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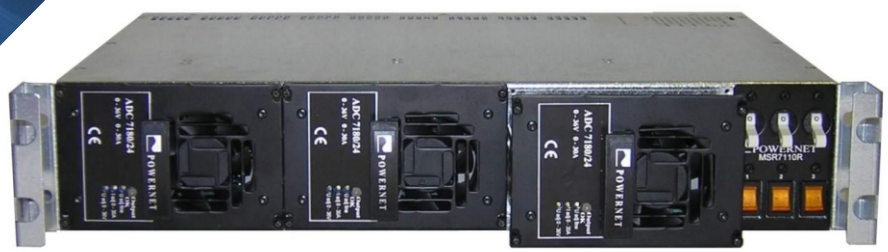
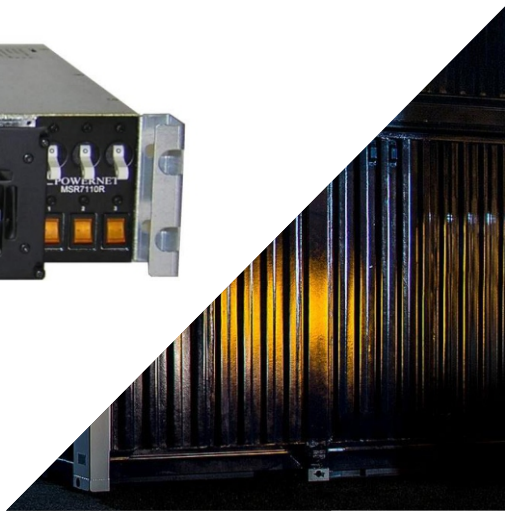




MSR 2400W

Multipurpose Power System for Telecom and Industrial Applications

CE

UTILITY

INDUSTRIAL

TELECOM

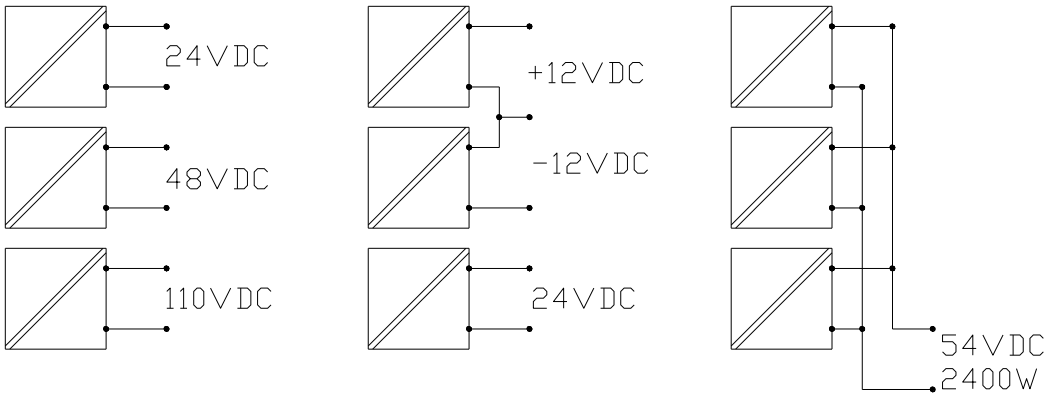
2400W MODULAR SYSTEM

All voltages available 0...144VDC per module
U and I adjustable from 0 to max value
Hot-swap plug-in modules
Power supply or battery charging applications
Module and mains alarm for remote monitoring
Solid construction for heavy duty applications
Optional Shut Down and input over voltage disconnection

FLEXIBLE CONNECTIONS

Parallel n+1 connection, up to 90A
Series connection, up to 400VDC
Multi outputs, ± outputs

Connection examples



19" SUB-RACK UNITS

Type	Voltage versions	Modules per rack	Power	Mechanics (Width x Height x Depth)
MSR7110/48	24V, 36V, 48V	1...3 pcs	800W...2400W	19" (482mm) / 2U (88mm) / 360mm
MSR7110/96	72V, 96V	1...3 pcs	800W...1800W	19" (482mm) / 2U (88mm) / 360mm

8871100C	Covering plate set for empty module place
70130753	IEC320 power cord 2.5m, rubber cable

RECTIFIER MODULES

Type	Input Voltage range *)	Nominal Output Voltage	Voltage setting range	Max output current	Current limit setting	Max power	Mechanics (Width x Height x Depth)
ADC7180R/24	55-264VAC/78-360VDC	24 VDC	0-36VDC	30A	0-30A	800W	25TE / 2U / 230mm
ADC7180R/36	55-264VAC/78-360VDC	36 VDC	0-54VDC	20A	0-20A	800W	25TE / 2U / 230mm
ADC7180R/48	55-264VAC/78-360VDC	48 VDC	0-72VDC	15 A	0-15A	800W	25TE / 2U / 230mm
ADC7180R/72	55-264VAC/78-360VDC	72 VDC	0-108VDC	10A	0-10A	800W	25TE / 2U / 230mm
ADC7180R/96	55-264VAC/78-360VDC	96 VDC	0-144VDC	7.5A	0-7.5A	800W	25TE / 2U / 230mm

*) Max power 600W at DC input
Reduced power 55...200VAC or 78...200VDC

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INPUT

Input voltage	55...264 VAC	55...200VAC reduced power, see module datasheet
	78...360 VDC / max 600W	78...200VDC reduced power, see module datasheet
Frequency		45...65Hz
Safety		IEC 60335-2-29:2002 (Ed 4) + A1:2004 + A2:2009
EMC-Standard		EN 61000-6-1:2019
		EN 61000-6-3: 2006 +A1:2010
		EN 61000-3-2: 2018
		EN 61000-3-3: 2013 + A1:2017
Input current		Max 4.5A per module
Inrush current	Soft start	Max 7A 10ms peak, otherwise less than 4.5A
Isolation	Input / ground	1500VAC
	Input / outputs	3750VAC
	Output / ground	500VDC
Main switch	Front panel with light	12, 24, 48VDC One per PSU
		72, 96VDC One per sub-rack, max 10A current
Mains input connector	Common input for each rectifier	IEC320 C14 male connector

Note: If charger's rated output voltage is higher than 36V it doesn't fulfill article 10.101 ("The no-load d.c. output voltage shall not exceed 42,4V"). Protection against electric shock must be taken into account in installation. IEC 60335-1:2010 (Ed 4) + A1:2013 + A2:2016

OUTPUT

Voltage	Nominal voltages	0...144VDC / max 800W per module
Current	Nominal current per module	0...30A / max 800W per module
Short circuit protection	Rectifier modules	Short circuit protected, electronic current limit
MCBs on front panel	ADC7110/48 sub rack	3 x 30A MCB in negative output
	ADC7110/96 sub rack	3 x 10A MCB in negative output
Output connector	3 terminal groups on rear panel	3-pole 10mm² screw terminal for each rectifier (+, -, PE)
Hot swap	Series diode in each rectifier	Hot-swap allowed, Input and output switch at OFF position
Series/parallel operations	All modules can be connected in series or in parallel	

CONTROLS

Input	On the front panel	Power switch with ON/OFF light
Output	On the front panel	MCB ON/OFF safety switch

ALARMS

Input failure	$U_{in\ nom}$ < appr. 150 VAC	Normaly open and closed relay contacts
Output failure	Module failure or output switch off	Relay contact and MCB auxilary relay
Alarm connector	Rear panel	Removable 12-pole 2.5mm² screw terminal
	Pin configurations	
	1 Mains alarm COMMON	
	2 Mains alarm NO	
	3 Mains alarm NC	
	4 Parallel output alarm COMMON	
	5 Parallel output alarm NO *)	
	6 Series output alarm PSU1 COMMON	
	7 Series output alarm PSU1 NC *)	
	8 Series output alarm PSU2 COMMON	
	9 Series output alarm PSU2 NC *)	
	10 Series output alarm PSU3 COMMON	*) Normaly = Mains / PSU OK
	11 Series output alarm PSU3 NC *)	
	12 Not in use	

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MECHANICAL

Power Rack	19" sub- rack	Positions for 3 pcs of ADC7180 euro modules
Dimensions	Height	2U (88mm)
	Widht	19" (482mm)
	Depth	360mm
Weight	Rack without rectifiers	5.5kg
	Rectifier	1.35kg
Enclosure	Steel	IP20

ENVIRONMENTAL

Temperature range	Operating	-25°C...+50 °C (full power typically)
		+50°C...+70 °C (de-rating)
	Storage	-40°C...+85 °C
Cooling	Temperature controlled fan	Front panel, air flow front to rear
Grounding	M6 screw	On the rear panel

Operating and connecting the sub-rack and modules

GENERAL

MSR7110 sub-racks can be used to supply several output voltages from 0V up to 400VDC in series connection. Modules can be connected in parallel, series or to have multi output voltages from the same sub-rack. Units are hot swappable, but the sub-rack also have both input and output switch to make the change without power. 1...3 pcs of modules can be installed in the sub-rack. Empty module places are covered by the cover plate.

MOUNTING THE SUB-RACK

Sub-rack is installed in 19" cabinet and mounted by 4pcs of M6 screws from the front panel.
Electrical installation of the rack must be performed by skilled person.

MOUNTING THE PLUG-IN MODULE

The plug-in module is installed by pushing it to the bottom of sub-rack as long as the connector in the rear panel have the contact with the mating connector in sub-rack. Mounting screws in modules front panel are fastened. Removing the module is made in opposite order.

MAINS CONNECTION

The mains is supplied by IEC320 C14 male connector. Use 1-phase power cords cross-section 3 x 1,5mm². The minimum mains fuse is 16A. Make sure that both input and output are switched off in the front panel of sub-rack before connecting the mains. Turn the mains switch to up position. The switch light indicates that mains is connected. The unit is starting about 4 seconds. The unit's output led in front panel is lightning green.

OUTPUT CONNECTION

Use minimum 4mm² output cable, 6mm² preferred. Connect cables to the screw terminal in the sub-rack's rear panel via the cable clamp. Output MCBs can be turned to the ON position after module's output led in front panel is green.

Outputs can be in stand-alone, parallel or series use.

1. Stand-alone use
Connect minimum 4mm² cables from modules + and - screw terminal to load.

2. Parallel use
Connect each module to the load by minimum 4mm² cables. To ensure proper load sharing the length and cross section of each output cable need to be the same and the output adjustment at each module should be equal.

3. Serial use
The serial connection is made by connecting the positive output of module 1 to the negative output of module 2 and connecting the load between the positive output of module 2 and negative output of module 1. Use minimum 4mm² cables.

OUTPUT VOLTAGE ADJUSTMENT

The factory setting for the output is the nominal voltage (for example 48VDC). Output of each module can be adjusted by turning Uadj trimmer. The adjustment is made by small screw driver.

OUTPUT CURRENT LIMIT ADJUSTMENT

The factory setting for the current limit is the nominal output current. Output current limit (max current) can be adjusted from the Iadj trimmer.

ALARMS

Potential free change over relay contacts (NO, NC, COM) are included in system.

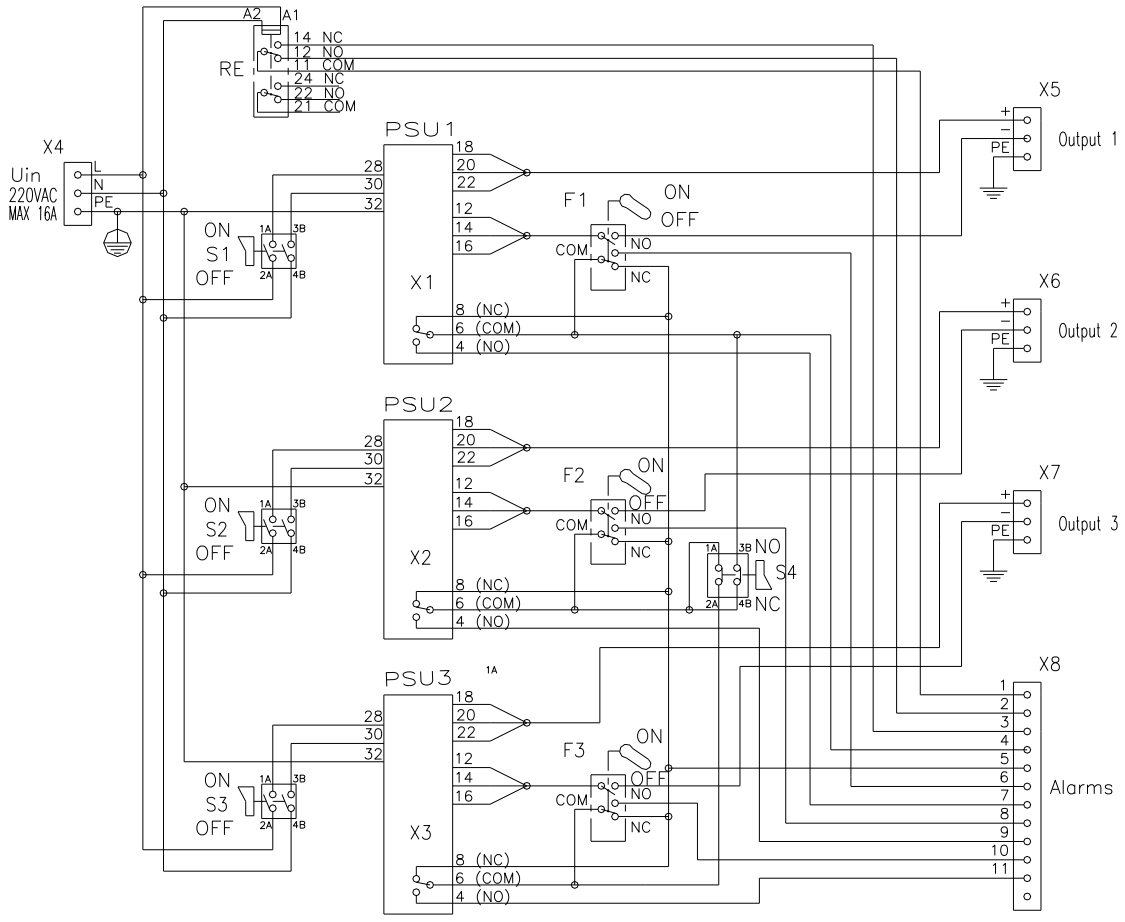
Input alarm

Input alarm is indicated when mains reduce below 150V. Both normally open contact between pins 1-2 and normally closed contact between pins 1-3 are available.

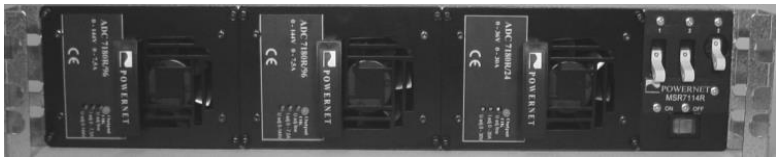
Module fail or output MCB fail

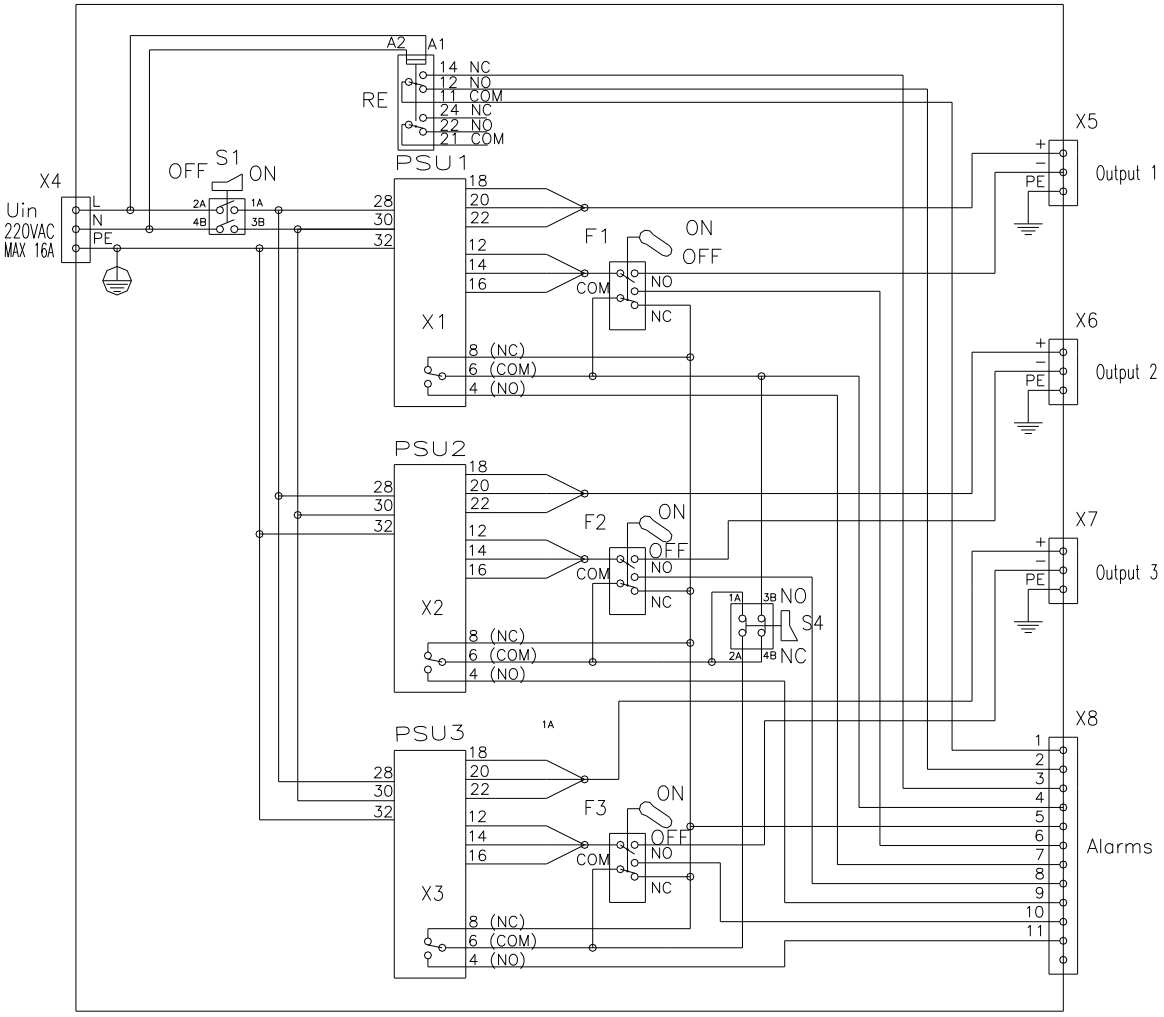
Each rectifier have module fail relay alarm NO and NC contact. Standard sub-rack includes NC contacts from each rectifier and parallel connected common alarm from whole system with NO contacts. Parallel connected NO contacts are in use when switch S4 is in NO position. Common alarm can be now connected between pins 4-5. If the switch S4 is in NC-position (serial alarm), output alarms of each PSU can be used individually from pins 6-7, 8-9 and 10-11 or to these individual alarms can be connected in series and the common NC output can be taken out between pins 6 – 11. The status normal means the normal operating condition for the power supply. The cross section of alarm cable can be 0,22 ... 0,75mm².

Electrical connections in the sub-rack
Voltage versions 12VDC, 24VDC and 48VDC



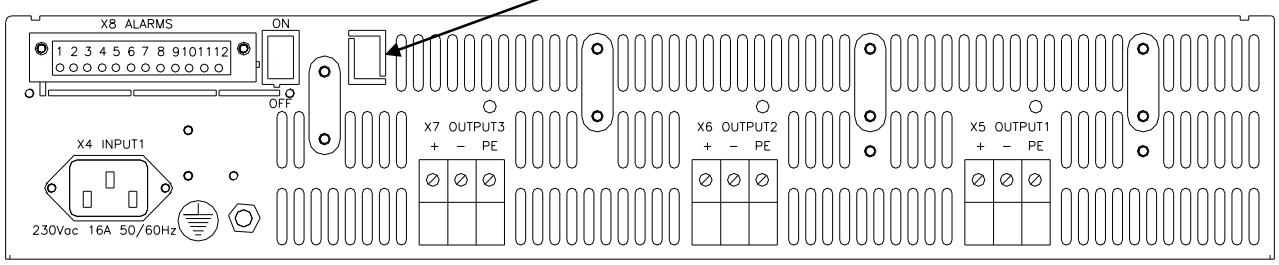
Electrical connections in the sub-rack
Voltage versions 72VDC and 96VDC





Pin Configuration in rear panel

Lead trough position for analog control cable



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Enedo Headquarters
Martinkyläntie 43
01720 Vantaa
Finland

Tel: +358 9 478 466
info@enedopower.com

www.enedopower.com

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