

# OPUS HE 19" BULK RACK

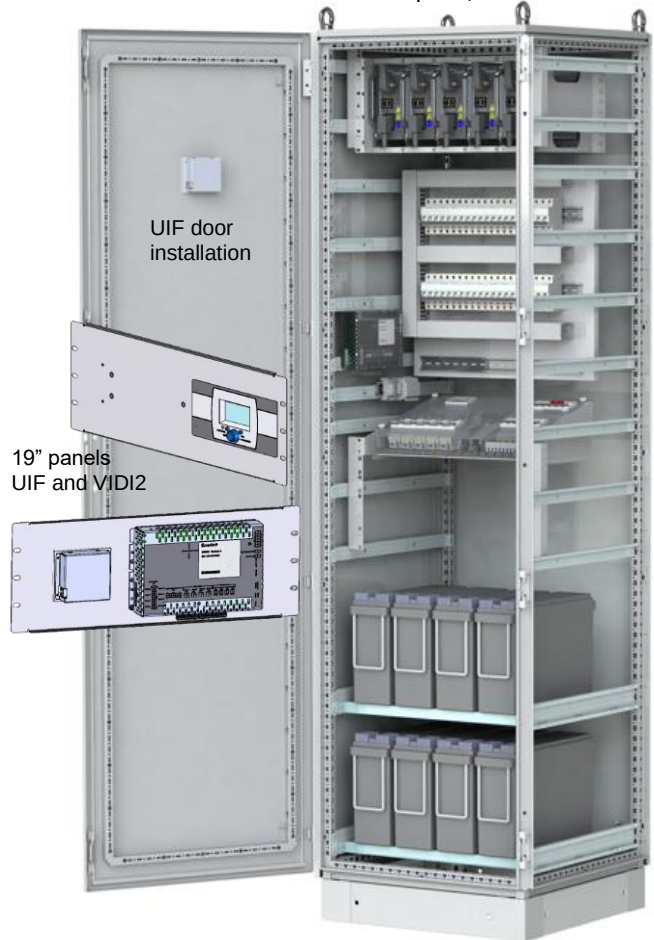
## 10 kW Building Block Rack 5U+3U

OPUS HE 24-7.5 BULK R 5U+3U F  
OPUS HE 48/60-10.0 BULK R 5U+3U F  
OPUS HE 110/125-10.0 BULK R 5U+3U F  
OPUS HE 220-10.0 BULK R 5U+3U F

OPUS HE BULK SLAVE RACK  
MASTER-SLAVE SET-UP 20KW  
MULTI CABINET UP TO 64KW



Application example 19" cabinet:  
Rectifiers top 5U, bulk 3U middle



## 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 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 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
- Configurable power 1.5kW-10.0 kW
- Master-Slave connection up to 64kW
- Qty of rectifier slots and rectifiers configurable per order
- VIDI2 controller, local and remote interfaces: 4/12 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
- Bulk output, battery terminals and battery shunt included.
- Safety: Rectifiers: IEC 62368-1, EN 50124-1 rail
- EMC: Rectifiers: EN 61000-6-1 / -2 / -3 / -4 / -5  
EN 50121-4/-5 rail, ETSI EN 300386 (48/60V)

# Technical Specifications

| General construction |                                    |
|----------------------|------------------------------------|
| Cooling              | Natural convection, air flow plate |
| Dimensions & weight  | Height 5U + 3U (8U/356 mm)         |
|                      | Depth 380 mm                       |
|                      | Width 19"                          |
|                      | Weight 15 kg w/o rectifiers        |

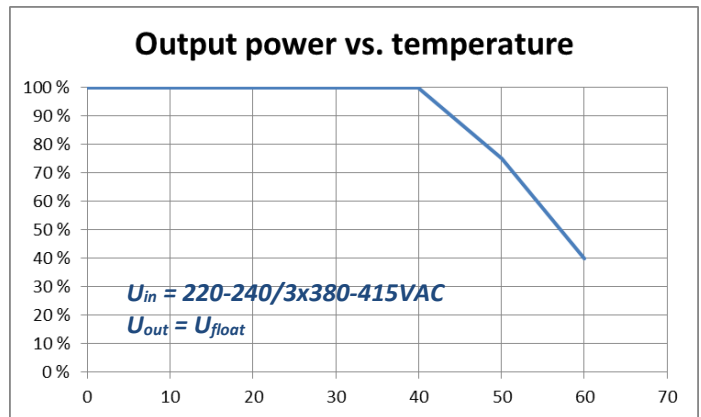
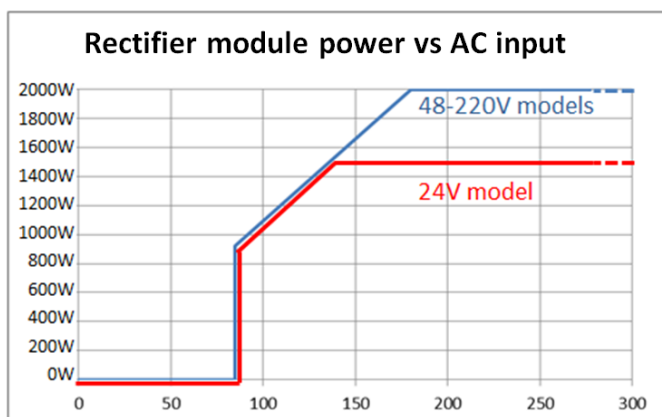
| Environment and standards |                                                |
|---------------------------|------------------------------------------------|
| Temp. range               | -25 ... +60°C, see derating, Start-up at -40°C |
| Safety, rectifiers        | EN 62368-1, EN 50124-1 rail      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

| AC Input                   | OPUS HE<br>24-9 BULK<br>R 5U+3U F                                                                                                                                                                                                                                                 | OPUS HE<br>48-12 BULK<br>R 5U+3U F | OPUS HE<br>60-12 BULK<br>R 5U+3U F | OPUS HE<br>110-12 BULK<br>R 5U+3U F | OPUS HE<br>125-12 BULK<br>R 5U+3U F | OPUS HE<br>220-12 BULK<br>R 5U+3U 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)<br><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<br>Rated full power range: 180 – 275 VAC / 3 x 312–476 VAC (TN-S system)<br>See derating curves below, 1200W per rectifier at 120VAC<br>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 @<br>220/380V                                                                                                                                                                                                                                                                 | 22A @ 220/380VAC                   |                                    |                                     |                                     |                                     |
| Maximum current            | 25A @<br>130/226V                                                                                                                                                                                                                                                                 | 25A @ 180/313VAC                   |                                    |                                     |                                     |                                     |
| Recommended mains fuse     | 3 x 25 A (TN-S)                                                                                                                                                                                                                                                                   |                                    |                                    |                                     |                                     |                                     |
| Rectifier input protection | MCB C16A / rectifier module                                                                                                                                                                                                                                                       |                                    |                                    |                                     |                                     |                                     |

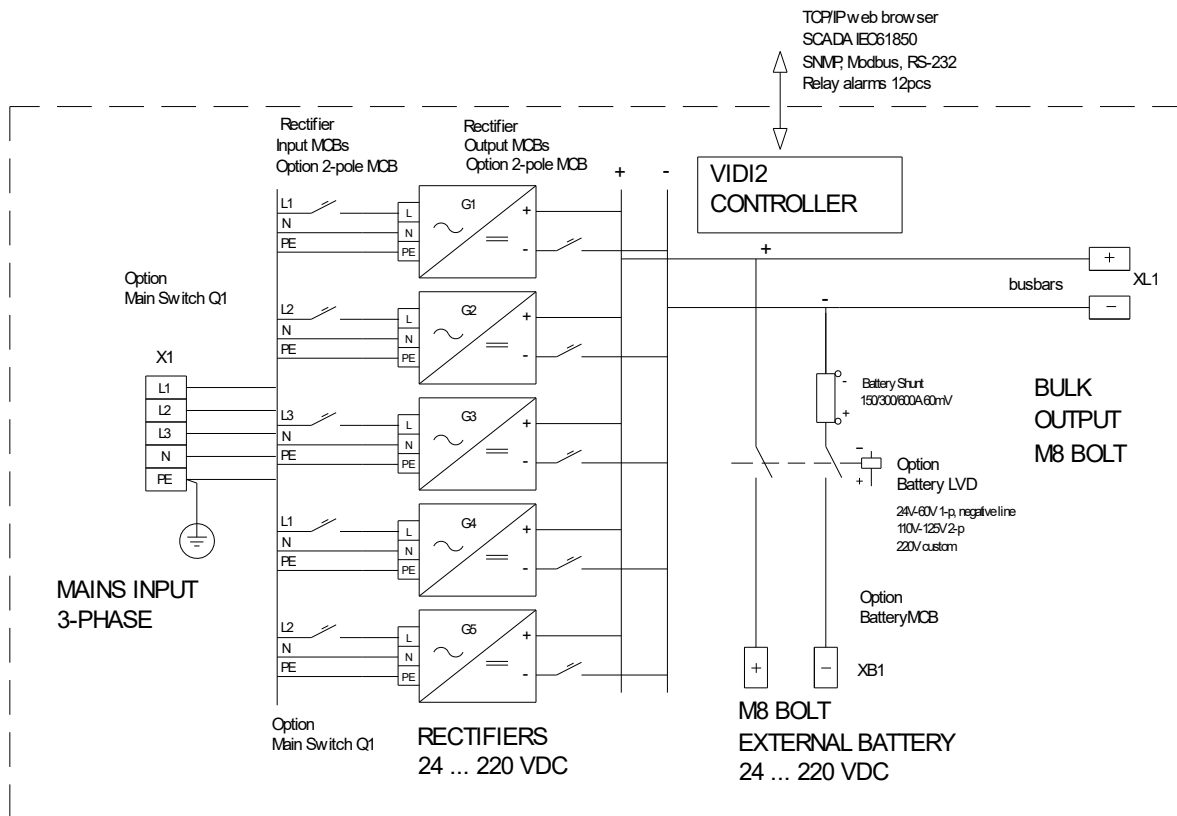
| DC Output                   | OPUS HE<br>24-9 BULK R<br>5U+3U F         | OPUS HE<br>48-12 BULK<br>R 5U+3U F | OPUS HE<br>60-12 BULK<br>R 5U+3U F | OPUS HE<br>110-12 BULK<br>R 5U+3U F       | OPUS HE<br>125-12 BULK<br>R 5U+3U F | OPUS HE<br>220-12 BULK<br>R 5U+3U F |
|-----------------------------|-------------------------------------------|------------------------------------|------------------------------------|-------------------------------------------|-------------------------------------|-------------------------------------|
| 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                 | 312.5A @ 24V                              | 208.3A @ 48V                       | 166.7A @ 60V                       | 92.5A @ 108V                              | 83.3A @ 120V                        | 46.3A @ 216V                        |
| Max Power                   | Max 7.5kW                                 | Max 10kW                           | Max 10kW                           | Max 10kW                                  | Max 10kW                            | Max 10kW                            |
| 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 ++ - -<br>Battery shunt included (no battery fuse)                                                                                                                 |
| Alarms, Inputs       | Configurable relay alarms 4 pcs (option up to 12), Spring terminals 0.75mm <sup>2</sup> ... 1.5mm <sup>2</sup> cable<br>Configurable alarm/temp. inputs 4 pcs (option up to 12), Spring terminals 0.75mm <sup>2</sup> ... 1.5mm <sup>2</sup> cable |

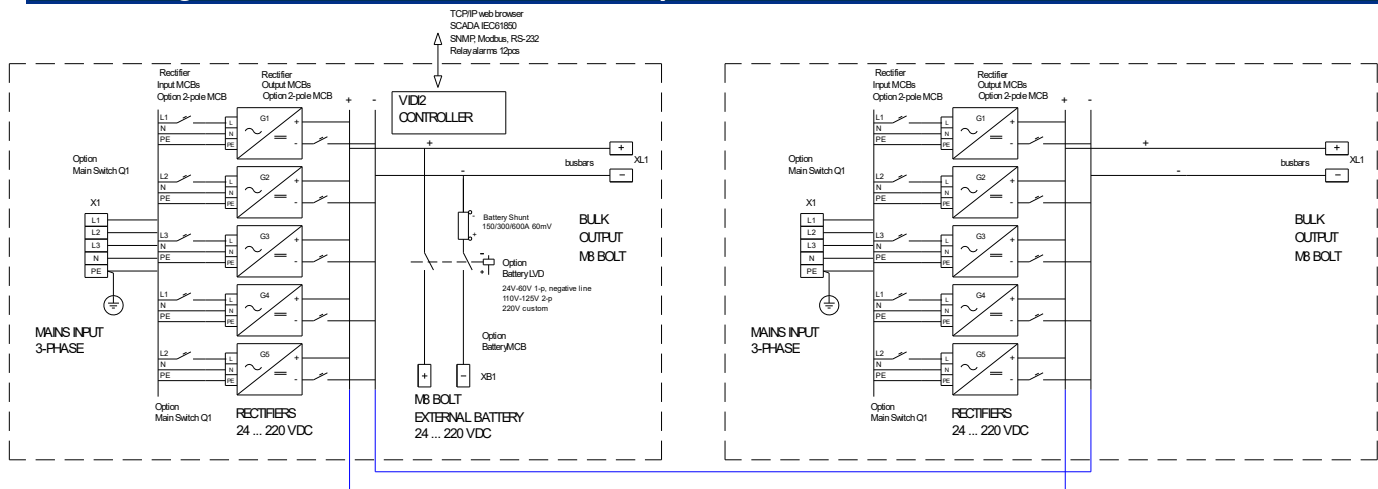
## Derating curves



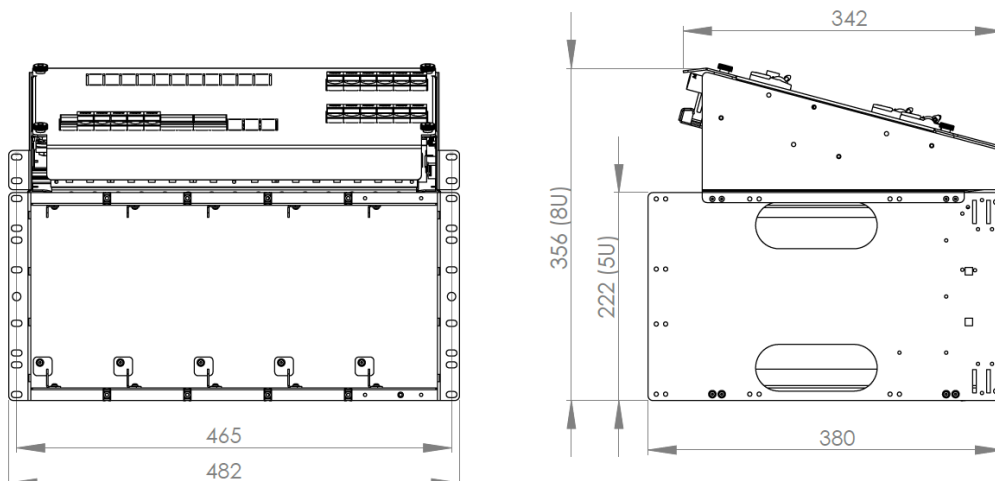
## Block Diagram



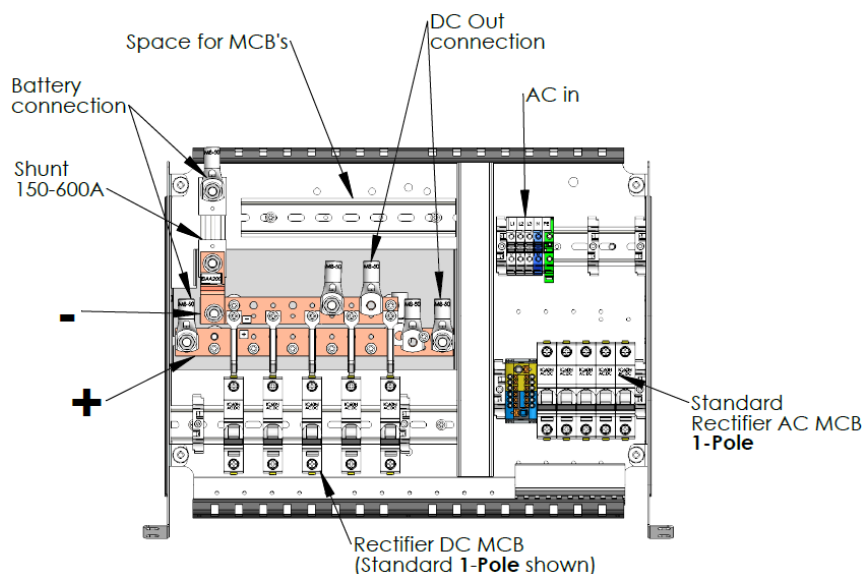
## Block Diagram, Master – Slave connection up to 24kW



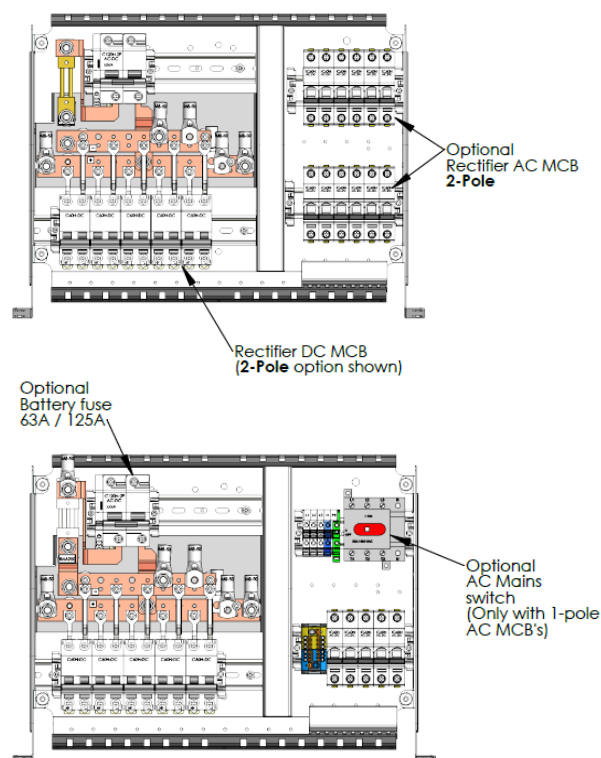
## Mechanical dimensions



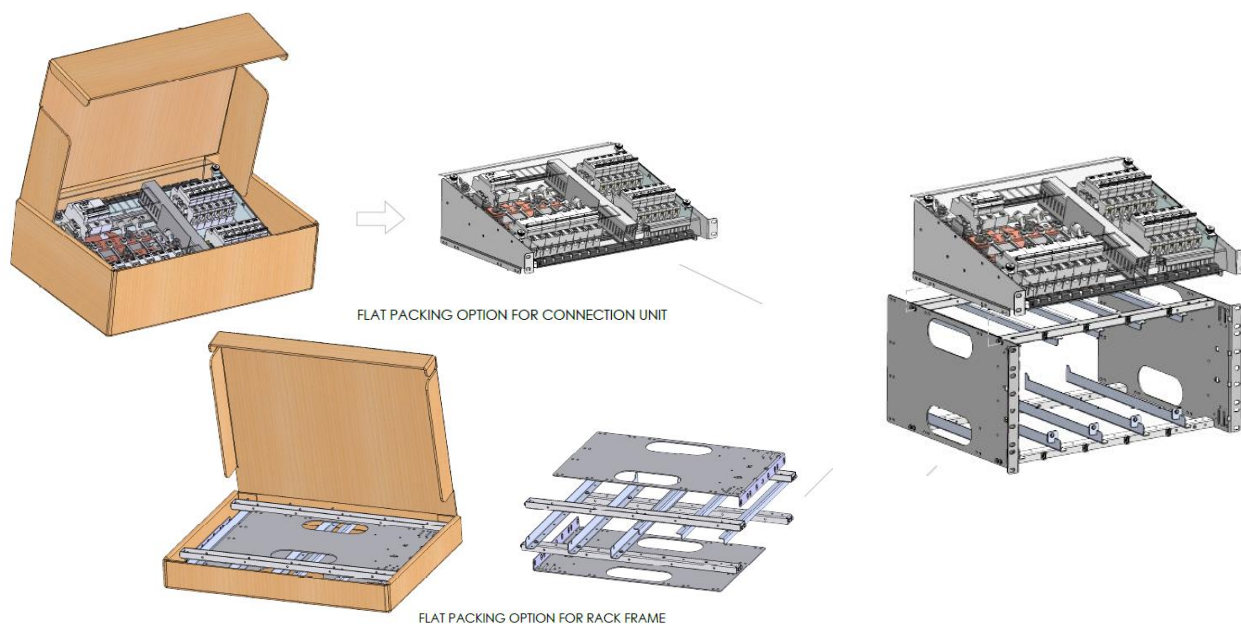
## STANDARD CONFIGURATION



## OPTIONS



## Flat packing option



## Order Information

| Systems, Description                | Order number | Voltage / Current      | Master-Slave set-up   |
|-------------------------------------|--------------|------------------------|-----------------------|
| OPUS HE 24-7.5 BULK R 5U+3U F       | 922XW16114   | 24VDC / 62.5A – 312.5A | 24VDC / 62.5A – 2000A |
| OPUS HE 48/60-10.0 BULK R 5U+3U F   | 922XW16115   | 48VDC / 41.7A – 208.3A | 48VDC / 41.7A – 1333A |
|                                     |              | 60VDC / 33.3A – 166.7A | 60VDC / 33.3A – 1067A |
| OPUS HE 110/125-10.0 BULK R 5U+3U F | 922XW16117   | 110VDC / 18.5A – 92.5A | 110VDC / 18.5A – 592A |
|                                     |              | 125VDC / 16.7A – 83.3A | 125VDC / 16.7A – 533A |
| OPUS HE 220-10.0 BULK R 5U+3U F     | 922XW16119   | 220VDC / 9.3A – 46.3A  | 220VDC / 9.3A – 296A  |

See price list and configurators for the system configuration