



ENERGY RE-CONNECT
POWER DROP BACKUP

ERC-9010AT

"PowerEdge PdbU - Always on Matters"

SPECIFICATION

DESCRIPTION

This document is the technical specification for the Energy Reconnect Battery Backup POE Unit.

ERC-9010AT 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.

Device is enclosed in an aluminum rugged enclosure for protection and can be easily mounted as a free standing or wall hanging near the powered device such as security camera.

The battery backup unit was designed to provide enough backup power for high power security cameras of up to 30 W loads for at least 60 minutes.



bt 60W input Ready

ERC-9010AT incorporates internal lithium-ion batteries with an option for additional ext. battery pack and power conversion stages to power cameras in cases of lost main power sources.

KEY FEATURES

- Provides reserve power in case of loss of main power sources.
- Can provide at least 60min of reserve power for high power 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

- "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

PdbU – it's an IP edge PoE UPS & 12-24VDC/24VAc LV Midspan PoE UPS



Figure 1



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ABSOLUTE MAXIMUM RATINGS

Input POE voltage	57V
Input Auxiliary voltage	30Vdc / 26.4Vac
Pass Through Data rate	1000Mb/s
Operating Temperature	-20°C to +60°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 IEEE802.3at	42		57	V
Input current	I _{POE_IN}	P _{load} =30W, V _{in_poe} =42V			850	mA
Data Rate	D _{RATE}	Pass Through Data Rates	10		1000	Mb/s
POE detection		According to IEEE802.3at				
Auxiliary						
DC Input voltage	V _{AUX_IN_DC}		10.8		30	V _{DC}
Maximum DC Input voltage ripple	V _{AUX_IN_RIPPLE}		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}	P _{load} =30W, V _{in_aux} =11V _{DC}			3.3	A _{DC}
Input AC current	I _{AUX_IN_AC}	P _{load} =30W, V _{in_aux} =22V _{AC_RMS}			1.6	A _{RMS}
Fuse Tripping Threshold	I _{FUSE}	Slow blow fuse Fuse is Internal		7		A
Turn ON Inrush Limit	I _{AUX_IN}				4A	A
Lithium-Ion Battery						
Internal battery total Capacity	C		5200			mAh
Charge/discharge cycles	CDC	75% capacity of C _{BAT}	300			
Operating time	T _{BAT_OPER}	Fully charge @ 30W output on POE or @30W auxiliary outputs.	60			Min
Battery Charge Time ¹	T _{BAT_C}	From fully depleted Internal Battery to fully charged.		24	30	Hours
Operating temperature range	Temp _{_C}	Charge	-20		50	°C
	Temp _{_D}	Discharge	-20		60	°C
Remark #:						
1. While charging, up to additional 3W are consumed from input. Output power is un-effected.						



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
OUTPUT						
POE						
Output voltage	V _{POE_OUT}	Option 1: There is POE signal on the POE input (Output is directly connected to the input)	41		57	V
		Option 2: No POE on the input Powered from battery or Aux. input	42		43.5	V
Output current	I _{POE_OUT}	Option1: Option2: For options 1 and 2: • For max Output power of 30W			735 720	mA
Output Power	P _{POE_OUT}	Note: The power is the Total power of P _{POE_OUT} + P _{AUX_OUT}			30	W
Auxiliary						
Output Voltage	V _{AUX_OUT}	For all connection options. See Table 1	12	12.3	12.5	V _{DC}
Output Voltage ripple	V _{AUX_OUT_RIP PLE}				200	mV _{P-P}
Output Current	I _{AUX_OUT}	P _{load} on Aux out = 30W, V _{aux_out} =12V			2.5	A
Output Power	P _{AUX_OUT}				30	W
Audio Amplifier						
Output Amplifier Gain	A _v	Amplifier gain	13.1	13.6	14.1	dB
Output Current Limit			3	4.6		A
Output Power	P _{OUT}	THD+N = 10%, R _L = 8Ω	6	7.4		W
THD + Noise	THD+N	P _{OUT} = 2W, f = 1kHz, R _L = 8Ω		0.06		%
Reset Timer						
ON time	T _{ON}	Timer periodically power off POE and Aux. Outputs		24		Hours
OFF time	T _{OFF}			1.5		Sec
LED Indicators (see table 1)						



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Parameter	Symbol	Test Conditions / Comment	Min	Typ	Max	Units
Isolation Parameters						
Chassis (GND) to All Inputs, Outputs		IEEE802.3at	1500			V _{AC}
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.	
Short circuit protection on auxiliary output	Integrated SC protection.	
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 47 mm
Enclosure material	Material is 6061 aluminum	
Enclosure type	For indoor installations only	
Minimum thickness of enclosure		2 mm
Enclosure color		Black
Weight	Packaged unit	1.2 lb (0.55 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

IEEE802.3at		Need to meet 1000Mb/s requirements
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Input / Output Power table & Indications

Table 1

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

1. Battery input option can be the internal Batteries or an external power enhanced battery pack.
2. POE "Power OK" Green indication – only when valid POE Load is connected.
3. "Battery Charging" orange LED indication – After power drop and return, orange LED on POE out connector will be ON until Battery is fully charged again.

Connectors

CONNECTORS DESCRIPTION	
Connector Name	Description
Input POE, Ethernet connector:	BelFUSE Single port rugged RJ-45 Shielded connector: PN: 0826-1X1T-GH-F
Output POE, Ethernet connector:	Prosper Single RJ-45 + 2 USB PN: MRJ-G121024NL
Auxiliary Input , Auxiliary Output	DEGSON TB, Snap, 5mm pitch, 2pins, Gray PN: DG211R-5.0-02P-11
Audio Amplifier	3.5mm, 2x Stereo Audio Jack (See connections table)
Ext Battery pack	DEGSON Conn,TH,RA,TB,P=5mm,2P,20A,Green PN: 2EDGRC-5.0-02P-1400AH
IOs	Phoenix Contact 8 Position Terminal Block Header, Male Pins, 3.50mm,



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CONNECTORS DESCRIPTION

Connector Name	Description
	90°, Right Angle Through Hole PN: 19539

PIN DESCRIPTION - RJ45 INPUT POE

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 POE

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 IN (V _{DC} plus\ minus, or V _{AC})
Pin 2	Power IN (V _{DC} minus\ plus, or V _{AC})

PIN DESCRIPTION - AUXILARY OUTPUT

Name	Description
Pin 1	Aux return (GND)
Pin 2	Aux_output



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PIN DESCRIPTION - AUDIO IN/OUT

Name	Description	
Top Connector	Audio output – 3.5mm Standard Jack input. Male connector should go directly to Speaker 4 – 8ohms. Speaker must be connected between L and R of the Jack male connector (and not relative to ground).	
Bottom Connector	Audio Input – 3.5mm standard Jack input. Can be Mono or Stereo. (if Stereo L+R will be combined to Mono.)	

PIN DESCRIPTION - EXT BATTERY PACK INPUT

Name	Description
Pin 1	Power (-V)
Pin 2	Power (+6.4V to 8.4V Li-ion Battery Pack).

PIN DESCRIPTION - I/Os

Name	Function	Description
Pin 1	BAT_Voltage	6V – 8.4V I _{out} < 0.5mA
Pin 2	GND	
Pin 3	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 4	GND	
5 to 8	Future use	Future use



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Marking:

Energy Re-Connect Ltd. -
PdbU
P/N: ERC-9010AT

PoE_In - PoE 802.3at
AUX_In - 12-24VDC/3.3A; 24VAC/1.6A
EXT_BAT - Custom extended Battery Pack
PoE_Out - PoE 802.3at, 30W
AUX_Out - 12VDC/2.5A

MECHANICAL DESCRIPTION	
Dimensions (LxWxH):	5.19 x 3.85 x 1.85 in. (132 x 98 x 47 mm)
Weight:	1.21 lb (0.55 kg)

Figure 2

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