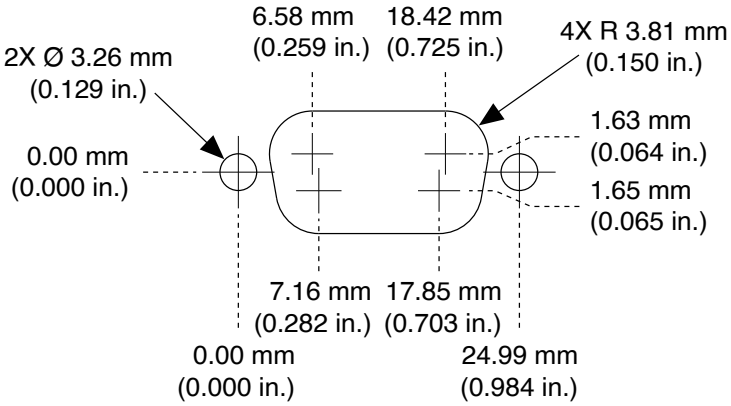
Figure 2. TRC-8546 Mounting Features



Panel Mounting the TRC-8546

The recommended panel mounting cutout dimensions are shown below.

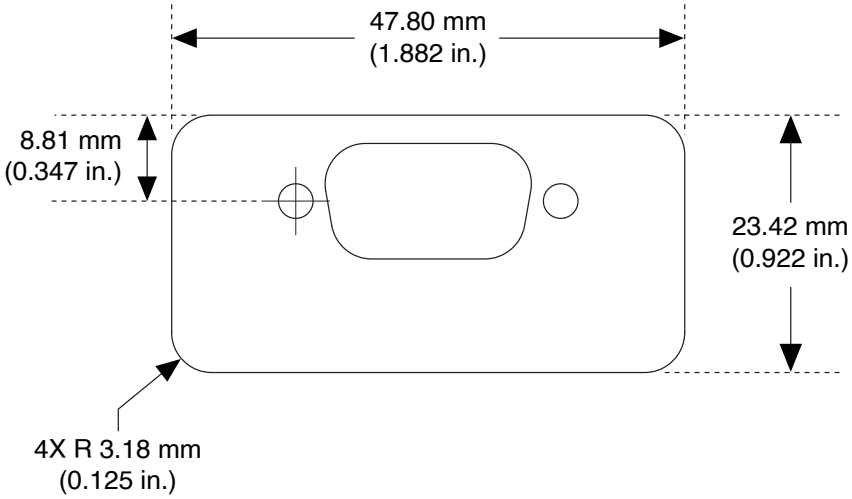
Figure 3. Recommended Cutout Dimensions



Tighten the jackscrews to a maximum torque of 0.56 N · m (5.0 lb · in.).

The jackscrews included with the TRC-8546 work with panel thicknesses up to 2.21 mm (0.087 in.). If your panel is thicker than 2.21 mm (0.087 in.), you can mill out a recessed pocket for the TRC-8546. The following figure shows the recommended pocket dimensions and cutout position.

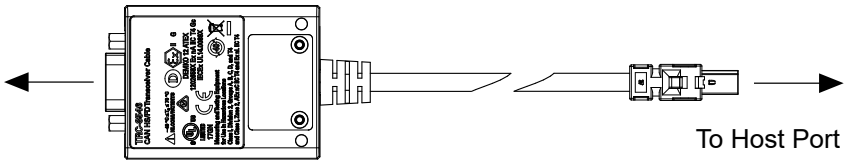
Figure 4. Recommended Pocket Dimensions



Wiring to the TRC-8546

The TRC-8546 is used with an NI-XNET interface host port.

Figure 5. TRC-8546 Connections



The TRC-8546 has one 9-pin male D-Sub connector that provides connections to a LIN bus.

The port has two common pins (COM) that are internally connected to the transceiver cable's isolated reference and serve as the reference ground for the LIN signal. You can connect the LIN bus reference ground to one or both COM pins.

The D-Sub connector shell connects through the TRC-8546 shielding to the connector on the host port end. The shielding does not electrically connect to the COM signals.

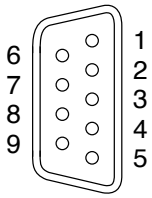
Caution When connecting the D-Sub connector shell, do not exceed the maximum jackscrew torque of 0.56 N · m (5.0 lb · in.).

The TRC-8546 receives power from the NI-XNET host port but also requires an external power supply of +8 V to +18 V to operate. Supply power to the TRC-8546 V_{SUP} pin from the LIN bus.

The TRC-8546 pinout is listed in the following table.

Table 1. Pin Assignments for the TRC-8546

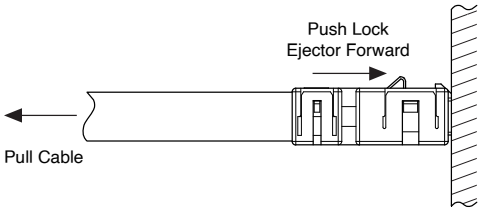
Connector	Pin	Signal Name
	1	No Connection (NC)

Connector	Pin	Signal Name
	2	NC
	3	COM
	4	NC
	5	NC
	6	COM
	7	LIN
	8	NC
	9	V_{SUP}

Inserting and Removing the TRC-8546

The TRC-8546 connects to a host device with an active latching connector. To connect the TRC-8546 to a host device, push the connector assembly into the host receptacle until the internal latch snaps into position. The latch emits an audible click when engaged. To remove the TRC-8546, push the lock ejector forward to disengage the latch and simultaneously pull the TRC-8546, as shown in the following figure.

Figure 6. Inserting and Removing the TRC-8546



Cable Specifications

LIN cables should meet the physical medium requirement of a bus RC time constant of 5 µs. For detailed formulas for calculating this value, refer to the ***Line Characteristics*** section of the LIN specification. Belden cable (3084A) and other unterminated CAN/Serial quality cables meet these requirements and should be suitable for most applications.

Termination Resistors

LIN cables require no termination, as nodes are terminated at the transceiver. Slave nodes typically are pulled up from the LIN bus to V_{SUP} with a 30 kΩ resistance and a serial diode. This termination usually is integrated into the transceiver package. The master node requires a 1 kΩ resistor and serial diode between the LIN bus and V_{SUP}. On NI-XNET LIN products, master termination is software selectable; you can enable it in the API with the NI-XNET Session Interface:LIN:Termination property.

Cable Lengths

The maximum allowable cable length is 40 m, per the LIN specification.

Number of LIN Nodes

The maximum number of devices on a LIN bus is 16, per the LIN specification.

TRC-8546 LEDs

The TRC-8546 includes two LEDs per port to help you monitor hardware and bus status. LED 1 primarily indicates whether the hardware is currently in use. LED 2 primarily indicates the activity information of the connected bus. Each LED can display two colors (red or green), which display in the following four patterns:

Table 2. LED Pattern Definitions

Pattern	Meaning
Off	No LED illumination
Solid	LED fully illuminated
Blink	Blinks at a constant rate of several times per second
Activity	Blinks in a pseudo-random pattern

Table 3. LED Pattern Indications

Condition/State	LED 1	LED 2
Port identification	Blinks green	Blinks green
NI-XNET catastrophic error	Blinks red	Blinks red
No open session on hardware	Off	Off
Open session on hardware, port is properly powered, and hardware is not communicating	Solid green	Off
Open session on hardware, port is missing power	Solid red	Off
Hardware is communicating	Solid green	Activity green (returns to idle/off one second after last TX or RX)