



Valere X Series rectifiers are an ideal solution for applications requiring high availability, high power density, and scalable growth.

Utilizing a robust platform, these rectifiers feature industry leading power density, flexibility, and ease of use.

With horizontal airflow, internal fans, and wide operating temperature range, they provide an ideal solution for a wide range of power needs.

THE VALERE DIFFERENCE

Optimization – Valere Power rectifiers are optimized for the demanding power needs of wireless communications, enterprise and broadband access equipment.

SMALL SIZE, BIG POWER – At only 2RU, these compact rectifiers can provide up to 5600 Watts of power. The small size can free up space to reduce system size or incorporate additional electronics.

Industry Leading Efficiency – An industry leading 92% efficiency reduces the thermal load thus improving the overall reliability and availability of the system.

Flexibility – These rectifiers are designed to operate as an integral component in Valere's Compact, Integrated, Modular or Enterprise DC Power Systems. They are extremely flexible and can be operated either with a system controller or as a stand-alone module in telecommunication and enterprise applications.

FEATURES

- 180VAC to 264VAC Input
- Up to 92% efficiency
- Power Factor Correction
- Hot Pluggable
- Front panel LED indicators
- I2C Serial Communications bus
- AC Fail Alarm
- DC Fail Alarm
- Over-temperature Alarm
- UL Recognized to EN60950
- CSA Certified
- VDE Certified

INPUT SPECIFICATIONS

X SERIES	X2500A1	X5000A1	X5000A2	X7500A1	X2500B1	X3750B1	NOTES
Input Voltage (min)	180 Vac	200 Vac	200 Vac	180 Vac	180 Vac		
Input Voltage (max)	264 Vac	277 Vac	277 Vac	264 Vac	264 Vac		
Input Frequency (min)	47 Hz						
Input Frequency (max)	63 Hz						
Input Current (max)							
@ 180 Vac (amps)	19	36	32	52	14	27	
@ 208 Vac (amps)	17	32	30	45	12	23	
Inrush Current (max)	30 amps peak						Excludes X caps in the EMC input filter.
Power Factor	.99 @ typ. @ 230Vac, full load						

OUTPUT SPECIFICATIONS

MAIN OUTPUT	X2500A1	X5000A1	X5000A2	X7500A1	X2500B1	X3750B1	NOTES
Vo Set Point (min/typ/max)	42/48/56V			21/24/28.5V			
Regulation (min/max)	±1%						Total regulation line,load, aging & temperature)
Output Current (min/max amps)	0/50	0/100	0/100	0/150	0/100	0/150	
Current Limit Setpoint (min/max amps)	55	110	110	155	105	155	Current limit setpoint is adjustable via I ² C or through Valere Network Interface Card.
Short Circuit Current (RMS amps)	20	35	35	50	35	50	
Output Noise*	40 mV rms typical (10kHz to 20MHz) 30 dBrc (measured without external battery) 150mV P-P (10 Khz to 20 Mhz)						
Output Rise Time* (min/max)	100/400 (msec)						Measured at 10 – 90% of final output level
Dynamic Response* (maximum)	3%						Change in output voltage within 10 msecs after a 10 to 100% load step change
Turn On Delay* (maximum)	3.5 sec						Measured from application of valid ac voltage to regulation set-point.
Adjustable Over-voltage Protection (min/max)	54/60 (Vdc) remotely config.			27/30 (Vdc) remotely config.			
Backup Over-voltage Protection (max)	60 Vdc			30 Vdc			
Load Sharing (min/max)	±5 (%) of full load						
Reverse Output Current (max)	0.5 amps						Internal reverse protection is provided.
Efficiency	92% typ. @ 230Vac			90% typ. @ 230Vac			

NOTE: *Operating temperature range: -20°C to +65°C

AUXILIARY OUTPUT	X2500A1	X5000A1	X5000A2	X7500A1	X2500B1	X3750B1	NOTES
Output 1							
Nominal Voltage	12V						
Vmin/max	10.5 / 14						
Source Current Rating (min/max)	0 / 500mA			0 / 2 amps	0 / 500mA		
Sink Current (max)	100mA						Current required for internal controls when AC is not present

NOTE: Output 1 operates independent of main DC output and is referenced to Vout-

PHYSICAL SPECIFICATIONS

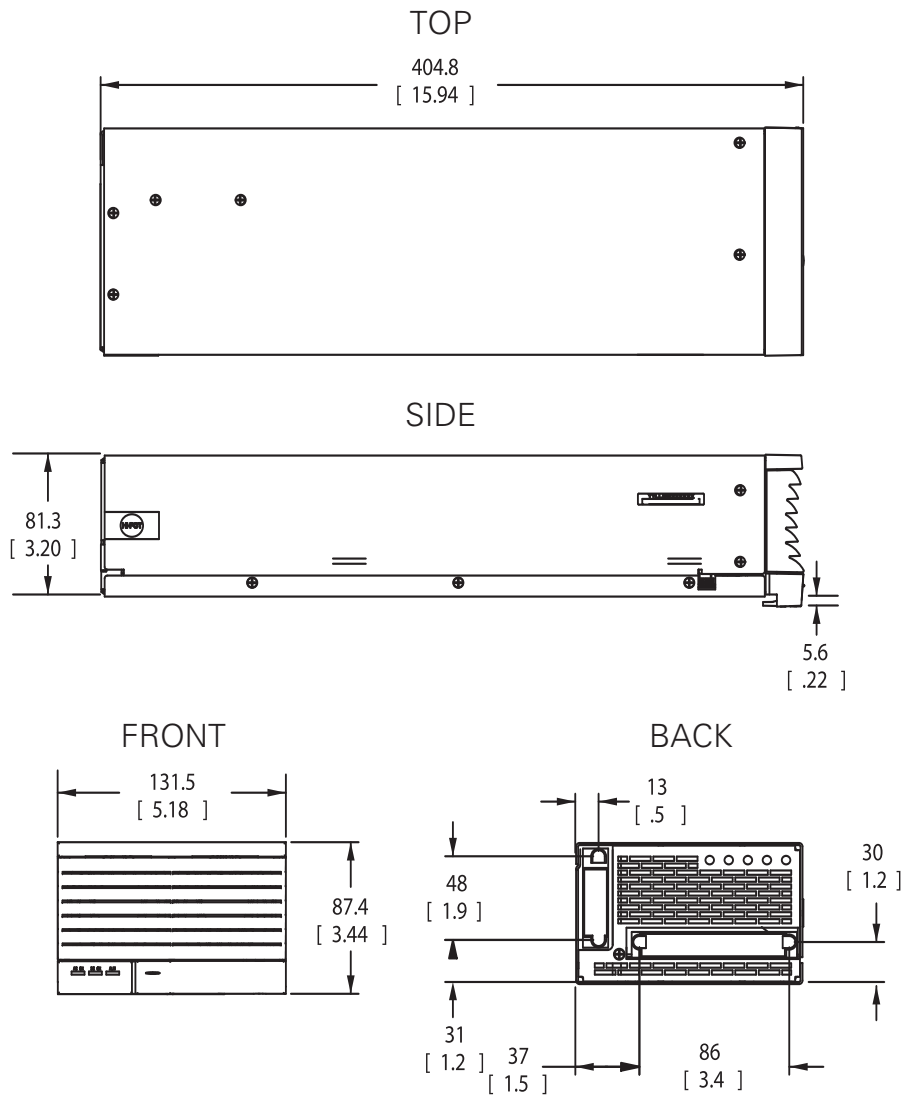
X Series Rectifier

- Depth: 404.8mm (15.94")
- Height: 81.3mm (3.20")
- Width: 131.5mm (5.18")
- Weight: 6.8kg (15lbs)

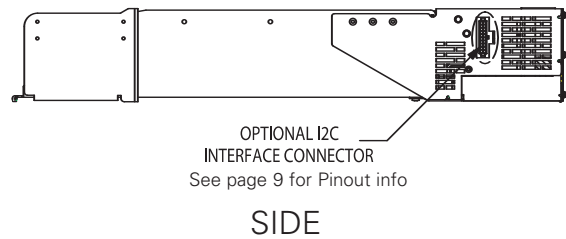
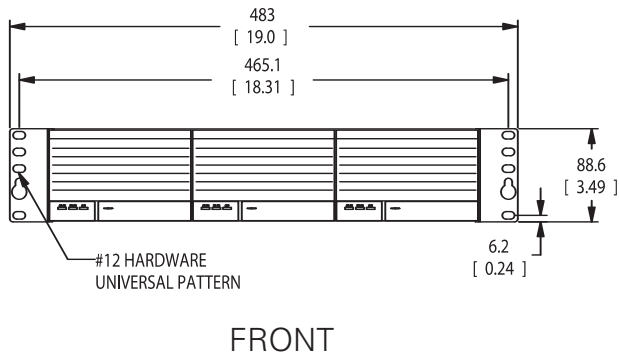
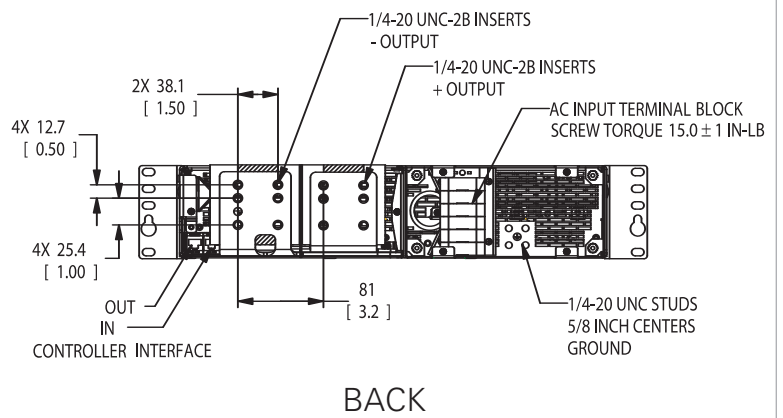
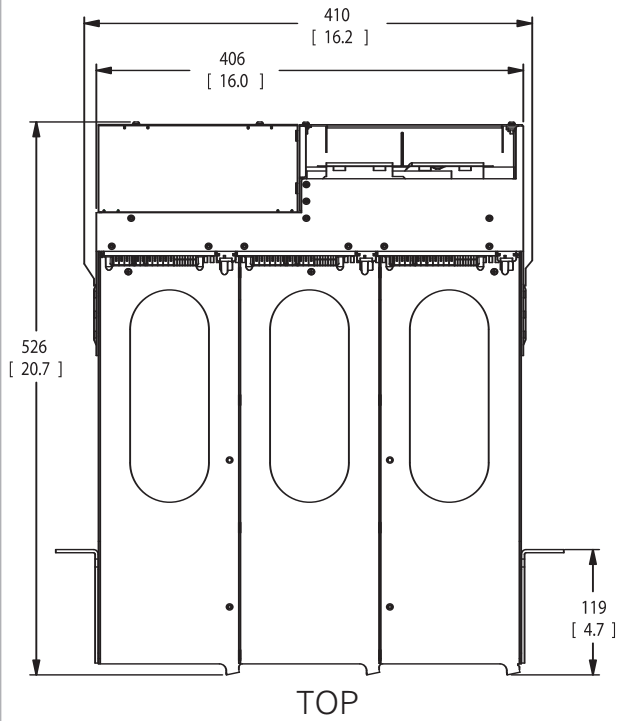
482.6mm (19") Shelf Dimensions

- Depth: 533.4mm (21.00")
- Height: 88.6mm (3.49")
- Width: 409.4mm (16.12") (accommodates up to three rectifiers)
- Weight: 5.4kg (12lbs)

RECTIFIER DIMENSIONAL DRAWINGS

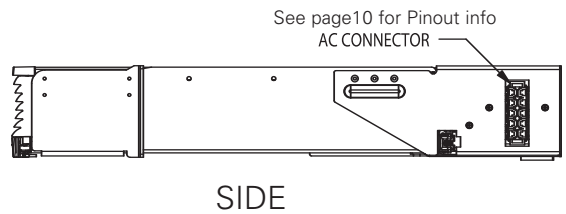
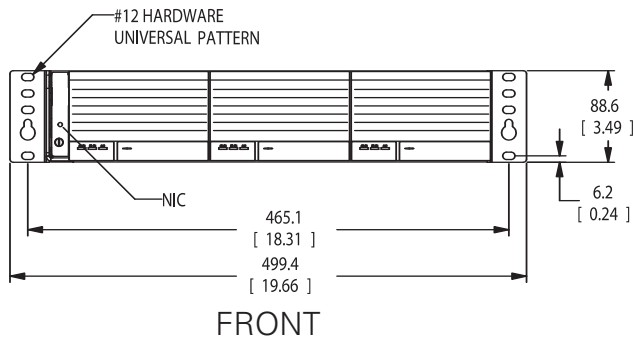
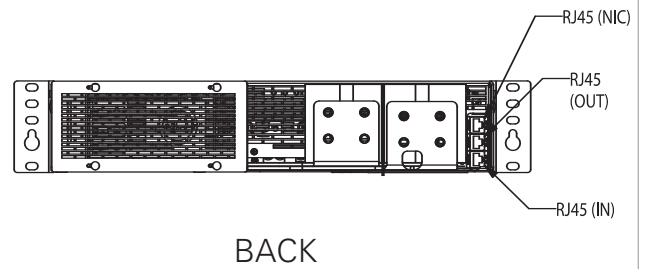
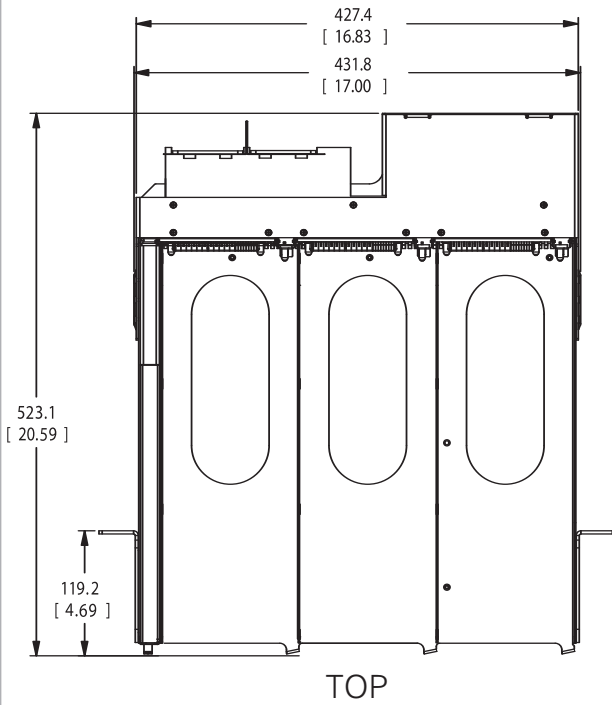


482.6mm (19") SHELF WITHOUT NIC DIMENSIONAL DRAWINGS



NOTE: This is a representative shelf. Contact your sales representative for custom configurations.

482.6mm (19") SHELF WITH NIC DIMENSIONAL DRAWINGS



NOTE: This is a representative shelf. Contact your sales representative for custom configurations.

NETWORK INTERFACE CARD FEATURES

Operating Voltage

- 12V (operates from BIAS Aux Output 1 only)

Operating Current

- 500mA max

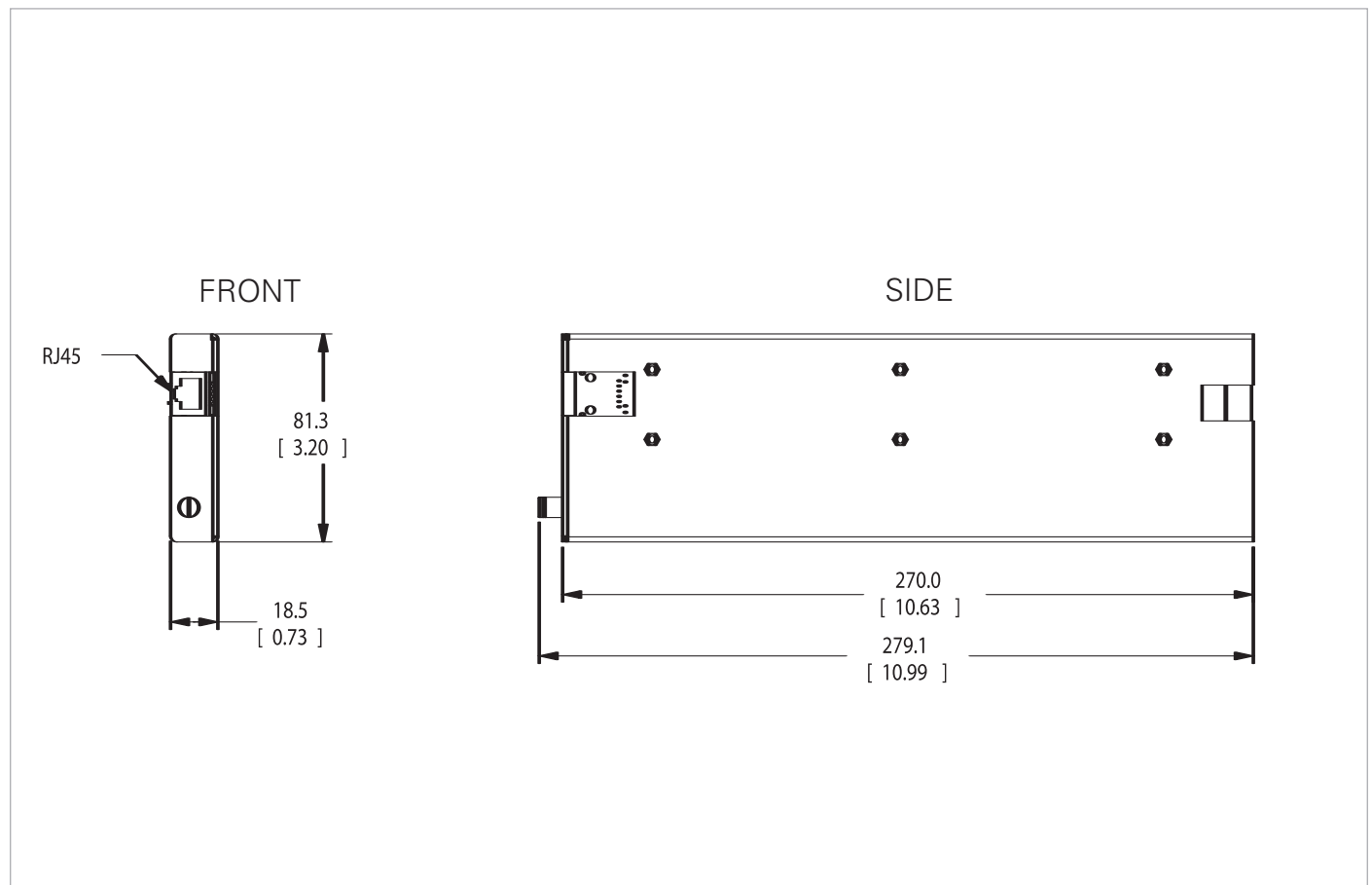
Interface Connection

- RJ45

Interface

- 10/100 LAN
- Webserver
- TELNET
- SNMP

NETWORK INTERFACE CARD DIMENSIONAL DRAWINGS



ENVIRONMENTAL CHARACTERISTICS

PARAMETER	Min	Max	Unit	Notes
Storage Temperature	-40	85	°C	
Operating Temperature	-40	65	°C	No power derating except the X7500A which derates 2%/°C above 50°C.
Humidity	5	95	%	Relative Humidity Non Condensing
Altitude	-200	8000	Ft	For operation above 8000', maximum temperature is derated 2°C per 1000' for temps above 65°C

GENERAL REQUIREMENTS

Shock

IEC68-2-27, Mil-STD-810E, 20G

Vibration

IEC68-2-64 (random vibration), Frequency Range: 20 - 2000 Hz, Time duration: Minimum of 30 minutes.

Seismic Rating

Zone 4, per GR-63-CORE.

Radiated EMI

Conforms to EN55022, Level B.

Conductive Emissions

EN55022, Level B & FCC Class B

NEBS

EMC, Surge Standards, and Electrical Safety per GR-1089-CORE.

IEEE-C62.41

IEEE Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits. Category A2.

EN61000-3-2

Limits for harmonic current emissions for class D equipment.

EN61000-3-3

Limits for voltage fluctuations and flicker in low-voltage systems.

EN61000-4-2

Electrostatic discharge immunity test. Level 4. All user accessible ports. Damage free, operational and non-operational. Criterion B.

EN61000-4-3

Radiated, radio-frequency, electromagnetic field immunity test. Level 3: 10 V/m.

EN61000-4-4

Electrical fast transient/burst immunity test. Level 4

EN61000-4-5

Surge immunity test. Installation Class 4.
6 kV: Line to Line, Criterion A.
6 kV: Line to Ground, Criterion A.

EN61000-4-6

RF Common Mode. Level 3, Criterion A.

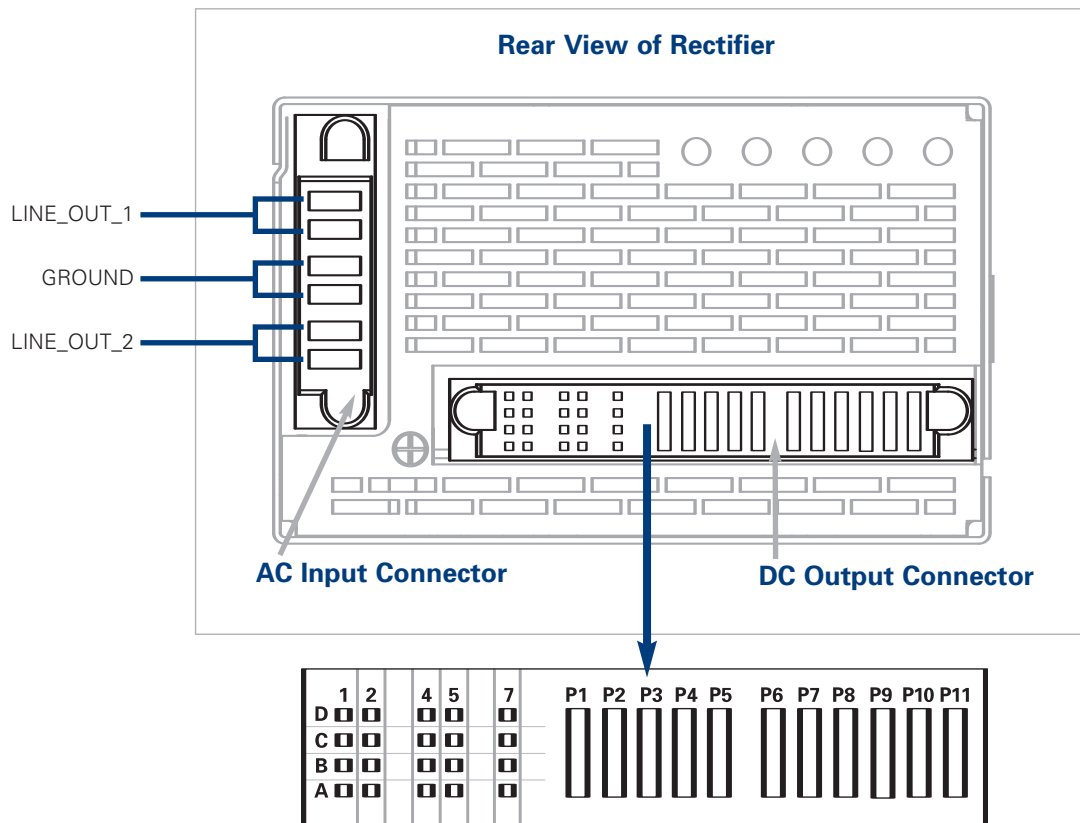
EN61000-4-8

Magnetic Field. Level 3, Criterion A.

EN61000-4-11

Voltage dips, short interruptions and voltage variations.

RECTIFIER CONNECTOR PINOUT REQUIREMENT

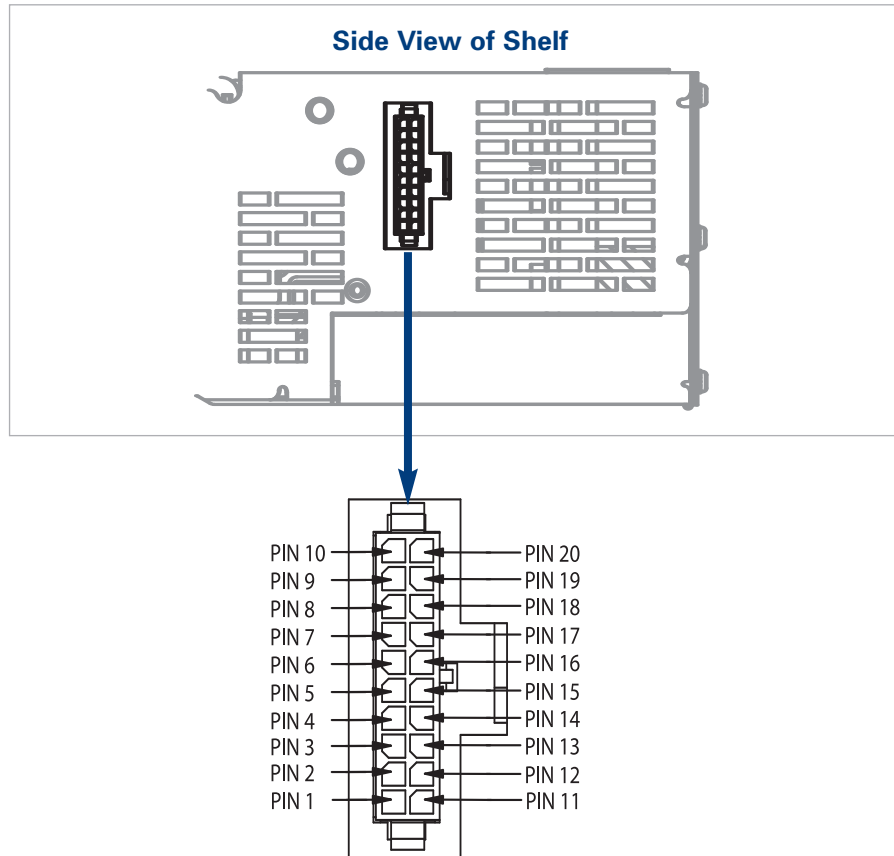


Unit DC Output
 Connector P/N: 51939-052
 Mating Connector P/N: 51940-027
 Supplier: FCI/BERG

Unit AC Input
 Connector P/N: 51939-052
 Mating Connector P/N: 51940-027
 Supplier: FCI/BERG

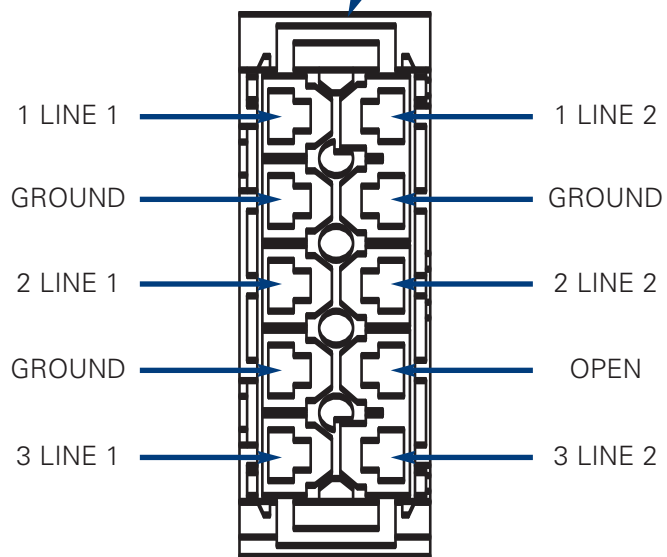
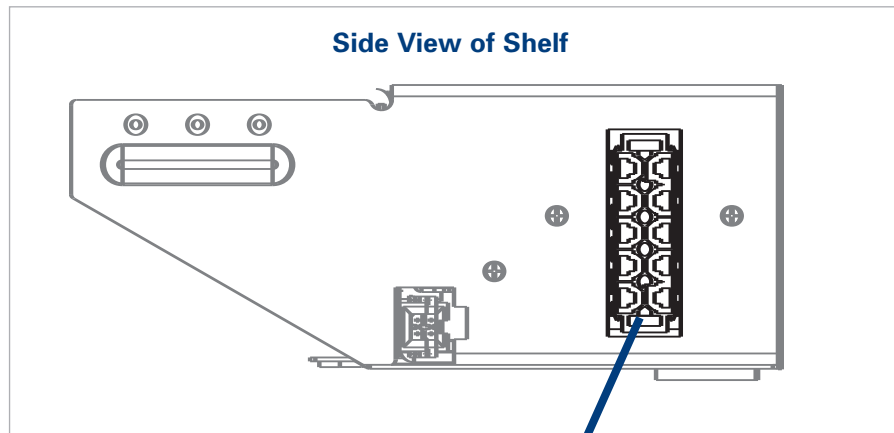
FCI NUMBERING	1	2	4	5	7
D	TEMP_ALARM	SDA	RESERVED	RESERVED	SHORT_PIN
C	MODULE_DISABLE	SCL	RESERVED	LOC2	REMOTE_SENSE-
B	AC_FAIL	MODULE_ALARM	ISHARE	LOC1	RESERVED
A	MODULE_PRESENT	LOGIC_GROUND	V_MARGIN	LOC0	REMOTE_SENSE+
P1					
P2					
P3	OUTPUT NEGATIVE				
P4					
P5					
P6					
P7					
P8	OUTPUT POSITIVE				
P9					
P10					
P11	RESERVED				

OPTIONAL INTERFACE CONNECTOR PINOUT REQUIREMENT (482.6mm (19") Shelf w/no NIC)



PIN LOCATION		PIN LOCATION	
10	OPEN	20	MODULE_PRESENT
9	OPEN	19	OPEN
8	MODULE_AC FAIL_2	18	MODULE_ALARM_2
7	MODULE_AC FAIL_1	17	MODULE_ALARM_1
6	MODULE_AC FAIL_0	16	MODULE_ALARM_0
5	MODULE_DISABLE	15	THERMAL_FAIL
4	LOGIC_GRND	14	OPEN
3	SDA	13	V_MARGIN
2	SCL	12	I_SHARE
1	SHELF_BIAS	11	Vmain_2

AC CONNECTOR PINOUT REQUIREMENT (482.6mm (19") Shelf with NIC)



Mating Connector P/N: 0439141103
Supplier: Molex

SIGNAL DESCRIPTION

Non-Isolated Signals

OUTPUT+ and OUTPUT-

Power blades uses 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.

V_MARGIN

V_Margin is used in systems where analog voltage margining up of the output voltage is required. The rectifier output voltage will default to the I2C setpoint value, which is factory default set to 48.0V. Analog margining will then allow a host system to increase the rectifier above this I2C setpoint. It may be left un-terminated in systems where this feature is not required.

INPUT VOLTAGE	RECTIFIER OUTPUT VOLTAGE INCREASE
0V or Un-terminated	0V
5V	10V

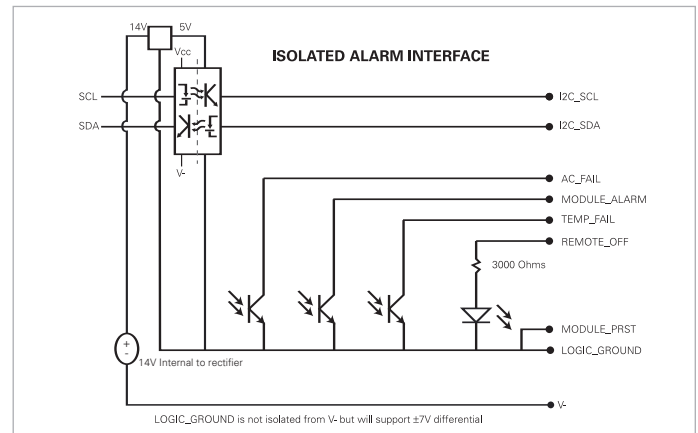
ADDRESS PINS (LOC01, LOC02, LOC03)

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 logic 1 or connected to OUTPUT- to generate logic 0.

Isolated Signals

I2C COMMUNICATIONS BUS (SCL, SDA)

The I2C Communications Bus provides information about internal rectifier conditions as well as full control of output voltage and alarming setpoints. 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. The rectifiers communicate via the proprietary Valere Communication Protocol. Contact your Valere Power representative for technical assistance in interfacing to the rectifiers using this interface protocol. The I2C Bus signals are logic referenced to LOGIC_GROUND. The internal bias for the I2C isolation circuit will support a 10V common mode voltage differential to OUTPUT.



MODULE_PRESENT

This signal is a connection to logic ground. It may be used to determine the presence of a rectifier module in a system location.

AC_ALARM

This signal is an opto-isolated open collector signal referenced to LOGIC_GND within each rectifier. AC_ALARM is a normally closed signal which signifies the presence of an alarm with a high impedance. AC_ALARM indicates the presence of valid AC input voltage to the rectifier.

MODULE_ALARM

This signal is an opto-isolated open collector signal referenced to LOGIC_GND within each rectifier. MODULE_ALARM is a normally closed signal which signifies the presence of an alarm with a high impedance. MODULE_ALARM is designed to provide a power fail warning to indicate the pending loss of DC voltage during line drop conditions. MODULE_ALARM is asserted at least 5mSec prior to loss of DC output voltage during these conditions.

OVERTEMP_ALARM

This signal is an opto-isolated open collector signal referenced to LOGIC_GND within each rectifier. OVERTEMP_ALARM is a normally closed signal which signifies the presence of an alarm with a high impedance. OVERTEMP_ALARM indicates that the rectifier module has shut down due to an overtemperature condition.

MODULE_DISABLE

This signal is a current limited input designed to accept a 3.3V to 5V input voltage. Applying this voltage results in disabling the DC output voltage from the rectifier. This signal may be left unterminated in systems where MODULE_DISABLE is not required or is implemented via the I2C Interface.