Data Center and Open Compute Power Solutions

Modular, Scalable, High Density and Titanium Efficiency Products
Murata has been developing and manufacturing a range of power products including AC-DC power supplies and DC-DC converters for various applications for more than 35 years. Recently, we have focused our efforts on power distribution sub-systems used in the emerging Data Center market. Our latest product offerings include shelf systems compliant with Open Compute V1 and V2 Power Shelf Specifications. While typical OCP Power Shelves only support 3-phase AC input, our Power Shelves support Single Phase AC, 3-Phase AC and HVDC (200-400Vdc) inputs, allowing you to achieve a leading edge, power efficient Data Center with either an AC or DC input power architecture.

Key Components

- 12V and 54Vout 21” 1OU Power Shelf
- 19”/21” 2RU Power Shelf
- 54V, 3.6kW Titanium Efficiency Power Supply
- 12V, 3kW - 3.2kW Titanium Efficiency Power Supplies
- ATS (Automated Transfer Switch) Modules
- RMU (Remote Management Unit)
- Battery Backup Shelf

Murata’s key power shelf features:

- Up to 18kW total output power @12Vout
- Up to 21.6kW total output power @54Vout
- 15kW N+1 or 9kW N+N redundant
- 12.3V or 54V main output
- 12.2V AUX output
- PSU conversion efficiency higher than 96% at 50% of load (80 PLUS Titanium class)
- Available input configurations – Single phase AC, 3-Phase AC; HVDC
Open Compute and Data Center Power Solutions

The OCP power distribution topology for centralized power supply systems is an excellent solution with which you can enjoy benefits such as redundancy and expandability. Our power shelves are OCP compliant and offer leading edge performance.

1OU Power Shelves

12V
The MWOCES-21x Series of shelves are 18kW/19.2kW, 21" 1OU, power shelves that provide 18kW/19.2kW total output power. The shelves provide up to 15kW/16kW in N+1 or 9kW/9.6kW in N+N redundancy configurations. You can install up to six 3kW/3.2kW power supplies (PSUs) in a shelf, so you can scale the total power solution according to your needs today, while offering flexibility to support what you may need tomorrow. The 3.2kW version has an ATS in each PSU. The PSU efficiency is higher than 96% at 50% load level, one of the highest available on the market.

54V
The MWOCES-xxx Series of shelves are 21.6kW, 19" or 21" 1OU, power shelves that provide 21.6kW total output power. The shelves provide up to 18kW in N+1 or 10.8kW in N+N redundancy configurations. You can install up to six 3.6kW PSUs in a shelf, so you can scale the total power solution according to your needs today, while offering flexibility to support what you may need tomorrow. The PSU efficiency is higher than 96% at 50% load level, one of the highest available on the market.

Power Shelf Features
- 80 PLUS® Titanium efficiency PSU
- Up to 6 PSUs per shelf
- High reliability, redundant design
- OCP V1 and V2 open rack compliant
- 2 AC inputs to shelf for flexible shelf configurations (N+1, N+N)
- 2 AC outlets for additional input power to ICT equipment in the rack
- External communication interface RMU through SNMP
- Hot swappable

2RU Power Shelf

The MWOCES-19x Series is an 18kW, 19" (convertible to 21") 2RU, power shelf that provides up to 18kW total output power or 15kW in N+1 redundancy configuration. You can install up to six 3kW PSUs and 2 ATS modules in the shelf.

Power Shelf Features
- Provides up to 15kW (N+1) in 2RU height
- 80 PLUS Titanium efficiency PSU (3kW)
- Up to 6 PSUs per shelf
- High reliability, redundant design
- OCP V1 and V2 rack compliant
- ATS unit equipped to support high reliable AC redundancy
- 6 AC outlets for additional input power to ICT equipment in the rack
- External communication interface RMU through SNMP
- Hot swappable
Power Supplies

54V, 3.6kW Power Supply
The MWOCP68-3600-D-RM is an 80 PLUS Titanium efficient (96% efficiency at 50% load) 3,600 watt front end power module with a 54.5Vdc main output and a 12Vdc standby. The power supply is 68mm and 6 can fit into a 19" shelf. With an accessory kit the shelf will fit into a 21" rack.

Power Supply Features
• 3,600W maximum output power
• 54.5Vdc main output and a 12Vdc standby output
• 44.3W/inch³ power density
• N+1 or N+N redundant
• 1U height 490mm x 68.0mm x 40mm (19.29” x 2.68” x 1.57”)
• Input & output reporting with PMBus interface, active current sharing on 54V

12V, 3kW – 3.2kW Power Supplies
The MWOCP74-3000-RM series power supplies are 80 PLUS Titanium efficient (96% at 50% of load) up to 3,200 Watts, power factor corrected front end power modules with 12.3Vdc main output and 12.2Vdc (2.5A) standby. The power modules have active current sharing and up to six (6) modules may be operated in an OCP shelf delivering up to 15kW, N+1 rack level power for use in the OCP Open Rack.

Power Supply Features
• 3,030W output power – MWOCP74-3000-A-RM
• 3,200W output power with ATS – MWOCP74A3200-A-RM
• 12.3V main output & 12.2V standby output
• 1U height 73.5 x 550 x 40mm (2.89” x 21.65” x 1.57”)
• 30.4W/cubic inch power density
• N+1 redundancy capable
• Hot pluggable
• Active current sharing on 12V main output, ORing FET isolation

The MWOCP74A3200-A-RM with ATS offers the same features as above and includes an automatic transfer switch inside the power supply. It allows 2 inputs into the power supply and switches from one to another, if one fails.

<table>
<thead>
<tr>
<th>Series</th>
<th>Output Power</th>
<th>Input Voltage</th>
<th>Output Voltage</th>
<th>Standby Voltage</th>
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</thead>
<tbody>
<tr>
<td>MWOCP74-3000-A-RM</td>
<td>3,030W Titanium</td>
<td>90 - 300Vac or 192 - 400Vdc</td>
<td>12.3Vdc</td>
<td>12.2Vdc</td>
</tr>
<tr>
<td>MWOCP74A3200-A-RM with ATS</td>
<td>3,200W Titanium</td>
<td>180 - 305Vac</td>
<td>12.3Vdc</td>
<td>12.2Vdc</td>
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Battery Backup Solution

Murata offers 21” OCP and EIA 19” rack mountable battery backup solutions to support high reliability architectures. We utilize Murata’s best in class Lithium Ion battery cell technology for our BBU (Battery Backup Unit). With a compact form factor, each BBU is capable of supplying 4kW for up to two minutes. The 21” OCP Battery Backup Shelf (BBS) has 4 slots for BBUs and can supply up to 16kW for two minutes in the event of an AC power loss. The BCU (Battery Control Unit) in the shelf communicates with each BBU and the power shelf to implement intelligent power system control via our Remote Management Unit (RMU). Murata’s Battery Backup Solution is lighter and smaller than traditional Lead Acid batteries, improving your business in terms of maintenance, OPEX and total cost of ownership.

**BBU Features**

- 4kW maximum output power
- 12V input and output voltage
- 120 seconds hold up time
- Adjustable charging power
- Active current sharing on 12V output
- Oring FET isolation
- Hot swap available
- Overvoltage, overcurrent, over temperature protection and reporting

**Battery Shelf Features**

- Fits into the 21” OCP Open Rack Standard
- Up to 16kW total power per shelf (4 BBUs)
- Battery Shelf (600×537×87 mm)
- Four battery slots; each BBU provides 12Vdc, 4kW (max)
- One battery control unit for management of BBUs
- Communicates with Murata Power Shelf (MWOC series)
- Three battery shelves can be connected in parallel

Remote Management Unit (RMU)

The MWOC-RMU is a Remote Management Unit for the MWOCES series OCP compliant power shelves. The MWOC-RMU can monitor and control the internal PSUs and/or peripheral equipment installed in the MWOCES-21x and MWOCES-19x via the PMBus, and can communicate with the host system via Ethernet by SNMP. The MWOC-RMU provides efficient communication and reporting for datacenter applications.

**RMU Features**

- Communicates internally via PMBus
- Communicates externally via SNMP
- LED status indicators
- Two (2) RJ45 connectors
- Hot pluggable

Contact information:

- If you have questions or comments, please contact: Kevin Gero at kevin.gero@murata.com
- In Japan, please contact: Gaku Kamitani at gkami@murata.com or Hiroki Tatsumi at hiroki_tatsumi@murata.com
Global locations
For details please visit www.murata.com

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4. Power plant equipment
5. Medical equipment
6. Transportation equipment (vehicles, trains, ships, etc.)
7. Traffic signal equipment
8. Disaster prevention / crime prevention equipment
9. Data-processing equipment
10. Application of similar complexity and/or reliability requirements to the applications listed above

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Please read rating and CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.

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