

Product Features:

- Down converter system
- Complies with EN60950-21 RFT-C
- Up to 360W output power capability at 70°C
- Load share to offer full redundant power n+1
- 19" and ETSI compatible
- 250mm (9.84") deep
- Field interchangeable modules
- installation and connection



Cost effective reliability

This compact 3x120W remote energy solution from Mitra E&I provides high availability of power to remote sites in the local loop of the newest networks. The system connects to copper pairs networks powered at high voltage in the central office equipment. This solution takes advantage of the battery energy back-up power provided centrally. In this way high availability is provided at the remote site without increasing the number of remote battery locations and the exponential costs associated with their maintenance.

One compact system for street cabinet above- or underground

The system is composed of three modules 120W. The module inputs are fed by a common high voltage bus combining 24 copper pairs connected to the central office equipment. The lateral cooling of the system provided by a removable fan tray enables the installation of the system horizontally or vertically to secure excellent cooling in street cabinets located above- or underground.

Easy installation and faster deployment

The 200mm / (7.87") deep system is delivered in either 19" or ETSI compatible rack mounting. The module can be quickly and very cost effectively installed in the network as it does not require any connection to the utility network, or any site safety approvals.

The energy system is designed to operate on temperature range from -25°C to 70°C in forced air cooling.

Redundancy at all levels

Dual power bus supports very high reliability. All power modules can be easily replaced in the field without interruption of power. The number of copper pair connections is designed independently of the number of power modules. It enables the reduction of copper pairs necessary secure redundancy at the module level and ease the dimensioning of the number of pairs in regard to the distance from the central up-converter.

Integrated remote monitoring and output distribution

An embedded module combining five outputs and site alarm monitoring completes the system. Up to six site dry alarms can be connected to the remote power system. A modulator combines these alarms and provides a signal that can be reported to the central office up converter which allows site monitoring, lines and power conversion from a central location.



1 Safety

Certification

CE marked for low voltage directive
EN60950 and EN60950-21

Dielectric strength test (on every unit):

Input - output: 4242VDC
Input - earth: 1414VDC

Module complies with ITU-T K.44 and ITU-T K.45

Each pair properly connected to the central office up converter and to the Cherokee remote input card delivers up to 58mA / 18W at a voltage equal to 320V minus the voltage drop on the copper pair at 58mA.

In such case the following protections apply:

Line to earth

The current between lines and ground is limited to 1.5mA per remote location.

Low line resistance

The current capability per pair is limited to 8mA when the output voltage of the DC/DC converter is below 245VDC. When the resistance of the line is such that the output voltage goes below 166V then the DC/DC converter output will go below 50V.

See also specification of the central office up converter systems CES48/xxL320RFM-2A



2 EMC Data

2.1 EMC - Emission ETSI EN300 386

Port	Frequency range	Limits	Reference standard
DC input (conducted)	0.15 - 30 MHz	B	EN55022
Enclosure (radiated)		B	EN55022

2.2 EMC - immunity EN300 386

Port	Phenomena	Test	Frequency	Criteria	Reference standard
Enclosure	RF electromagnetic field, amplitude modulated	3 V/m 10V/m 3/Vm 10V/m 80% AM	80Mhz - 800 MHz 800MHz - 960MHz 960MHz - 1GHz 1.4GHz - 2GHz	A	EN61000-4-3
	ESD	8 kV air 6kV contact		B	EN61000-4-2
DC input ports	Burst/Fast transients	0.5 kV 5/50ns	5kHz	B	EN61000-4-4
	Surge Line to ground	1.2/50µs 1KV		B	EN61000-4-5
	RF common mode Amplitude modulated	3 V 80% AM	150kHz to 80MHz 1kHz	A	EN61000-4-6
DC output ports and signals	Burst/Fast transients	1kV 5/50ns	5kHz	B	EN61000-4-4
	Surge Line to ground	1.2/50µs 1KV		B	EN61000-4-5
	RF common mode Amplitude modulated	3 V 80% AM	150kHz to 80MHz 1kHz	A	EN61000-4-6

3 Environmental Data

Parameter	Conditions	Min.	Max.	Unit
Temperature range	Operating (integrated system fans)	-25/(-4)	70/(158)	°C/(°F)
	Starts (may work out of spec)	-40/(-40)		°C/(°F)
	Storage and transit	-40/(-40)	70/(158)	°C/(°F)
Relative humidity	Operating, non-condensing	5	95	%
	Storage and transit	5	100	%
Altitude	Operating	10/(1.3)	2500/(8200) 104/(14.8)	m/(feet) kPa/(psi)
	Storage and transit	10/(1.3)	12000/(39400) 106/(15)	m/(feet) kPa/(psi)
Vibration	Operating		1.5	mm
	Constant amplitude: Constant acceleration:	2 to 9Hz 9 to 200Hz	5	g _{rms}
Storage and transport	Constant amplitude:	2 to 9Hz	3	mm
	Constant acceleration	9 to 200Hz	10	g _{rms}
Shock	IEC 721-3-4		25	g
Acoustic noise	Meets NCBS spec		49	dBA



4 Electrical data

4.1 Input data

RES30L013RFM48N					
Parameter	Conditions	Min.	Nom.	Max	Unit
Input voltage					
Operating range		200	250	320	V
Start		200	210	220	V
Stop		165	170	175	V
Source current	Per module at nom. power		0.56	0.86	A
Efficiency	Nominal load 25°C, nominal input voltage	82	85		%

4.2 Output data

4.2.1 120W modules

Parameter	Conditions	Min.	Nom.	Max	Unit
Output voltage	2.2A output load	-53.4	-54	-54.6	V
Overvoltage protection		-57		-60	V
Output power capability	70°C forced air		120		W
Output current		0	2.2		A
Current limit		3		3.4	A
Turn ON/OFF delay time	250V input		3	5	s
Regulation					
Line	Nominal to 170V or 320V			±0.4	%
Load				±1	%
Temperature drift	-25°C to 70°C		1	2	%
Combined effect	Source, load, cross, adjust, temperature		2	3	%
Dynamic response	Minimum load 0.2A, load change 1A rate 0.5A/μs				
Voltage change				1	V
Recovery				4	ms
Power sharing	Minimum load 10%, passive sharing			±5	%
Narrow band noise	Meets ETS 300 132-2 §4.8				
Ripple and noise	Nominal input; full load, 25°C 20MHz BW			100	mV _{pp}



4 Protections

Over voltage: Each module features a latching over voltage protection between 57V and 60V . In such event the module will shut down and will generate an alarm to the monitoring card.

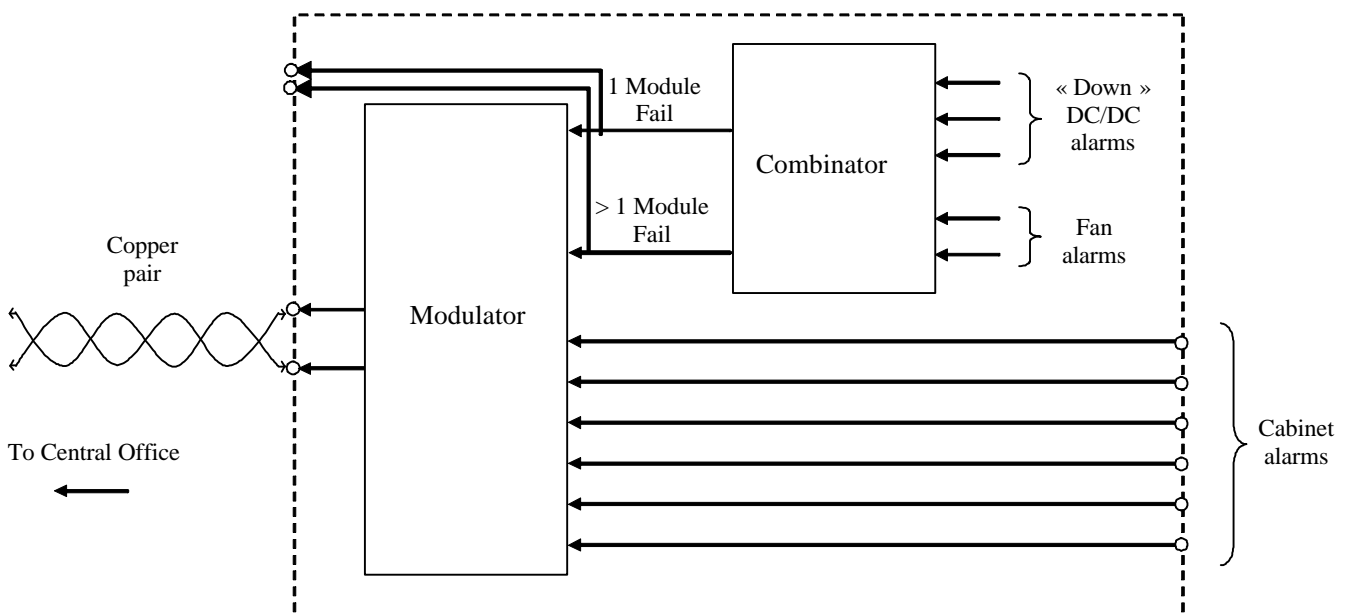
Over temperature: Each module features a non-latching embedded temperature protection when ambient temperature exceeds 70°C

Overload In case of overload on the system properly dimensioned (input power is at least equal to the power necessary to feed all modules installed) a relay will disconnect the load from the 48V DC bus for ten seconds. If the overload is continuous subsequent disconnections will stand for ten minutes each until the overload is removed.

5 Monitoring

Converter output monitoring: One green led indicates proper operation of the system. In addition an alarm normally open changes its status when converter fails.

The system monitoring card enables the monitoring of the energy system and of external digital alarm with following principle.



The alarms from the “Down DC/DC converters” and fans (when applicable) are combined in order to generate a Not Urgent or Urgent (one or more than one element failed respectively). These two alarms are available at front of the rack.

In addition these alarms are combined together with the “external” cabinet alarms to form an 8-bit word that is modulated and sent to the central office over one copper pair.

This signal copper pair is galvanically isolated from the rest of the system and is protected against lightning (with Gas Discharge Devices).

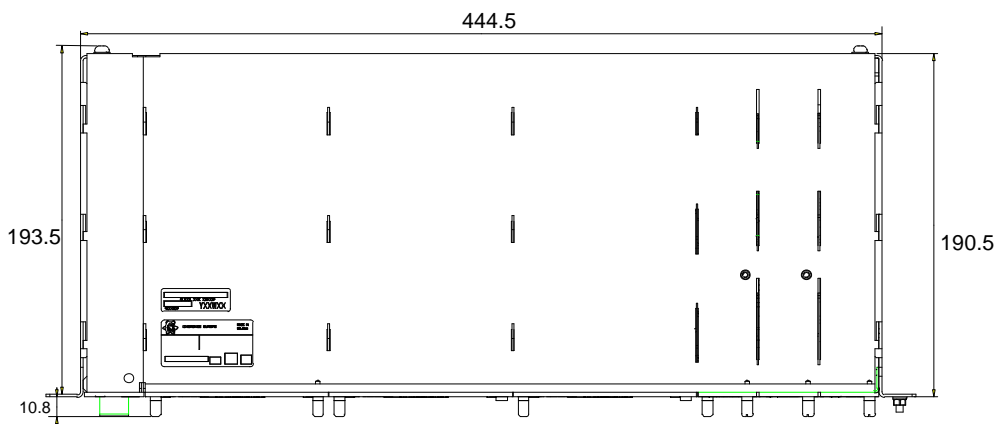
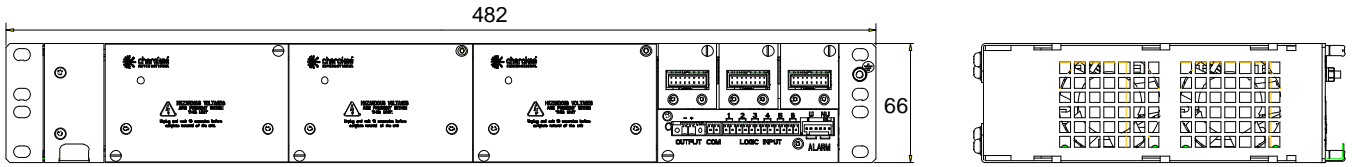
The alarms can be retrieved at the central office when the system is equipped with the MODU monitoring card CEM03.



RES24L013RFM48N

Remote feeding medium power down converter

6 Mechanical



Weight: empty 2.4kg (5.29lbs); full features 4.49kg (9.90lbs)

Connectors

DC Input: Molex .100" pitch	mating: Molex .100" pitch C-grid	
	Housing :	90142 - 0016
	Terminal :	0119 - 0109
DC output: phoenix: MC 1.5/2-GF-3.81	mating: MC 1.5/2-STF-3.81	182 7703
Communication : MC 1.5/2 STF	mating : MC 1.5/2 – STF – 3.5	184 0366
Alarm inputs : MC 1.5 / 12 ST	mating : MC 1.5/12 – ST – 3.5	184 0463
Alarm outputs : Wago Micro	mating : Wago Multisystems micro	733 - 106



RES24L013RFM48N

Remote feeding medium power down converter



7 Product overview and ordering information

Description	Order number
Remote Energy System including System rack, 1 removable fan tray, 3 input cards 8 lines one distribution and alarm card 3 modules DC/DC 120W -54V output Cardboard dimensions Packaging weight	RES24L013RFM48N TBD TBD
Connection kit including output mating connectors, signal mating connectors, alarms in/output	5304 500 00741
Connector kit for 3 x 8 lines with cables	5304 500 00881

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