



ENERGY RE-CONNECT
POWER DROP BACKUP

ERC-9005AF

"PowerEdge PdbU - Always on Matters"

SPECIFICATION

DESCRIPTION	KEY FEATURES
<p>This document is the technical specification for the Energy Reconnect Battery Backup POE Unit.</p> <p>ERC-9005AF provides reserve power in the case of a loss of the main POE or auxiliary power supplies to the powered device due to accidental power loss or vandalism.</p> <p>Device is enclosed in a plastic rugged enclosure for protection and can be easily mounted as a free standing or wall hanging near the powered device such as security camera.</p> <p>The battery backup unit was designed to provide enough backup power for average security camera up to 11 W loads for at least 60 minutes.</p> <p>ERC-9005AF incorporates two internal lithium-ion batteries or ext. battery pack and power conversion stages to power cameras in cases of lost main power sources.</p>	<ul style="list-style-type: none"> • Provides reserve power in case of loss main power sources • Can provide at least 60min of reserve power for average security camera • Small form factor • Supports 10/100/1000 BASE-T Ethernet • RoHS Compliant • Ambient temperature: -20 to +50 °C • The unit can be mounted as free standing or wall hanging.
	APPLICATIONS
	<ul style="list-style-type: none"> • "PowerEdge PdbU" a native PoE Platform, situated at the edge of the network, that provides reliability back-up, connectivity, physical intrusion alarms and Cyber "Sandbox" functionality which guarantees continuous operations of mission critical devices such as; Surveillance Cameras, Access Control devices, IoT, SCADA, Cyber IP Gatekeeper, among others.

PRODUCT HIGHLIGHT

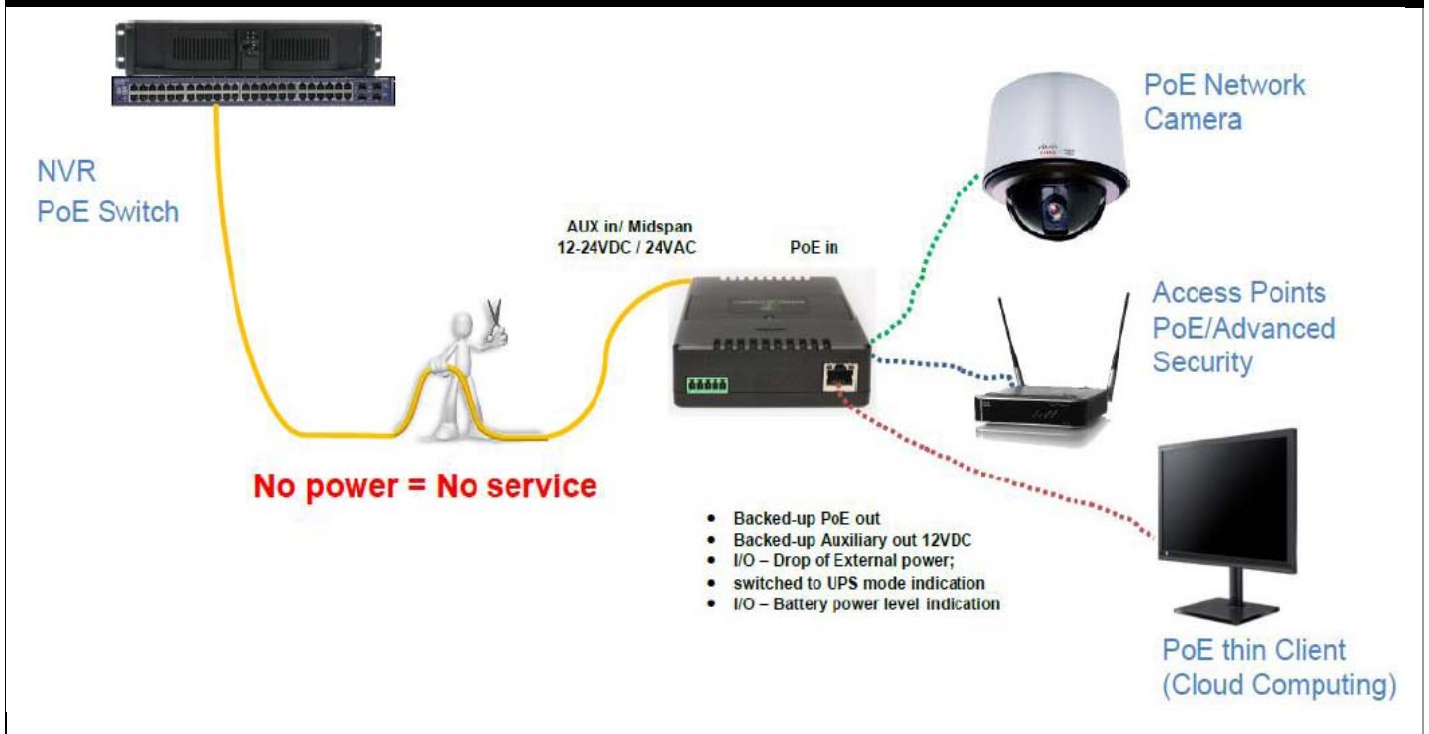


Figure 1



ERC-9005AF

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ABSOLUTE MAXIMUM RATINGS

Input POE voltage	57V
Output POE voltage	56V
Input Auxiliary voltage	30Vdc / 26.4Vac
Output Auxiliary Voltage.....	12.5V
Pass Through Data rate	1000Mb/s
Operating Temperature.....	-20°C to +50°C
Storage Temperature Range	-20°C to +60°C

Note: Exceeding these ratings could cause damage to the device. All voltages are with respect to Ground. Currents are positive into, negative out of specified terminal.

ELECTRICAL CHARACTERISTICS

Unless otherwise specified, the following specifications apply over the recommended operating condition and ambient temperature of -20°C to +50°C except where otherwise noted. Typical values at +25°C.

Parameter	Symbol	Test Conditions / Comment	Min	Typ	Max	Units
INPUT						
POE						
Input voltage	V_{POE_IN}	Note: Minimum input voltage needs to be higher than voltage according IEEE802.3af	40		57	V
Input current	I_{POE_IN}	According to IEEE802.3af			350	mA
Data Rate	D_{RATE}	Pass Through Data Rates	10		1000	Mb/s
POE detection		According to IEEE802.3af				
Auxiliary						
DC Input voltage	$V_{AUX_IN_DC}$		10.8		30	V_{DC}
Maximum DC Input voltage ripple	$V_{AUX_IN_RIPPLE}$	Measured with 20MHz oscilloscope bandwidth	324		792	mV _{P-P}
AC Input voltage	$V_{AUX_IN_AC}$	Frequency 47-63Hz	21.6		26.4	V_{AC_RMS}
Input DC current	$I_{AUX_IN_DC}$				1.5	A_{DC}
Input AC current	$I_{AUX_IN_AC}$				1.5	A_{RMS}
Fuse Tripping Threshold	I_{FUSE}	Slow blow fuse Fuse is Internal		5		A
Short circuit and Overcurrent protection threshold	$I_{AUX_IN_SC}$			5		A
Lithium-Ion Battery						
Capacity per battery	C		2600			mAh
Number of the batteries	N_{BAT}	Batteries are connected in series		2		
Nominal Voltage	V_{BAT_NOM}	For one battery		3.7		V
Charging voltage	V_{CHARGE}			4.2		V
Charge/discharge cycles	CDC	75% capacity of C_{BAT}	300			



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Parameter	Symbol	Test Conditions / Comment	Min	Typ	Max	Units
Operating time	T _{BAT_OPER}	Fully charge @11W output on POE or @10W auxiliary outputs For up to 300 charge/discharge cycles	60			Min
Operating temperature range	T _{CHARGE}	Charge	0		50	°C
	T _{DISCHARGE}	Discharge	-20		50	°C
OUTPUT						
POE						
Output voltage	V _{POE_OUT}	Option 1: There is POE signal on the POE input (Output is directly connected to the input)	40.5		56	V
		Option 2: No POE on the input Powered from battery or Aux. input	38		40.5	V
Output current	I _{POE_OUT}	Option1:	275			mA
		Option2:	290			
Output Power	P _{POE_OUT}	When batteries are fully charged:			11	W
		Batteries charging: Note: The power is the Total power of P _{POE_OUT} + P _{AUX_OUT}			10	
Auxiliary						
Output Voltage	V _{AUX_OUT}	For all connection options. See Table 1	12		12.4	V _{DC}
Output Voltage ripple	V _{AUX_OUT_RIPPLE}	For all connection options. See Table 1			300	mV _{p-p}
Output Current	I _{AUX_OUT}	For output power of 10W	0.8			A
Output Power	P _{AUX_OUT}	For all connection options. See Table 1			10	W
Reset Timer						
ON time	T _{ON}	Timer periodically power off POE and Aux. Outputs		24		H
OFF time	T _{OFF}			1.5		Sec
LED Indicators (see table 1)						
Isolation Parameters						
Chassis (GND) to All Inputs, Outputs		IEEE802.3af	1500			V _{AC}



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Parameter	Symbol	Test Conditions / Comment	Min	Typ	Max	Units
Environmental Data						
Operating Ambient Temperature		Continuous Operation	-20		+50	°C
Storage Ambient Temperature			-20		+60	°C
Operating Humidity		Non-Condensing, Per IEC 68-2-56	0		90	%
Storage Humidity		Non-Condensing	0		90	%
Operating Altitude			0		2000	m
Vibration		IEC60068-2-6 Class 4M4 (IEC60721-3-4)				
Shock		IEC60068-2-27 Class 4M3 (IEC60721-3-4)				
General Data						
Reliability		Calculated MTBF. Continuous operation @ TA = 25°C. Calculation method: Relex Bellcore Software Version 5.30.	25000			Hours
Life Time		Expected Life Time @ TA = 40°C	10			Years
Warranty			2			Years

PROTECTION

Short circuit protection on auxiliary	Fuse and Current limit protection circuit	
Short circuit protection on a buck for auxiliary output	SC protection circuit in a buck for auxiliary output	
Surge protection on POE and Aux. inputs	Enhance level per ITU-T.K45	+/-6kV 10/700us Line to ground 25 Ohm external resistor $I=6kV/(15+25/8)=331A$
	GR-1089 Core 6 Ports type 3b/5b See Appendix C	Peak surge suppression level for combination waveform 1.2/50us - 8/20us POE pairs 6 Ohm ext. resistor +/-800V, I=100A
	IEC6100-4-5 Class 4	4kV, 8/20usec, 2kA



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MECHANICAL SPECIFICATIONS

Dimensions (LxWxH)		132 x 98 x 30 mm
Enclosure material	Material is V1 rated	
Enclosure type	For indoor installations	
Minimum thickness of enclosure		2 mm
Enclosure color		Black
Weight	Packaged unit	0.65 lb (0.29 kg)

STANDARDS COMPLIANCE

Safety Standard Approvals

Standard Name	Criteria	Notes
UL60950-1, EN60950-1, CA/CSA-C22.2 NO. 60950-1, UL2043	UL, cUL mark , GS, CB report	Material should be suitable for use in environmental air space. See UL60950-1 paragraph 4.7.3.1

EMC

FCC Part 15 Subpart B, EN55022, EN55024	Class B	See surge requirements in protection section
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Environmental Standards

RoHS		
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Networking Standards

IEEE802.3af		Need to meet 1000Mb/s requirements
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Input / Output Options power table

Table 1

#	Inputs			Outputs			Indications				
	POE	Aux	Battery*	POE	12VDC_Aux	Battery charger	Input Power OK	Output Power OK	Battery Discharge	Backup Mode	Battery Voltage
							POE In (RJ-45 LED)	POE out (RJ-45 LED)	POE In (RJ-45 LED)	Aux out pin #4	Aux out pin #5
1	ON	OFF	Standby \ Charging	ON	ON	ON	Green	Green	—	0V	Battery Voltage
2	OFF	ON	Standby \ Charging	ON	ON	ON	Green	Green	—	0V	Battery Voltage
3	ON	ON	Standby \ Charging	ON	ON	ON	Green	Green	—	0V	Battery Voltage
4	OFF	OFF	ON	ON	ON	OFF	—	Green	Orange	> 4V	Battery Voltage

* Battery input option can be the internal Batteries or an external power enhanced battery pack.
 * POE out Green indication – only when valid POE Load is connected.

Connectors

CONNECTORS DESCRIPTION	
Name	Description
Ethernet connector POE+ Data input & POE + Data output	2 x single port rugged RJ-45 Shielded connector: PN: 0826-1X1T-GH-F, BelFuse
Auxiliary Input Auxiliary Output	Field serviceable connectors: PN: 691313710002, Wurth Electronics Inc PN: OSTOQ053251, On Shore Technology Inc
Ext Battery pack	2 Pin Connector PN: RASM712X, Switchcraft Inc.



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PIN DESCRIPTION - RJ45 INPUT

Pin #	Name	Description
1	Pair1 (-)	Bidirectional Output Data
2	Pair1 (-)	Bidirectional Output Data
3	Pair2 (+)	Bidirectional Output Data
4	Pair3 (+)	Bidirectional Output Data + Power
5	Pair3 (+)	Bidirectional Output Data + Power
6	Pair2 (+)	Bidirectional Output Data
7	Pair4(-)	Bidirectional Output Data + Power
8	Pair4(-)	Bidirectional Output Data + Power
9	Shield	Connector shielding

PIN DESCRIPTION - RJ45 OUTPUT

Pin #	Name	Description
1	Pair1 (-)	Bidirectional Output Data
2	Pair1 (-)	Bidirectional Output Data
3	Pair2 (+)	Bidirectional Output Data
4	Pair3 (+)	Bidirectional Output Data + Power
5	Pair3 (+)	Bidirectional Output Data + Power
6	Pair2 (+)	Bidirectional Output Data
7	Pair4(-)	Bidirectional Output Data + Power
8	Pair4(-)	Bidirectional Output Data + Power
9	Shield	Connector shielding

PIN DESCRIPTION - AUXILARY INPUT

Name	Description
Pin 1	Power (12-24V plus or 24V AC)
Pin 2	Power (12-24V minus or 24V AC)

PIN DESCRIPTION - AUXILARY OUTPUT

Name	Function	Description
Pin 1	Power (+12V)	Aux output voltage
Pin 2	GND (-12V)	Aux return pin
Pin 3	GND	Ground reference for indications
Pin 4	Backup mode Ind (See Table 1)	0V => when POE_in or Aux_in exist. 4V-5V => when in Battery backup mode I_out < 0.5mA
Pin 5	BAT_Voltage	6V – 8.4V I_out < 0.5mA



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PIN DESCRIPTION - EXT BATTERY PACK INPUT	
Name	Description
Pin 1	Power (-V)
Pin 2	Power (+6.4V to 8.4V Li-ion Battery Pack). See Table3 for approved Pack Part Numbers.

Marking:

Energy Re-Connect Ltd. -

PdbU

P/N: ERC-9005AF

PoE_In - PoE 802.3af
 AUX_In - 12-24VDC/1.5A; 24VAC/0.7A
 EXT_BAT - Custom extended Battery Pack
 PoE_Out - PoE 802.3af 11Watt
 AUX_Out - 12VDC /0.8A

MECHANICAL DESCRIPTION	
Dimensions (LxWxH):	5.19 x 3.85 x 1.18 in. (132 x 98 x 30 mm)
Weight:	0.65 lb (0.29 kg)

Figure 2

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