

tPower 24V 3A (TP2403)

CHARGER | AUTOMATIC POWER SUPPLY



The **tPower 24V 3A (TP2403)** is an intelligent battery charger designed for industrial and power systems where reliability and operational continuity are critical. Its microprocessor-based architecture implements a five-stage IUoU charging curve: Recovery, Rapid Charge, Absorption, Float, and Refresh. This management optimizes battery life and ensures complete and safe recharging. The device can also work as a stable power supply, maintaining a 24V output even without a battery connected. The self-diagnostic system monitors the battery status in real time and reports anomalies via diagnostic LEDs and signal relays. A robust, efficient, and low-maintenance solution for demanding control, automation, and backup power applications.

CHARACTERISTICS

- Nominal output voltage: 24 V DC
- Maximum output current: 3 A $\pm$ 5%
- Nominal power: 72 W
- IUoU load curve (DIN 41773): 5 automatic stages
 - Recovery - Bulk - Absorption - Flotation
 - Refresh
- Operating modes:
 - Battery charger
 - Power supply
- Compatible battery types: Open lead-acid, AGM, Gel, Ni-Cd
- Electronic protections:
 - Short circuit and overload
 - Overvoltage (35 V DC typical)
 - Overtemperature
 - Reverse connection
- Integrated self-diagnostics: detects reverse polarity, disconnected or shorted battery, and incorrect voltage.
- LED indicators with flashing codes according to stage or error.
- Signal outputs (potential-free contacts):
 - Battery failure
 - AC power failure
 - Low battery

- Control input: Boost charging enable.
- Mounting: 35 mm DIN rail or wall mount.
- Cooling: Natural convection.
- Protection class: IP20.

HIGHLIGHTS

- 24V/3A Automatic Battery Charger with dual charging and power supply functions.
- Switching technology with intelligent multi-stage management (IUoU).
- Compatible with flooded, AGM, Gel, and Ni-Cd batteries.
- Automatic fault diagnosis: reverse polarity, disconnected battery, or short circuit.
- Full protection against overvoltage, overload, overtemperature, and short circuit.
- Potential-free output contacts for battery and AC mains failure.
- Compact design, DIN rail or wall mountable (35mm), with natural convection cooling.

TYPICAL APPLICATIONS

- Industrial control and automation systems
- Solar and hybrid power equipment
- DC backup panels and automatic generator start-up
- Marine and communications applications
- Remote monitoring and control systems

TECHNICAL DATA AND SPECIFICATIONS

ENVIRONMENTAL CONDITIONS	
Operating temperature	-25 °C a +70 °C
Storage temperature	-40 °C a +85 °C
Humidity	95 % @ 25 °C (no condensation)
Vibration	IEC 60068-2-6 (15 – 150 Hz, 1 g, XYZ)
Shock	IEC 60068-2-27 (10 g, 6 ms)
Refrigeration	Natural convection

MECHANICAL DATA	
Material of the body	Self-extinguishing polycarbonate
Mounting	riel DIN 35 mm / mural
Weight	0.30 kg
Dimensions (H x W x D)	90 x 72 x 55 mm
Protection	IP20

INPUT/OUTPUT	
Input	Nominal voltage: 100 – 240 – 277 V AC (single-phase) Operating range: 90 – 305 V AC Input current: 1.5 A @ 100 V / 0.8 A @ 240 V / 0.7 A @ 277 V Frequency: 47 – 63 Hz Inrush current: ≤ 50 A Internal fuse: 2.5 A Recommended external fuse: 10 A (MCB C curve)
Output	Nominal voltage: 24 V DC Maximum current: 3 A ± 5% Nominal power: 72 W Typical efficiency (50% load): 89% Ripple: < 80 mVpp @ I > 0.5 A Charging curve: IUoU, 5-stage auto-charging Boost voltage: 28.2–29 V Float voltage: 26.8–27.6 V (depending on battery type) Recovery: 2–21 V Derating: -1.6%/°C for T > 40 °C Maximum output contact current: 1 A – 30 VDC / 60 VAC

CERTIFICATIONS AND STANDARDS
IEC/EN 62368-1 (Electrical safety) IEC/EN 61000-6-3 (Emission) IEC/EN 61000-6-2 (Immunity) UL 1236 Recognized– BBGQ2 Battery Chargers (File E353241) Complies with Directives LVD 2014/35/UE y EMC 2014/30/UE

