

## PRODUCT OVERVIEW

MWOCES-211-P-C is a 21.6kW, 21" 10U power shelf that provides a delivery system for up to six 68mm, 10U [Power Supplies \(PSU\)](#), and one [Remote Management Unit \(RMU\)](#). It is intended to support 50.5V/54.5V 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 44.5(H) mm
- 21.6kW total output power (N+0)
- Accommodates up to six PSU modules and one RMU
- 50.5/54.5V output
- PSU & RMU are hot-swappable
- N+1 / N+N Redundancy
- Supports external BBU (Murata Battery Backup System)
- Four RJ45 ports with RMU
- 2-year warranty



For full details go to

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



## ORDERING GUIDE

Part Number <sup>1</sup>	Input Cion	DC Output Busbar Configuration
MWOCES-211-P-C <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

## INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Nom.	Max.	Units
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	528	
	HVDC	192	240/380	400	
Frequency	AC input	47	50/60	63	Hz
Input Current	Wye / Single-phase: 200-240Vac (Each input, per line)			23.5	Arms
	Delta : 200-240Vac (Each input, per line)			41.0	
	240-380Vdc (each input, per line)			23	Adc

## OUTPUT CHARACTERISTICS

Parameter	Configuration	Min.	Typ.	Max. (At Output Voltage)		Units
				50.5 Vdc	54.5 Vdc	
Output Power	With six (6) PSUs	0		21,600	21,600	W
	With five (5) PSUs	0		18,000	18,000	
	With four (4) PSUs	0		14,400	14,400	
	With three (3) PSUs	0		10,800	10,800	
	With two (2) PSUs	0		7,200	7,200	
	With one (1) PSU	0		3,600	3,600	
Output Current	With six (6) PSUs	0		427.7	396	A
	With five (5) PSUs	0		356.5	330	
	With four (4) PSUs	0		285.2	264	
	With three (3) PSUs	0		213.9	198	
	With two (2) PSUs	0		142.6	132	
	With one (1) PSU	0		71.3	66	
Holdup Time	With six (6) PSUs [5+1]		14.4 (at 18kW Output power)			ms
	With six (6) PSUs [3+3]		24 (at 10.8kW Output power)			
	With five (5) PSUs [4+1]		15 (at 14.4kW Output power)			
	With four (4) PSUs [3+1]		16 (at 10.8kW Output power)			
	With four (4) PSUs [2+2]		24 (at 7.2kW Output power)			
	With three (3) PSUs [2+1]		18 (at 7.2kW Output power)			
	With two (2) PSUs [1+1]		24 (at 3.6kW Output power)			
	With one (1) PSU		12 (at 3.6kW Output power)			

## ENVIRONMENTAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Storage temperature range	Non-operating	-40		70	°C
Operating temperature range	Altitude < 5,000m	0		40	
Storage humidity	Non-condensing	10		90	%
Operating humidity	Non-condensing	10		85	
Weight (Typical)	Shelf Only, without PSUs and RMU	12.1			kg
<b>Vibration Test</b>	<b>Vibration Non-operating</b>	<b>Vibration Operating</b>			
Excitation Mode:	Sinusoidal	Sinusoidal			
Test Frequency:	5Hz to 500Hz (5.0-9.0Hz) 6mm peak to peak (9.0-500.0Hz) 1G	5Hz to 500Hz (5.0-9.0Hz) 3mm peak to peak (9.0-500.0Hz) 0.5G			
Amplitude:	1G	0.5G			
Frequency Change Rate:	1 octave / min	1 octave / min			
Test Directions:	3 directions in space (x, y, z)	3 directions in space (x, y, z)			
Duration:	10 sweep cycles (2hours 13 minutes)	10 sweep cycles (2hours 13 minutes)			
Test Temperature:	Room temperature	Room temperature			
Electrical Work:	None	Power supply in operation			
<b>Shock Test</b>	<b>Shock Non-operating</b>	<b>Shock Operating</b>			
Shock Pulse:	Half sinusoidal	Half sinusoidal			
Shock Duration:	19ms	11ms			
Shock Amplitude:	7.5G	3.5G			
Test Directions:	2 directions (±z)	6 directions (±x, ±y, ±z)			
Number of Shocks:	6 (3 per each direction)	60 (10 per each direction)			
Test Temperature:	Room temperature	Room temperature			
Electrical Work:	None	Power supply in operation			
Safety approval	UL62368-1 : 2018 (3rd Edition) (Information Technology Equipment – safety – Part 1: General Requirements) CAN/CSA-C22.2 No. 62368-1 : 2018 (3rd Edition) (Information Technology Equipment – safety – Part 1: General Requirements) TUV : EN62368-1:2018 (3rd Edition) CQC : GB4943.1-2022 CB : IEC 62368-1:2018 (3rd Edition)				

## 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	50			Vdc

## EMISSION AND IMMUNITY

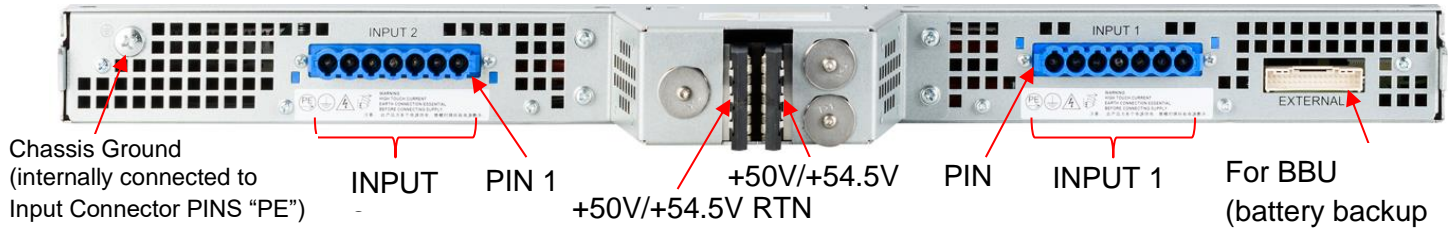
Parameter	Standard	Criteria
Input current harmonics	IEC/EN 61000-3-12	Class A
Conducted emission	CISPR 22	Class A
ESD immunity	IEC/EN 61000-4-2	Level 4 criteria A
Electrical fast transient/burst immunity	IEC/EN 61000-4-4	Level 3 criteria B
Surge immunity	IEC/EN 61000-4-5	Level 3 criteria A

**PRODUCT VIEWS AND CONNECTOR DETAILS**

**Front View**

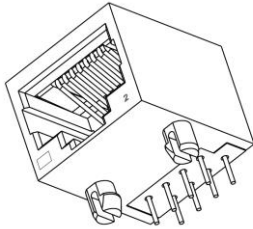


**Rear View**



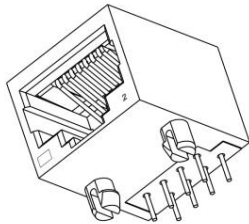
4mm<sup>2</sup> diameter(AWG10) earthing wire shall be connected to the chassis by screw at screw hole marked with "Protective Earth" symbol.

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



Pin	I/O	Function	Description
1	I	GND	-
2	O	PLS_F	Notification signal that at least one PSU AC input fault
3	O	BKP_F	Notification signal that at least one PSU is in FAULT state
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-

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



Pin	I/O	Function	Description
1	A	ISHARE	PSU current share signal
2	I	GND	-
3	I/O	SYNC_START	PSU activation signal
4	O	VOUT_SEL	Notification signal that PSU output voltage setting mode
5	I	GND	-
6	-	-	-
7	-	-	-
8	-	-	-

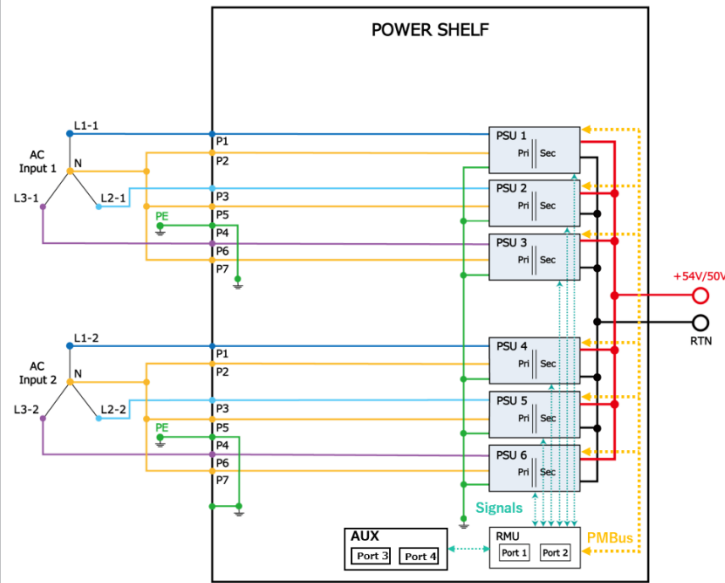
**INPUT CONNECTOR PIN ASSIGNMENT (AC INPUT 1 & 2)**

Positronic SP10RSSS48RM220A1-AA-2269 (Input 1) SP10RSSS48M220A1-AA-2269 (Input 2) mating connector: Positronic SP10RSSS1F0W01/AA-2268

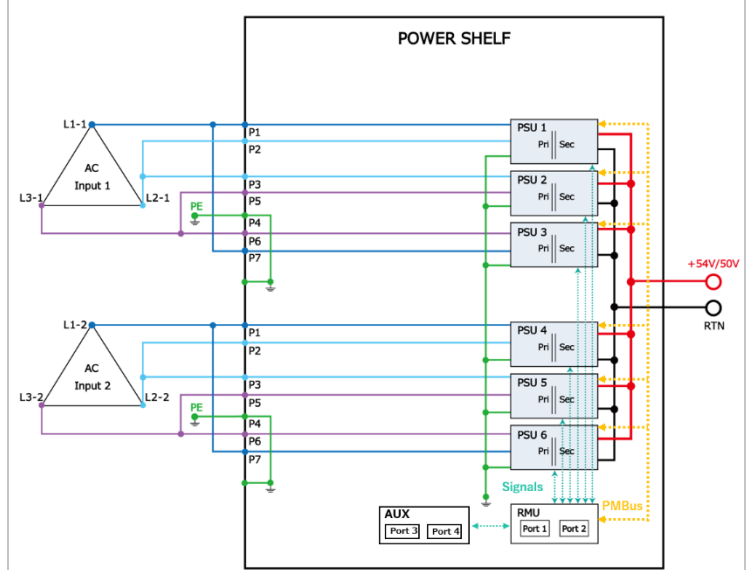
Wye Input			Delta Input			Single Input			HVDC Input		
Pin No	Signal	Function	Pin No	Signal	Function	Pin No	Signal	Function	Pin No	Signal	Function
1	L1	AC line voltage 1	1	L1	AC line voltage 1	1	L	AC live	1	(+ HVDC)	DC POSITIVE
2	N	Neutral	2	L2	AC line voltage 2	2	N	Neutral	2	(- HVDC)	DC RETURN
3	L2	AC 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

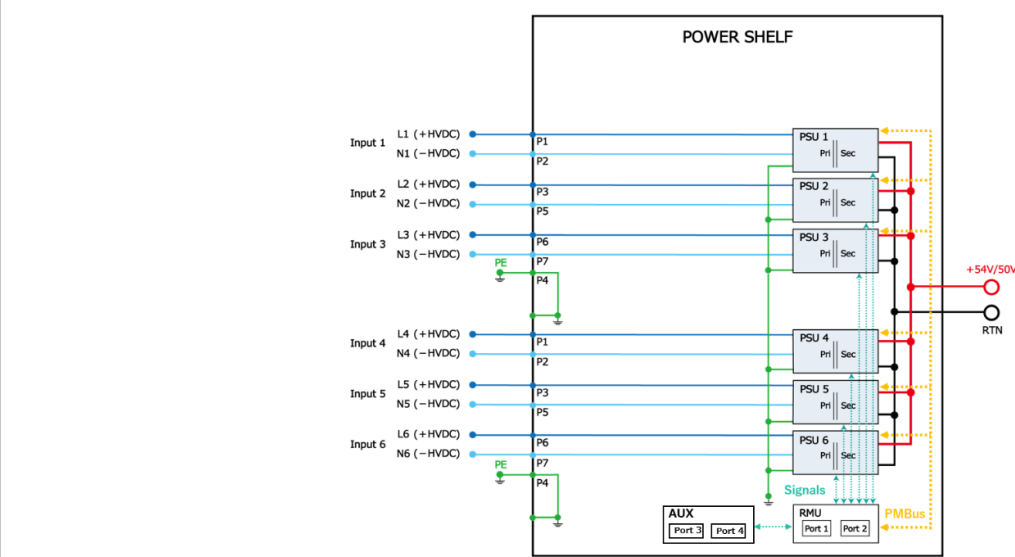
### Wye input



### Delta input



### Single phase & HVDC input



## COMMUNICATION (WITH MWOC-RMU)

FUNCTION	DESCRIPTION
Control the units	ON/OFF control of each unit installed in the power shelf Select the power source line
Reporting to the host	ON/OFF Status and presence information of each unit Status of input power sources Fault information of each unit Input power and output power of PSUs Output power and SoC of the battery unit

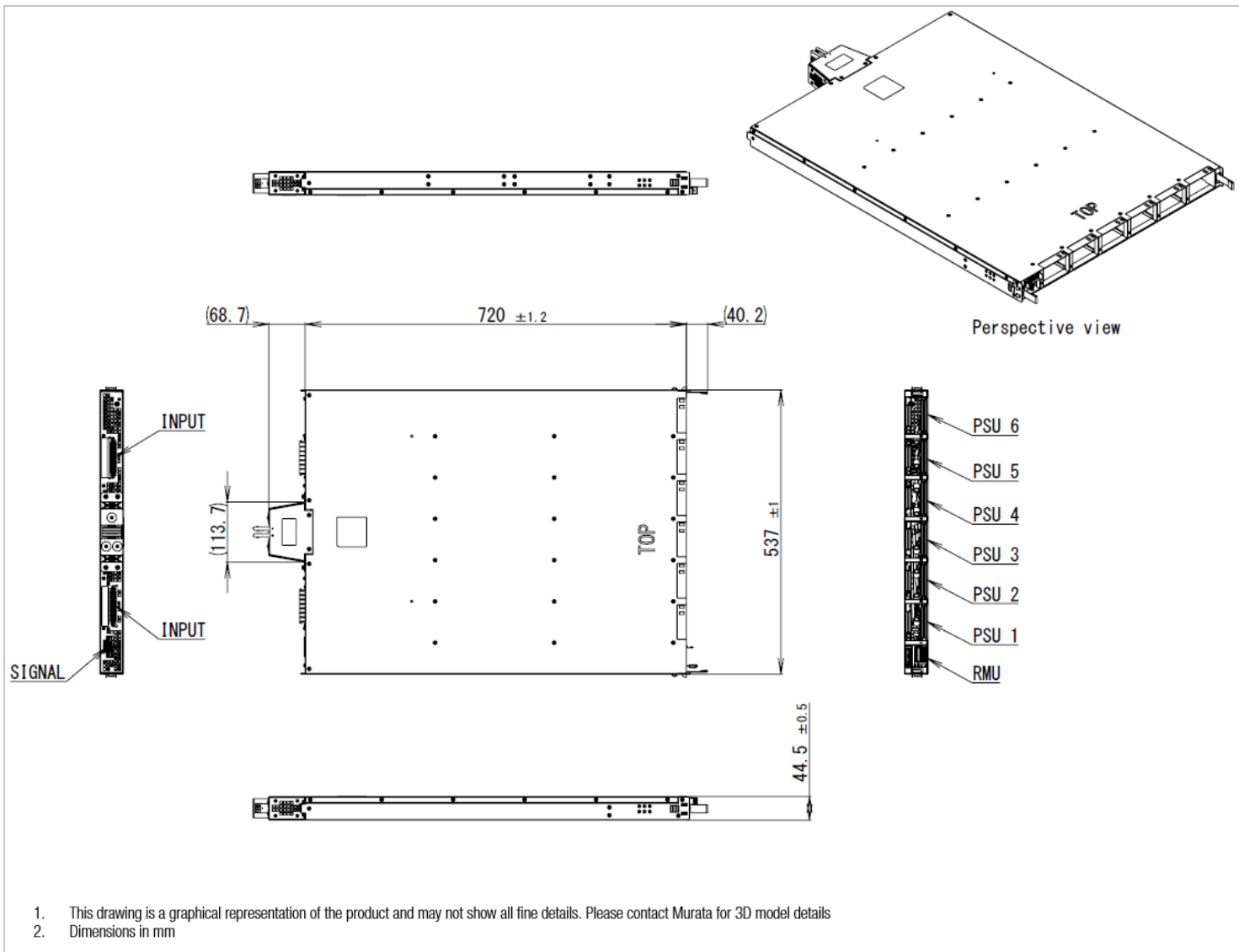
## COMMUNICATION (WITH MWOC-AUX)

FUNCTION	DESCRIPTION
Auxiliary power supply for 12V_SB	Outputs 12V from the bus voltage to back up the RMU during a power failure (requires for BBU)
Auxiliary signal	Outputs signals such as current share, fault, output voltage switching (TBD)

Link Back To [Order Guide](#)

## MECHANICAL DRAWING

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



RELATED PRODUCT DATASHEETS		
Document Number	Description	Click link below to open online datasheet
MWOC-RMU	Monitor and control unit	Link to: <a href="#">Datasheet</a>
MWOC P68-3600-D-RM	3.6kw/54.5V ac-dc front-end PSU module	Link to: <a href="#">Datasheet</a>
MWOC P68-3600-B-RM	3.6kW/50V ac-dc front-end PSU module	
MWOC_BLANKING_PANELS	Blanking panel accessories	Link to: <a href="#">Datasheet</a>

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**ISO 9001 REGISTERED**



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