

Product Overview:

Data

(Gen. 2020)

EPDA - External Power Distribution Assembly

Military PDU is an electrical power distribution unit designed to meet the needs of stable power and unique integration in military environments. This means it can operate in severe environments of vibration, shock, dirt, extreme weather conditions, etc.

Military PDU includes features to eliminate signal problems encountered with noisy power sources and includes power modules, controls and safety features.

Meets EMI standards by using filters and shielded enclosures.

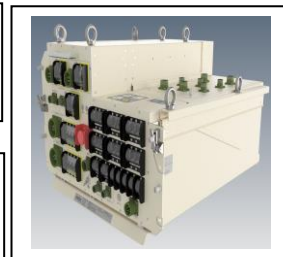
Mitigate voltage spikes / transients using surge suppression.

Save space with power source consolidation.

Consolidate AC and DC sources into one distribution system.

Create step up or down voltages with internal conversions. Create dc from ac, or ac from dc within a single unit.

Military PDU meets or exceeds MIL-SPEC reliability requirements, including MIL-STD-1399, MIL-STD-461, MIL-STD-810, MIL-STD-704, and other critical requirements.

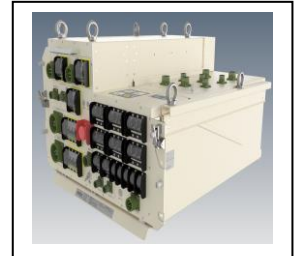


Product Description:

EPDA - External Power Distribution Assembly

Description:

- The military PDU is built to MIL-STD 461, 901, 810 and other standards to handle harsh conditions such as vibration, shock and extreme environmental conditions.
- Reduces or eliminates electromagnetic interference (EMI) conducted and induced by nearby electrical equipment.
- Protects from voltage spikes created by high-power equipment on the same lines and from lightning near external transmission lines.
- Integrates remote interlocks to cut off power to outlets to meet military security requirements.
- Create multiple power modules from a single facility power source, such as higher or lower voltages, or even DC power from AC power and vice versa.
- Exceed the limits of standard products
- Get perfect control with custom branches, switching, metering and more.
- Simplify installation by using the exact connectors you need.
- Integrate security systems with EPO and other interlocks.
- Get the exact size and shape of the case you need.
- Adopt the use of specialized connectors and sockets to interface with existing customer equipment, security systems and more.



Ultimately the military PDU takes into consideration the physical environment, the electrical environment and the operator's environment.

Proser specializes in working closely with customers to configure a custom PDU into an application-specific cohesive solution.

The structure of Military PDU as well as the internal parts are made of aluminum alloy of the 5000 and 6000 series equipped with Surtec 650 conductive anticorrosive treatment, according to MIL DTL 5541F Class III, the external surfaces can be painted on request.

Each Military PDU is 100% tested and with the ability to perform Environmental Stress Screening (ESS) based on specific program requirements.

MIL-STD-810G and MIL-STD-461F fully qualified

REACH compliance

CE marked

Key Specifications:

PDU accepts the following power sources:

- AC power source
 - N ° Phases: 3 phases + Neutral
 - Phase - Phase voltage: 400 Vac \pm 10%
 - Phase - Neutral Voltage: 230 Vac \pm 10%
 - Frequency: 50Hz \pm 5%
 - Maximum current required: 60 A / phase
- DC power source
 - 24 Vdc according to MIL-STD-1275E [S1]
 - Maximum current required: 90 A.

EQUIPMENT ITEMS DISTRIBUTION

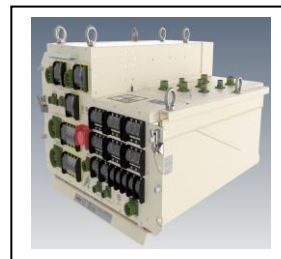
- 400Vac \pm 10% @ 50Hz \pm 5% 3 phase + neutral to the following units:
 - Shelter Power Distribution Assembly.
 - 2 (two) air conditioning units
 - Guard stabilization device
 - 1 service socket
- 230Vac \pm 10% @ 50Hz \pm 5% single phase to the following units:
 - 1 service socket
 - Internal and External lighting system
- 24Vdc according to MIL-STD-1275E [S1]:
 - Shelter.
 - Internal and External lighting system
 - DC service
- - 2 spare DCs

Product DataSheet:

EPDA - External Power Distribution Assembly

Military PDU is the power source for internal system equipment and external system equipment, the main missions of the PDU are:

- Accept the AC power supply (400V 3 Φ + N @ 50Hz) of the system.
- Accept AC power (400V 3 Φ + N at 50Hz) from an external AC source
- Accept the DC power supply (24V) of the system.
- Accept DC power (24V) from truck batteries
- Provide AC / DC conversion for powering DC loads
- EMI filter the AC power source.
- Distribute AC and DC electricity to the Shelter and to external equipment
- Protect powered equipment from surges occurring on primary power feeders.



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 - Internal and External lighting system
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- 2 spare DCs

ELECTRICAL CHARACTERISTICS

Parameter	INPUT CHARACTERISTIC	Min.	Typ.	Max.	UNIT
1) AC Voltage Level	Nominal Voltage Level		400V		V _{RMS}
	Steady state Tolerance Limits	360		440	V _{RMS}
2) AC Voltage Level	Nominal Voltage Level		230		V _{RMS}
	Steady state Tolerance Limits	207		253	
Input Current	Line Current (Each Phase at Max Load)			60	A _{RMS}
Frequency	Nominal Frequency	50			Hz
	Frequency tolerance	±5			%
3) DC Voltage Level	Nominal Voltage Level		24		V _{DC}
	Steady state Tolerance Limits	20		33	V _{DC}
Input Current	Line Current			90	A _{DC}
Parameter	Isolation Characteristics	Min.	Typ.	Max.	UNIT
Line AC Safety	Isolation Voltage (dielectric strength)			1500	V _{DC}
	Isolation Resistance @ 500Vdc	10			MΩ
Line DC Safety	Isolation Voltage (dielectric strength)			500	V _{DC}
	Isolation Resistance @ 500Vdc	10			MΩ

MECHANICAL FEATURES					
Dimensions	(H x W x D)	360 x 604 x 606mm			
Weight		95kg			

RELIABILITY CHARACTERISTICS		Min.	Typ.	Max.	UNIT
Calculated MTBF MIL-HDBK-217F @ TA=35°C Ground, Fixed (G _F)			60		10 ³ Hrs.

ELECTRICAL CHARACTERISTICS (400Vac 50kVA)

Parameter	Test Condition	V _{OUT}	Min.	Typ.	Max.	UNIT	Cos.φ
Power	Power Consumption in normal operating condition	400V _{AC}			11	kVA	0,9
		400V _{AC}			9,3	kVA	0,8
		400V _{AC}			9,3	kVA	0,8
		400V _{AC}			8	kVA	0,8
		400V _{AC}			1,9	kVA	0,8
		400V _{AC}			10	kVA	0,8

ELECTRICAL CHARACTERISTICS (230Vac 1.85kVA)

Parameter	Test Condition	V _{OUT}	Min.	Typ.	Max.	UNIT	Cos.φ
Power	Power Consumption in normal operating condition	230V _{AC}			1,6	kVA	0,8
		230V _{AC}			0,25	kVA	0,8

ELECTRICAL CHARACTERISTICS (24Vdc 4,2kW)

Parameter	Test Condition	V _{OUT}	Min.	Typ.	Max.	UNIT	Cos.φ
Power	Power Consumption in normal operating condition	24V _{DC}			0,6	kW	
		24V _{DC}			0,085	kW	
		24V _{DC}			1	kW	
		24V _{DC}			0,25	kW	
		24V _{DC}			0,25	kW	
		24V _{DC}			1	kW	
		24V _{DC}			1	kW	

STANDARDS & QUALIFICATION

STANDARDS COMPLIANCE		
CE Marked		
REACH	with the regulation CE n° 1907/2006	
QUALIFICATION TESTING		
	MIL-STD-810G	
Hot Operative Conditions	49°C “according to STANAG 2895 Category A1” Method 501.5 Proc. II	
Hot Not Operative Conditions	71°C “according to STANAG 2895 Category A1” Method 501.5 Proc. I	
Cold Operative Conditions	-19°C “according to STANAG 2895 Category C0” Method 502.5 Proc. II	
Cold not operative conditions	-21°C “according to STANAG 2895 Category C0” Method 502.5 Proc. I	
Salt Fog	48h exposure + 48h drying	Method 509.5
Operative Humidity	59% @41°C 88% @31°C	Method 507.5 Proc. I
Not Operative Humidity	14% @71°C 80% @33°C	Method 507.5 Proc. I
Icy Conditions	6mm of ice with a specific gravity of 0.9g/cm ³ Method 521.3.	
Blowing Dust	Air velocity 1.5 to 8.9m/s Concen. 10.6 ±7 g/m ³ . Method 510.5 Proc. I	
Blowing Sand	Air velocity 18 to 29m/s Concen. 2.2 ±0.5 g/m ³ . Method 510.5 Proc. II	
Operative Altitude	pressure 90 kPa (1000 m) 101.3 kPa (sea level) Method 500.5, Proc. II	
Transportation Altitude	pressure 54kPa (5000m)	Method 500.5, Proc. I
Operative Rain	Intensity 4 mm/h Duration 1h Slope to 45°	Method 506.5, Proc. I
Not Operative Rain	Intensity 100mm/h Duration 30' Slope to 45°	Method 506.5, Proc. I
Hail	Hailstone diameter 15mm – 25mm respect to the vertical up to 40°	
Snow	Operate during snow accumulation of 20kg/m ²	
Fungus	Operate exposed to the fungus environment Method 508.6	
Washing	Survive Duration 5 min Distance 1,5m Pressure 2,5 bar	
Contamination by fluids	Survive	Method 504.1 Table 504.1-I
Slope	Operate slopes of up to 3°	
Vibration Transport – On Road	Figure 514.6 C-1 Table 514.6 C-II	Method 514.6 Proc. I

	Figure 514.6 C-1 Table 514.6 C-II	Annex C Category 4
Vibrations – C17 transport	according to the profiles in Figura12, Figura13, Figura1 40 hrs	

QUALIFICATION TESTING			
	MIL-STD-810G		
Vibrations – Ship transport	Life sea transport profile: 20 days		Method 514.6 Proc. I Category 21
Accelerations - Static loading	Longitudinal Fwd: 3g Longitudinal Aft: 1.5g Lateral 1.5g Vertical up 2g Vertical down 4g		Method 513.6 Proc. I
Accelerations – Crash Landing	Longitudinal Fwd: 9g Longitudinal Aft: 1.5g Lateral 1.5g Vertical up 2g Vertical down 4.5g		Method 513.6
Restrained cargo shocks On and Off road	Severity as defined in AECTP 400, Method 403 Annex A, Table A-1, Test category “Transportation”.		AECTP 400, Method 403
Shock Transit Drop and Man - handling	Carried to a combat situation by man, truck, rail.		Method 516.6 Proc. IV
Shock – Bench handling	Survive exposure to bench handling		Method 516.6 Proc. VI
Rapid Decompression	Survive Decompression from 75.2kPa to 18.8kPa		Method 500.5 Proc. III
Nearby Lighting strike	Operate		MIL-STD-464C Table 8 par. A.5.5
External RF EME Environment conditions	Radiated electric field of 50V/m from 30MHz to 18GHz		MIL-STD-461F
External Power Surge	Operate	Level 3 external power supply Level 2 for I/O external lines	IEC EN61000-4-4
		Level 2 unidirectional surges	IEC EN61000-4-5
	MIL-STD-461F Ground Army		
CE102	Conducted Emissions, Power Leads, 10kHz to 10MHz		
RE102	Radiated Emissions, Electric Field, 10 kHz to 18 GHz.		
RS103	Radiated Susceptibility, Electric Field, 2 MHz to 40 GHz.		
CS101	Conducted Susceptibility, Power Leads, 30Hz to 150kHz		
CS114	Conducted Susceptibility, Bulk Cable Injection, 10kHz to 200MHz		

CS115	Conducted Susceptibility, Bulk Cable Injection, Impulse Excitation
CS106	Conducted Susceptibility, Transients, Power Leads
CS116	Conducted Susceptibility, Damped Sinusoidal Transients, Cables and Power Leads, 10 kHz to 100 MHz