



Crossing Track Simulator

User Manual



095-190216-0001
Revision: A02
May 20, 2020

Copyright Notice

© 2022 QuEST Rail LLC. All rights reserved.

Product Support

Product Orders	orders@questrail.com
RMA Requests	rma@questrail.com
Accounts Payable	ap@questrail.com
Accounts Receivable	ar@questrail.com
Other Inquiries	(816) 240-8425

Table of Contents

Styles	iv
About This User Manual	1
Safety Statement	1
Crossing Track Simulator Overview	1
Package Contents	2
Crossing Track Simulator Connection	2
Operating the Crossing Track Simulator	3
CTS Approach Track Control	3
CTS Island Track Control	4

Styles

The following conventions appear in this manual:

bold

Bold text indicates an item you must select or click in the software, such as menu items and dialog box options. Bold text also indicates dialog box names, menu items, and button names.

monospace

Text in this font indicates text that you should enter from the keyboard. This text is also used for file names and extensions.



This icon indicates a note, which suggests important information.



This icon indicates a tip, which suggests hints or advisory information.



This icon indicates a caution or warning, which advises you of what to do to avoid data loss, component damage, or an application system crash.

About This User Manual

The Crossing Track Simulator User Manual provides information about how to apply and operate the Crossing Track Simulator (CTS).

Safety Statement



The Crossing Track Simulator (CTS) is for test purposes only.

If you use this simulator in conjunction with an in-service crossing controller for troubleshooting purposes, you must remove the CTS and reinstall the actual track wires prior to placing the crossing back into service.



Users must adhere to their company's operating rules regarding placing a crossing back into service after the use of this device.

Crossing Track Simulator Overview

The objective of the Crossing Track Simulator (CTS) is to facilitate the testing of applications which require an approach and island track circuit load for a crossing controller. With a CTS connected to a crossing controller Unit Under Test (UUT), the test-user can calibrate both the approach and island track circuits and manipulate occupancies of both for the purpose of evaluating application logic programs. The CTS also can simulate an open approach track circuit to verify correct system reaction to either a broken rail condition or disconnected track wires.

Two test cables are included with the CTS. These cables are attached to the sides of the CTS with Velcro straps. The first cable is pre-wired to a Phoenix connector that mates directly to an ElectroLogIXS Crossing Track Interface (XTI) Board Personality Module. The second cable brings the track connections of TX+, TX-, RX+, and RX- out to alligator clips for easy connection to AAR terminals common on older crossing controllers such as Harmon Industries' HXP-3 or Safetran GCP models.

The CTS also includes a magnetic strap to facilitate locating the simulator near the connection points of the crossing controller on a metal test rack.

Package Contents

Description	Part Number	Quantity
Crossing Track Simulator	800-190216-0001	1
XTI Personality Module Interface Cable	814-190216-0001	1
AAR Terminal Interface Cable	814-190216-0002	1

Crossing Track Simulator Connection

To connect the Crossing Track Simulator, choose the CTS cable associated with the crossing controller connections present for the application, either the ElectroLogIXS XTI Board Personality Module or the AAR Terminal Interface Cable.

1. Connect the circular connector on the cable to the top of the CTS chassis and screw it down until it clicks into place.
2. Connect the other end of the cable to the crossing controller, either the ElectroLogIXS XTI Board Personality Module or the TX+, TX-, RX+, and RX-AAR Terminals.



Wire labels are provided on the ARR Terminal Interface cable. Take care to make the connections correctly. Additionally, the AAR Terminal Interface Cable alligator clips have color-coded insulators as follows:

TX+:	Red	TX-:	Black
RX+:	Yellow	RX-:	Green



The ElectroLogIXS XTI Personality Board Module Interface Cable mates directly to the personality module connector and is pre-wired with the TX+, TX-, RX+, and RX- connections in the correct location.

Operating the Crossing Track Simulator

This section focuses on the functionality of the Crossing Track Simulator in conjunction with the crossing controller approach and island track circuits.



This section assumes the test-user has made all connections as described in the [Crossing Track Simulator Connections](#) section.

CTS Approach Track Control

The CTS Approach Track Control consists of a three-position switch to modify the approach track load that is presented to the crossing controller. The following three switch positions are available:

- **50%**—Shorts out one of the two inductors used to simulate the approach track circuit. Due to tolerances of the electrical components used inside the CTS, this represents an occupation of the approach track circuit between 30% and 70% of an open approach. The 50% switch position also may be required to calibrate the crossing controller at the higher end of the approach track frequencies if the 100% setting presents too large of a track load and calibration is unsuccessful.
- **Broken Rail**—Creates an open circuit to the crossing controller. Use this switch position to verify the correct response of the crossing controller to this situation. For example, a high signal condition.
- **Normal 100%**—Represents an unoccupied approach track, which is used for calibrating the crossing controller approach track at the current operating

frequency. The 100% track load represents approximately 1400 feet of a unidirectional track circuit.

CTS Island Track Control

The CTS Island Track Control consists of a three-position switch to modify the island track load that is presented to the crossing controller. The following three switch positions are available:

- **SHUNT**—Places a short across the island track circuit to simulate island occupation.
- **NORMAL**—Represents an unoccupied Island track circuit.
- **ISL CAL**—Places a 60 m Ω shunt approximately 10 feet outside of the island for calibration purposes. Use this switch position when calibrating the island track circuit.