500W-3000W, AC AND DC INPUT MODELS

9000 RAIL BATTERY CHARGER

PRODUCT DESCRIPTION

ADC9000 series battery management and power modules are the flagship solutions for rail industry.

This rugged and versatile series is rail approved according to the highest standards. Track record is field proved by major rail manufacturers world-wide.

Modules are utilizing forced cooling for lowest possible footprint and total volume, saving valuable space.

Communication via Ethernet (TRDP) and/or CAN-bus enabled for 3kW products.

FEATURES

- 230 VAC and 400 VAC input models
- 110 VAC input model
- Efficiency up to 95 %
- Forced cooling with fan
- MTBF 1 800 000 h
- Output models 24, 36, 110 VDC
- 500W, 1500W and 3200W models
- Coated PCB for rail and metro applications
- Large operation temperature range from
  -40 ˚C to +55 ˚C and up tp +70˚C with derating

STANDARDS

- EN50155:2007 Railway applications – Electronic equipment used on rolling stock
- EN50124-1:2001 Railway applications – insulation coordination
- EN50153:2014 Railway applications – Rolling stock – Protective provisions relating to electrical hazards
- EN45545-2:2013: Railway applications – Fire protection on rail vehicles
- EN61373:2010: Railway applications - Shock and vibration

V i t e c POWER GmbH
Bahnstraße 65-67/2/2, A-2230 Gänserndorf, Austria, Tel.: +43 (0)2282 3144, Email: office@vitecpower.com
www.vitecpower.com

Technical Specifications

AC input	ADC9040	ADC9942 ADC9944	ADC9982	ADC9953
Input voltage	1x230 VAC rms (+15 % / -20 %)	3x400 VAC rms (+15 % / -20 %)	3x400 VAC rms (+15 % / -20 %)	3x400 VAC rms (+15 % / -20 %)
Input current	2,5 Arms	5,5 Arms	5,5 Arms	5,5 Arms
Inrush current		12A peak/phase	12A peak/phase	12A peak/phase
Input frequency	47…63 Hz	47…63 Hz	47…63 Hz	47…63 Hz
External circuit breaker	10A	16A	16A	16A
Nominal output voltage	29 VDC	24 VDC	36 VDC	110 VDC
Output voltage adjustment range		21…32 VDC	25,2…45 VDC	100…137 VDC
Overvoltage protection		35 V	50 V	145 V
Maximum output current	23 A	100…133 A	71,9…88,9 A	23…29 A
Maximum output power	550 W	3200 W	3200 W	3200 W
Efficiency	90…93 %	90…93 %	90…93 %	90…93 %
Regulation	Voltage ±1 %	Voltage ±1 %	Voltage ±1 %	Voltage ±1 %
Output voltage adjustment		ADC9942 via CAN bus ADC9944 also via Ethernet	Via CAN bus	Via CAN-bus
Output ripple voltage	<50 mVRMS	ADC9942 <150mVRMS ADC9944 <75 mVRMS	<150mVRMS	<150 mVRMS
Rev.-polarity-protection	Mechanical	Mechanical	Mechanical	Mechanical
Ethernet (TRDP)	No	ADC9944	No	No
CAN	No	ADC9942 and ADC9944	Yes	Yes
Ambient temperature	-40 °C to +55 °C +70°C with derating	-40 °C to +55 °C +70°C with derating	-40 °C to +55 °C +70°C with derating	-40 °C to +55 °C +70°C with derating
Dimensions Width x height x depth	175 x 112 x 250 mm	220 (290) x 88 (105) x 400mm	220 (290) x 88 (105) x 400mm	220 (290) x 88 (105) x 400mm

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500W-3000W, AC AND DC INPUT MODELS

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110VDC input	DDC9870	DDC9961	DDC9970
Input voltage	110 VDC (-30% … +25%)	110 VDC (-30% … +25%)	110 VDC (-30% … +25%)
Input current	13 A	26 A	26 A
Inrush current	< 5 A	< 5 A	< 5 A
External circuit breaker	25 A	40 A	40 A
Input fusing	external	external	external
Nominal output voltage	24 VDC	24 VDC	28 VDC
Overvoltage protection	30 V	30 V	30 V
Maximum output current	63 A	110 A	110 A
Maximum output power	1500 W	3000 W	3000 W
Efficiency	91…95 %	91…95 %	91…95 %
Regulation	Voltage ± 0,5 %	Voltage ± 2,5 %	Voltage ± 2,5 %
Output voltage adjustment	Via CAN bus	Analog	Analog
Output ripple voltage	<120 mVRMS	<120 mVRMS	<120 mVRMS
Ambient temperature	-40 ˚C to +55 ˚C +70˚C with derating	-40 ˚C to +55 ˚C +70˚C with derating	-40 ˚C to +55 ˚C +70˚C with derating
Dimensions Width x height x depth	146 mm x 86 mm x 398 mm	220 mm x 88 mm x 400 mm	220 mm x 88 mm x 400 mm

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