

# APR48-ES Rectifier Module



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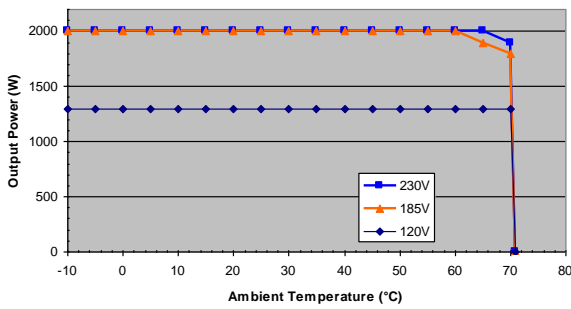
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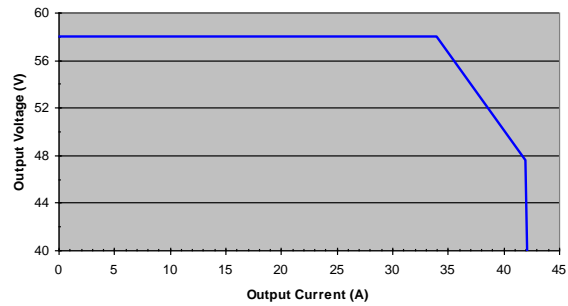
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**AC Input**

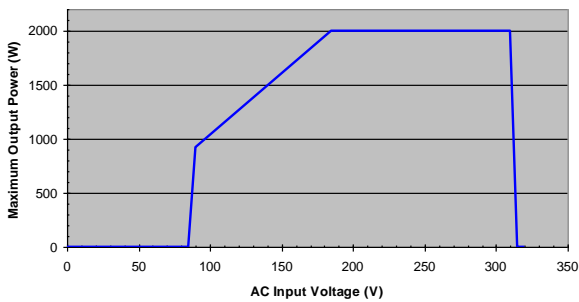
Nominal AC Input:	100V, 120V, 208 - 240V
Rated Operating Range:	100 to 275V rms (see product performance curves).
Extended Operating Range:	90 to 300V rms
Frequency Range:	45 to 66Hz
Maximum Input Current:	11.4A rms (185Vac, 20°C)
Efficiency:	96.4% peak >95% (20 to 100% load, Vin=230Vac, Vout=54.5Vdc)
Power Factor:	>0.99 (50 to 100% load)
Total Harmonic Distortion (THD):	<5% (50 to 100% load, rated 230V ac voltage)
Swell Tolerance:	Rectifier shuts down above 305V Returns to normal operation when input is within operating range.
Input Over-current Protection:	Fuses (phase and neutral) HRC
AC Fuse Ratings:	16A / 250V



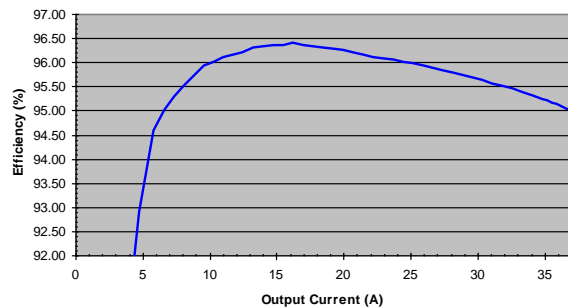
**Output Power derating with Temperature and AC Input Voltage (Vout = 54.5V)**



**Output Voltage with Output Current (AC Input >185V, Vout = 48.0V)**



**Maximum Output Power with AC Input Voltage (Ambient Temperature ≤ 60°C)**



**Rectifier Efficiency with Output Current (Ambient Temperature 25°C, Vin = 230V, Vout = 54.5V)**

**DC Output**

Nominal Voltage:	48V
Adjustable Voltage Range:	43 to 57.5V <i>Constant power output characteristic 48 – 57.5V. Load required below 45V.</i>
Rated Output Power:	2000W @ 185 – 275V ac (230V nominal) 1150W @ 110 – 120V ac (120V nominal)
Preset Accuracy	±0.1V
Regulation:	±0.1V <i>Constant voltage mode, AVC enabled from system controller.</i>
Default (Fail-safe) voltages Loss of System Communication: Preset voltage:	Output voltage resets to system preset voltage 54.5 ±0.1V (manufacturer preset)
Hold-up Time:	12ms <i>At 80% output power and 230V ac the DC output voltage change is 54.5V to 43V.</i>
Start-up (soft start) Start up delay: Output ramp slope: (rectifier rated output, % Amps per second)	Adjustable 0 to 600 seconds (factory preset: 2 seconds) Adjustable 1 to 100% per second (factory present 20% per second)
Protection Current Limit: Over Temperature Turndown: Over Voltage Shutdown: Short-circuit:	41.7A Automatic power turndown. See temperature derating graphs. <3ms delay Full short-circuit protection. Output current limited to less than 130% of rated output current. <i>Rectifier will continue normal operation after short-circuit is removed. Non-urgent (Current Limit) alarm generated.</i>
Noise Ripple (<100Hz) Audio Frequency (300 Hz – 3.4 kHz): Wide band (5Hz – 1MHz): Peak to peak (0 – 20 MHz): Discrete frequency (3.4kHz – 150kHz):	<20mV rms (unweighted) <2mV (psophometric) <20mV rms (unweighted) <200mV p-p (unweighted) <5mV rms (1kHz wide selective frequency) <i>At 25°C, 54.5V output</i>

**Environmental Requirements**

Ambient Temperature Rated Operating Range: Extended Operating Range:	-10°C to +50°C [14°F to 122°F] -40°C to +70°C [-40°F to 158°F] <i>Output characteristics derate above 50°C and below -10°C [14°F]. Refer to derating graphs.</i>
Humidity Nominal: Range:	50% RH < 95% RH (non condensing)
Altitude:	< 3000m [9800']

**Mechanical**

Dimensions H, W, D:	3U (130mm, 5.1"), 42mm (1.6"), 266mm (10.5") overall
Weight:	1.7kg [3.7 lb]
Connector:	PCB Edge
Cooling:	Temperature controlled, variable speed high reliability fan
Front panel LEDs:	
Power on:	Green
Minor alarm:	Amber
Major alarm:	Red

**Compliances**

Safety:	AS/NZS 60950.1, UL 60950-1, IEC 60950-1
EMC – immunity	
Electrostatic discharge:	EN 61000-4-2
Radiated radio frequency:	EN 61000-4-3
Electrical fast transients:	EN 61000-4-4
Surge:	EN 61000-4-5
Conducted radio frequency:	EN 61000-4-6
Dips, interruptions & variations:	EN 61000-4-11
EMC – emissions	
Conducted emissions (AC):	EN 55022 / CISPR 22 (Class B)
Conducted emissions (DC):	EN 300 386 (Class A)
Radiated emissions:	EN 55022 / CISPR 22 (Class B)
Harmonics:	EN 61000-3-2
Fluctuations and flicker:	EN 61000-3-3

**Certifications**

Europe	CE-mark
USA	UL and FCC
Canada	cUL and IC

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