

DC 4KW, AC 3.6KVA 19" 12U RACK

# OPUS MVPS MODULAR UPS SYSTEM



## Features

- » Efficiency off-line AC loads 99%, rectifiers up to 97%, inverters 90%
- » Convection cooling or temp.controlled fans for inverters
- » Outputs 24VDC - 220 VDC, 200 – 240 VAC
- » DC power max 4kW  
AC power on-line max 3.6kVA, off-line 6kVA
- » Configurable load distribution
- » VID1+ I/O controller, local and remote interfaces  
12 x relays, Ethernet, Modbus, IEC61850, SNMP, RS-232
- » Flexible design with full front cabling
- » Options: Wall mounting and IP21 kit, battery block voltage monitoring
- » Safety:  
Rack: EN61439-1, EN61439-2  
Low voltage switchgear controlgear assemblies  
Modules: EN 62368-1
- » EMC:  
Rack: EN61439-1, EN61439-2  
Modules: EN 61000-6-1 / -2 / -3 / -4

## Main features



## Use cases



## PRODUCT DESCRIPTION

OPUS HE power systems are robust, free convection cooled, N+1 redundant backup power solutions for critical infrastructure applications such as transmission and distribution substations, process industries, railway signalling and substations and telecommunications.

OPUS HE modular UPS system consists of MHE rectifiers, DAC inverters, bypass units, VID1+ controllers, Connections for mains and battery and DC and AC load distribution MCBs. System is configurable to match with the requirements of the application.

19" 12U Rack delivers maximum 4 kW DC output power and 3.6kVA/3.6kW AC output power. All typical battery voltages 24V, 48V, 60V, 110V, 125V and 220V are supported. 19" 12U UPS Racks include slots for maximum 2 rectifier modules and 3 inverter modules. Load distribution configuration of MCB quantity and current ratings can be configured per order. Wall mounting, IP21 cover kit, temperature sensor and battery block voltage monitoring are options.

**OPUS MVPS 24-3.0 230-3.6 R12U F**  
**OPUS MVPS 24-3.0 230-2.4/6.0 R12U F**  
**OPUS MVPS 48-4.0 230-3.6 R12U F**  
**OPUS MVPS 48-4.0 230-2.4/6.0 R12U F**  
**OPUS MVPS 60-4.0 230-3.6 R12U F**  
**OPUS MVPS 60-4.0 230-2.4/6.0 R12U F**  
**OPUS MVPS 110-4.0 230-3.6 R12U F**  
**OPUS MVPS 110-4.0 230-2.4/6.0 R12U F**  
**OPUS MVPS 125-4.0 230-3.6 R12U F**  
**OPUS MVPS 125-4.0 230-2.4/6.0 R12U F**  
**OPUS MVPS 220-4.0 230-3.6 R12U F**  
**OPUS MVPS 220-4.0 230-2.4/6.0 R12U F**

**On-line / Off-line**

# TECHNICAL SPECIFICATIONS

GENERAL CONSTRUCTION	
<b>Cooling, modules</b>	1000VA modules natural convection 1200VA modules temp. controlled fan
<b>Protection</b>	IP 20, Option IP21
<b>Controller user interface</b>	Display and local control in front panel
<b>Connections</b>	Behind front panel
<b>Colour</b>	Frame RAL 7037, door RAL 7024
<b>Dimensions &amp; weight</b>	Height 12U (533 mm) Width 19" (482 mm) Depth 395 mm Weight 20 kg w/o rectifiers

ENVIRONMENT AND STANDARDS	
<b>Temp. range</b>	-25 ... +60°C, see derating, Start-up at -40°C
<b>Humidity max</b>	95% relative humidity, non-condensing
<b>Altitude</b>	Max 3km, full power up to 2km above sea level Derating 2% per 100 m between 2-3km
<b>Safety</b>	Rack: EN61439-1, EN61439-2 Modules: EN 62368-1
<b>EMC</b>	Rack: EN61439-1, EN61439-2 Modules: EN61000-6-1 / -2 / -3 / -4 Generic

AC Input	OPUS HE 24V R12U F	OPUS HE 48V R12U F	OPUS HE 60V R12U F	OPUS HE 110V R12U F	OPUS HE 125V R12U F	OPUS HE 220V R12U F
<b>AC connection</b>	TN-S system, 2W + N + PE, (2-phases, neutral and protective earth wires)					
<b>Nominal input voltage</b>	220-240 VAC / 3 x 380-415 VAC (TN-S system) 50/60Hz Options: 1-phase 1W+N+PE supply 220-240VAC, 2-phase Delta 2W+PE 200-250VAC					
<b>Input range</b>	See Rectifier datasheet					
<b>Nominal current</b>	8A @ 220/380V		11A @ 220/380VAC			
<b>Maximum phase current</b>	13A @ 85-130V		13A @ 85-180VAC			
<b>Recommended mains fuse</b>	2 x 25 A (TN-S)					
<b>Rectifier input protection</b>	MCB C16A / rectifier module					

DC Input, Inverters Model 3 x Inverters	24 V		48V - 60 V		110V - 125 V		220 V	
	No Fans	Fan cooled	No Fans	Fan cooled	No Fans	Fan cooled	No Fans	Fan cooled
<b>Nominal voltage</b>	24 VDC		48 VDC / 60 VDC		110 VDC / 125 VDC		220 VDC	
<b>Voltage range</b>	20-32 VDC		40-72 VDC		88-150 VDC		178-275 VDC	
<b>Nominal current (Uin 1.8vpc)</b>	3 x 33 A	3 x 45 A	3 x 19A	3 x 32A	3 x 8A	3 x 14A	3 x 4A	3 x 7A
<b>Input Protection per module</b>	MCB C63A		MCB C40A		MCB C25A		MCB C16A	

AC Input, Bypass Model 2 x INV + BPU	OPUS HE 24V R12U F	OPUS HE 48V R12U F	OPUS HE 60V R12U F	OPUS HE 110V R12U F	OPUS HE 125V R12U F	OPUS HE 220V R12U F
<b>AC connection</b>	TN-S system, 1W + N + PE, (phase, neutral and protective earth wire)					
<b>Nominal input</b>	200-240 VAC 50/60Hz					
<b>Input range</b>	80-270 VAC 45-66Hz					
<b>Input current</b>	10A @ 2kVA rated power, max 30A at max 6kVA of-line supply					
<b>Mains fuse FS1</b>	32 A (sizing is based max off-line supply 6kVA)					

DC Output	OPUS HE 24V R12U F	OPUS HE 48V R12U F	OPUS HE 60V R12U F	OPUS HE 110V R12U F	OPUS HE 125V R12U F	OPUS HE 220V R12U F
<b>Grounding</b>	2-pole, floating					
<b>Nominal voltage</b>	24 VDC	48 VDC	60 VDC	108 VDC	120 VDC	216 VDC
<b>Voltage factory setting</b>	27.24 VDC	54.48 VDC	68.10 VDC	122.58 VDC	136.20 VDC	245.16 VDC
<b>Voltage range</b>	21-33 VDC	42-59 VDC	51-72 VDC	90-150 VDC	100-160 VDC	178-280 VDC
<b>Quantity of rectifiers</b>	32 A (sizing is based max off-line supply 6kVA)					
<b>Max current</b> <b>Max Power</b>	125A @ 24V Max 3.0kW	82,3 @ 48V Max 4kW	66.7A @ 60V Max 4kW	37A @ 108V Max 4kW	33,3 @ 120V Max 4kW	18.5A @ 216V Max 4kW
<b>Static voltage regulation</b>	± 2 % @ rack terminals (load, line, temp)					
<b>Rectifier output protection</b>	MCB C63A	MCB C50A	MCB C40A	MCB C20A	MCB C20A	MCB C10A

AC output	24 V		48V - 60 V		110V – 125 V		220 V	
	No Fans	Fan cooled	No Fans	Fan cooled	No Fans	Fan cooled	No Fans	Fan cooled
<b>Output voltage and frequency</b>	On-line mode: Nominal 230 VAC/50Hz sine wave, user programmable 200–240V / 50–60 Hz Off-line mode: Mains voltage and frequency, transfer time to backup supply 4msec (programmable)							
<b>Nominal Power, 3 x INV</b>	3kVA/1.8kW	3.6kVA/2.4kW	3kVA/2.1kW	3.6kVA/kW	3kVA/2.1kW	3.6kVA/kW	3kVA/2.1kW	3.6kVA/kW
<b>Max nom current, 3 x INV</b>	3 x 4.4 A	3 x 5.2 A	3 x 4.4 A	3 x 5.2 A	3 x 4.4 A	3 x 5.2 A	3 x 4.4 A	3 x 5.2 A
<b>Overload capacity, 5 sec</b>	3 x 1200 W		3 x 1700 W		3 x 1700 W		3 x 1700 W	
<b>Overload capacity, 60 sec</b>	110% for all models, number of restart attempts and delays are user programmable							
<b>Max short circuit current</b>	3 x 13 A / 1-4 sec							

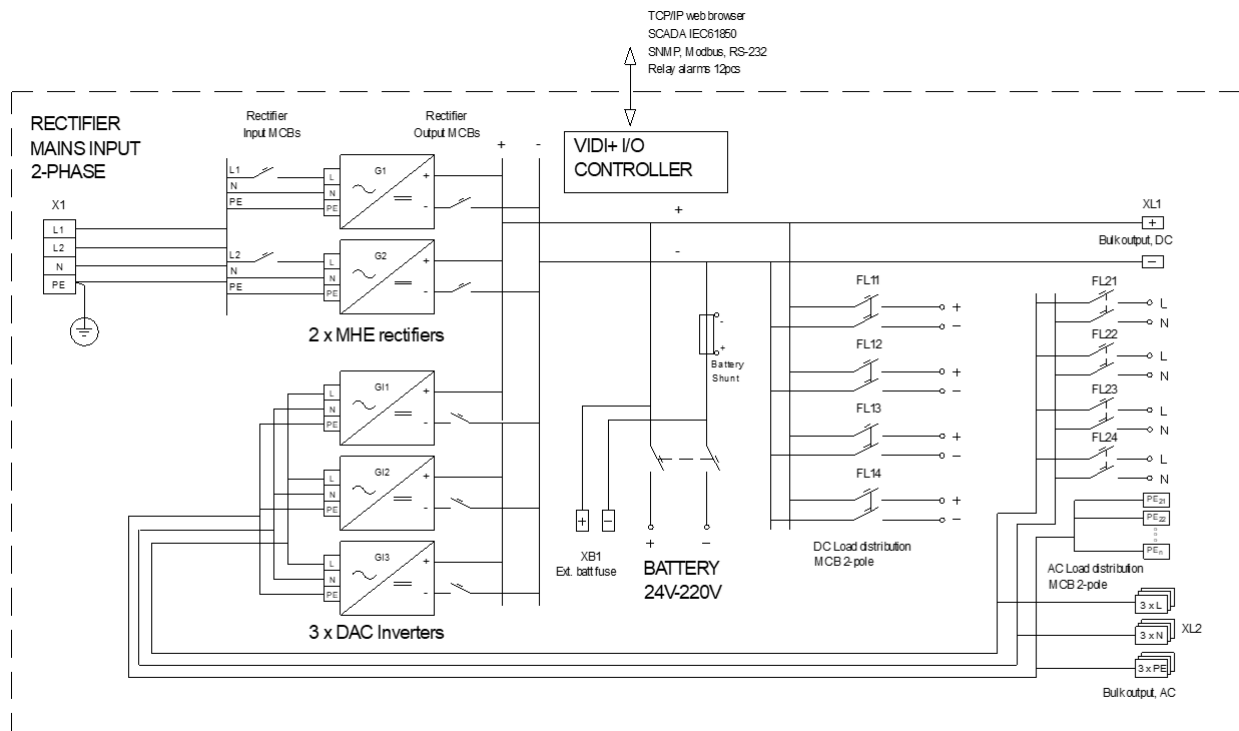
Battery connection	OPUS HE 24V R12U F	OPUS HE 48V R12U F	OPUS HE 60V R12U F	OPUS HE 110V R12U F	OPUS HE 125V R12U F	OPUS HE 220V R12U F
<b>Bulk batt.conn. XB1</b>	50mm <sup>2</sup> Screw terminal, + / - (external battery protection)					
<b>Protective device</b>	MCB D125A 2-pole + aux	MCB D100A 2-pole + aux	MCB D100A 2-pole + aux	MCB D63A 2-pole + aux	MCB D63A 2-pole + aux	MCB D63A 2-pole + aux

DC Load distribution	OPUS HE 24V R12U F	OPUS HE 48V R12U F	OPUS HE 60V R12U F	OPUS HE 110V R12U F	OPUS HE 125V R12U F	OPUS HE 220V R12U F
<b>Bulk Output XL1</b>	50mm <sup>2</sup> Screw terminal, + / -					
<b>Protective devices</b>	Max 4 x MCB 2-p + aux, 2 A to 63 A (total max DC+AC 4 x MCB 2-p+aux)					

AC Load distribution	OPUS HE 24V R12U F	OPUS HE 48V R12U F	OPUS HE 60V R12U F	OPUS HE 110V R12U F	OPUS HE 125V R12U F	OPUS HE 220V R12U F
<b>Bulk Output XL2</b>	3 x 10mm <sup>2</sup> Screw terminal, 3xL - 3xN - 3xPE					
<b>Protective devices</b>	Max 4 x MCB 2-p + aux, 2 A to 63 A (total max AC+DC 4 x MCB 2-p+aux)					

Connection terminals	
<b>Rectifiers Mains Input X1</b>	10 mm <sup>2</sup> Screw terminal L1 - L2 (L1) – N - PE
<b>Bypass Mains Input X2</b>	10 mm <sup>2</sup> Screw terminal L – N - PE
<b>DC output</b>	Bulk output XL1, screw terminal 50mm <sup>2</sup> MCB screw terminals, 1.5mm <sup>2</sup> ... 25 mm <sup>2</sup> flexible cable, 1.5mm <sup>2</sup> ... 35 mm <sup>2</sup> rigid cable
<b>AC output</b>	Bulk output XL2, 3 x screw terminal 10mm <sup>2</sup> MCB screw terminals, 1.5mm <sup>2</sup> ... 25 mm <sup>2</sup> flexible cable, 1.5mm <sup>2</sup> ... 35 mm <sup>2</sup> rigid cable
<b>Battery</b>	Bulk battery connection XB1, screw terminal 50mm <sup>2</sup> MCB screw terminals, 1.5...35 mm <sup>2</sup> flexible cable, 1...50 mm <sup>2</sup> rigid cable
<b>Alarms, Inputs</b>	Configurable relay alarms 4 pcs (option up to 12), Spring terminals 0.75mm <sup>2</sup> ... 1.5mm <sup>2</sup> cable Configurable alarm/temp. inputs 2 pcs (option up to 12), Spring terminals 0.75mm <sup>2</sup> ... 1.5mm <sup>2</sup> cable

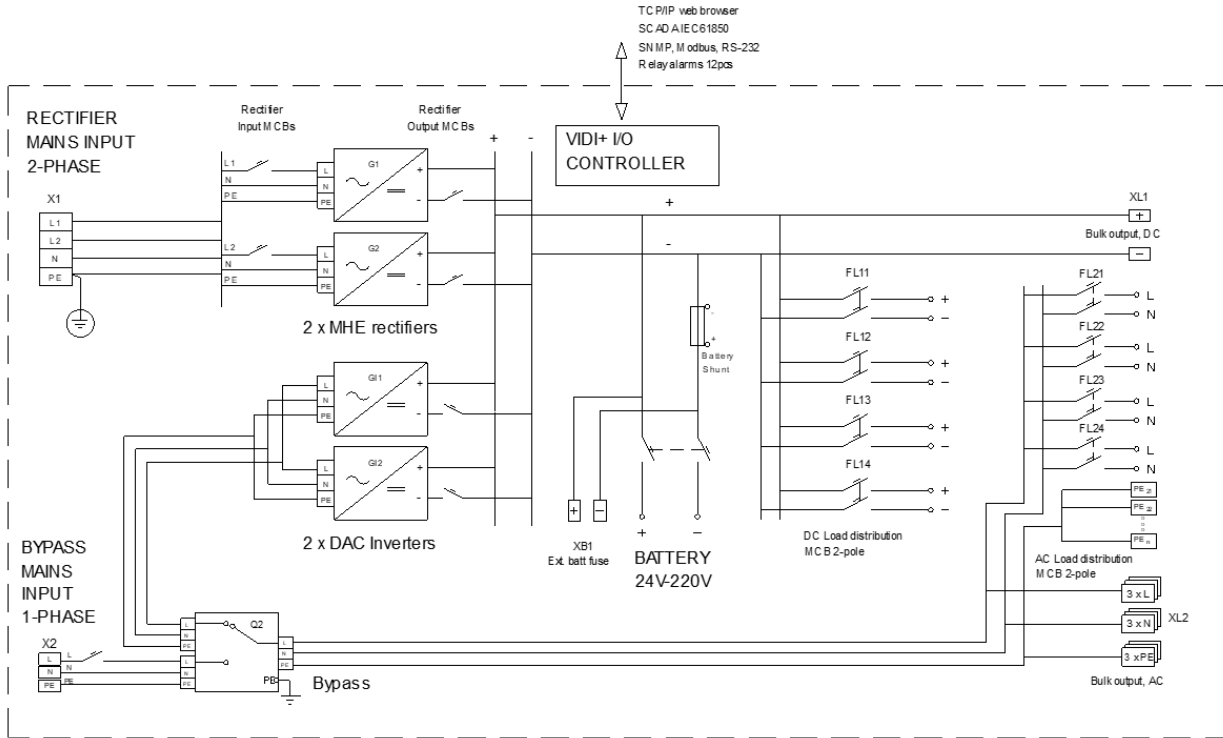
# BLOCK DIAGRAM, 2 X MHE RECTIFIER, 3 X DAC INVERTER



\*) Distribution configurable, max total qty for DC and AC 4pcs of MCB 2-p+aux

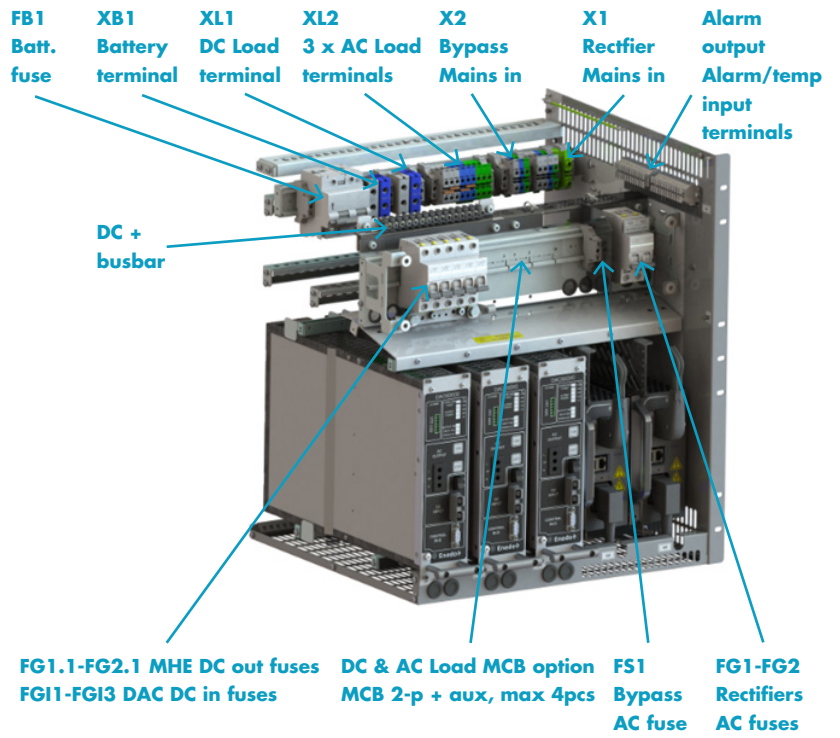
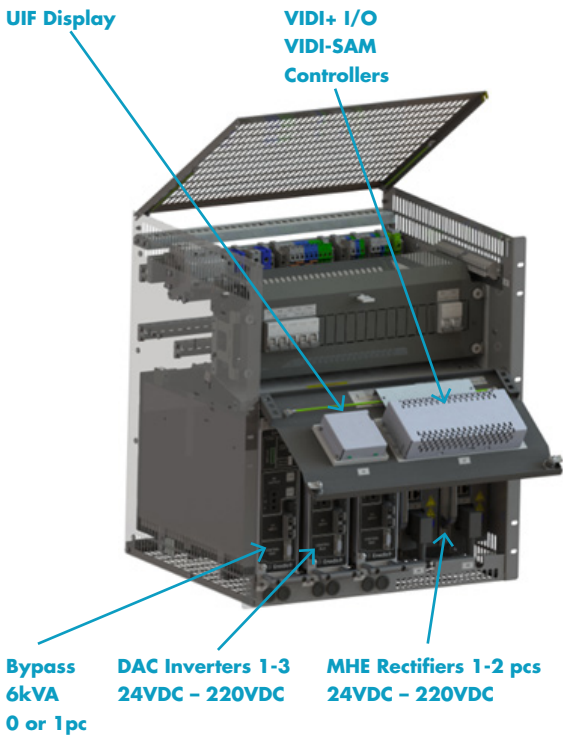
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# BLOCK DIAGRAM, 2 X MHE RECTIFIER, 2 X DAC INVERTERS, 1 X BPU BYPASS

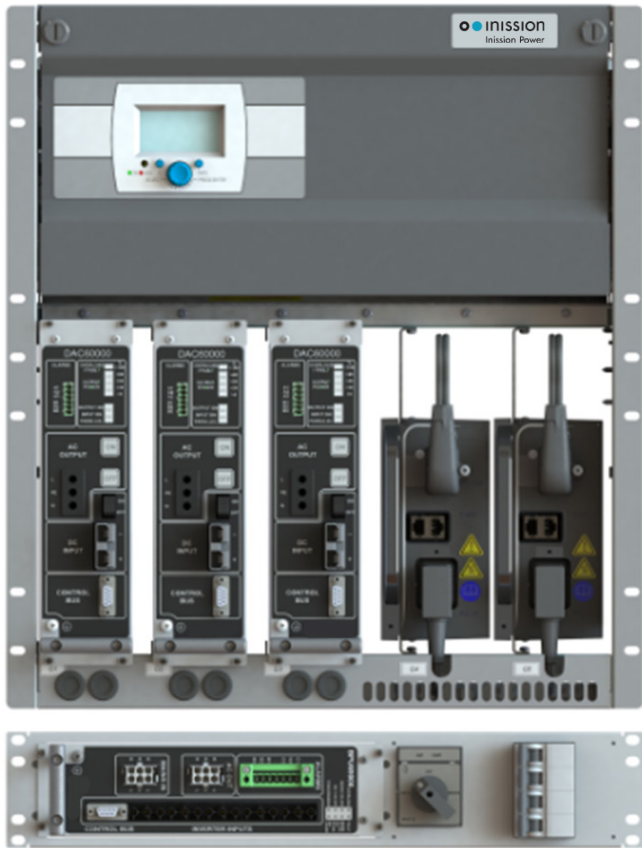


\*) Distribution configurable, max total qty for DC and AC 4pcs of MCB 2-p+aux

# LAYOUT DRAWINGS



# LAYOUT DRAWINGS, EXTERNAL BYPASS SHELF



## 19" 12U UPS Rack

2 x Rectifier modules  
3 x Inverter modules

## External bypass shelf 19" 2U

Static bypass 6kVA  
Manual bypass 6kVA  
AC-load distribution option 4 x MCB 1-p

# ORDER INFORMATION

Systems, Description	Order number	DC Output	AC Output On-line	AC Output Off-line
<b>OPUS MVPS 24-3.0 230-3.6 R12U F</b>	922X015970	24VDC 62.5A – 125A	230VAC 1-3.6kVA	N/A
<b>OPUS MVPS 24-3.0 230-2.4/6.0 R12U F</b>	922X015971	24VDC 62.5A – 125A	230VAC 1-2.4kVA	230V 6kVA
<b>OPUS MVPS 48-4.0 230-3.6 R12U F</b>	922X015980	48VDC 41.7A – 83.3A	230VAC 1-3.6kVA	N/A
<b>OPUS MVPS 48-4.0 230-2.4/6.0 R12U F</b>	922X015981	48VDC 41.7A – 83.3A	230VAC 1-2.4kVA	230V 6kVA
<b>OPUS MVPS 60-4.0 230-3.6 R12U F</b>	922X015982	60VDC 33.3A – 66.7A	230VAC 1-3.6kVA	N/A
<b>OPUS MVPS 60-4.0 230-2.4/6.0 R12U F</b>	922X015983	60VDC 33.3A – 66.7A	230VAC 1-2.4kVA	230V 6kVA
<b>OPUS MVPS 110-4.0 230-3.6 R12U F</b>	922X015984	110VDC 18.5A – 37A	230VAC 1-3.6kVA	N/A
<b>OPUS MVPS 110-4.0 230-2.4/6.0 R12U F</b>	922X015985	110VDC 18.5A – 37A	230VAC 1-2.4kVA	230V 6kVA
<b>OPUS MVPS 125-4.0 230-3.6 R12U F</b>	922X015986	125VDC 16.7A – 33.3A	230VAC 1-3.6kVA	N/A
<b>OPUS MVPS 125-4.0 230-2.4/6.0 R12U F</b>	922X015987	125VDC 16.7A – 33.3A	230VAC 1-2.4kVA	230V 6kVA
<b>OPUS MVPS 220-4.0 230-3.6 R12U F</b>	922X015988	220VDC 9.3A – 18.5A	230VAC 1-3.6kVA	N/A
<b>OPUS MVPS 220-4.0 230-2.4/6.0 R12U F</b>	922X015989	220VDC 9.3A – 18.5A	230VAC 1-2.4kVA	230V 6kVA

# RECTIFIER MODULES

Systems	Order number	Voltage / Current
<b>MHE 24-1500</b>	92I280	24VDC / 62.5A
<b>MHE 48-2000</b>	92I160	48VDC / 41.7A
<b>MHE 60-2000</b>	92I290	60VDC / 33.3A
<b>MHE 110-2000</b>	92I250	110VDC / 18.5A
<b>MHE 125-2000</b>	92I260	125VDC / 16.7A
<b>MHE 220-2000</b>	92I270	220VDC / 9.3A

# INVERTER AND BYPASS MODULES

Description	Type number 1kVA no fan	Type number 1.2kVA fan cooling
<b>Inverter 24VDC</b>	DAC62132VF	DAC62232VF
<b>Inverter 48/60VDC</b>	DAC62132VF	DAC62232VF
<b>Inverter 110/125VDC</b>	DAC62132VF	DAC62232VF
<b>Inverter 220VDC</b>	DAC62132VF	DAC62232VF
<b>Static Bypass 6kVA</b>	BPU69130VF	

Controllers, Description	Order number		Options, Description	Order number
<b>VIDI+ I/O System controller</b>	94G910		<b>VIDI-SAM Aux controller KIT</b>	8320X0004402

Options, Description	Order number		Options, Description	Order number
<b>Temperature Sensor</b>	94M268		<b>Wall mounting and IP21 kit</b>	8320X0002080

Load MCBs, 2-p C-curve	Order number		Load MCBs, 2-p B-curve	Order number
<b>C2A 2-p, Schneider C60H-DC</b>	5540X0009012		<b>B2A 2-p 6 kA Schneider iC60N</b>	5540X0014950
<b>C4A 2-p, Schneider C60H-DC</b>	5540X0009014		<b>B4A 2-p 6 kA Schneider iC60N</b>	5540X0014951
<b>C6A 2-p, Schneider C60H-DC</b>	5540X0009016		<b>B6A 2-p 6 kA Schneider iC60N</b>	5540X0014952
<b>C10A 2-p, Schneider C60H-DC</b>	5540X0009017		<b>B10A 2-p 6 kA Schneider iC60N</b>	5540X0014953
<b>C16A 2-p, Schneider C60H-DC</b>	5540X0009020		<b>B16A 2-p 6 kA Schneider iC60N</b>	5540X0014955
<b>C20A 2-p, Schneider C60H-DC</b>	5540X0009021		<b>B20A 2-p 6 kA Schneider iC60N</b>	5540X0014956
<b>C25A 2-p, Schneider C60H-DC</b>	5540X0009023		<b>B25A 2-p 6 kA Schneider iC60N</b>	5540X0014957
<b>C32A 2-p, Schneider C60H-DC</b>	5540X0009025		<b>B32A 2-p 6 kA Schneider iC60N</b>	5540X0014958
<b>C40A 2-p, Schneider C60H-DC</b>	5540X0009026		<b>B40A 2-p 6 kA Schneider iC60N</b>	5540X0014959
<b>C50A 2-p, Schneider C60H-DC</b>	5540X0009027		<b>B50A 2-p 6 kA Schneider iC60N</b>	5540X0014960
<b>C63A 2-p, Schneider C60H-DC</b>	5540X0009028		<b>B63A 2-p 6 kA Schneider iC60N</b>	5540X0014961
<b>Auxiliary contact, C60H-DC series</b>	5760X0008930		<b>Auxiliary contact, iC60N series</b>	5760X0009731