TEDEG

# PowerGuard 115-VAC 400 Hz Frequency Converter

## Advanced Technology for Continuous and Dependable Energy Solutions

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PowerGuard

# 115 VAC 400 Hz Frequency Converter

Developed by TEDEG Engineering, the PowerGuard Military 115 VAC 400 Hz Converter is designed to provide the reliable energy conversion needed in modern defense and industrial applications. With its innovative features and superior performance compared to both domestic and international competitors, this system stands out by meeting military standards and delivering energy efficiency and durability—capable of handling even the toughest operational conditions.

PowerGuard accepts 3-phase 360–440 VAC at 50–60 Hz as input and can convert it to a variable 115 VAC–220 VAC, 60–400 Hz output voltage. Having successfully passed MIL-STD-810G and MIL-STD-461G tests, the system has proven its durability under demanding environmental conditions. An optional power distribution unit can be attached to the output, enabling intelligent, controlled energy distribution to different systems according to customer needs.

**Advanced Features**

1. **Dynamic Voltage and Frequency Conversion**
   - Input: 3-phase, 360–440 VAC, 50–60 Hz
   - Output: Variable 115 VAC–220 VAC, 60–400 Hz
   - Connection Options:
     - Star (Wye) Connection: 115 VAC (line-to-neutral), 400 Hz
     - Delta Connection: 115 VAC (line-to-line), 400 Hz
2. **Compliance with Military Standards**
   - MIL-STD-1399B: Technical standard compliance
   - MIL-STD-810G: Durability
   - MIL-STD-416: Magnetic resilience
   - MIL-STD-704F & MIL-STD-1399-300B: Output voltage and frequency requirements
3. **Advanced Protection Mechanisms**
   - Phase sequence protection
   - Overload, short-circuit, and over-temperature protection
   - Standby-state monitoring and control of voltage/frequency fluctuations
4. **Integrated Testing and Monitoring**
   - Real-time monitoring of input and output parameters
   - RS-422 protocol for remote control and data monitoring
   - Streamlined for full functional testing and maintenance
5. **Physical and Environmental Durability**
   - Operating Temperature: –30°C to +55°C
   - Dust, vibration, humidity, and shock resistance in compliance with MIL-STD-810G
   - Capable of operating under reduced atmospheric pressure up to 3000 meters altitude

**Application Areas**

- **Defense Industry**
  - Military Weapon Systems: Ensures continuous operation for radar and weapon systems through precise power conversion.
  - Air Platforms: Supplies power for aircraft and helicopters.
  - Land Platforms: Provides reliable energy for armored vehicles and mobile operations.
  - Naval Platforms: Used in communication, sonar, and control systems for ships and submarines.
- **Industrial Applications**
  - Test & Calibration Laboratories: Delivers stable power for devices requiring high-precision energy.
  - Production Lines: Utilized where precise and high-quality power conversion is essential.
  - Heavy Industry & Automation: Serves as a power source for large industrial motors and control systems.
- **Critical Systems**
  - Hospitals and Healthcare Centers: Enables uninterrupted operation of critical medical devices.
  - Data Centers: Meets continuous power demands for servers and storage units.
  - Emergency Management: Acts as a portable energy source in disaster scenarios.
- **Mobile & Portable Power Solutions**
  - Field Operations: Offers fast and efficient energy conversion for mobile deployments.
  - Military Camps: Provides power for forward posts and temporary military bases.
  - Special Military Motors: Powers engines widely used in defense and aviation sectors.
  - High-Power Devices: Suitable for critical missions requiring large amounts of energy.

| Feature | Details |
|---|---|
| Input Voltage and Frequency | 3-phase, 360-440 VAC, 50-60 Hz |
| Output Voltage and Frequency | Variable 115 VAC to 220 VAC, 60 to 400 Hz |
| Connection Types | Wye (Star): 115 volts AC (line-to-neutral), 400 hertz |
| | - Delta connection: 115 volts AC (line-to-line), 400 hertz |
| Efficiency | That's 85% |
| Output Power Factor | - Star connection: Minimum 0.85 |
| | - Triangle connection: Minimum 0.80 |
| Total Harmonic Distortion (THD) | Output total harmonic distortion:<br>Below five percent |
| Frequency Modulation | Maximum frequency of 4Hz |
| Voltage Modulation | Maximum 2.5 Vrms |
| Response Time | - Time to reach steady-state values: 200 ms<br/>- |
| | Shutdown time: 100–170 ms (for over-/undervoltage) |
| Protection Mechanisms | Phase sequence, overload, short circuit, and over-temperature protection |
| Operating Temperature | -30°C to +50°C |

| Feature | Details |
|---|---|
| Durability Standards | - MIL-STG-1399B |
| | - MIL-STD-810G |
| | - MIL-STD-416G |
| Monitoring & Control | - CIT (In-Device Examination) |
| | - CIT (Built-in Test) <br/>- OLED screen, remote monitoring and control via RS-422 protocol |
| Physical Durability | Dust, vibration, moisture, rainfall, and shock resistance |
| Operating Altitude | 3000 metre |
| Weight | 210+- 5 Kg |

# Desktop Remote Control & Monitoring Ethernet Software