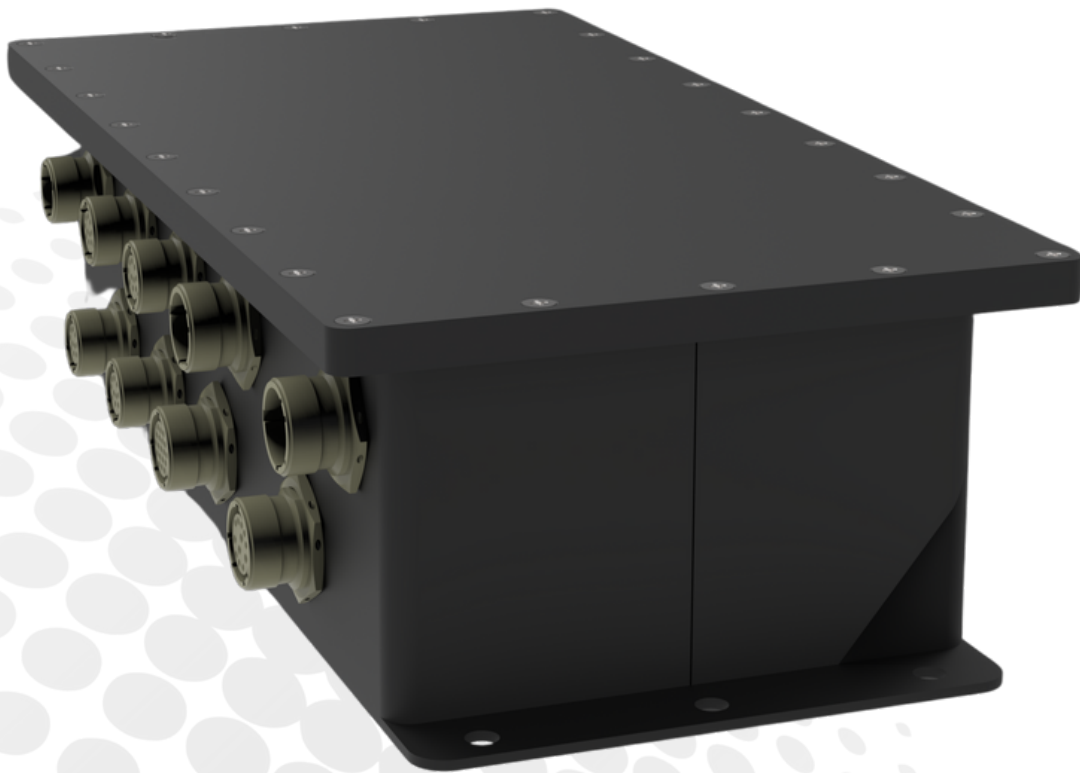


PowerGuard-A 380 VAC-28 VDC Military AC-DC Converter & Distribution System

Product Code: 3PAC-DC-1000-28



380 VAC-28 VDC Military AC-DC Converter & Distribution System



Product Description

PowerGuard-A Series is a high-reliability, military-grade 3-phase AC power conversion and intelligent power management system developed by Tedeg Defence for demanding field, vehicle, and outdoor operations. It rectifies a wide-range 360–440 VAC three-phase input into a stabilized 500–800 VDC high-voltage DC bus, and subsequently converts this bus into configurable 12 / 24 / 28 / 36 / 48 VDC regulated outputs across power classes from 1 kW to 4 kW, delivering continuous full-load performance even under extreme thermal and environmental conditions.

Built around a high-efficiency architecture and a ruggedized, conduction-cooled thermal design, the system maintains stable output regulation during long-duration and mission-critical operation. Its fully sealed IP67 aluminum enclosure eliminates airflow paths, preventing the ingress of dust, mud, humidity, and rain. Passive heat dissipation is achieved through an engineered conduction path that transfers thermal energy directly to the host platform structure—ensuring silent operation and zero maintenance throughout the unit's lifecycle.

The PowerGuard-A Series is not only a power converter but also a smart power distribution and control hub. Each output channel can be monitored and controlled remotely through optional Ethernet, RS-485, or CAN-Bus interfaces, providing real-time telemetry for voltage, current, temperature, and system health. Remote switching, output enable/disable, load diagnostics, and alarm reset functions allow seamless integration into centralized vehicle or platform management systems.

Engineered to comply with MIL-STD-810 environmental and MIL-STD-461 EMC requirements, the PowerGuard-A Series delivers secure, uninterrupted power to mission-critical subsystems deployed in armored vehicles, radar shelters, mobile command units, naval platforms, and rugged outdoor power infrastructure.

Application Areas

The PowerGuard-A Series is designed for harsh, mission-critical deployments where uninterrupted power, environmental resilience, and remote controllability are essential. Its sealed, fanless, and high-voltage DC bus architecture makes it suitable for a wide range of military and industrial platforms, including:

• Military & Tactical Vehicles

3-phase onboard AC sources converted into stabilized DC outputs for communication electronics, weapon systems, mission computers, EO/IR payloads, and auxiliary subsystems.

• Mobile Command, Radar & Communication Nodes

Reliable multi-voltage DC power for radio transceivers, radar processors, network routers, surveillance suites, and tactical communication shelters.

• Field Power Distribution & Energy Modules

Integration into outdoor enclosures or modular power cabinets for powering sensors, surveillance networks, and distributed electronic loads.

• Naval, Marine & Offshore Platforms

Corrosion-resistant, sealed power conversion for shipboard electronics, surface vehicles, unmanned marine systems (USV), and dockside support units.

• Rugged Industrial & Emergency Power Systems

Use in remote monitoring stations, shelters, and industrial automation where sealed, silent, and maintenance-free power conversion is required.

Advanced Features

Multi-Voltage Configurable Outputs

Supports selectable and independent DC output configuration of 12 / 24 / 28 / 36 / 48 VDC, enabling the same hardware platform to power a wide range of mission equipment and subsystems.

Intelligent Power Management Controller

A dedicated embedded controller provides real-time monitoring and control of all power channels, including:

- Output voltage & current telemetry
- Fault & alarm reporting
- Thermal diagnostics
- Remote enable/disable of each output

Advanced Remote Communication Interfaces

Optional digital interfaces include:

- Ethernet (TCP/UDP-based protocol)
- RS-485 (Modbus / custom protocol)
- CAN-Bus (J1939 / CANopen-style messaging)
- These allow full system integration into vehicle or platform control networks.

Fully Sealed IP67 Military Enclosure

The aluminum, monolithic IP67 chassis provides:

- Zero air ingress
- Zero moisture ingress
- Mud, dust, rain, and salt fog protection
- No fans, vents, or moving parts (silent operation)

Conduction-Cooled Thermal Path

Heat is transferred directly through the enclosure using a conduction-cooled design optimized for:

- Harsh vibration environments
- Fanless reliability
- Platform-mounted heat sinking

High Shock & Vibration Resilience

Designed according to MIL-STD-810H shock and vibration profiles for armored vehicles, naval systems, and field equipment.

EMI/EMC Hardened Power Stage

Conversion stages and filtering blocks follow MIL-STD-461 design principles, ensuring protection against conducted and radiated emissions in dense electronic environments.

Programmable Output Behavior

Outputs can be:

- Sequenced
- Current-limited
- Soft-started
- Time-delayed
- Over-voltage / under-voltage protected

All programmable parameters are accessible through communication interfaces.

Mission-Critical Reliability

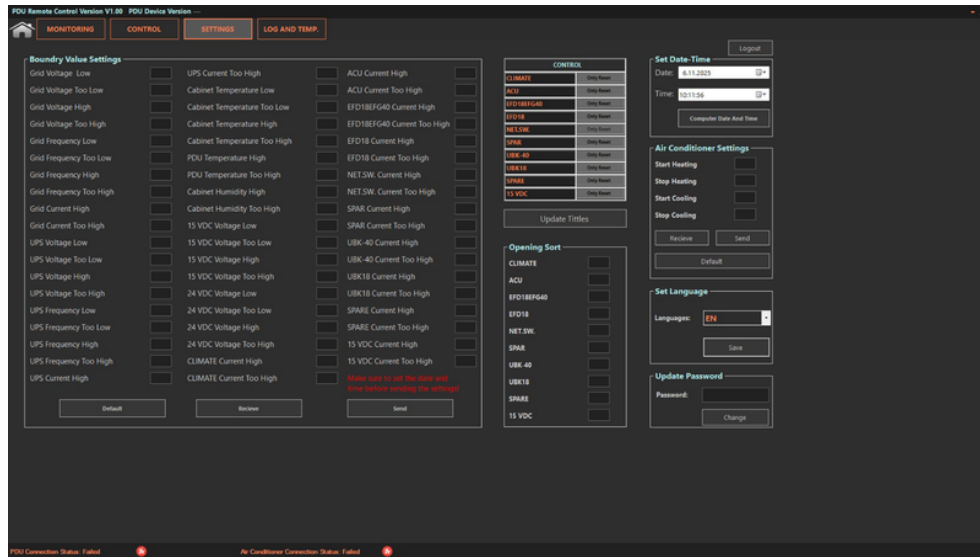
Redundant components, wide thermal margin, and a rugged mechanical structure guarantee uninterrupted power delivery in 24/7 battlefield operation.

Electrical Specifications

Category	Parameter	Specification
AC Input (3-Phase)	Input Voltage Range	360–440 VAC, 3-phase (L-L)
	Nominal Input Voltage	380 / 400 VAC
	Input Frequency	47–63 Hz
	Input Current (Full Load)**	Depends on model (1–4 kW versions)
	Power Factor	≥ 0.95 (typ.)
	Inrush Current	Soft-start controlled
	Input Protections	Over-current, under-voltage lockout (UVLO), phase-loss detection
	EMI/EMC Compliance	Designed according to MIL-STD-461 principles
28 VDC Output Stage	Nominal Output Voltage	28 VDC
	Voltage Accuracy	±1% typ. (±2% max)
	Output Power Options	1 kW / 2 kW / 3 kW / 4 kW
	Rated Output Current	Model-dependent (e.g., 1 kW ≈ 35 A)
	Transient Response	< 5% deviation, 2 ms recovery
	Efficiency	92–95%, depending on model
	Isolation	Reinforced isolation between Input–Bus–Output
	Short-Circuit Protection	Electronic current limit, auto-recovery
	Over-Voltage Protection	Programmable OVP
	Over-Current Protection	Constant-current limit + shutdown
	Over-Temperature Protection	Thermal shutdown + telemetry reporting
	Soft-Start	Controlled, programmable rise time
Remote Monitoring & Control	Communication Interfaces	Ethernet / RS-485 / CAN-Bus (optional)
	Telemetry Data	Voltage, current, temperature, DC bus, system faults
	Remote Functions	Output ON/OFF, fault reset, sequencing, channel enable/disable

Product Code: 3PAC-DC-1000-28
PFC / 09-2025 v2

Remote Control & Software Interface (Optional)



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	-

Mechanical Interface

