



Genesis t-Rx7100

r a i l s h u n t a u g m e n t e r s y s t e m

F E A T U R E S

- 7.1 VDC / 6.8 Amps Output to Track
- 120 VAC Line or 12 VDC Battery Input Power
- System Diagnostic Front Panel Indicators
- Circuit Breaker Input Overcurrent Protection
- Inputs and Outputs Fully Isolated
- System Check Output for Monitoring System Health Status
- Automatic Switchover to DC Battery Input if 120 VAC Fails
- Input and Output Internal Surge Protection
- Plug-in Input/Output Connector - AWG 10 to 24 Solid or Stranded Wire
- Wall or Rack Mount Ventilated Enclosure
- Expandable for 2-Track Applications
- Three-Year Limited Warranty

B E N E F I T S

- 7.1 VDC track output helps "bite through" rust and other railhead surface contaminants for greatly improved shunting
- Maintainer can see status of input power and System Check "at a glance" with front panel LED indicators
- Circuit breaker input protection eliminates fuses and possibility of using inappropriate fuse size or type
- Heavy-duty drive electronics and internal surge protection yields greater reliability
- Easily mounted enclosure takes up minimal space
- System Check output can activate signals if track output fails
- Easy to wire connector requires wire striping only - no terminals to crimp
- Plug-in connector ensures quick error free hook-up
- Meets or exceeds AREMA recommended practices

How the t-Rx7100 Rail Shunt Augmenter Improves Shunting

The Genesis t-Rx7100 (*pronounced tee-rex*) helps to electrically "bite through" rust and contaminants that prevent reliable wheel/rail shunting required for railroad signal warning systems. "Whetting" the rail with approximately 7 Volts DC provides better wheel/rail electrical conductivity by providing enough potential (voltage) and energy (amperage) to electrically conduct through resistive layers of rust and other railhead contaminants. When the t-Rx7100 is used in conjunction with a motion sensor or grade-crossing predictor that offers "rusty-rail shunting software or firmware," both inbound and outbound shunting problems can virtually be eliminated.

Applications Suitable for the t-Rx7100 Rail Shunt Augmenter

The t-Rx7100 Rail Shunt Augmenter should be used when there are shunting problems and the following conditions exist:

- Crossing signals use motion sensors or constant-warning equipment or other audio-frequency detection equipment such as AFTAC
- Dark territory (no wayside signals)
- Rail traffic is such that rust and contaminants accumulate on railhead surface between trains (typically less than one to three trains per day)
- Rail cars are empty or otherwise lightweight and do not consistently shunt the rails

Installation Requirements

Because 7.1 Volts DC is continuously applied to the rails, each approach should be isolated with an insulated rail joint at the far end of the approach. Narrow-band shunts are also required matching the frequency of the motion sensor or constant-warning system. If shunt augmentation is needed for a second nearby track, the t-Rx7100 can be expanded by adding the t-Rx7101 auxiliary unit.

AC Power Fail Switchover

The t-Rx7100 Shunt Augmenter automatically switches to 12VDC battery power should the AC line power fail and will return to AC line power once it is restored.

Monitoring the t-Rx7100 Output

A 12VDC isolated output signal (SYSCHK) is available as long as the t-Rx7100 is supplying voltage/current on the T1/T2 track outputs. The SYSCHK output is removed immediately if the track output fails for any reason. Once the track output voltage/current returns to normal, the 12VDC SYSCHK output is restored after a 5 second delay.

SYSCHK should be connected to the unused UAX (Safetran GCP or MS) or AUX (GE HXP-3 or PMD-3) input of the detection equipment to cause signal activation should the track output fail. See the User Guide for details about how to connect SYSCHK and suggestions for programming the detection equipment.

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r a i l s h u n t a u g m e n t e r s y s t e m

S P E C I F I C A T I O N S

OUTPUTS

Track Voltage (approximate)	7.1	VDC
Track Current Maximum (approximate)	6.8	Amps
System Check (SYSCHK)	12.0	VDC
Auxillary (AUXAC)	7.0	VAC

INPUTS (absolute maximum)

AC Line	95 - 135	VAC
DC Battery	9.5 - 16	VDC
AC Line Overcurrent Circuit Breaker	2	Amps
DC Battery Overcurrent Circuit Breaker	15	Amps

ENVIRONMENT

Operating Temperature	-40 (-40) - 160 (71)	°F (°C)
Humidity (non-condensing).....	95%	Relative

MEASUREMENTS (see reference drawings for details)

Height	9.5 (24.13)	in (cm)
Width	5.56 (14.12)	in (cm)
Length (including connector)	9.9 (25.15)	in (cm)
Weight	24.1 (10.93)	lbs (kg)
Mounting Hole Centers - Width	2.5 (6.35)	in (cm)
Mounting Hole Centers - Height.....	8.75 (22.23)	in (cm)

I N S T A L L A T I O N

The t-Rx7100 Shunt Augmenter outputs must be connected exactly as shown in the t-Rx7100 Installation Wiring Diagram (furnished with unit and available for download at www.genesisusa.com). This results in a DC voltage level on the rails of approximately 7.1 volts with the motion sensor or constant-warning system transmit frequency imposed on the DC voltage level.

To ensure the 7.1 volts on the rails is "contained" and does not leak through ground to the opposite rail beyond the bounds of the approaches, an insulated joint must be installed at the far end of each approach (2 insulated joints total required).

Also, narrow-band shunts must be used to terminate the approaches.

To activate the crossing signal system should the 7.1 VDC track output fail, the t-Rx7100 must be connected according to the installation drawings. This requires the SYSCHK output to be connected to an available unused UAX or AUX input of the GCP/HXP or MS, and programming the system to require a UAX or AUX input signal before its MS or GCP relay output can become energized. **IMPORTANT: IF THE UAX TERMINALS ARE ALREADY IN USE (i.e. there are wires already attached to the terminals), DO NOT CONNECT THE SYSCHK WIRES TO THE UAX INPUTS.** See the t-Rx7100 User Guide for details about how to connect the SYSCHK output and recommended programming of the detection equipment.

An Earth Ground Terminal is located on the bottom mounting flange. It **MUST** be connected to the signal case or bungalow earth ground buss with an AWG #12 or larger wire that is no more than 36" in length. This connection is required for the t-RX7100 internal secondary lightning protection to be effective. See the User Guide for details about connecting the Earth Ground Terminal.

O R D E R I N G I N F O R M A T I O N

- To order the t-Rx7100 shunt augmenter system, specify: t-Rx7100, part number 08033-2000. To order the t-Rx7100 without the 5-second SYSCHK delay, specify part number 08033-2000-ND. (Female mating plug-in connector included.)
- To order the mating female plug-in connector, specify: Part number 08033-2002.



CONNECTOR WIRING

Wire size range	10 - 24	AWG
Screw tightening torque - minimum	4.4 (.5)	in lbs (Nm)
Screw tightening torque - maximum	5.3 (.6)	in lbs (Nm)
Recommended wire exit clearance (min)*	3 (7.6)	in (cm)

* clearance measured from front panel face

WIRING CONNECTIONS

PIN	NAME	FUNCTION
01	BX110	110 VAC LINE INPUT
02	CX110	110 VAC LINE RETURN
03	B12	12 VDC BATTERY POSITIVE
04	N12	12 VDC BATTERY NEGATIVE
05	AUXAC	AUXILLARY AC OUTPUT
06	AUXRET	AUXILLARY AC RETURN
07	SYSCHK+	SYSTEM CHECK OUT (+)
08	SYSCHK-	SYSTEM CHECK OUT (-)
09	T1A	T1 GCP/HXP/MS/MD
10	T1B	T1 TRACK OUTPUT (+)
11	T2A	T2 GCP/HXP/MS/MD
12	T2B	T2 TRACK OUTPUT (-)
EGND	EARTH GROUND	TERMINAL TO EARTH GND BUSS



t-Rx helps bite through rust and film