

# OPUS HE BULK RACK

## 12 kW Building Block Rack

OPUS HE 24-9.0 BULK R9U F  
 OPUS HE 48-12.0 BULK R9U F  
 OPUS HE 60-12.0 BULK R9U F  
 OPUS HE 110-12.0 BULK R9U F  
 OPUS HE 125-12.0 BULK R9U F  
 OPUS HE 220-12.0 BULK R9U F

OPUS HE BULK SLAVE RACK  
 MASTER-SLAVE SET-UP 24KW  
 MULTI CABINET UP TO 64KW



UIF Display to cabinet door

VIDI Controller and pre-wired alarm terminals mounted to cabinet locally.

Wiring and parameters settings are made and tested in Enedo factory.



## 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 bulk rack is intended for local cabinet system builders. Local builder can use standard building block from Enedo and add local market requirements to cabinet locally. Typical locally added features are load distribution panels, battery fuses, display to cabinet door, double A/B system connections, alarm management and batteries.

Bulk rack includes readymade cable connections and parameter settings, which reduces significantly the design and manufacturing costs needed in local system builder side. Rack is produced in serial production in Enedo factory, which means fully controlled quality level, short delivery times and competitive cost level. OPUS HE bulk rack is ideal solution for local partner to increase the flexibility and value provided for local end customers

## Features

- Efficiency up to 97%
- Convection cooling – no fans
- Outputs 24, 48, 60, 110, 125, 220 VDC
- 12.0 kW power, 1-6 rectifiers per rack
- Master-Slave connection up to 24kW
- VIDI+ I/O controller, local and remote interfaces  
12 x relays, Ethernet, Modbus, IEC61850, SNMP, RS-232
- Air flow plate for optimized cooling
- Air flow plate guides cooling air to backside of the cabinet and creates chimney effect
- Rectifier input and output breakers included to the rack
- Bulk output, battery terminals and battery shunt included.
- Safety:  
Rectifiers: EN 62368-1, EN 50124-1 rail
- EMC:  
Rectifiers: EN 61000-6-1 / -2 / -3 / -4 / -5  
EN 50121-4 rail, ETSI EN 300386 (48/60V)

# Technical Specifications

General construction	
Cooling	Natural convection, air flow plate
Dimensions & weight	Height 9U (400 mm) Depth 400 mm Width 23" OR side wall mounting 537mm (542mm incl screw heads) Weight 15 kg w/o rectifiers

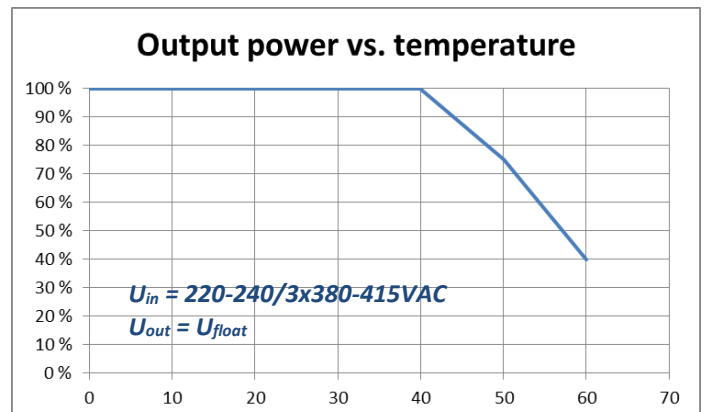
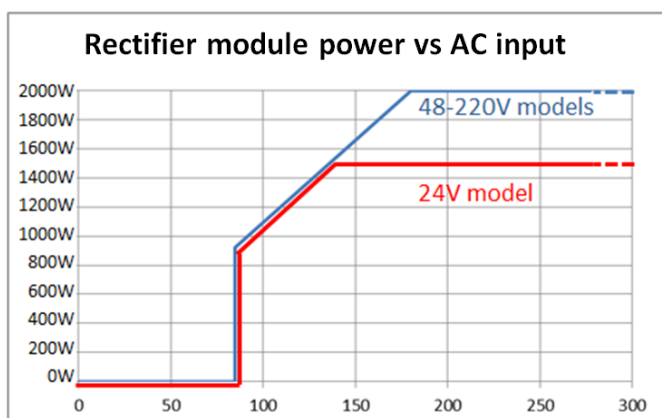
Environment and standards	
Temp. range	-25 ... +60°C, see derating, Start-up at -40°C
Safety, rectifiers EMC, Rectifiers	EN 62368-1, EN 50124-1 rail EN61000-6-1 / -2 / -3 / -4 Generic EN61000-6-5 Utility, surge level 2 EN 50121-4 Rail, ETSI EN 300 386 (48/60V)

AC Input	OPUS HE 24-9 BULK R9U F	OPUS HE 48-12 BULK R9U F	OPUS HE 60-12 BULK R9U F	OPUS HE 110-12 BULK R9U F	OPUS HE 125-12 BULK R9U F	OPUS HE 220-12 BULK R9U F
AC connection	TN-S system, 3W + N + PE, (3-phases, neutral and protective earth wires)					
Nominal input	220-240 VAC / 3 x 380-415 VAC (TN-S system) <i>Options: 1-phase supply 100-250VAC, 3-phase Delta/IT supply 3 x 173-250VAC</i>					
Input range	Max range: 85 – 300 VAC / 3 x 147–528 VAC Rated full power range: 180 – 275 VAC / 3 x 312–476 VAC (TN-S system) See derating curves below, 1200W per rectifier at 120VAC Temporary high voltage range 275 - 300VAC / 3 x 476 - 528VAC, continuous supply not recommended					
Input frequency	Rated 45 - 66 Hz, reduced power at 35 - 45 Hz. Shut down at 35 Hz					
Nominal current	16A @ 220/380V	22A @ 220/380VAC				
Maximum current	25A @ 130/226V	25A @ 180/313VAC				
Recommended mains fuse	3 x 25 A (TN-S)					
Rectifier input protection	MCB C16A / rectifier module					

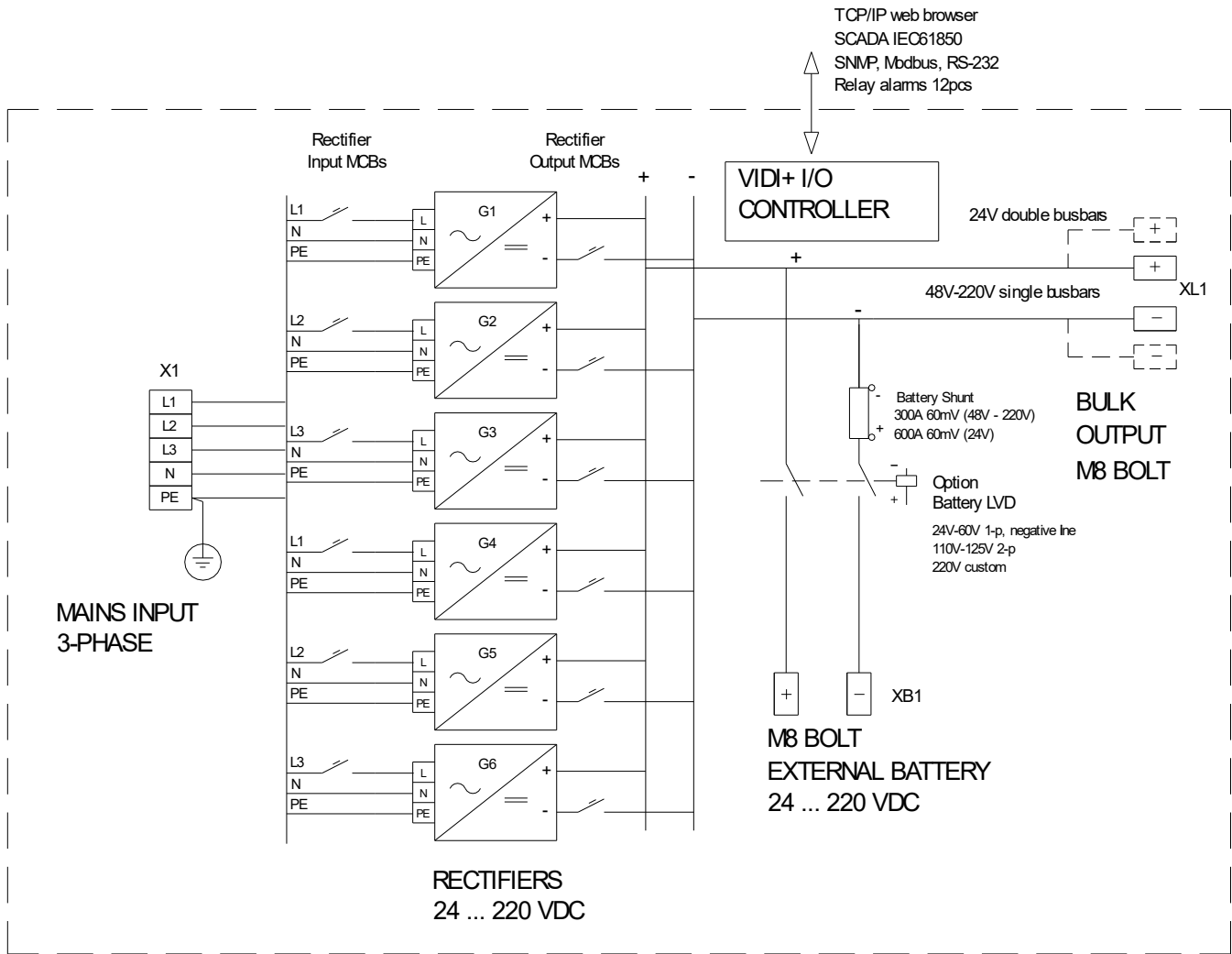
DC Output	OPUS HE 24-9 BULK R9U F	OPUS HE 48-12 BULK R9U F	OPUS HE 60-12 BULK R9U F	OPUS HE 110-12 BULK R9U F	OPUS HE 125-12 BULK R9U F	OPUS HE 220-12 BULK R9U F
Grounding	Floating, 2-pole system					
Nominal voltage	24 VDC	48 VDC	60 VDC	108 VDC	120 VDC	216 VDC
Voltage factory setting	27.24 VDC	54.48 VDC	68.10 VDC	122.58 VDC	136.20 VDC	245.16 VDC
Voltage range	21-33 VDC	42-59 VDC	51-72 VDC	90-150 VDC	100-160 VDC	178-280 VDC
Quantity of rectifiers	Max 6 pcs					
Max current	375A @ 24V	250A @ 48V	200A @ 60V	111A @ 108V	100A @ 120V	55.5A @ 216V
Max Power	Max 9kW	Max 12kW	Max 12kW	Max 12kW	Max 12kW	Max 12kW
Static voltage regulation	± 2 % @ rack terminals (load, line, temp)			± 1 % @ rack terminals (load, line, temp)		
Rectifier output protection	MCB C63A	MCB C50A	MCB C40A	MCB C20A	MCB C20A	MCB C10A

Connection terminals	
Mains terminal	Terminal blocks 16 mm <sup>2</sup> , L1-L2-L3-N-PE
DC output	Busbar 5 x 20mm M8 bolt connection, bulk output, 48-220V models + - , 24V model ++ - -
Battery	Busbar 5 x 20mm M8 bolt connection, bulk output, 48-220V models + - , 24V model ++ - - Battery shunt included (no battery fuse)
Alarms, Inputs	Configurable relay alarms 8 pcs (option up to 12), Spring terminals 0.75mm <sup>2</sup> ... 1.5mm <sup>2</sup> cable Configurable alarm/temp. inputs 6 pcs (option up to 12), Spring terminals 0.75mm <sup>2</sup> ... 1.5mm <sup>2</sup> cable

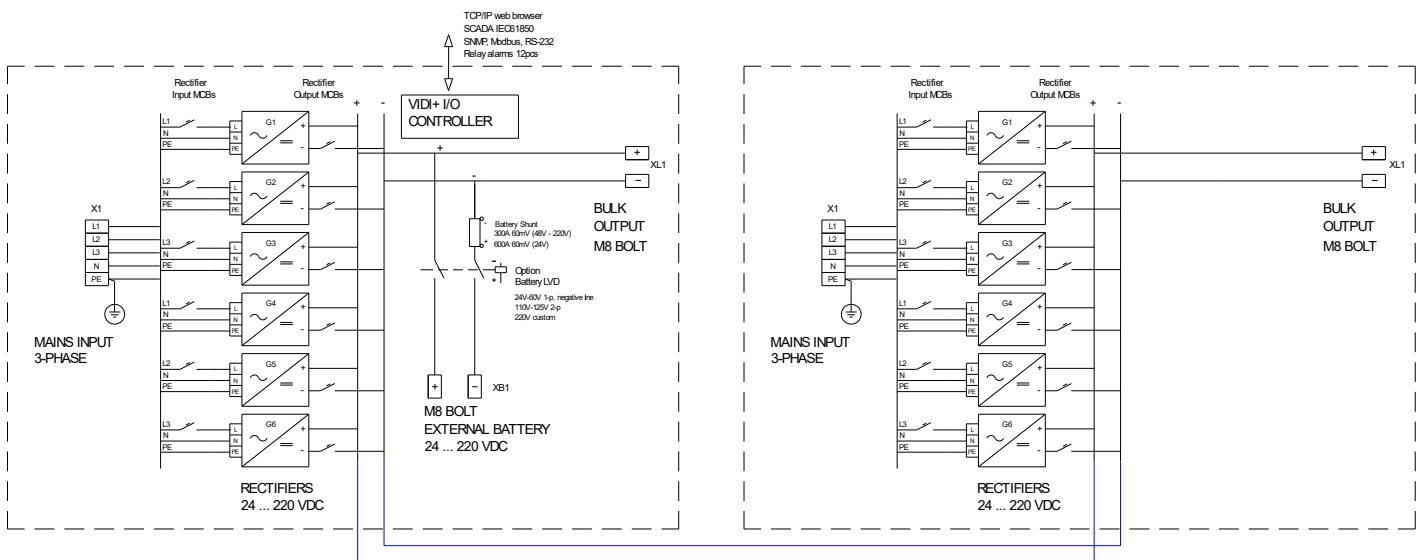
## Derating curves



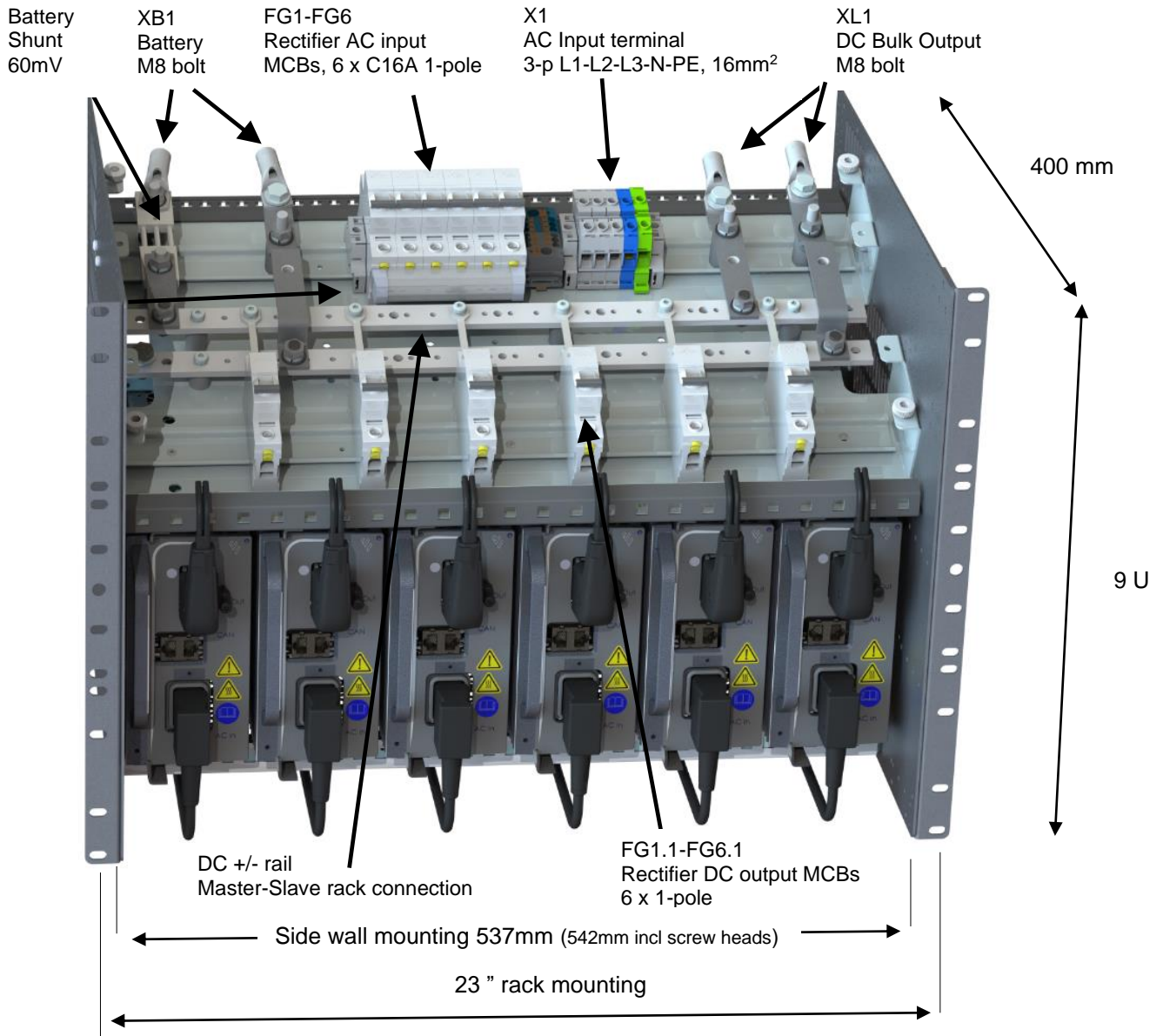
# Block Diagram



# Block Diagram, Master – Slave connection up to 24kW



## Layout drawings 48-220V models (24V model double XB1 & XL1 busbars)



### Order Information

Systems, Description	Order number	Voltage / Current	Master-Slave set-up
OPUS HE 24-9.0 BULK R9U F	9220X0015106	24VDC / 62.5A – 375A	24VDC / 62.5A – 750A
OPUS HE 24-9.0 BULK SLAVE R9U F	9220X0015107	24VDC / 62.5A – 375A	
OPUS HE 48-12.0 BULK R9U F	9220X0015108	48VDC / 41.7A – 250A	48VDC / 41.7A – 500A
OPUS HE 48-12.0 BULK SLAVE R9U F	9220X0015109	48VDC / 41.7A – 250A	
OPUS HE 60-12.0 BULK R9U F	9220X0015110	60VDC / 33.3A – 200A	60VDC / 33.3A – 400A
OPUS HE 60-12.0 BULK SLAVE R9U F	9220X0015111	60VDC / 33.3A – 200A	
OPUS HE 110-12.0 BULK R9U F	9220X0014716	110V / 18.5A – 111A	110V / 18.5A – 222A
OPUS HE 110-12.0 BULK SLAVE R9U F	9220X0015114	110V / 18.5A – 111A	
OPUS HE 125-12.0 BULK R9U F	9220X0015066	125V / 16.7A – 100A	125V / 16.7A – 200A
OPUS HE 125-12.0 BULK SLAVE R9U F	9220X0015064	125V / 16.7A – 100A	
OPUS HE 220-12.0 BULK R9U F	9220X0015112	220V / 9,25A – 55,5A	220V / 9,25A – 111A
OPUS HE 220-12.0 BULK SLAVE R9U F	9220X0015113	220V / 9,25A – 55,5A	