

# 80 Amp LORAIN® DG-DC Converter Shelf with 10 Amp Converter Modules

## Key Features

- Modular design provides for system redundancy and easy expansion of operating capacity in small increments
- Hot insertion capability allows for system expansion without disruption
- Compact shelf provides 80 amps at -48VDC in only 3 rack units (5.25-in.) of space in a standard 19-in. relay rack. Mounting rails are adjustable for 23-in. mounting width
- Isolated input to output
- UL recognized to ensure safe and reliable performance

## Standard Features

- Converter MINOR alarm
- Converter MAJOR alarm
- Current limiting
- Over-voltage protection
- Over-temperature protection
- Load sharing for parallel operation
- Easily accessible input and output connections for simplified installation

**Compact, cost effective, modular design, ideal for +24 VDC applications requiring -48 VDC output.**



**80 amp Converter Shelf**

## Description

The LORAIN® modular DC to DC converter shelf provides up to 80 amps at -48 volts DC via high frequency switch mode converters rated at 10 amps each.

Modular design allows the converter's capacity to expand as your system expands. The MHS80CAB converter shelf can accept eight individual, 10-amp plug-in converter modules. Two or more shelves can be combined into one system for load requirements in excess of 80 amps. The modules can be easily installed live without system interruption.

+24 VDC input and expandable -48 VDC output makes this system ideal for both cellular radio and microwave sites with -48 VDC requirements.

## Application

The LORAIN® DC to DC converter system's compact size and expandability makes it ideal for +24 VDC wireless sites requiring -48 VDC output.

## Additional Information

For additional specification, engineering or installation information, specify model MHS80CAB spec. number 588249301 (dual input feed) or 588249500 (individual converter input feed) and model MHS10B spec. number 486800127 (module).

# 80 Amp LORAIN® DC-DC Converter Shelf with 10 Amp Converter Modules

## Specifications

### Input

Voltage	24.0 volts DC nominal, with range of 21 to 28 volts DC
Current	210 amps maximum (at full load with eight 10 amp modules, 21VDC input)
Circuit Protection	35 amp fuse is located in the positive input lead of each converter module.
Filtering	Noise reflected back to the battery is less than 32dBnC and is within the parameters set forth in Telcordia technical reference TR-TSY-000009, using test measurements in PUB43802, pages 5 and 6.
Efficiency	87% typical

### Output

Voltage	-48.0 VDC
Current	10 amps per DC-DC converter module, up to a total of 80 amps per shelf with eight modules installed.
Regulation	Steady state output voltage remains within $\pm 1$ volt of the pre-adjusted voltage for any load current from no load to full load and over the specified input voltage range.
Dynamic Response	For a step load change of 50% within the range of 10% to 100% of full rated current, the maximum voltage transient will not exceed 5% of the initial steady state voltage.
Filtering	Voice band noise is less than 32dBnC. Wide band noise does not exceed 250 mV peak to peak over the frequency range of 0 to 20 MHz. Wide band noise does not exceed 30 mV rms over the frequency range of 0 Hz to 20 MHz.

### Protection

Overvoltage	Each DC-DC converter module will automatically shut down and lock out should its output voltage exceed 115% to 125% of nominal voltage. Manual restart is necessary after the overvoltage condition is corrected.
Overcurrent	When the output current of a DC-DC converter module increases to a preset value between 102.5% to 115% of rated full load, the output voltage of the module will automatically decrease to limit current to this value. The output will recover to within specified limits when the overload condition is removed.
Over Temperature	Each DC-DC converter module will automatically shut down if the internal temperature of the module exceeds a predetermined value. Operation will automatically resume after the over-temperature condition is removed.

### Status/Alarm Indicators

Frame	Minor Alarm LED (yellow) and contact single DC-DC Converter Module failure Major Alarm LED (red) and contact two or more DC-DC Converter Module failures Input OK LED (green) the input voltage source is within operating limits
Module	Output OK LED (green) and contact output voltage is between the low and high voltage alarm limits and fan is operating normally.

### Environmental

Operating Temperature	-40°C to +65°C (-40°F to +149°F)
Storage Temperature	-40°C to +85°C (-40°F to +185°F)
Humidity	0% to 95% relative humidity, non-condensing
Altitude	Maximum operating ambient temperature should be derated linearly (1°C per 1000 ft) at elevation above 3000 ft.
Audible Noise	The audible noise at any point 5 ft from any vertical surface of the shelf shall not exceed 60dB-A per ANSI S1.4.
EMI/RFI Suppression	This unit conforms to the requirements of FCC Part 15, Subpart B, Class B; EN55022, Class B for radiated and conducted noise; and GR-1089 CORE for conducted noise.



10 Amp Converter Module

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