



Drives Hard
Works Smart
Never Quits

Genesis t-Boss7400

acdc track driver

FEATURES

- Four Independent Isolated AC Outputs
- Powered from Signal System Battery Supply
- Increased Track Power Output with XP Option
- LED Status Indicator for Battery Input
- LED Status Indicator for Each AC Track Output
- Circuit Breaker Input Overcurrent Protection
- Inputs and Outputs Fully Isolated
- Exceptionally Efficient, Cool Operation
- Rugged Design and Construction - Built to Last
- Internal Input and Output Surge Protection
- Plug-in Input/Output Connector - AWG #10 to #24 Wire
- Wall or Rack Mount Compact Ventilated Enclosure
- Clean System Shutdown and Power-up at Low or High Battery Voltage
- Three-Year Limited Warranty

BENEFITS

- Capable of driving four separate track circuits
- XP Option provides additional voltage and power for track circuits that are long or otherwise difficult to drive
- Maintainer can see "at a glance" the status of battery input power and each track output
- 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
- Easy to wire connector requires wire stripping only - no terminals to crimp
- Plug-in connector ensures quick error free hook-up
- Input battery voltage monitoring eliminates indecisive signal operation and "gate pumping" at marginal battery voltages
- Meets or exceeds AREMA recommended practices

How the t-Boss7400 excels as an ACDC Track Driver

XP Option for Extra Track Drive Capability: The Genesis t-Boss7400XP (*pronounced tee-Boss*) with the extra output power option, provides higher voltage and amperage output for those track circuits that would normally overload a conventional track driver. The t-Boss7400XP provides additional voltage and amperage that enables it to drive

- unusually long track circuits;
- track circuits with poor ballast and wet weather conditions; and
- island circuits where the roadway has been chemically treated to melt snow and ice.

When using a conventional track driver, the above situations often require setting the track current limiting resistor at or near zero Ohms to enable the track circuit to pick up the track relay. Under worst-case conditions, it may be necessary to add a diode rectifier to the track circuit output inside the equipment enclosure until track conditions improve. Of course such remedies may compromise the functional integrity of the signal system and should not be used. These remedies also place substantial strain on the track driver and may cause overheating of the driver and the track resistors.

Reliability: Because the t-Boss operates very efficiently and runs cool even under full load (track circuit occupied), reliability is improved due to reduced heat stress to system electronics. Reliability is further enhanced by heavy-duty power electronics and substantial secondary surge and lightning protection on both inputs and outputs.

Improved Wheel/Rail Shunting: ACDC track circuits, also known as "Style-C" or "Ring-10" track circuits, have long enjoyed a reputation for superior shunting sensitivity. This is partially due to the greater potential (voltage) used to excite the track circuit. However, studies have shown that to maintain shunting continuity once it is acquired, sufficient power is required to "burn" through the resistance of railhead rust and contaminants. Each t-Boss7400 output with the XP option, is capable of outputting in excess of 4 amperes at 8 volts – easily enough power to maintain shunting with most situations having difficult or poor track conditions.

Battery Input Voltage Monitoring: The Genesis t-Boss7400 ACDC Track Driver provides "clean" shutdown and power-up at marginal battery voltages. Should the battery DC input voltage drop below 8.5 VDC, the system immediately shuts down and remains shut down until the battery voltage recovers to 10.0 VDC. This minimizes the possibility of erratic signal operation and "gate-pumping" where the signals and gates repeatedly cycle between ON and OFF, resulting in much confusion to motorists and the risk of damage to vehicles and to the gate arms.

Status Indicators and Plug-in Connector for Easy Maintenance: LED indicators are provided for the battery input and for each of the four AC outputs. This enables the signal maintainer to quickly determine if there is a problem with the ACDC track driver or with the input DC battery voltage. Also, change out of the unit is made much easier and less susceptible to error by not having to disconnect 10 wires from AAR terminals and then reconnect them. With the t-Boss7400, simply unplug the connector from the original unit and reconnect to the replacement unit.

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SPECIFICATIONS

OUTPUTS

Track Voltage XP - (ballast resistance = 2Ω)	8.2	VAC ¹
Track Voltage SP - (ballast resistance = 2Ω)	7.1	VAC ²
Track Current Maximum (each output) approx.	4.3	Amps

INPUTS

DC Battery - Minimum	9.0	VDC
DC Battery - Maximum	16.0	VDC
DC Battery Current (no output load).....	0.55	Amps
DC Battery Overcurrent Circuit Breaker	15	Amps

ENVIRONMENT

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

MEASUREMENTS (see reference drawings for details)

Height	7.00 (17.78)	in (cm)
Width	5.56 (14.12)	in (cm)
Length (including connector w/o wiring)	7.70 (25.15)	in (cm)
Weight	15.5 (7.03)	lbs (kg)
Mounting Hole Centers - Width	2.5 (6.35)	in (cm)
Mounting Hole Centers - Height.....	6.25 (15.88)	in (cm)

NOTES 1: XP (extra output power version - optional). VAC value is approximate.
2: SP (standard output power version). VAC value is approximate.



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

INSTALLATION

Most installations using ACDC type circuits have three track circuits: one for the island with an approach circuit on each side of the island circuit. Occasionally a fourth track circuit is needed for a spur or siding.

As with all ACDC type track circuits, insulated rail joints are needed at the ends of each circuit. The usual practice is to place an insulated joint in each rail across from one another (to the extent possible). Most installations will require a minimum of 8 insulated joints.

A pair of wires, typically AWG #6 twisted, are used to feed each track circuit. A "Ring-10" diode is then connected across the rails of each track circuit at the opposite end from where the feed wires are connected. Diodes should be installed with the polarity opposite from adjacent circuits. Proper hookup regarding phase polarity from the t-Boss is also important. See the wiring diagram in the t-Boss7400 User Guide for details.

Primary lightning protection is mandatory. The t-Boss7400 is not warranted against lightning damage if primary lightning protection is inadequate. It is also very important that the lightning protection equipment for all track circuits and for the B12/N12 battery circuit has a low-resistance path to earth ground.

If the t-Boss7400 with the XP (extra power) output option is used, different value track resistors may be advisable. Please consult the Users Guide for more information.

ORDERING INFORMATION

- To order the t-Boss7400 ACDC Track Driver with the XP option (extra cost), specify: t-Boss7400XP, part number 10041-1000XP. (Female mating plug-in connector included.)
- To order the t-Boss7400 with standard power output specify: t-Boss7400SP, part number 10041-1000SP. (Female mating plug-in connector included.)
- To order the mating female plug-in connector, specify: Part number 10041-1001.

CONNECTOR WIRING PINOUTS		
PIN	NAME	FUNCTION
01	B12	12 VDC BATTERY POSITIVE
02	N12	12 VDC BATTERY NEGATIVE
03	T1+	TRACK OUTPUT 1 POSITIVE
04	T1-	TRACK OUTPUT 1 NEGATIVE
05	T2+	TRACK OUTPUT 2 POSITIVE
06	T2-	TRACK OUTPUT 2 NEGATIVE
07	T3+	TRACK OUTPUT 3 POSITIVE
08	T3-	TRACK OUTPUT 3 NEGATIVE
09	T4+	TRACK OUTPUT 4 POSITIVE
10	T4-	TRACK OUTPUT 4 NEGATIVE

