

## PRODUCT OVERVIEW

MWOCES-211-P-D is a 33.0kW, 21" 10U power shelf that provides a delivery system for up to six 67mm, 10U [Power Supplies \(PSU\)](#), and one [Remote Management Unit \(RMU\)](#) (MWOC-RMU-3). It is intended to support 50.0V power distribution architectures in OCP (V3) systems. Two AC input connectors accommodate either three-phase four-wire delta (without neutral) or three-phase five-wire wye (with neutral) configurations for added flexibility. Each input is configured to power a group of three power supply module slots. DC output connection is provided by pluggable bus bars.



## FEATURES

- Supports OCP systems
- 10U height
- 537(W) x 720(L) x 45.0(H) mm
- 33kW total output power (N+0)
- Accommodates up to six PSU modules and one RMU
- 50.0V output
- PSU & RMU are hot-swappable
- N+1 / N+N Redundancy
- Designed to support BBU
- Eight RJ45 ports with RMU
- Busbar-connector temperature sensor capability
- 2-year warranty



For full details go to

[www.murata.com/rohs](http://www.murata.com/rohs)



Certificate and Test Report



## ORDERING GUIDE

| Part Number <sup>1</sup>    | Input Configuration                                                                                                                                          | DC Output Busbar Configuration |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| MWOCES-211-P-D <sup>2</sup> | <ul style="list-style-type: none"> <li>✓ Three-Phase four wire Delta</li> <li>✓ Three-Phase five wire Wye</li> <li>✓ Single-Phase</li> <li>✓ HVDC</li> </ul> | Bar clip                       |

<sup>1</sup> Shelf does not include the power supply modules and RMU and needed to be ordered separately as required.

<sup>2</sup> Contact Murata for availability

<sup>3</sup> Total output voltage followed PSU input voltage de-rating

## INPUT CHARACTERISTICS

| Parameter                     | Conditions                                            | Min. | Nom.        | Max.  | Unit |
|-------------------------------|-------------------------------------------------------|------|-------------|-------|------|
| Input Voltage Operating Range | Line to Line (Delta source)                           | 180  | 200/208/277 | 305   | Vac  |
|                               | Line to Line (Wye source with neutral connection)     | 312  | 346/360/480 | 529   |      |
|                               | HVDC                                                  | 192  | 240/380     | 400   |      |
| Frequency                     | AC input                                              | 47   | 50/60       | 63    | Hz   |
| Input Current                 | Wye / Single-phase: 200-240Vac (Each input, per line) |      |             | 29.3  | Arms |
|                               | Delta : 200-240Vac/240-277Vac (Each input, per line)  |      |             | 52/43 |      |
|                               | 240-380Vdc (each input, per line)                     |      |             | 24.38 | Adc  |

## OUTPUT CHARACTERISTICS

| Parameter      | Configuration             | Min.                          | Typ. | Max.  | Units |
|----------------|---------------------------|-------------------------------|------|-------|-------|
| Output Power   | With six (6) PSUs         | 0                             |      | 33000 | W     |
|                | With five (5) PSUs        | 0                             |      | 27500 |       |
|                | With four (4) PSUs        | 0                             |      | 22000 |       |
|                | With three (3) PSUs       | 0                             |      | 16500 |       |
|                | With two (2) PSUs         | 0                             |      | 11000 |       |
|                | With one (1) PSU          | 0                             |      | 5500  |       |
| Output Current | With six (6) PSUs         | 0                             |      | 673.8 | A     |
|                | With five (5) PSUs        | 0                             |      | 561.5 |       |
|                | With four (4) PSUs        | 0                             |      | 449.2 |       |
|                | With three (3) PSUs       | 0                             |      | 336.9 |       |
|                | With two (2) PSUs         | 0                             |      | 224.6 |       |
|                | With one (1) PSU          | 0                             |      | 112.3 |       |
| Holdup Time    | With six (6) PSUs [5+1]   | 24.0 (at 27.5kW Output power) |      |       | ms    |
|                | With six (6) PSUs [3+3]   | 40.0 (at 16.5kW Output power) |      |       |       |
|                | With five (5) PSUs [4+1]  | 25.0 (at 22.0kW Output power) |      |       |       |
|                | With four (4) PSUs [3+1]  | 26.7 (at 16.5kW Output power) |      |       |       |
|                | With four (4) PSUs [2+2]  | 40.0 (at 11.0kW Output power) |      |       |       |
|                | With three (3) PSUs [2+1] | 30.0 (at 11.0kW Output power) |      |       |       |
|                | With two (2) PSUs [1+1]   | 40.0 (at 5.5kW Output power)  |      |       |       |
|                | With one (1) PSU          | 20.0 (at 5.5kW Output power)  |      |       |       |

### ENVIRONMENTAL CHARACTERISTICS

| Parameter                   | Conditions                                                                                                                                                                                                                                                                                                                                 | Min. | Typ. | Max. | Units |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|-------|
| Storage temperature range   | Non-operating                                                                                                                                                                                                                                                                                                                              | -40  |      | 70   | °C    |
| Operating temperature range | Altitude < 3050m                                                                                                                                                                                                                                                                                                                           | -5   |      | 45   | °C    |
| Storage humidity            | Non-condensing                                                                                                                                                                                                                                                                                                                             | 10   |      | 93   | %     |
| Operating humidity          | Non-condensing                                                                                                                                                                                                                                                                                                                             | 10   |      | 90   |       |
| Shock                       | Per EN 60028-2-27<br>Operational: 11 msec half-sine, 6g, 5 shocks per face, 6 faces<br>Non-operational: 11 msec half-sine, 12g, 10 shocks per face, 6 faces                                                                                                                                                                                |      |      |      |       |
| Vibration                   | Per EN 60068-2-6<br>Operating : Sinusoidal vibration, 5-500Hz, 0.5g<br>Non-Operating : Sinusoidal vibration, 5-500Hz, 1g                                                                                                                                                                                                                   |      |      |      |       |
| Safety approval             | UL62368-1 : 2018 (3rd Edition) (Information Technology Equipment – safety – Part 1: General Requirements)<br>CAN/CSA-C22.2 No. 62368-1 : 2018 (3rd Edition) (Information Technology Equipment – safety – Part 1: General Requirements)<br>TUV : EN IEC 62368-1:2020/A11:2020<br>CQC : GB4943.1-2022<br>CB : IEC 62368-1:2018 (3rd Edition) |      |      |      |       |
| Weight (Typical)            | Shelf Only, without PSUs and RMU                                                                                                                                                                                                                                                                                                           | 10.7 |      |      | Kg    |

### ISOLATION CHARACTERISTICS

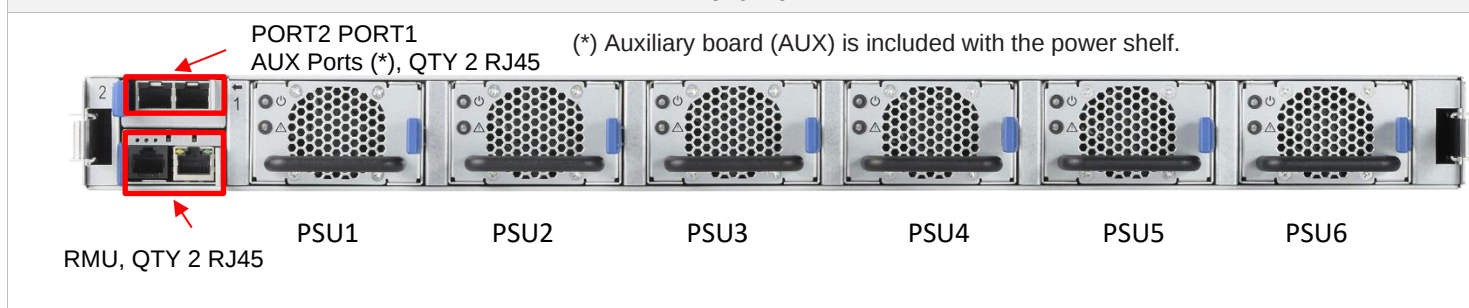
| Parameter                             | Conditions                   | Min.  | Typ. | Max. | Units |
|---------------------------------------|------------------------------|-------|------|------|-------|
| Insulation safety rating/test voltage | Input to output - Reinforced | 5,000 |      |      | Vdc   |
|                                       | Input to chassis             | 2,500 |      |      |       |
| Isolation                             | Output to chassis            | 100   |      |      | Vdc   |

### EMISSION AND IMMUNITY

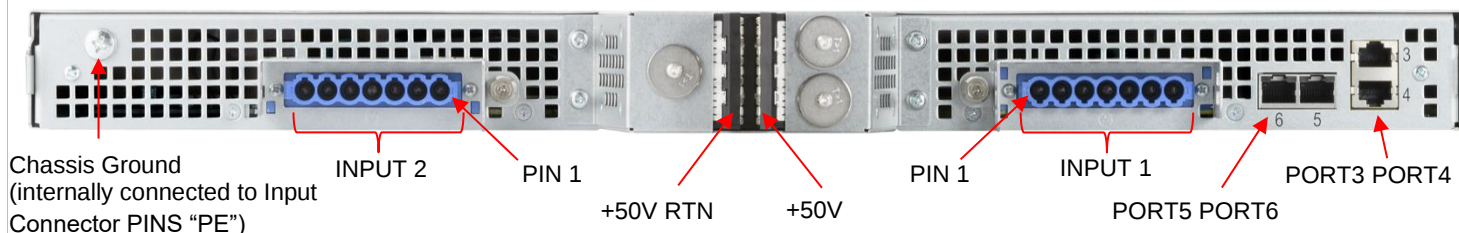
| Parameter                                | Standard          | Criteria           |
|------------------------------------------|-------------------|--------------------|
| Input current harmonics                  | IEC/EN 61000-3-12 | Class A            |
| Conducted emission                       | CISPR 32          | Class A            |
| ESD immunity                             | IEC/EN 61000-4-2  | Level 4 criteria A |
| Electrical fast transient/burst immunity | IEC/EN 61000-4-4  | Level 2 criteria A |
| Surge immunity                           | IEC/EN 61000-4-5  | Level 4 criteria B |

### PRODUCT VIEWS AND CONNECTOR DETAILS

#### Front View

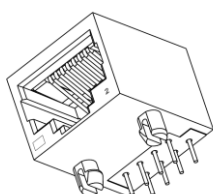


**Rear View**



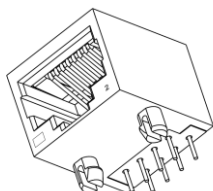
4mm<sup>2</sup> diameter(AWG10) earthing wire shall be connected to the chassis by screw at screw hole marked with "Protective Earth" symbol .

**RJ45 CONNECTOR PIN ASSIGNMENT (AUX PORT 1)**



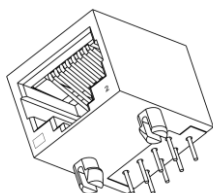
| Pin | I/O | Function    | Description          |
|-----|-----|-------------|----------------------|
| 1   | I/O | GND         | -                    |
| 2   | I/O | PLS         | Signal pass through  |
| 3   | I/O | CLS         | Signal pass through  |
| 4   | I/O | RS-485A     | Modbus communication |
| 5   | I/O | RS-485B     | Modbus communication |
| 6   | I   | RS485_Addr2 | Modbus daisy chain   |
| 7   | I   | RS485_Addr1 | Modbus daisy chain   |
| 8   | I   | RS485_Addr0 | Modbus daisy chain   |

**RJ45 CONNECTOR PIN ASSIGNMENT (AUX PORT 2)**



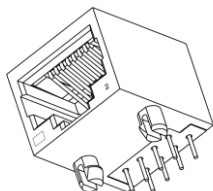
| Pin | I/O | Function    | Description          |
|-----|-----|-------------|----------------------|
| 1   | I/O | GND         | -                    |
| 2   | I/O | PLS         | Signal pass through  |
| 3   | I/O | CLS         | Signal pass through  |
| 4   | I/O | RS-485A     | Modbus communication |
| 5   | I/O | RS-485B     | Modbus communication |
| 6   | O   | RS485_Addr2 | Modbus daisy chain   |
| 7   | O   | RS485_Addr1 | Modbus daisy chain   |
| 8   | O   | RS485_Addr0 | Modbus daisy chain   |

**RJ45 CONNECTOR PIN ASSIGNMENT (PORT 3)**



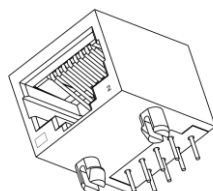
| Pin | I/O | Function     | Description              |
|-----|-----|--------------|--------------------------|
| 1   | A   | ISHARE       | PSU current share signal |
| 2   | I/O | GND          | -                        |
| 3   | I/O | SYNC_START   | Sync. signal             |
| 4   | -   | N.C          | -                        |
| 5   | -   | N.C          | -                        |
| 6   | I/O | AC_FAULT_CLR | Fault clear              |
| 7   | -   | N.C          | -                        |
| 8   | I/O | GND          | -                        |

**RJ45 CONNECTOR PIN ASSIGNMENT (PORT 4)**

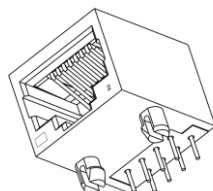


| Pin | I/O | Function     | Description              |
|-----|-----|--------------|--------------------------|
| 1   | A   | ISHARE       | PSU current share signal |
| 2   | I/O | GND          | -                        |
| 3   | I/O | SYNC_START   | Sync. signal             |
| 4   | -   | N.C          | -                        |
| 5   | -   | N.C          | -                        |
| 6   | I/O | AC_FAULT_CLR | Fault clear              |
| 7   | -   | N.C          | -                        |
| 8   | I/O | GND          | -                        |

**RJ45 CONNECTOR PIN ASSIGNMENT (PORT 5)**

|  | Pin | I/O | Function     | Description                    |
|-----------------------------------------------------------------------------------|-----|-----|--------------|--------------------------------|
|                                                                                   | 1   | I/O | AC_LOSS_1    | PSU 1 AC loss detection signal |
|                                                                                   | 2   | -   | N.C          | -                              |
|                                                                                   | 3   | I/O | AC_LOSS_2    | PSU 2 AC loss detection signal |
|                                                                                   | 4   | -   | N.C          | -                              |
|                                                                                   | 5   | I/O | AC_LOSS_3    | PSU 3 AC loss detection signal |
|                                                                                   | 6   | -   | N.C          | -                              |
|                                                                                   | 7   | I/O | PULSE_MGMT_L | BBU assist request             |
|                                                                                   | 8   | I/O | GND          | -                              |

**RJ45 CONNECTOR PIN ASSIGNMENT (PORT 6)**

|  | Pin | I/O | Function     | Description                    |
|-----------------------------------------------------------------------------------|-----|-----|--------------|--------------------------------|
|                                                                                   | 1   | I/O | AC_LOSS_4    | PSU 4 AC loss detection signal |
|                                                                                   | 2   | -   | N.C          | -                              |
|                                                                                   | 3   | I/O | AC_LOSS_5    | PSU 5 AC loss detection signal |
|                                                                                   | 4   | -   | N.C          | -                              |
|                                                                                   | 5   | I/O | AC_LOSS_6    | PSU 6 AC loss detection signal |
|                                                                                   | 6   | -   | N.C          | -                              |
|                                                                                   | 7   | I/O | PULSE_MGMT_L | BBU assist request             |
|                                                                                   | 8   | I/O | GND          | -                              |

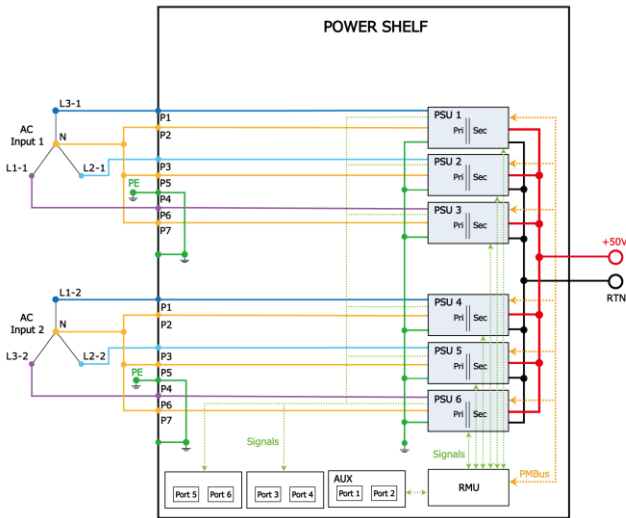
**INPUT CONNECTOR PIN ASSIGNMENT (AC INPUT 1 & 2)**

Equivalent to Amphenol 10170827-07P010 (Input 1), 10170827-07P011 (Input 2)  
mating connector: Equivalent to BizLink 747-63-07A2A1BNN3X090800

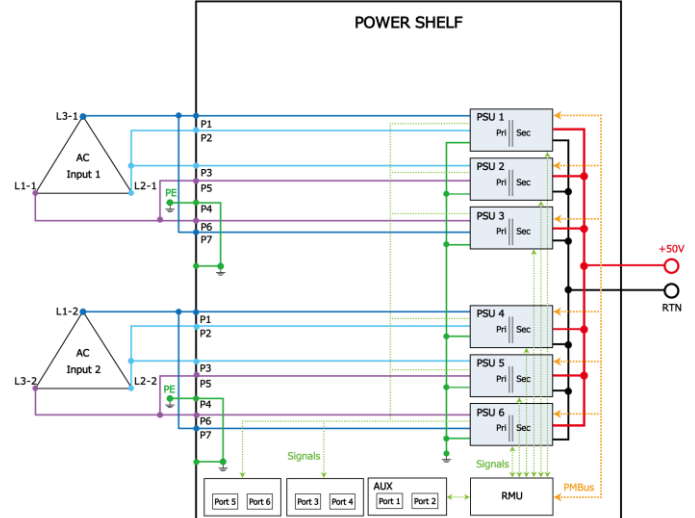
| Wye Input (INPUT 1) |        |                   | Delta Input (INPUT 1) |        |                   | Single Input (INPUT 1) |        |                  | HVDC Input (INPUT 1) |          |                  |
|---------------------|--------|-------------------|-----------------------|--------|-------------------|------------------------|--------|------------------|----------------------|----------|------------------|
| Pin No              | Signal | Function          | Pin No                | Signal | Function          | Pin No                 | Signal | Function         | Pin No               | Signal   | Function         |
| 1                   | L3     | AC line voltage 3 | 1                     | L3     | AC line voltage 3 | 1                      | L      | AC live          | 1                    | (+ HVDC) | DC POSITIVE      |
| 2                   | N      | Neutral           | 2                     | L2     | AC line voltage 2 | 2                      | N      | Neutral          | 2                    | (- HVDC) | DC RETURN        |
| 3                   | L2     | AC line voltage 2 | 3                     | L2     | AC line voltage 2 | 3                      | L      | AC live          | 3                    | (+ HVDC) | DC POSITIVE      |
| 4                   | PE     | Protective earth  | 4                     | PE     | Protective earth  | 4                      | PE     | Protective earth | 4                    | PE       | Protective earth |
| 5                   | N      | Neutral           | 5                     | L1     | AC line voltage 1 | 5                      | N      | Neutral          | 5                    | (- HVDC) | DC RETURN        |
| 6                   | L1     | AC line voltage 1 | 6                     | L1     | AC line voltage 1 | 6                      | L      | AC live          | 6                    | (+ HVDC) | DC POSITIVE      |
| 7                   | N      | Neutral           | 7                     | L3     | AC line voltage 3 | 7                      | N      | Neutral          | 7                    | (- HVDC) | DC RETURN        |
| Wye Input (INPUT 2) |        |                   | Delta Input (INPUT 2) |        |                   | Single Input (INPUT 2) |        |                  | HVDC Input (INPUT 2) |          |                  |
| Pin No              | Signal | Function          | Pin No                | Signal | Function          | Pin No                 | Signal | Function         | Pin No               | Signal   | Function         |
| 1                   | L1     | AC line voltage 1 | 1                     | L1     | AC line voltage 1 | 1                      | L      | AC live          | 1                    | (+ HVDC) | DC POSITIVE      |
| 2                   | N      | Neutral           | 2                     | L2     | AC line voltage 2 | 2                      | N      | Neutral          | 2                    | (- HVDC) | DC RETURN        |
| 3                   | L2     | AC line voltage 2 | 3                     | L2     | AC line voltage 2 | 3                      | L      | AC live          | 3                    | (+ HVDC) | DC POSITIVE      |
| 4                   | PE     | Protective earth  | 4                     | PE     | Protective earth  | 4                      | PE     | Protective earth | 4                    | PE       | Protective earth |
| 5                   | N      | Neutral           | 5                     | L3     | AC line voltage 3 | 5                      | N      | Neutral          | 5                    | (- HVDC) | DC RETURN        |
| 6                   | L3     | AC line voltage 3 | 6                     | L3     | AC line voltage 3 | 6                      | L      | AC live          | 6                    | (+ HVDC) | DC POSITIVE      |
| 7                   | N      | Neutral           | 7                     | L1     | AC line voltage 1 | 7                      | N      | Neutral          | 7                    | (- HVDC) | DC RETURN        |

## INTERNAL CONNECTION

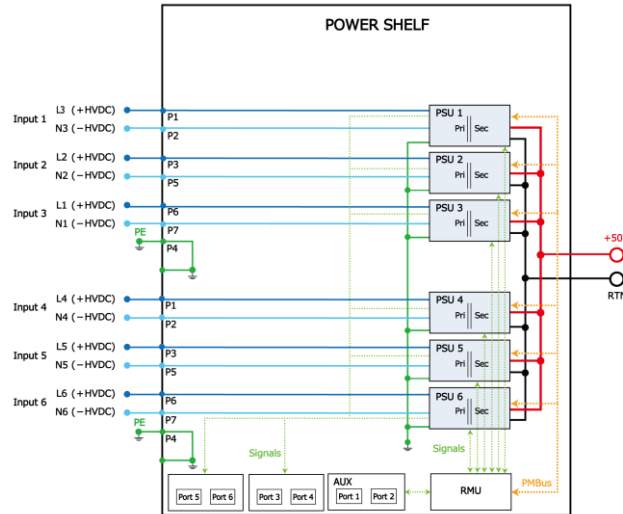
### Wye Input



### Delta Input



### Single Phase & HVDC Input



## COMMUNICATION (WITH MWOC-RMU-3)

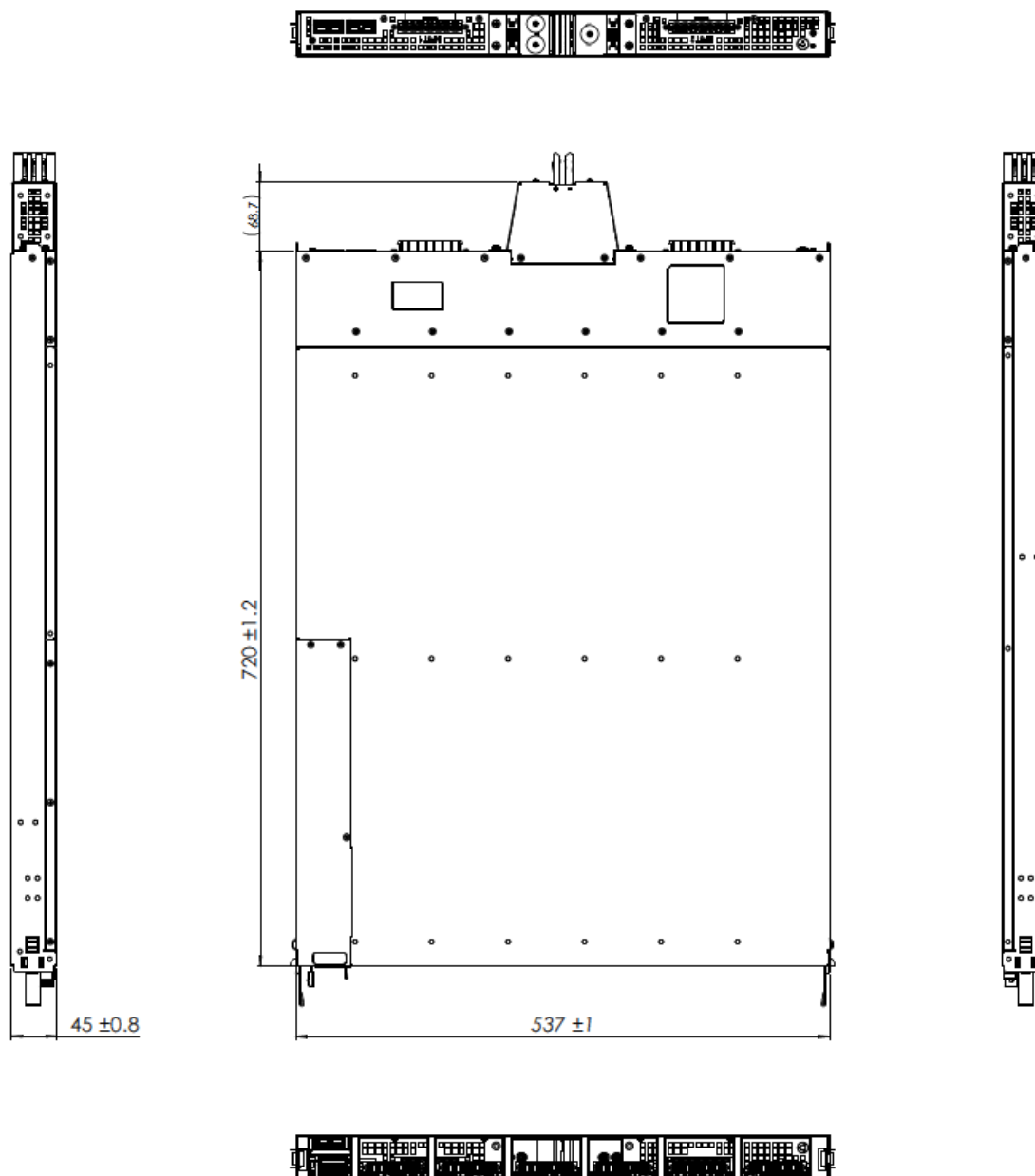
| FUNCTION              | DESCRIPTION                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------|
| Control the units     | ON/OFF control of each unit installed in the power shelf                                                               |
| Reporting to the host | ON/OFF Status and presence information of each unit<br>Status of input power sources<br>Fault information of each unit |

## COMMUNICATION (WITH MWOC-AUX)

| FUNCTION                          | DESCRIPTION                                                                           |
|-----------------------------------|---------------------------------------------------------------------------------------|
| Auxiliary power supply for 12V_SB | Generates 12V for RMU power supply from bus voltage.                                  |
| RS485                             | Modbus RTU<br>For communication with higher-level master systems, daisy-chain support |

Link Back To [Order Guide](#)

MECHANICAL DRAWING



1. This drawing is a graphical representation of the product and may not show all fine details such as molded part surface features, internal components, screw head type. Please contact Murata for 3D model for additional details
2. Dimensions in mm
3. Subject to change without notice; contact Murata for latest version

| RELATED PRODUCT DATASHEETS |                                        |                                           |
|----------------------------|----------------------------------------|-------------------------------------------|
| Document Number            | Description                            | Click link below to open online datasheet |
| MWOC-RMU-3                 | Monitor and control unit               | Link to: <a href="#">Datasheet</a>        |
| MWOC67-5500-B-RM           | 5.5kw/50.0V ac-dc front-end PSU module | Link to: <a href="#">Datasheet</a>        |
| MWOC_BLANKING_PANELS       | Blanking panel accessories             | Link to: <a href="#">Datasheet</a>        |

[back to the product overview](#)

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 ISO 9001 REGISTERED



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