



## FEATURES

- 12kW total output power<sup>1</sup> (N+1)
- N+1 redundancy
- Single Phase and HVDC input models
- 1U height
- 437(W) x 650(L) x 43.8(H) mm
- Accommodates up to five PSUs and one RMU
- Supports external BBU (Murata battery backup system)
- 12.3VDC output
- Hot swappable
- Equipped with two C13 2.5A/AC outlet<sup>2</sup>
- Optional mounting kit available

<sup>1</sup> Includes power drawn from AC outlets

<sup>2</sup> Only available on MWDCES-191-C Model



For full details go to  
[www.murata-ps.com/rohs](http://www.murata-ps.com/rohs)



## PRODUCT OVERVIEW

MWDCES-191 series of redundant 19" 1U 12kW OCP compliant shelves provide a simple solution for 12V distributed applications that are limited by single phase AC mains or HVDC input power availability. These shelves can be deployed with up to five, 74mm 1U [Power Supplies \(PSU\)](#), and a [Remote Management Unit \(RMU\)](#) and also provide C13 outlets (AC model only) for peripheral equipment power. These features in addition to the single DC output busbar configuration make this shelf an ideal solution for OCP or application requiring distributed 12V intermediate bus architectures.

## ORDERING GUIDE

| Part Number <sup>3</sup> | Input Configuration | DC Output Busbar Configuration |
|--------------------------|---------------------|--------------------------------|
| MWDCES-191-C             | Single Phase AC     | Multi-link busbar              |
| MWDCES-191-D             | HVDC                |                                |

<sup>3</sup> Shelf does not include PSUs and RMU, refer to the [product datasheets](#) for details

## INPUT CHARACTERISTICS

| Parameter       | Conditions                        | Min. | Nom.        | Max. | Units |
|-----------------|-----------------------------------|------|-------------|------|-------|
| Input Voltage   | MWDCES-191-C, Line to Neutral     | 180  | 200/208/240 | 264  | Vac   |
| Operating Range | MWDCES-191-D                      | 192  | 240/380     | 400  | VDC   |
| Frequency       |                                   | 47   | 50/60       | 63   | Hz    |
| Input Current   | MWDCES-191-C                      |      |             | 34   | Arms  |
|                 | 200-240VAC (each input, per line) |      |             |      |       |
|                 | MWDCES-191-D                      |      |             |      |       |

## OUTPUT CHARACTERISTICS

| Output Voltage | Parameter      | Conditions                | Min. | Typ. | Max.   | Units |
|----------------|----------------|---------------------------|------|------|--------|-------|
| 12.3VDC        | Output Power   | With five (5) PSUs        | 0    |      | 12,000 | W     |
|                |                | With four (4) PSUs        | 0    |      | 12,000 |       |
|                |                | With three (3) PSUs       | 0    |      | 9,000  |       |
|                |                | With two (2) PSUs         | 0    |      | 6,000  |       |
|                |                | With one (1) PSU          | 0    |      | 3,000  |       |
|                | Output Current | With five (5) PSUs        | 0    |      | 976    | A     |
|                |                | With four (4) PSUs        | 0    |      | 976    |       |
|                |                | With three (3) PSUs       | 0    |      | 732    |       |
|                |                | With two (2) PSUs         | 0    |      | 488    |       |
|                |                | With one (1) PSU          | 0    |      | 244    |       |
|                | Holdup Time    | With five (5) PSUs [4+1]  | 15   |      |        | ms    |
|                |                | With four (4) PSUs [3+1]  | 16   |      |        |       |
|                |                | With four (4) PSUs [2+2]  | 24   |      |        |       |
|                |                | With three (3) PSUs [2+1] | 18   |      |        |       |
|                |                | With two (2) PSUs [1+1]   | 24   |      |        |       |
|                |                | With one (1) PSU          | 12   |      |        |       |

## ENVIRONMENTAL CHARACTERISTICS

| Parameter                   | Conditions   | Min. | Typ. | Max. | Units |
|-----------------------------|--|------|------|------|-------|
| Storage temperature range   |  | -40  |      | 70   | °C    |
| Operating temperature range | Altitude < 3,000m  | 0    |      | 40   | °C    |
| Storage humidity            | Non-condensing   | 10   |      | 90   | %     |
| Operating humidity          | Non-condensing   | 10   |      | 85   | %     |
| MTBF                        | Per Telcordia SR-332 M1C1 @ 40°C                           | 300k |      |      | Hrs   |
| Shock                       | 30G non-operating  |      |      |      |       |
| Vibration                   | Operating, random vibration, 5-500Hz 1.11G                 |      |      |      |       |
| Safety approval             | c-CSA-us (CSA 60950-1-03 / UL 60950-1 second edition) RoHS |      |      |      |       |
| Weight                      | Shelf only, without PSUs/RMU                               |      | 12.5 |      | Kg    |

**ISOLATION CHARACTERISTICS**

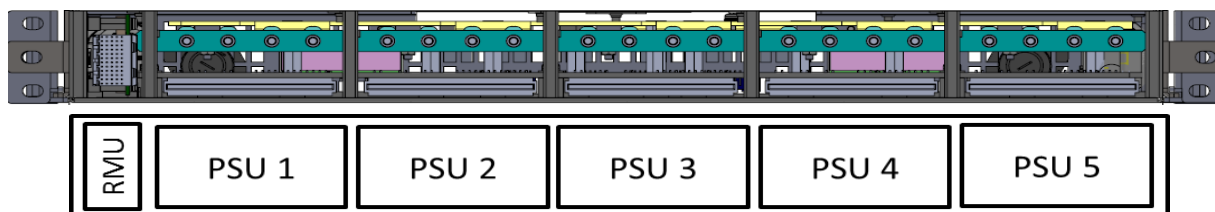
| Parameter                               | Conditions                   | Min.  | Typ. | Max. | Units |
|---|------------------------------|-------|------|------|-------|
| Insulation safety rating / test voltage | Input to output - Reinforced | 3,000 |      |      | Vrms  |
|   | Input to chassis             | 1,500 |      |      |       |
| Isolation                               | Output to chassis            | 50    |      |      | Vdc   |

**EMISSION AND IMMUNITY**

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

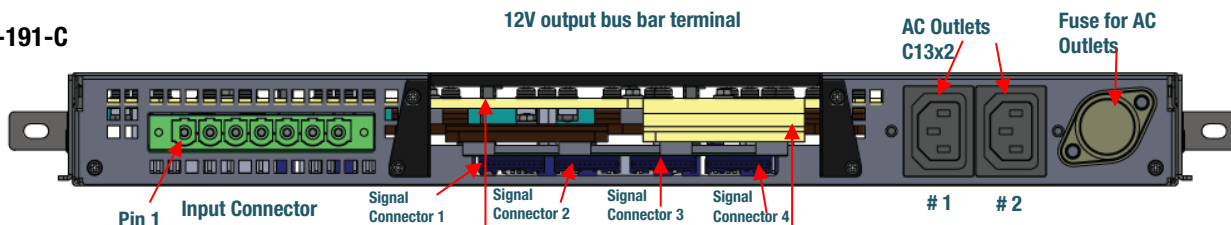
**PRODUCT VIEWS AND CONNECTOR DETAILS**

Front View, All Models

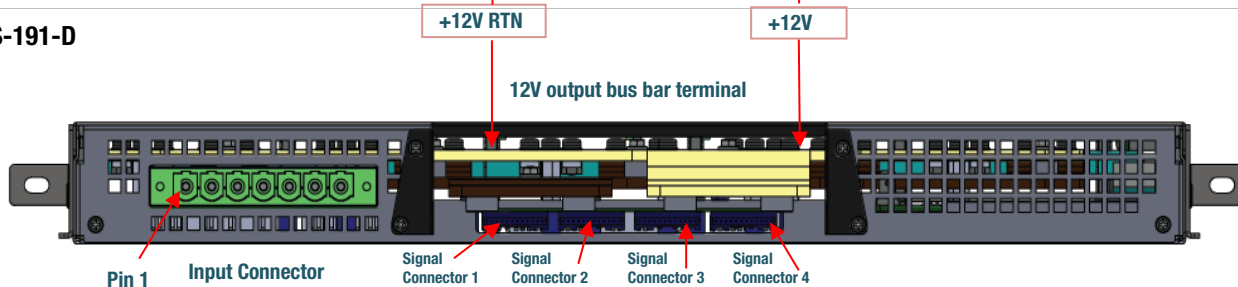


Rear Views

**MWDCES-191-C**



**MWDCES-191-D**



Note: Signal Connector 1,2,3 and 4 are used for battery shelf

**INPUT CONNECTOR DETAILS (PHOENIX CONTACT 1999055, SHELF END)**

| MWDCES-191-C |        |                  | MWDCES-191-D |        |                  |
|--------------|--------|------------------|--------------|--------|------------------|
| PIN NO.      | SIGNAL | FUNCTION         | PIN NO.      | SIGNAL | FUNCTION         |
| P1           | PE     | PROTECTIVE EARTH | P1           | PE     | PROTECTIVE EARTH |
| P2           | N      | NEUTRAL          | P2           | N      | DC RETURN        |
| P3           | L      | AC LIVE          | P3           | L      | DC POSITIVE      |
| P4           | N      | NEUTRAL          | P4           | N      | DC RETURN        |
| P5           | L      | AC LIVE          | P5           | L      | DC POSITIVE      |
| P6           | N      | NEUTRAL          | P6           | N      | DC RETURN        |
| P7           | L      | AC LIVE          | P7           | L      | DC POSITIVE      |

## SAFETY CONSIDERATIONS



Junction between shelf and rack Busbar may be extremely hot, in the case of a heavy load and especially when shelf is mounted in V2 Open Rack (Single Busbar). Please be aware and take adequate precautions.

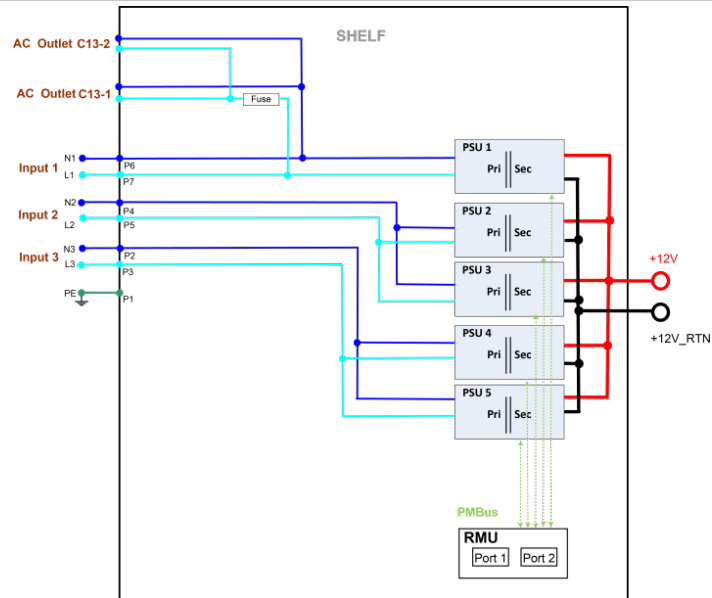
## CONVENIENCE AC OUTLET CONNECTORS 1-2

| Description         | Notes   |
|---------------------|---|
| IEC 320-2-2/F (C13) | <ol style="list-style-type: none"> <li>The convenience outlets are internally connected to the main AC inputs and are not galvanically isolated.</li> <li>Output voltage: 200-240VAC 50/60Hz, maximum 2.5A per outlet; Total power drawn from these outlets needs to be considered by end user when selecting the external mains circuit protector and also to ensure maximum input current ratings of this shelf are not exceeded.</li> <li>Branch fuse protection is provided by 600V 6A Bussmann FNQ-R-6 or LP-CC or Littlefuse KLDR006.TXP. Replaced with same type and ratings.</li> </ol> |

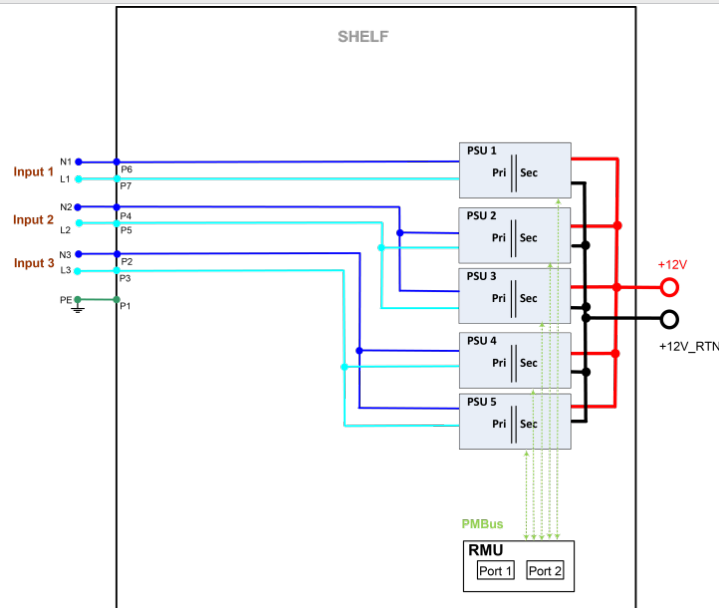


## INTERNAL CONNECTION

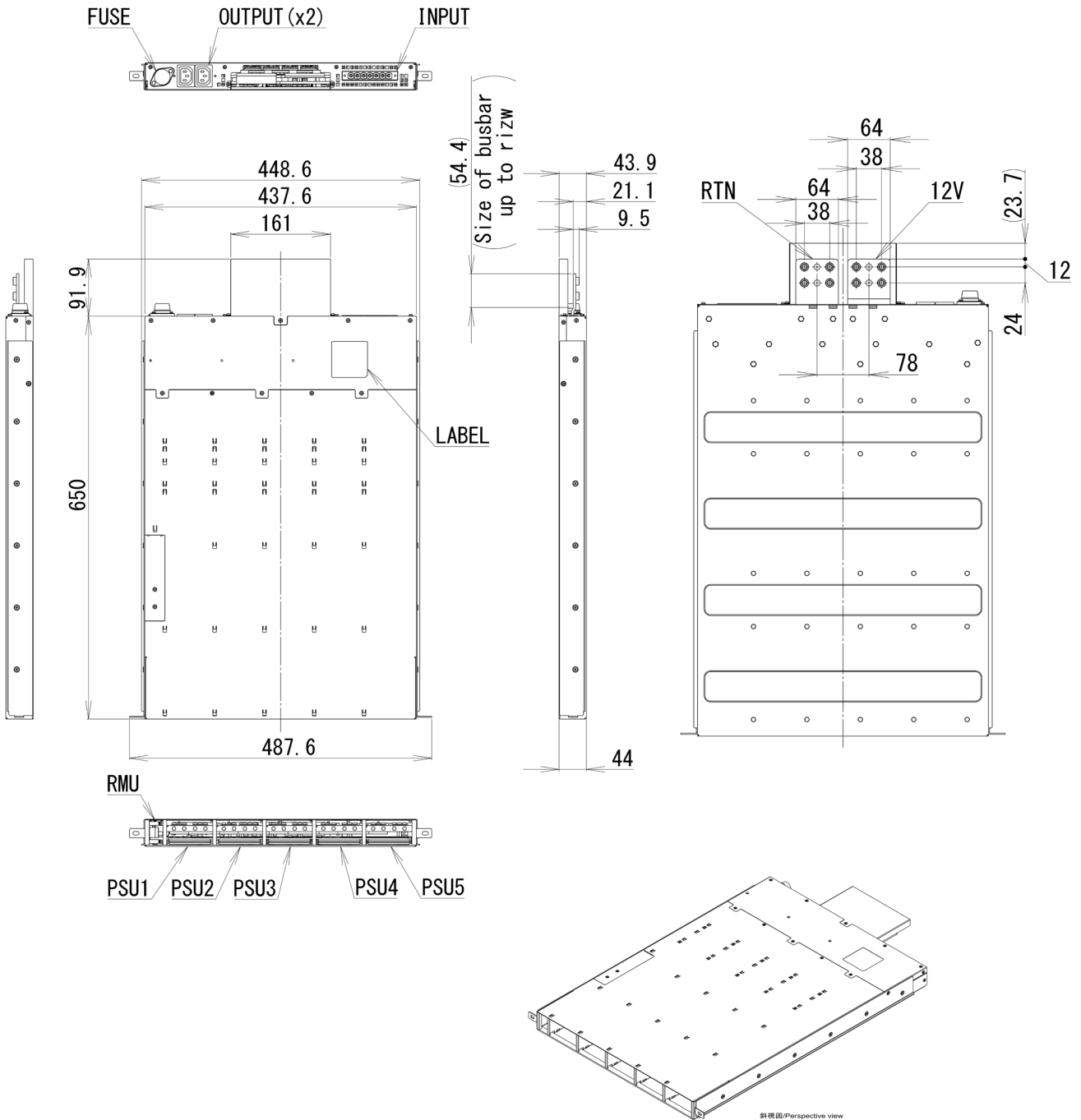
### MWDCES-191-C (Single Phase AC)



### MWDCES-191-D (HVDC)



MECHANICAL DRAWING



**RELATED PRODUCT DATASHEETS**

| Document Number      | Description                    | Link  |
|----------------------|--------------------------------|---|
| MWOC-RMU             | MONITOR AND CONTROL UNIT       | <a href="https://power.murata.com/datasheet?/data/power/mwoc-rmu.pdf">https://power.murata.com/datasheet?/data/power/mwoc-rmu.pdf</a>                         |
| MWOC74-3000-A-RM     | 3KW AC-DC FRONT END PSU MODULE | <a href="https://power.murata.com/datasheet?/data/power/mwoc74-3000-a-rm.pdf">https://power.murata.com/datasheet?/data/power/mwoc74-3000-a-rm.pdf</a>         |
| MWOC_BLANKING_PANELS | BLANKING PANEL ACCESSORIES     | <a href="https://power.murata.com/datasheet?/data/power/mwoc_blanking_panels.pdf">https://power.murata.com/datasheet?/data/power/mwoc_blanking_panels.pdf</a> |

Murata Power Solutions, Inc.  
129 Flanders Road  
Westborough, MA 01581  
ISO 9001 and 14001 REGISTERED



This product is subject to the following operating requirements and the Life and Safety Critical Application Sales Policy. Refer to: <https://www.murata-ps.com/requirements/>

Murata Power Solutions, Inc. ("Murata") makes no representation that the use of its products in the circuits described herein, or the use of other technical information contained herein, will not infringe upon existing or future patent rights. The descriptions contained herein do not imply the granting of licenses to make, use, or sell equipment constructed in accordance therewith. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards that anticipate dangerous consequences of failures, monitor failures and their consequences, lessen the likelihood of failures that might cause harm, and take appropriate remedial actions. Buyer will fully indemnify Murata, its affiliated companies, and its representatives against any damages arising out of the use of any Murata products in safety-critical applications. Specifications are subject to change without notice.

© 2019 Murata Power Solutions, Inc.