

V Series Rectifier

High Efficiency Module

Eltek V-series rectifiers provide industry-leading efficiency in a 2 RU footprint. Reliability, scalability, and hot-swap capability make for optimal system design and cost-effective deployment – from initial installation to future upgrades. The High-Efficiency ("HE") models deliver up to 96% conversion efficiency.



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Doc 370096.DS3 Issue 1

THE ELTEK DIFFERENCE

A BETTER CHOICE

Energy efficiency is a practical choice that helps protect the environment. Eltek is committed to forming partnerships dedicated to this cause

INDUSTRY-LEADING-EFFICIENCY

With a peak efficiency over 96%, V-Series HE rectifiers reduce energy waste and costs. Since they generate less heat, it takes less energy to cool the equipment and immediate environment, thereby reducing expenses throughout the network.

OPTIMIZATION

Eltek rectifiers are optimized for the demanding power and power conversion needs of wireless communications, enterprise and broad-band access equipment.

FLEXIBILITY

V-Series rectifiers are designed to operate in Eltek's Compact and Integrated DC Power Systems.

PRODUCT DESCRIPTION

Vertically cooled 2RU rectifiers with wide range of output modules available.



KEY FEATURES

- 96% EFFICIENCY
- ONLY 2RU IN HEIGHT
- OPERATES AT FULL POWER IN TEMPERATURES UP TO +65°C
- CONSTANT CURRENT
- NEBS LEVEL 3

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MODEL	V0500A1- HE	V0750A1- HE	V1000A1- HE	V1250A1- HE	V1500A1- HE	V2000A1- HE	V2500A1- HE
INPUT DATA							
Input Voltage (Rated)	100 – 240 VAC				200– 240 VAC		
Input Voltage (Operating Range)	90 – 264 VAC				180– 264 VAC		
Input Frequency	47 – 63Hz						
Input Current (max) at rated input voltage	7A	9A	12A	15A	9A	12A	15A
Inrush Current (excludes X caps in the EMC input filter)	< 30A						
Power Factor Nominal input, full load	0.99						
OUTPUT DATA							
Vo Set Point (VDC min/default/max)	42/48/56						
Rated Output Current	10A	15A	20A	25A	30A	40A	50A
Output Power (watts max)	560W	840W	1120W	1400W*	1680W	2240W	2800W†
Short Circuit Current (RMS amps)	8.5 A _{rms}	7.4 A _{rms}	7.5 A _{rms}	7.8 A _{rms}	7.5 A _{rms}	9.3 A _{rms}	10.2 A _{rms}
Output Noise	25 mV rms typical (10kHz to 20MHz); 36dBrc (@54V and full load)						
Output Rise Time (min/max)	100/400 msec (measured at 10 – 90% of final output level)						
Static Voltage Regulation	±1% (Total regulation over line, load, aging and temperature)						
Dynamic Response (maximum)	3% (change in output voltage within 10 msec after a 10 to 90% load step change)						
Turn On Delay (max)	<4 sec (measured from application of valid ac voltage to regulation set-point)						
Adjustable Over-voltage Protection	Up to 60 VDC						
Backup Over-voltage Protection (max)	62 VDC						
Load Sharing	±10% of full load			±5% of full load			
Reverse Output Current (max)	115mA						
Peak Efficiency (240 VAC Input)	94.7%			> 96.3%			
Heat Dissipation at 50% Load at Nominal Input (BTU/hr)	78	92	77	101	126	161	196
Heat Dissipation at 100% Load at Nominal Input (BTU/hr)	110	120	146	210	271	419	644

*Output power derated below 105 VAC, 1400W to 1250W @ 90 VAC.

†Output power derated below 200 VAC, 2800W to 2500W @ 180 VAC.

Typical specifications, unless otherwise stated:

Nominal line: 120 VAC, 1250W or less and 240 VAC, 1500W and greater

Nominal output voltage: 54.00 VDC

Nominal load: 100% of rated current

Specifications are subject to change without notice

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ALL MODELS

AUXILIARY OUTPUT

Nominal Voltage	12V
Vmin/max	10.5 / 14
Source Current Rating (min/max)	0/100mA
Sink Current* (max)	100mA

PHYSICAL

Height	87.6mm (3.45") (includes faceplate)
Width	86.7mm (3.41") (includes faceplate)
Depth	282.9mm (11.14")
Weight	3.2kg (7 lbs)

ENVIRONMENTAL

Parameter	Minimum	Maximum	Unit	Notes
Storage Temperature	-40	70	°C	
Operating Temperature (internal cooling)	-40	70	°C	Except V2500A1-HE, which has a maximum of 65°C
Humidity	5	95	%	Relative humidity, non-condensing
Altitude	-200	8000	Ft	For operation above 8000', maximum temperature is derated 2°C per 1000'.

APPLICABLE STANDARDS

NEBS Level 3	
GR-3108-CORE	Class 2: Protected Environments
EN55022 Level B	Radiated Emissions Conducted Emissions
EN61000-3-2	Limits for harmonic current emissions
EN61000-3-3	Limits for voltage fluctuations and flicker in low-voltage systems.
EN61000-4-2	Electrostatic discharge immunity test.
EN61000-4-3	Radiated, radio-frequency, electromagnetic field immunity test. 10 V/m.
EN61000-4-4	Electrical fast transient/burst immunity test.
EN61000-4-5	Surge immunity test. 6 kV: Line to Line. 6 kV: Line to Ground.
EN61000-4-6	RF Common Mode.
EN61000-4-8	Magnetic Field.
EN61000-4-11	Voltage dips, short interruptions and voltage variations.

* Current required for internal controls when AC is not present

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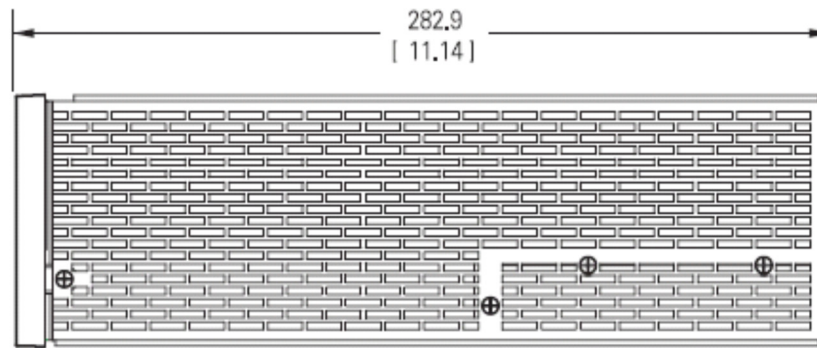
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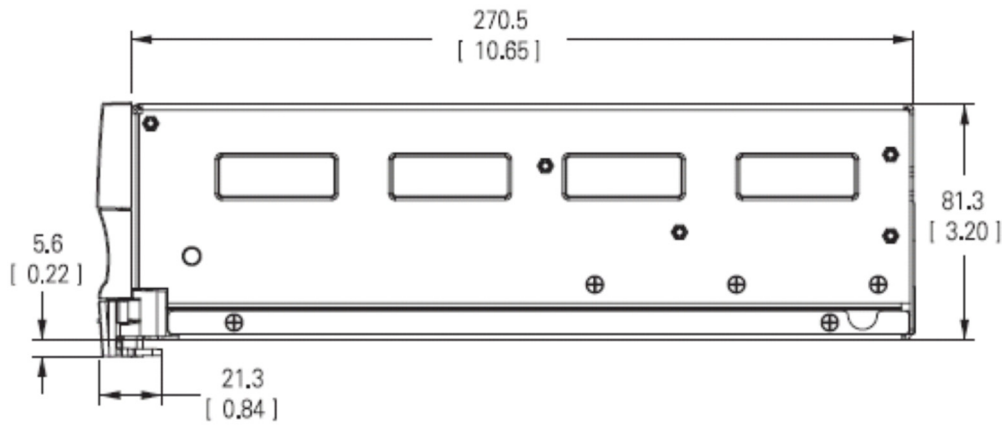


DIMENSIONAL DRAWINGS

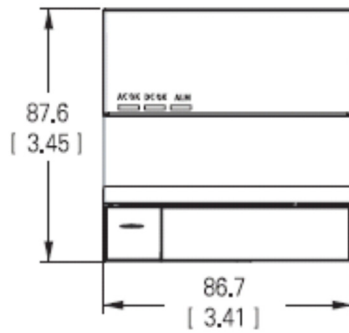
Top View



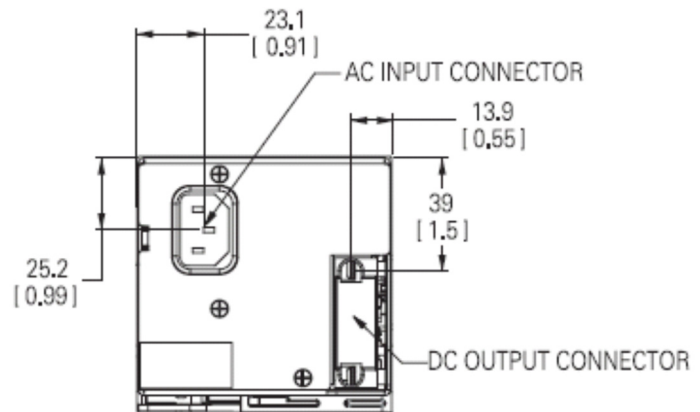
Side View



Front View



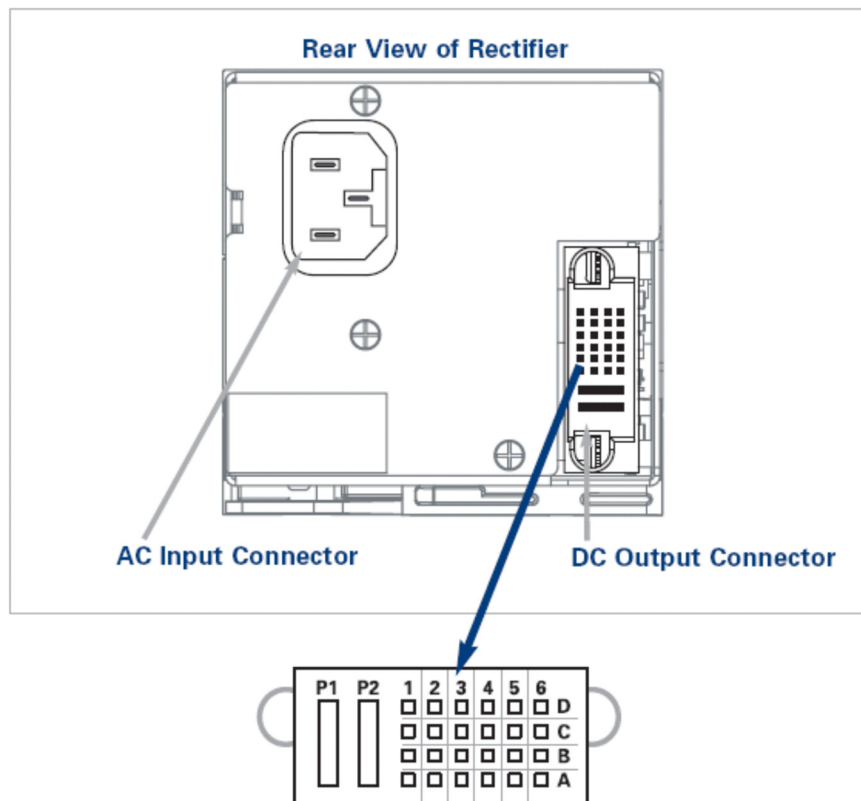
Back View



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RECTIFIER CONNECTOR PIN-OUT



Unit Connector p/n: 51732-007
 Mating Connector p/n: 51742-102024
 Supplier: FCI/Berg

FCI NUMBERING	1	2	3	4	5	6
D	REMOTE_SENSE+	MODULE_DISABLE	MODULE_PRESENT	RESERVED	LOGIC_GROUND	RESERVED
C	REMOTE_SENSE-	SHORT_PIN	OPTION	RESERVED	OPTION	SHELF_BIAS
B	OPTION	OPTION	LOC1	OPTION	RESERVED	SCL
A	V_MARGIN	ISHARE	LOC2	LOC0	RESERVED	SDA
P1	OUTPUT POSITIVE					
P2	OUTPUT NEGATIVE					

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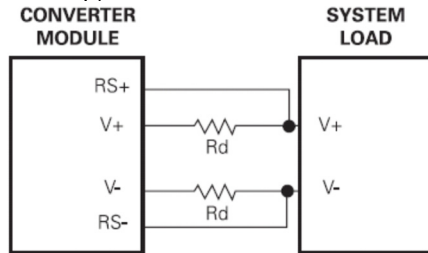
RECTIFIER SIGNAL DESCRIPTION

OUTPUT + AND OUTPUT-

Power blades used for connecting positive and negative power connections.

REMOTE_SENSE+ AND REMOTE_SENSE-

These signals are used to compensate for distribution drop across the output distribution. The maximum voltage drop from the rectifier module to the remote sense connection (the complete round trip) must be maintained to less than 1V.



The remote sense leads may be left un-terminated in applications where remote voltage regulation is not required.

ISHARE

All rectifiers ISHARE pins are tied together on the system backplane to support load sharing. This connection may be terminated between rectifiers or left un-terminated in systems where load share is not required.

SHORT_PIN

The short pin is used to disable the rectifier if not fully seated in a system. It is required to be tied to OUTPUT- in the system backplane in order for the rectifier to provide proper output voltage. It may not be left un-terminated.

I²C COMMUNICATIONS BUS (SCL, SDA, LOC0, LOC1, LOC2)

The I²C Communications Bus provides information about internal rectifier conditions as well as full control of output voltage and alarming set-points. SCL and SDA are common data signals and can be wired directly to a system controller or on a common shared bus between the rectifiers in a system and the main system controller.

LOC0, LOC1, and LOC2 are location pins used to set rectifier address in a system where the I²C bus is shared between rectifiers. They may be left un-terminated to generate a logic 1 or connected to OUTPUT- to generate a logic 0.

The I²C Communications Bus signals are logic referenced to OUTPUT-. The Address Scheme is shown.

LOC 0 LOGIC LEVEL	LOC 1 LOGIC LEVEL	LOC 2 LOGIC LEVEL	RECTIFIER I ² C POSITION
0	0	0	0x10
0	0	1	0x12
0	1	0	0x14
0	1	1	0x16
1	0	0	0x18
1	0	1	0x1A
1	1	0	0x1C
1	1	1	0x1E

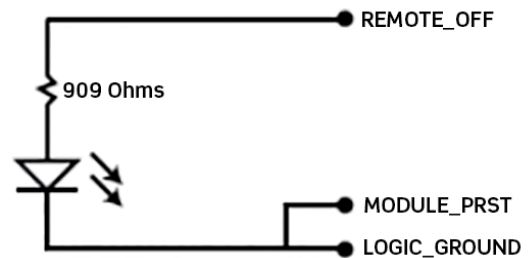
RECTIFIER SIGNAL DESCRIPTION

For more information on I²C, refer to the I²C Application Guide.

SHELF_BIAS

Provides a 12V/100 mA bias for system operation. Shelf bias is a bi-directional signal that can be provided from an external source to power the secondary control circuitry within each rectifier. Shelf bias is internally protected from overload conditions.

(ISOLATED INTERFACE SIGNALS)



REMOTE_OFF

This signal is a current limited input designed to accept a 3.3V to 5V input voltage. Applying a voltage between these pins will result in disabling the DC output voltage from the rectifier. This signal may be left un-terminated in systems where REMOTE_OFF is not required or is implemented via the I²C Interface.

MODULE_PRESENT

This signal is internally connected to LOGIC_GND within each rectifier. It may be used to determine the presence of a rectifier module in a system location.