powerbox
Powering Progress

B2591-8

Schaefer AC/DC Battery Charger

For illustrative purposes only

FEATURES

- Queensland Rail Type Approval C0192 - validated for signalling and level crossing applications.
- Natural convection cooling - no fans, reducing potential failure points and increasing long-term reliability.
- High-temperature operation up to 75°C for stable performance in signalling and equipment huts.
- Conformal-coated electronics and reinforced chassis resist humidity, vibration, and contamination common within the rail corridor.
- Supports parallel and redundant operation with active current sharing for load balancing and system redundancy.
- High transient protection, reverse polarity protection, and monitoring via Charger Fail and DC OK relay outputs.

SPECIFICATIONS

INPUT

Voltage Range	115V AC ±20% or 230V AC +15%/-20%, unit switches off at under- and overvoltage
Frequency	50/60Hz
Input Fuse / MCB	External, 10A time lag / K-characteristic related to MCB`s manufactured by ABB
No-load Input Power	Approx. 6W
Switch-on Time	300ms typical
Inrush Current	Limiting by thermistor

OUTPUT

Voltage	13.8V DC (adjustable 12 ... 16V DC)
Current	23A
Line Regulation (±10%)	0.1 %
Load Regulation (10-90%)	< 2%
Efficiency at Full Load	Approx. 85%
Switching Frequency	Approx. 33 kHz
Ripple	≤ 1% +30mVp-p
Load Transient (10-90-10%)	6 % typical
Response Time to ±1 %	2ms typical
Turn-on Rise Time	Softstart, 300ms typical
Overload Protection	Current limited to 70 ... 110 % of full load
Overvoltage Protection	OVP switches off the module at U_{out} = 18V (with automatic return to operation)
Remote Sensing	Sense lines have to be connected to the output or to the load under regard of polarity
Redundant Operation	Via installed decoupling diode in the (+) output line
Parallel Operation	Includes Current Sharing with Interrupt in case of faulty unit in parallel operation
Reverse Polarity Protection	Via anti-parallel diode in the output (output fuse required)
Transient and Surge Protection	Varistor on Input and Output to meet 2kV transient/surge in accordance with EN61000-4-4 / EN61000-4-5

MECHANICAL

Mounting Type	Wall
Dimensions	140 x 300 x 260mm (WxHxD)
Weight	Approx. 5.0 kg
Increased Mechanical Strength	For shock and vibration in accordance with EN61373
Protection Category	IP20
Mounting Instructions	Only in provided position (cooling fin vertical). Above and below the unit at least 40mm distance to neighbouring parts.

ENVIRONMENTAL

Cooling	Natural Convection
Humidity	Up to 99% RH, non-condensing due to additional Tropical Protection (Conformal Coating) applied to all PCBs.
Temperature Coefficient	0.02 %/°C typical
Operating Temperature	-20°C to +75°C
Internal Temperature	Switch 90°C heatsink temperature for emergency power off
Load Derating	2.5 %/°C from +55°C
Storage Temperature	-40°C to +85°C

ALARMS / MONITORING

Charger Failure	Indicating with relay
DC-OK with Relay (output voltage monitoring)	Switching threshold: U_{OUT}<12VDC

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RELIABILITY

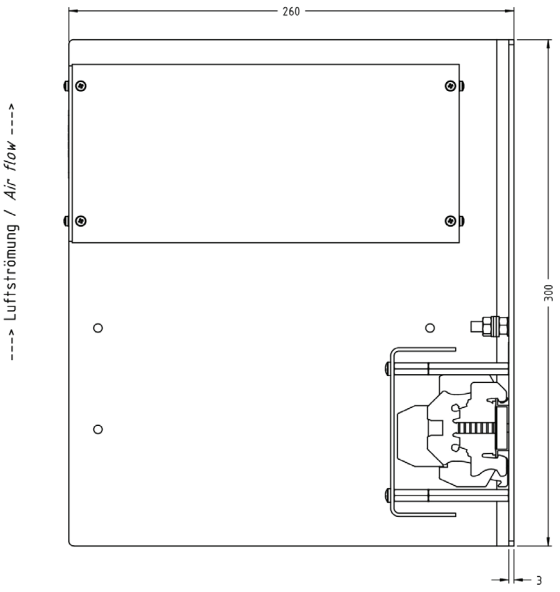
MTBF	Approx. 100.000 h at 40°C (in acc. to MIL-HDBK-217E Notice 1)

SAFETY & STANDARDS

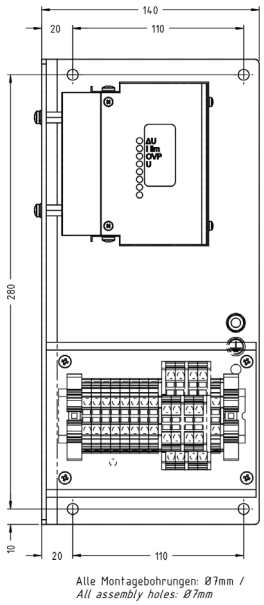
Safety / Construction	Acc. to to EN/IEC 61010-2-201 + EN/IEC 61010-1
Earth Leakage	< 3.5mA, acc. to EN/IEC 61010-2-201 + EN/IEC 61010-1
EMC Compatibility	Acc. to EN 61000-6-2 / EN 61000-6-4
Safety Class	1 (equipment with protective earth connection)
Overvoltage Category	II
Pollution Degree	2
Maximum Installation Altitude	2000m
Isolation Resistance	> 10 MΩ at 500V DC
Isolation Test	Acc. to EN/IEC 61010-2-201 + EN/IEC 61010-1

TECHNICAL DRAWINGS

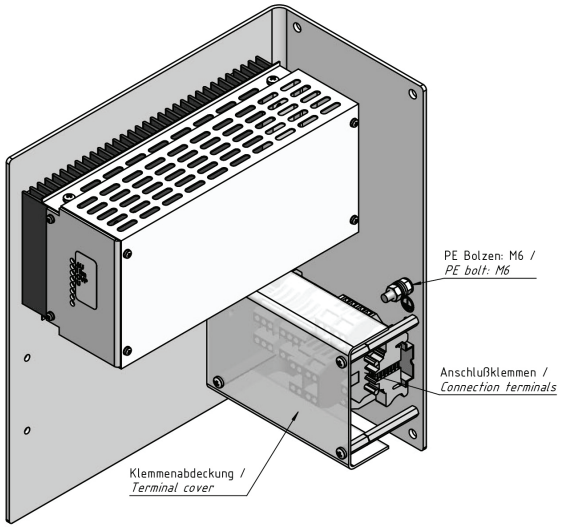
B2591-8-FRONT



B2591-8-SIDE



B2591-8-ISOMETRIC



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