



# Genesis *os-Boss dcx2* dual dc-dc converter

## FEATURES

- Two Isolated 2.2 VDC, 2.5 Amp Regulated Outputs
- Built-in User Adjustable 0 to 5 Ohm Track Current Limit Resistor for Each Output
- 10 VDC to 30 VDC Battery Input Voltage
- Designed Using Latest Advanced Technology
- Lightning and Surge Protection on Input and Outputs
- Self-resetting Fuse Protection on Input and Outputs
- LED Status Indicator for Battery Input
- LED Status Indicators for Each 2.2 VDC Output
- Compact Footprint - 4.4" x 2.4" x 1.6"
- Sturdy Aluminum Powder Coated Enclosure
- DIN Rail, B or P-150 Type Relay Rack Mounting Base Available
- Plug-in Connector with Spring-Cage Wire Retainers for Wiring Inputs and Outputs
- Three-year Limited Warranty

## BENEFITS

- 2.5 Amp outputs can easily drive low resistance track circuits that use 1 Ohm track relays
- Regulated outputs unaffected by changes in battery input voltage or load conditions (built-in resistor will change output voltage according to load if adjusted to more than 0 Ohms)
- Built-in user adjustable track current limit resistors eliminates cost of resistors, wiring, mounting and required space
- Exceptionally reliable, efficient operation even at full load or with outputs continuously short-circuited
- LED indicators provide "at-a-glance" status of input and outputs
- Low input voltage shutdown eliminates "on/off hunting" when input voltage is near operating threshold
- Robust lightning, surge protection and self-resetting fuses provide significant improvement in reliability
- Mounting options include wall, DIN rail, B or P-150 relay types
- Compact footprint enables significant space savings
- Plug-in connector wiring requires no soldering, lugs or tools

### The os-Boss dcx2 - Reliable, Efficient and Maintainable

#### WHAT IS THE OS-BOSS DCX2?

'OS' stands for "over switch," or more precisely, "train-over-switch." The word section often follows 'OS' to make reference to an 'OS-section.' An OS-section is trackage that includes a track switch plus limited additional track beyond the fouling point and before the switch points.

Track switches in railroad switchyards, control points and other locations, may be "thrown" remotely by operating personnel or a computer. To avoid causing a derailment, a switch must never be thrown if the OS-section is, or soon will be, occupied by a locomotive or railcar. An OS-section is usually configured as a short track circuit capable of detecting if it is occupied. If occupied, changing the switch position is prevented or delayed until the OS-section is unoccupied.

The os-Boss is a dual DC-DC converter powered by DC battery energy, nominally 12 to 14 volts, that is converted to two electrically isolated 2.2 VDC outputs. The outputs are used to energize two separate track circuits made up of the straight and the diverging part of the switch within an OS-section. Each circuit is connected to a relay (or other equipment) which determines if the switch may be thrown.

#### WHY USE THE OS-BOSS DCX2?

The Genesis os-Boss dcx2 Dual DC-DC Converter is designed for exceptional reliability using technology that enables efficient and cool operation. Because excessive heat is a major contributor to electronic component failure, reliability is significantly improved.

Today's surge and lightning protection technology is substantially better than that of even a decade ago, and the os-Boss dcx2 uses conservative and industry proven design techniques to guard against damage caused by lightning and voltage surges. Circuit protection is further improved by self-resetting fuses that will limit input or output currents that could damage the internal electronic circuitry.

Reduced component count is realized by using the built-in track current limit resistors. Rather than using an external voltage dropping resistor in series with a DC track driver output and wasting the unwanted voltage and amperage as heat, the os-Boss dcx2 simulates the track current limit resistor without wasting energy. This not only eliminates the expense of two resistors, additional wiring, space and maintenance, but it also reduces energy requirements and reduces the load placed on batteries and battery chargers.

The exceptionally small footprint of the os-Boss dcx2 provides easier installation and saves space. Although wall mounting is standard, optional mounting adapters are available for 35mm DIN rail and the industry standard P-150 or B style relay racks.

# Genesis os-Boss dcx2

## dual dc-dc converter

### SPECIFICATIONS

#### OUTPUTS (maximum)

T1, T2	2.2	VDC
T1, T2	(internally current limited) 2.5	Amps

#### INPUTS

B/N (max)	30	VDC
B/N (min)	10	VDC

#### ENVIRONMENT

Operating Temperature	-40 (-40) to 120 (50)	°F (°C)
Humidity (non-condensing)	95%	Relative

#### MEASUREMENTS (see reference drawings for details)

Height (mtg tabs included)	5.43 (13.8)	in (cm)
Width	2.38 (6.0)	in (cm)
Depth (includes mating connector)	2.44 (6.2)	in (cm)
Mtg Depth Required for Wire Clearances	3.00 (7.6)	in (cm)

### CONNECTOR WIRING

Wire Size - Range	12 - 28 AWG
Recommended Wire Size	12 AWG

CONNECTOR WIRING PINOUTS		
PIN	NAME	FUNCTION
1	B+	BATTERY POSITIVE INPUT
2	B-	BATTERY NEGATIVE INPUT
3	T1+	TRACK 1 POSITIVE OUTPUT
4	T1-	TRACK 1 NEGATIVE OUTPUT
5	T2+	TRACK 2 POSITIVE OUTPUT
6	T2-	TRACK 2 NEGATIVE OUTPUT
EXTRN TERM*	EARTH GROUND*	EARTH GROUND*

\*External 6-32 screw terminal is electrically common with enclosure case. Connect to earth ground if not grounded via DIN rail or relay rack adapter earth ground. See User Guide for required earth grounding requirements.

### INSTALLATION

The Genesis os-Boss dcx2 Dual DC-DC Converter should be mounted in a dry, weather protected enclosure, with ambient temperature less than 120°F (49°C).

Recommended hookup wire is stranded AWG #12, however for applications requiring output currents less than one amp, wire size may be reduced. The plug-in connector requires stripping the wire, opening the spring-cage wire retaining mechanism, inserting the wire into the proper connector position, then releasing the spring-cage retaining mechanism. No lugs, crimping or soldering is required. The connector will accommodate one wire only for each connector position.

DO NOT wire the plug-in connector with power applied or plugged in to the os-Boss dcx2. Before applying power, ensure that all wiring is secure and correct, including polarities. Damage caused by incorrect hookup is not covered by the warranty.

Adjust each built-in track current limit resistor by rotating the potentiometer to the desired setting using a small screwdriver through the provided hole in the enclosure. If an external track current limit resistor is wired in series with the os-Boss dcx2, set the potentiometer to 0 Ω. If the os-Boss dcx2 built-in resistor and an external resistor are used, add the resistor values for calculating the overall resistor value.

Wall mounting the os-Boss dcx2 requires four #6 or #8 screws. DIN rail mounting requires the optional DIN rail mounting base. To mount in a single relay rack position, use the optional B or PN-150 type relay mounting base.

Earth grounding is mandatory for adequate lightning damage protection. Use AWG #14 (or larger) wire routed as directly as practical to an earth ground buss. Warranty does not cover lightning or voltage surge damage if the os-Boss dcx2 is not properly earth grounded.\*

### OPERATION

Operation of the Genesis os-Boss dcx2 Dual DC-DC Converter after installation may occasionally require adjustment of the built-in or external track current limit resistor due to changing track ballast conditions or other environmental circumstances.

### ORDERING INFORMATION

os-Boss dcx2 Dual DC-DC Converter <sup>1</sup> without mounting base (can be wall mounted)	p/n 19062-000
os-Boss dcx2 Dual DC-DC Converter <sup>1</sup> with 35mm DIN rail mounting base	p/n 19062-006
os-Boss dcx2 Dual DC-DC Converter <sup>1</sup> with P-150 style relay rack mounting base	p/n 19062-004
os-Boss dcx2 Dual DC-DC Converter <sup>1</sup> with B style relay rack mounting base	p/n 19062-005

<sup>1</sup> Female mating connector included

\*Please see User Guide for complete information for installing, resistor adjustment and maintaining the Genesis os-Boss dcx2 Dual DC-DC Converter.



DIN Rail (35mm) os-Boss dcx2 Installation

