

Power Distribution Box (PDB – CV)

Model Number: THRSLPDB2001

Overview

The **Power Distribution Box (PDB – CV)** is a standard THRSL product designed to supply and manage power in carrier vehicle applications. It receives input from a **DC UPS**, distributes **24V and regulated 12V outputs**, and integrates a **Battery Monitoring System (BMS)** for real-time current monitoring.

The PDB incorporates solid-state relay (SSR) switching, MCB protection, and modular connectors, ensuring safe and reliable operation across industries. It has been **successfully deployed in the UXOR project supplied to the Indian Air Force (IAF)**, proving its reliability in demanding defense environments.

Technical Specifications

Parameter	Specifications
Input Voltage Range	20V – 30V (DC UPS input)
Output Voltage	Same as input; regulated 12V
Maximum Load Current	30A @ 24V, 16A @ 12V
BMS Capacity	100A load monitoring, 50A charging monitoring
Relays	2 × Solid State Relays (controlled by BMS)
Protection Features	MCB overcurrent protection
Charging Interface	Direct charger connector
Switch	ON/OFF switch on OCU
Connectors	MIL-grade connectors for input, multiple outputs, BMS, charging
Protection Standard	IP65
Operating Temperature	-20°C to +55°C

Key Features

- DC UPS input for uninterrupted vehicle power supply
- Integrated **Battery Monitoring System (BMS)** with load and charge current tracking
- 24V distribution with regulated 12V output
- Solid-state relay switching for safe power source selection
- Built-in overcurrent protection with MCBs
- Modular MIL-grade connector interface for **plug-and-play deployment**
- IP65 enclosure with wide operating temperature range

Applications

- Carrier vehicle subsystems in defense and industry
- Power management for robotic control stations
- Industrial mobile systems requiring reliable DC distribution
- UXOR carrier vehicle integration (**field-proven in IAF deployment**)

Compliance

Environmental Qualification (JSS 55555)

Sr. No.	Standard	Compliance Details
1	Vibration (Test 28)	Ground equipment in tracked vehicle, 5–13 Hz: ± 6 mm, 13–500 Hz: ± 40 m/s ² , 1 hr cumulative (all axes)
2	Temperature Cycling	-20°C to +55°C, dwell time 60 min, 14 cycles
3	Random Vibration	Same as above (all three axes)
4	High Temperature (Test 17)	55°C $\pm$ 3°C for 16 hrs, followed by storage at 75°C $\pm$ 3°C for 24 hrs
5	Low Temperature (Test 20)	-10°C $\pm$ 3°C for 16 hrs
6	Tropical Exposure (Test 27)	14 cycles from 20°C to 45°C (RH 95%)
7	Bump (Test 5)	4000 bumps @10g, 2–3 bumps/sec, pulse width 16 ms
8	Rain (Test 12)	4 shower heads @45° directed at corners
9	Corrosion – Salt Fog (Test 9)	Enclosure, PCBs, painted parts
10	Corrosion – Acid (Test 7)	Enclosure, PCBs, painted parts
11	Dust (Test 14)	Equipment in unpacked, switched-off condition
12	Mould Growth (Test 21)	On PCBs, insulation, rubber, gaskets, plastics, polymers, textiles

EMI/EMC Compliance (Defense Standards)

Sr. No.	Standard	Compliance Details
1	CE 102	Conducted emissions, power leads, 10 kHz to 10 MHz
2	CS 101	Conducted susceptibility, power leads, 30 Hz to 150 kHz
3	CS 114	Conducted susceptibility, bulk cable injection, 10 kHz to 200 MHz
4	CS 115	Conducted susceptibility, bulk cable injection, impulse excitation
5	CS 116	Conducted susceptibility, damped sinusoidal transients, 10 kHz to 100 MHz
6	RE 102	Radiated emissions, Electric Field
7	RS 103	Radiated susceptibility, Electric Field, 2 MHz to 40 GHz
8	PBESD	Personnel Borne Electrostatic Discharge



Note

The **Power Distribution Box (PDB – CV)** is part of **THRSL’s standard technology suite**, designed for **plug-and-play deployment** across industries. Its successful application in the **UXOR project for the Indian Air Force (IAF)** validates its dependability for mission-critical vehicle power management.

Custom versions can be developed with different load ratings, input sources, or connector options.