TEDEG

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PowerGuard TPS-28 Power Management Unit

Empowering Technology

PowerGuard

PowerGuard TPS-28 Power Management Module

Developed by TEDEG Defense, the PowerGuard TPS-28 Power Management and Conversion System is designed to provide reliable 28V DC energy for modern defense and industrial applications. With its innovative architecture and high-performance design that meets military standards, it offers significant advantages over both domestic and global competitors. Its high energy efficiency and advanced design ensure reliable operation even under harsh environmental conditions.

The PowerGuard TPS-28 converts 230 VAC 50 Hz input voltage into isolated and regulated 28V DC output. The system includes two independent 10A and 50A output channels. Each output can be monitored and controlled through analog and digital signals. The integrated microcontroller-based control card, featuring RS-485 communication up to 10 Mbps, allows remote monitoring and control capabilities.

Designed for outdoor military use, the PowerGuard TPS-28 is tested in accordance with MIL-STD-810G standards to ensure durability under conditions such as dust, humidity, vibration, and temperature extremes. Additionally, it meets MIL-STD-461 electromagnetic performance standards, ensuring seamless integration into vehicle and mobile mission platforms. As a result, it provides a reliable and continuous power management solution for defense and industrial applications.

Applications

- **Armored Land Vehicles:** Reliable 28V DC power supply for communication, control, and mission computers
- **Command and Control Systems:** Power source for radar, communication, and sensor infrastructures
- **Mobile Mission Systems:** Portable energy solutions used in field operations
- **Naval Platforms:** Backup power source for mission electronics on ships and boats
- **Aviation Ground Support Units:** 28V DC power supply for ground testing of aircraft and UAV systems
- **Industrial Defense Infrastructure:** Reliable DC power source for laboratories, test centers, and production lines
- **Disaster and Emergency Systems:** Field electronics power supply for AFAD, Coast Guard, and search-and-rescue units

Advanced Features

Input Specifications

- 230 VAC ±10%, 50 Hz mains input
- Universal input range support (90–264 VAC)
- Industrial terminal connection or optional MIL-DTL-38999 military-grade connector

Output Specifications (Module-Based)

Module 1 – 28V / 50A Isolated Converter

- 4 × 28V / 10A Switch Outputs
- 1 × 28V / 50A Switch Output

Module 2 – 28V / 10A Isolated Converter (I)

- 4 × 28V / 2A Switch Outputs
- 1 × 28V / 10A Switch Output

Module 3 – 28V / 10A Isolated Converter (II)

- 4 × 28V / 2A Switch Outputs
- 1 × 28V / 10A Switch Output
- **Total Output Power:** ≈ 1.7 kW (Optionally upgradable up to 10 kW)
- **Output Interface:** MIL-DTL-38999 military-grade connector (optional terminal block)
- **Low Ripple & Noise:** Max. 150 mVp-p ripple and noise
- Independent voltage and current measurement for each output

Smart Control and Communication

- MCU-based centralized control board
- 10 Mbps RS-485 HD communication interface
- Remote ON/OFF control capability
- Power OK alarm output for fault or power loss indication

Protection Functions

- Overvoltage Protection (OVP)
- Overcurrent and Overload Protection (OCP / OLP)
- Overtemperature Protection (OTP)
- Parallel operation support (current sharing capability)

Durability and Environmental Compliance

- Passive cooling (fanless design for high reliability)
- Operating temperature: -32°C to +55°C
- MIL-STD-810G compliant for vibration, shock, humidity, and rain exposure
- MIL-STD-461 compliant for EMI/EMC performance
- Rugged, dust- and moisture-protected enclosure suitable for outdoor use

Parameter	Value / Description
Input Voltage	230 VAC ±10%, 50 Hz (Universal input: 90–264 VAC)
Input Connection	MIL-DTL-38999 military-grade connector (optional terminal block)
Output Module 1	4 × 28V / 10A, 1 × 28V / 50A (isolated)
Output Module 2	4 × 28V / 2A, 1 × 28V / 10A (isolated)
Output Module 3	4 × 28V / 2A, 1 × 28V / 10A (isolated)
Total Output Power	≈ 1.7 kW (optionally upgradable up to 10 kW)
Output Connection	MIL-DTL-38999 military-grade connector (optional terminal version, Product No: TDG-PFC-A0001)
Isolation	Each power converter and output module is individually isolated
Measurement Feature	Voltage and current of each converter and output channel are independently measurable
Remote Monitoring	Real-time monitoring of current/voltage values of all modules and fault mode reporting via RS-485 HD (10 Mbps)
Remote Control	Individual ON/OFF control for each output switch (Remote ON/OFF capability)
BIT (Built-In Test)	Performs two automatic self-tests per second; detects faults and reports to the user with 90% accuracy
Control Unit	1 × MCU-based intelligent control unit
Communication	1 × RS-485 HD, 10 Mbps
Ripple & Noise	Max. 150 mVp-p
Protection Functions	Overvoltage (OVP), Overcurrent/Overload (OCP/OLP), Overtemperature (OTP)
Cooling	Passive (fanless), includes active heatsink design
Operating Temperature	-32°C to +55°C
Environmental Resistance	MIL-STD-810G compliant (vibration, shock, humidity, rain)
EMI/EMC Compliance	MIL-STD-461

Mechanical and Electrical Interface

Power Input		
D38999/24WD5PN		KN1
A	16 AWG	L
B	16 AWG	L
C	16 AWG	N
D	16 AWG	N
E	16 AWG	PE

Communication		
D38999/24WB35SN		KN6
1	22AWG	RS485RX+
2	22AWG	RS485RX-
3	22AWG	RS485_RX_SHIELD
4	22AWG	RS485TX+
5	22AWG	RS485TX-
6	22AWG	RS485_TX_SHIELD
7	22AWG	RS485_GND
8	22AWG	Spare
9	22AWG	Spare
10	22AWG	Spare
11	22AWG	Spare
12	22AWG	Spare
13	22AWG	Spare

Output-1		
D38999/24WE8SN		KN2
A	16 AWG	+
B	16AWG	+
C	16AWG	+
D	16AWG	+
E	16AWG	-
F	16AWG	-
G	16AWG	-
H	16AWG	-

Output-2		
D38999/24WE8SA		KN3
A	16 AWG	+
B	16AWG	+
C	16AWG	+
D	16AWG	+
E	16AWG	-
F	16AWG	-
G	16AWG	-
H	16AWG	-

Output-3		
D38999/24WC35SN		KN4
1	22 AWG	+
2	22 AWG	+
3	22 AWG	+
4	22 AWG	+
5	22 AWG	+
6	22 AWG	+
7	22 AWG	+
8	22 AWG	+
9	22 AWG	-
10	22 AWG	-
11	22 AWG	-
12	22 AWG	-
13	22 AWG	-
14	22 AWG	-
15	22 AWG	-
16	22 AWG	-
17-22	22 AWG	Spare

Output-4		
D38999/24WD5SN		KN5
A	16 AWG	+
B	16 AWG	+
C	16 AWG	-
D	16 AWG	-
E	16 AWG	Spare