

ELLBC-1

Features:

3-Stage Charging

Extends Battery Life

63 ADC output

Environmentally Sealed

Thermally Protected

Shock and Vibration Hardened



ENERPRO[®]

Enerpro Locomotive Layover Battery Charger

Overview

The Enerpro Locomotive Layover Battery Charger (ELLBC) is designed to provide 74V DC power to support both battery charging and other DC bus loads while the locomotive prime mover is shut down. Input power is provided by 480 VAC wayside power or from locomotive Head End Power (HEP) in emergency situations. The modern and reliable solid state design ensures batteries are fully charged and the locomotive is ready to go after a period of non-operation.

Operational Description

The ELLBC provides advanced onboard locomotive 3-stage battery charging which extends battery life and reduces the chance of locomotive failure to start. 3-stage charge is the industry standard profile for properly charging lead-acid batteries and reducing battery sulfation. The 3-stage profile is summarized as follows:

1st stage - Bulk

On initial power up, charging current is regulated at a constant 63ADC while charging voltage gradually increases as the battery accepts charge. When output voltage reaches 77 VDC the charger transitions to the 2nd stage .

2nd stage - Absorption

Charging voltage is regulated at a constant 77 VDC while battery charging current gradually decreases. The higher voltage of the absorption stage reduces sulfation by converting lead sulfate back to lead and sulfuric acid. After 30 minutes in the 2nd stage the charger transitions to the 3rd stage.

3rd stage - Float

Charging voltage is regulated at a constant 72 VDC until the charger is powered off. The float minimizes battery electrolyte loss while topping off the battery and powering additional loads. Depending on battery health, battery current typically drops to 5-10 ADC.

Operational Features

Over Temperature Protection

The charger self protects from over temperature by automatically and smoothly reducing power output when the transformer reaches its maximum safe operating temperature. Power output varies while the temperature is maintained at its maximum level. The charger incorporates an internal stirring fan which maximizes heat transfer through the enclosure walls and aluminum heat sinks.

Dust and Water Resistance

The ELLBC is housed in a sealed NEMA 4 rated enclosure which provides IP65 protection from dust and water.

Output Power Quality

Output ripple voltage is a maximum of 1.1% providing sensitive electrical loads with clean power. Charger output is extremely stable exhibiting 2 VDC maximum voltage overshoot after a 66% load dump.

Voltage and Current Meters

Rugged analog volt and current meters provide easy to read confirmation of charger performance.

Charger Fault Indication

A panel mount LED is illuminated when the charger is powered and output is less than 5 ADC.

Fan Fault Indication

A panel mount LED is illuminated when an internal stirring fan fault is detected. The charger will continue to operate but maximum output may be limited by thermal limits.

Quality Manufacture

Enerpro has been designing and manufacturing quality industrial power electronics products since 1983. With over 3,000 locomotive battery chargers in service worldwide we have developed a reputation for reliability and long service life. All products are manufactured in the USA.

Product Datasheet	
<i>Ratings</i>	
Input Voltage	480VAC +/- 10%, 3-phase
Input Current, Maximum	8 AAC
Output Voltage, Absorption Stage	77 VDC
Output Voltage, Float Stage	72 VDC
Output Power, Nominal	63 ADC @ 77VDC (4.8kW)
Output Power, Max Cont. @ 40°C ambient	48 ADC @ 73VDC (3.5kW)
Maximum Voltage Ripple	1.1%
Maximum Voltage Overshoot 67% load dump	2 VDC
Ambient Operating Temperature	-30°C to 45°C
<i>Physical</i>	
Envelope	37" H x 14" W x 12" D
Weight	195 lbs
Enclosure Material	Mild Steel
Enclosure Surface Coating	Powder Coat
Environmental Ingress Protection	IP65
Cooling	Natural Convection
<i>Other</i>	
Output Current Display	Analog, backlit
Output Voltage Display	Analog, backlit
Output short circuit protection	150A, 240V semi-conductor fuse
Input short circuit protection	Locomotive mounted circuit breaker
Over temperature protection	Voltage Foldback
Charger Output Fault indication	Panel LED
Fan Fault indication	Panel LED, external signal
Country of Manufacture	USA

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