

3P Power

Passion Profession Perfection



PRODUCT CATALOGUE

MRS Series Rectifier

MRS Series Rectifier - 2U ~ 13U FRONT ACCESS 4 ~ 48 POSITIONS



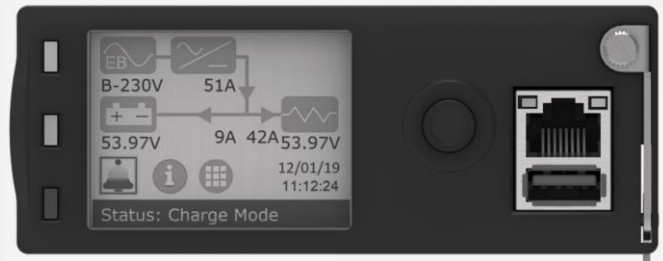
KEY FEATURES

- > 96% ~ 96.5% Efficiency Rectifiers
- Full Front Access
- Field Replaceable Controller
- Ethernet Comm. with SNMP
- Remote Monitoring & Control
- -48Vdc up to 192kW Output Capacity
- 3 LED Alarm/Status Indicators
- 4 Form-C Relay Alarms
- As many as Load & Battery Breakers
- Bulk Feed for External PDU
- LCD Display/Touchpad
- Easy Installation

MODEL	MRS0203-009kW ~ MRS1348-192kW	
OUTPUT CAPACITY	48Vdc / 9000W to 192000W	
INPUT PARAMETERS		
Voltage (nominal)	1-phase 100-120/200-240Vac (L+N + PE)	
	3-phase 230/400Vac (L1 L2 L3+N + PE)	
Frequency	45 to 66 Hz	
Rectifier Power Factor	> 0.99 (Typical)	
Protection Devices	Standard: Built-in AC Input MCB, Option: SPD 1Phase or 3Phase	
OUTPUT PARAMETERS		
System Voltage	-48Vdc Nominal	
Maximum Capacity	Load	125A ~ 3998A
	Battery	100A ~ 2000A discharge 0.1C ~ 0.3C
No. of Rectifier Slots	4 ~ 48 Slots	
DC DISTRIBUTION PARAMETERS		
Loads Circuits	Customized	
Bulk Feed For External PDU Connection	1 x 250A ~ 3900A	
Battery Circuits & Management	2 ~ 10 x 32A to 125A & LVBD @ 100A ~ 2000A	
CONFIGURATION AND PHYSICAL INFORMATION		
Numbers of Rectifier per Sub-rack	4 Rectifier Modules ~ 48 Rectifier Modules	
Approx. Gross Weight (kg) per Sub-rack	12kg ~ 120kg	
Dimensions in mm per Sub-rack	442 W x 500 D x 2U ~ 13U	

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M2000 Controller Module



MODEL / PART NUMBER	MRCMS0020000 / HE513240
GENERAL INFORMATION	
Operating Voltage	38 ~ 60Vdc
Power Consumption	4W (max)
Operating Environment	-20°C to +6°C, 95% Humidity non-condensing
Display	2.2", 320 x 240 resolution, 65k Colours TFT
Dimensions in mm	110 W x 130 D x 43 H
IO UNITS	
Number of IO's supported	4
Voltage sensing	Bus Voltage + 5 channels, ± 72V
Current sensing	3 channels, ± 50mV
Temperature sensing	2 channels, -20°C to 100°C
LVD control	3, NO/NC, 10A@60Vdc
Digital Inputs	8, opto-isolated
Relay Outputs	8, NO/NC, 1 form C, 1A @ 48Vdc
COMMUNICATION	
System control bus	2 x CAN V2.0b for communication with rectifiers and system units
Serial bus	2 x RS485, MODBUS RTU master & devise modes
Modern Interface	1 x RS232, modem interface for remote monitoring over GPRS/GSM and SMS alarms
Ethernet	10.100 Base T, MDI/ MDI-X, IP protocols: HTTP, HTTPS, SNMP V2c/V3, SNTP, FTP, IPV4, IPV6 (Static, Stateless & State full, DHCPv6)
USB	USB 2.0 Type A, USB Flash Drive support
Web Interface	HTML5, Java script base secure web interface, encrypted w/TLS
SNMP	SNMP V2c/V3, Get/ Get Bulk/ Set/ TRAPS, multiple user profiles
FUNCTIONS	
Battery	Float, boost and equalize charge modes, configurable battery temperature compensation, manual charge mode
	Low voltage disconnect and under voltage pre-warning
	Back up time and SoC monitoring
	Automatic battery health test, battery isolation for maintenance, symmetry supervision
System	Li-ion battery support, settable charge profiles and communication with battery BMS
	AC voltage measurement, grid power /phase failure detect
	Integrated support for renewable (solar) hybrid system
	Alarm grouping, alarm output mapping and alarm naming
	User configuration analog alarm engine and Boolean logic alarms
Rectifiers	User profile configuration & password protection
	Application and configuration update locally or remotely, offline configuration tool
	Individual rectifier current, temperature and status monitoring
	Power limited walk in, configurable power control in case of controller communication loss
	Linear or cyclic rectifier sleep mode for system efficiency
	Active current sharing up to 48 rectifiers in a sub-rack and system overload monitoring
LOGS	
Up to 10,000 event logs, performance logs on SD card or internal memory based on user configurable parameters, 1,000 change logs, and energy & run hour logs for grid, battery and DG	
Certifications	
Electromagnetic Compatibility (EMC)	ETSI EN 300 386 V2.1.1
Safety	EN 62368-1:2014

MRS Series Rectifier - 2U ~ 13U FRONT ACCESS 4 ~ 48 POSITIONS

High Efficiency Rectifier Module



MODEL / PART NUMBER	MRMS04830000 / HE513470
OUTPUT CAPACITY	48Vdc / 3000W
RECTIFIER MODULE INPUT PARAMETERS	
Input Power Factor	0.99 @ Nominal Input
Input Voltage	90 to 300Vac
Input Current	19.0A Maximum
Input Frequency	44 - 66 Hz
THD	< 5% (50% to 100% Load)
Protection & Galvanic Isolation	Off < 90-300Vac < Off
	Line & Neutral input fuses
	MOV Transient Protection
Input to Output: 3000Vac, Input to Ground: 1500Vac, Output to Ground: 500Vdc	
RECTIFIER MODULE OUTPUT PARAMETERS	
Adjustable Voltage Range	42.0Vdc - 58.0Vdc
Output Power	3000W above 176Vac, 1520W @ 90Vac
Maximum Current	62.5A @ 48Vdc
Current Sharing	± 5% of max. current
Static Voltage Regulation	± 0.5% for 10% - 100% load
Dynamic Voltage Regulation	± 5% for 10% - 90% load & 90% - 10% load, < 20ms Regulation Time
Ripple Noise	< 300mV p-p at 200MHz BW & < 10ms Hold up Time Ripple
Protection	Over voltage shutdown
	Short circuit proof
	Hot-Plugin inrush current limiting
	Over temperature shut-off
Efficiency	Output fuse
	96% peak
COMMUNICATION	
Communication Interface	Can Bus
ENVIRONMENTAL	
Type of Cooling	Fan Cool
Operating Temperature	- 40°C to +75°C Linear de-rating from 50°C onwards
Storage Temperature	- 40°C to +85°C
Humidity	95% Non-condensing
Noise	≤ 55dB
MTBF	> 500,000 Hours (30°C ambient)
Environmental	EN 300019-1-1/-2/-3, ROHS complied
CONFIGURATION AND PHYSICAL INFORMATION	
Numbers of Rectifier per Sub-rack	3 Rectifier Modules per MR23 Sub-rack
Gross Weight (kg) per Rectifier	2kg
Dimensions in mm per Rectifier	269 D x 105 W x 40.8 H
Dimensions in mm per Sub-rack	442 W x 358 D x 89 H (2U)
LED Indication	
Green	No Fault
	Rectifier comm. Ok
	Sleep Mode
Yellow (Warnings)	Input Low/High, rectifier in power de-rate mode, current limit
	Rectifier comm. Fail
Red (Alarms)	Abnormal temp or input shutdown, low o/p voltage alarm, over-voltage
	Rectifier fan fail
Certifications	
Electromagnetic Compatibility (EMC)	Conducted Emission CISPR 32 (Class B), Radiated Emission CISPR 32 (Class B)
Safety	EN 62368

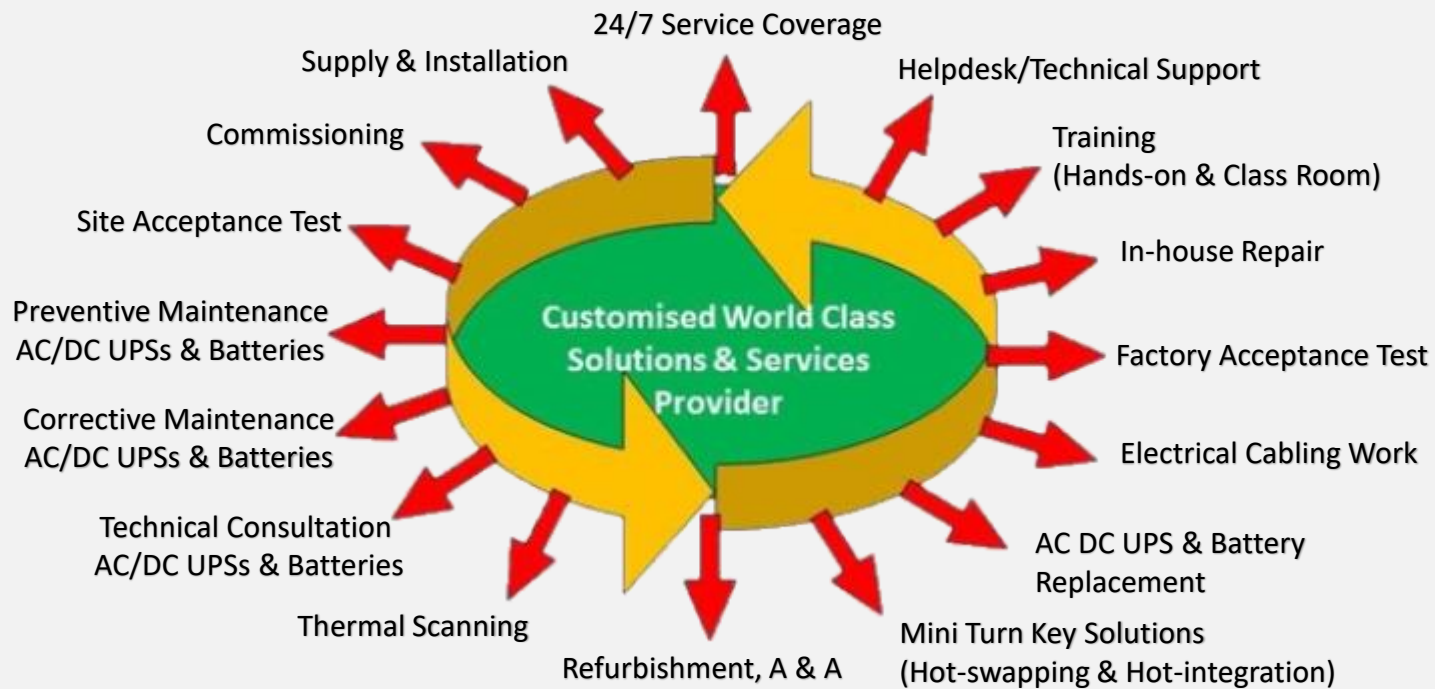
MRS Series Rectifier - 2U ~ 13U FRONT ACCESS 4 ~ 48 POSITIONS

High Efficiency Rectifier Module



MODEL / PART NUMBER	MRMS04840000 / HE513370
OUTPUT CAPACITY	48Vdc / 4000W
RECTIFIER MODULE INPUT PARAMETERS	
Input Power Factor	0.99 @ Nominal Input
Input Voltage	90 to 300Vac
Input Current	25.0A Maximum
Input Frequency	44 - 66 Hz
THD	< 5% (50% to 100% Load)
Protection & Galvanic Isolation	Off < 90-300Vac < Off
	Line & Neutral input fuses
	MOV Transient Protection
Input to Output: 3000Vac, Input to Ground: 1500Vac, Output to Ground: 500Vdc	
RECTIFIER MODULE OUTPUT PARAMETERS	
Adjustable Voltage Range	42.0Vdc - 58.0Vdc
Output Power	4000W above 176Vac, 2050W @ 90Vac
Maximum Current	83.3A @ 48Vdc
Current Sharing	± 5% of max. current
Static Voltage Regulation	± 0.5% for 10% - 100% load
Dynamic Voltage Regulation	± 5% for 10% - 90% load & 90% - 10% load, < 20ms Regulation Time
Ripple Noise	< 300mV p-p at 200MHz BW & < 10ms Hold up Time Ripple
Protection	Over voltage shutdown
	Short circuit proof
	Hot-Plugin inrush current limiting
	Over temperature shut-off
Efficiency	96.5% peak
COMMUNICATION	
Communication Interface	Can Bus
ENVIRONMENTAL	
Type of Cooling	Fan Cool
Operating Temperature	- 40°C to +75°C Linear de-rating from 50°C onwards
Storage Temperature	- 40°C to +85°C
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Noise	≤ 55dB
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Red (Alarms)	Abnormal temp or input shutdown, low o/p voltage alarm, over-voltage
	Rectifier fan fail
Certifications	
Electromagnetic Compatibility (EMC)	Conducted Emission CISPR 32 (Class B), Radiated Emission CISPR 32 (Class B)
Safety	EN 62368

3P Power One Stop Solution



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Passion Profession Perfection

3P POWER PTE. LTD.

1 Genting Link, #04-02,
Perfect One Building,
Singapore 349518

T +65 6743 1006 & +65 6019 0772

E enquiry@3ppower.com

W www.3ppower.com