

Integritas™ IR100ACR024ATEZ Rectifier



Uncompromised advanced power

The OmniOn IR100ACR024 rectifier module is designed to efficiently transform single phase AC power into 24 volt DC power using advanced switch mode rectification technology. All Integritas rectifier modules are modular in design, allowing for addition modules to be paralleled together when more power output is needed. This results in ultimate flexibility to add more power without the need to redesign the entire power solution. When efficient, reliable, uncompromised DC power is needed look to this proven leader to meet your critical power needs.

Feature and Advantages

- Compact – 1RU form factor provides high power density 24 Watts/cubic inch.
- High density power package - up to 2725 W.
- Efficient – Peak efficiency of 95.6% occurs at 50% load matching ideal needs for customer use patterns.
- Flexibly provides up to 100 Amps at 24 VDC.
- Adjustable output range between 22-29 VDC.
- Modular design allows for combining multiple rectifiers together to match overall power requirements.
- When paired with a master controller, multiple units run together using load sharing algorithm.
- Self-sustaining - built-in microcontroller keeps unit operational in the event of loss of master controller to eliminate single point of failure.
- Capable of N+1 to N+N redundancy when combined together into a complete power solution.
- Designed to work with Integritas DC power system solutions - a complete power package.
- Operates over a broad temperature range (-40°C through +55°C).
- Starts and runs at any AC voltage from 95 to 305 VAC.
- Fail safe performance – hot insertion capabilities allow for rectifier replacement without system shutdown; soft start and inrush current protection prevent nuisance tripping of upstream breakers.
- Extended service life – parallel operation with automatic load sharing ensures that units are not unduly stressed.
- Compliant to RoHS Directive 2011/65/EU and amended Directive (EU) 2015/863.
- Compliant to REACH Directive (EC) No 1907/2006.
- UL and CE compliant.

Specifications

Inputs

Voltage (VAC), 1 Φ	90 - 140 (low); 175 - 305 (high) Output power follows a linear path between defined points. 300V max excursion voltage.
Current Draw (A)	15 max @ 120 VAC (low); 16 to 10.5 @ 200-277 VAC (high)
Inrush Current	<18A after narrow EMI capacitor peak
Power Factor	0.98 @ loads over 50%
THD	< 5% @ loads over 50%
Holdover	15 milliseconds with $V_{out} > 21$ V
Frequency (Hz)	45 to 66

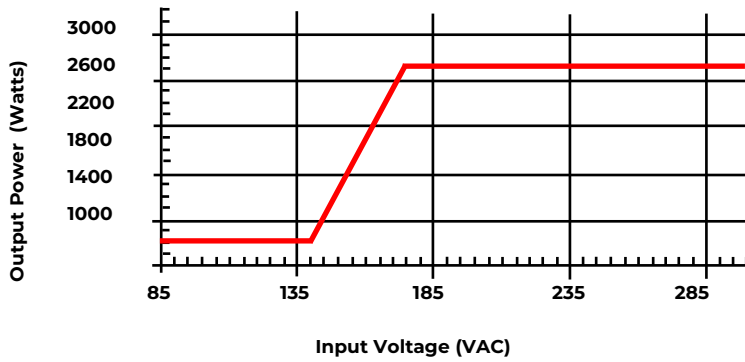
Outputs

Voltage (VDC)	22 – 29 Default = 27.3
Current (A)	44 (low); 100 (high)
Power (W)	1200 (low input <140 VAC); 2725 (high input >175 VAC)
Regulation	FEL 0.05% w/controller; 2% over life load and temperature
Dynamic Response	20 to 80% load step settles to less than 1% in 5 ms
Ripple (mV _{rms})	100
Noise (dB _{rnc})	<55
Efficiency	95.6% peak
Start Up	Start up is monotonic
Soft Start	Starts up into fully discharged batteries
Walk In	Current walk in over 8 to 10 seconds, can be disabled
Overload Shutdown	Shuts down with no damage when presented with a 15 milliohm short
Thermal Protection	Derates at 55°C and self protects with recoverable shutdown above 75°C

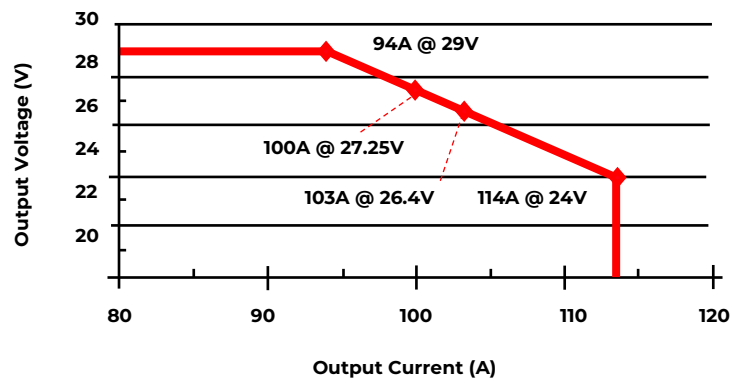
Environmental, Compliance & Physical

Operating Temperature Range (°C)	-40 to +75; (Output derates 2%/°C beginning at 55°C)
Cooling Method	Front to back airflow with onboard temperature controlled fans
Operating Relative Humidity	0 - 95% (non-condensing) for use in a controlled environment
Electromagnetic Compatibility	FCC Part 15; EN 55032 (CISPR32); EN 55035 Level A; GR-1089
Lightning Surge	EN/IEC 61000-4-5 Level 4 (Error free); ANSI C62.41 Category B 100 kHz ring and 1.2/50 μ s combination waves (6kV damage free)
Agency Certifications	UL1012; EN61204-7; CE; RoHS directive 2015/863
Harmonics	EN61000-3-2
Heat Release	174 Watts or 594 BTU/hr at full load of 2725 Watts, Noise<60 dBA @ 25°C
Mean Time Between Failure (MTBF)	300k Hours @ 25°C per Telcordia SR-332, Method 1, Case 3
Dimensions and Weight (in.) [mm], (lbs) [kg]	1.63 x 5.23 x 13.85 [42 x 133 x 352]; 5.05 [2.2]; packaged 5.95 [2.7]

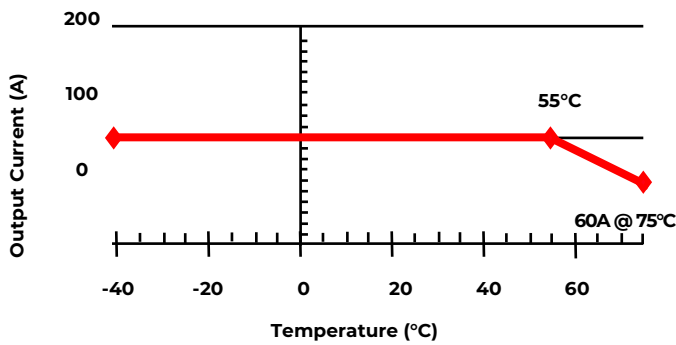
Specifications (Continued)



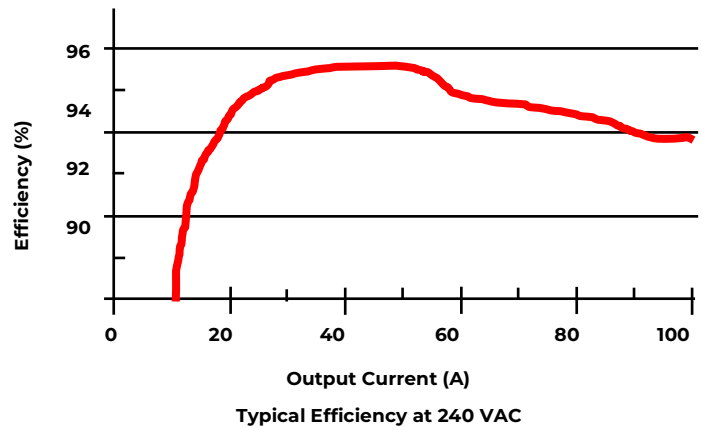
Output Power vs Input Voltage



Constant Power to 24 Volts



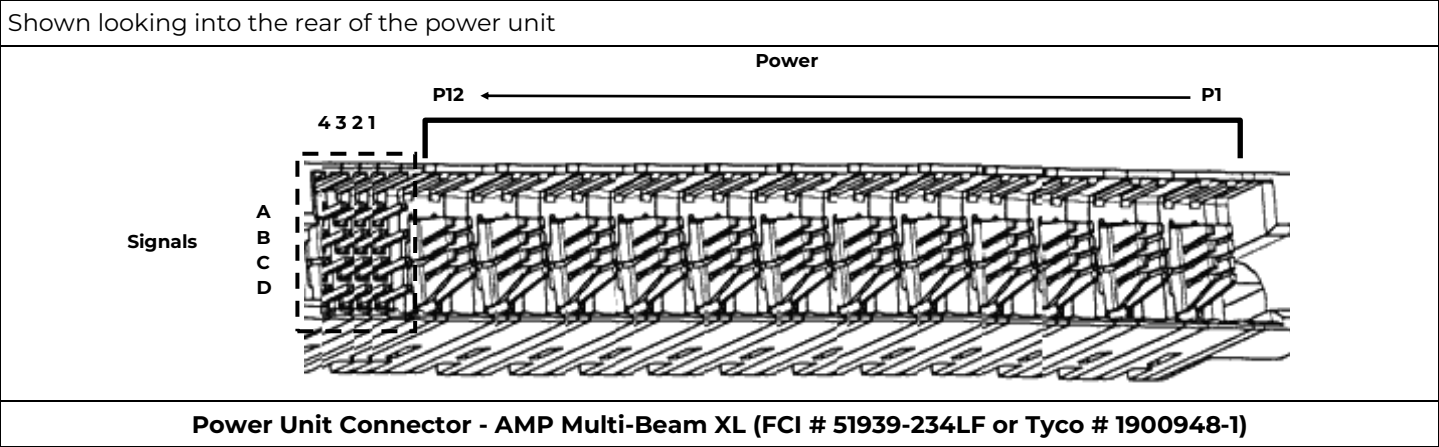
Rated Output Current ($V_{in} > 175$ VAC)



Typical Efficiency at 240 VAC

Technical Details

Signal Interface



Power											
DC									AC		
P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1
-48V	-48V	RTN	RTN	RTN	RTN	+24V	+24V	+24V	PE/GND (ACEG)	L2/N	L1

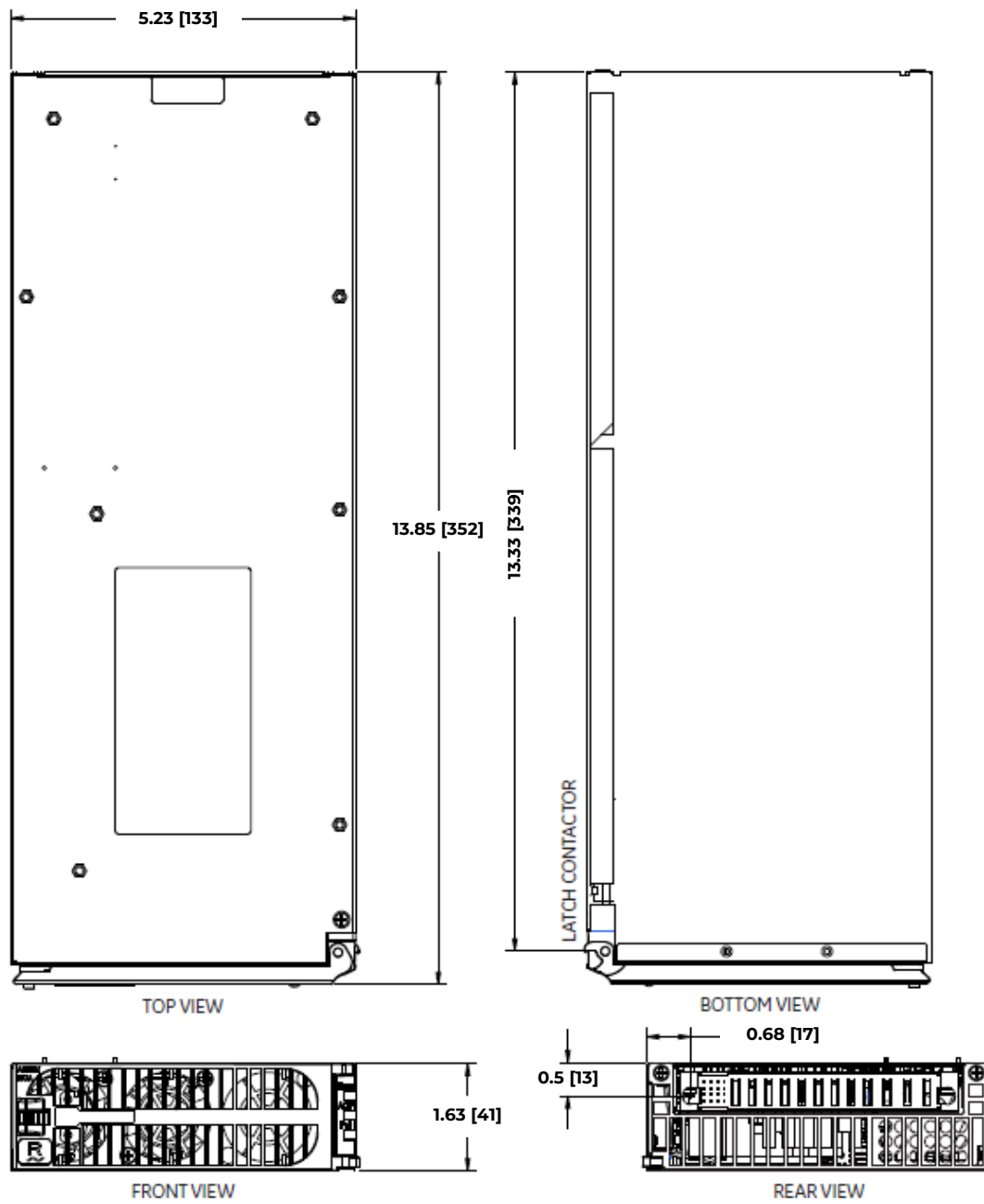
Signals - Pin Matrix and Functions				
	4	3	2	1
A	Interlock	SID4	PSID0	RS-485 (-)
B	Reserved	SID5	PSID1	RS-485 (+)
C	Reserved	SID6	PSID2	Reserved
D	Reserved	SID7	SID3	Return

PIN	LENGTH	DESCRIPTION
A1	Long	Non-Inverting RS-485 signal line (RS-485 A)
B1	Long	Inverting RS-485 signal line (RS-485 B)
C1	Long	Reserved for Factory Programming – Open Circuit in the system shelf
D1	Long	<ul style="list-style-type: none"> Signal Return for PSIDn, SIDn, & Interlock Power Units Connect Return to NE Common Return internally. Power Units diode isolate the Return signals from each Power Slot.
A2	Long	Power Slot Address 0
B2	Long	Power Slot Address 1
C2	Long	Power Slot Address 2
D2	Long	Shelf Address 3
A3	Long	Shelf Address 4
B3	Long	Shelf Address 5
C3	Long	Shelf Address 6
D3	Long	Shelf Address 7
A4	Short	Interlock
B4	Long	Factory Programming
C4	Long	
D4	Long	
		<ul style="list-style-type: none"> Logic 1 = Open Circuit (~3.3V). Logic 0 = Connection to the Return signal (~0.7V) Left slot (front view) is Power Slot 1 and has address 000B Power slot ID signals are connected directly to the Return signal at each Power Slot or left open Logic 1 = Connection to Return signal (~0.7V) Logic 0 = Open Circuit (~3.3V) Shelf addresses 1 (00001B) through 31 (11111B) are valid. Shelf address 0 (00000B) is invalid. Address 31 (11111B) disables comm. fail LED Power Unit Shelf ID signals connect to Shelf Return left open Disables power conversion within a Power Unit when not connected to the Return signal Power Unit Shelves connect Interlock directly to the Return signal at each Power Slot.
		Reserved for Factory Programming – Open Circuit in the system shelf

Technical Details (Continued)






















Dimensions

Inch [mm]



Technical Details (Continued)

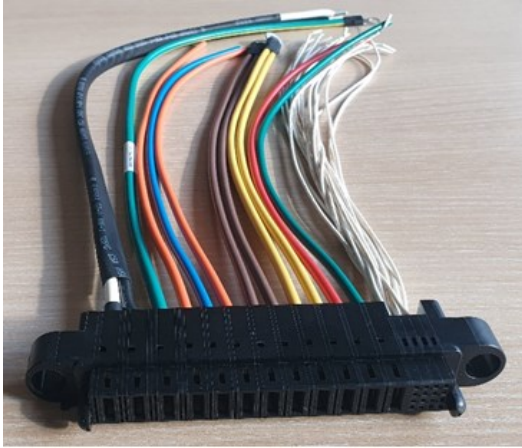
Status LEDs

LED			Condition
Norm		Green	Normal operation: No alarms, inputs and outputs are in the normal range, communicating with the system controller
ACF		Off	
Fail		Off	
Norm		Off	Unpowered: No input or output voltage present. 1. Remove and reinsert unit. 2. Check input voltage with voltmeter, if input is present, replace unit. 3. Check output bus voltage with voltmeter, if output bus voltage is present, replace unit.
ACF		Off	
Fail		Off	
Norm		Green blink	Standby: The unit is okay, but has been placed in Standby by the controller and is not delivering power. Note: if a unit in standby loses communications with the controller it will exit Standby mode and deliver power.
ACF		Off	
Fail		Off	
Norm		Amber	Output limit: The unit is okay and delivering maximum output • At max rated output • At configured current limit • At thermal limit If rectifier/converter equipped with optional air filters and reporting thermal limit, check air filters. Clean or replace all filters if necessary.
ACF		Off	
Fail		Off/ Red blink	
Norm		Off	ACF [AC Fail]: Rectifier input is missing or out of range. • Correct the AC fault
ACF		Amber	
Fail		Off/ Red blink	
Norm		Off	Shutdown*: The unit cannot deliver output. • High voltage shutdown • Thermal shutdown • Under voltage protect • Component failure
ACF		Off/Amber	
Fail		Red	
Norm		Off	Communication Fail: Blinks to indicate the rectifier is not communicating with a system controller. • Remove and reinsert unit. If fault remains and other units are communicating correctly, replace unit
ACF		Off/Amber	
Fail		Red blink	

* When a unit senses an over or under voltage condition it will shutdown, wait 10 seconds, then attempt to restart. If the over or under voltage condition remains it will cycle again. If the rectifier is loaded more than 10%, after 3 restart attempts the unit will lock out, and user intervention is require to restart.

Technical Details (Continued)

Ordering Information

Item	Description	Ordering Number
IR100ACR024ATEZ	24 VDC industrial power rectifier	150052771
CONNECTOR	PCB mating connector for IR or NE rectifiers (multi-beam XL)	1888132-1
RECEPTACLE CABLE ASSY_NE SERIES	<p>Single unit cable assembly for IR or NE rectifiers with AC inputs and 24, 48, or 125 VDC output (multi-beam XLE)</p> 	8600256037P

OmniOn Power Inc.

601 Shiloh Rd.

Plano, TX USA

omnionpower.com

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