Product Manual

TP-T25



1. System Overview

1.1 System Introduction

The TP-T25 portable tethered drone automatic reel system mainly consists of: a reel winch, a tether box, integrated tether cable, and integrated ground power supply.

It provides tethered drones with wired power supply, data transmission, and cable winding/unwinding functions.

The reel winch mainly includes the system enclosure, main frame, cable drum, and control circuit.

1.2 Main Technical Parameters

No.	Item	Technical Parameters
1	System box main dimensions	591 × 491 × 575 mm (L×W×H)
2	System box incl. handle & control panel	620 × 535 × 575 mm (L×W×H)
3	Cable length (single)	120m
4	Weight	55–60 kg
5	Input voltage	AC 380 V
6	Max. cable retraction speed	≤2 m/s
7	Operating mode	Passive payout / powered rewind
8	Power output voltage	DC 1000 V
9	power output	25kW
10	Recommended onboard power	≤ 25 kW

Nominal input: 380 VAC, 50 Hz. 400 VAC, 50 Hz grids are within the normal input range. Standard maximum rewind speed is ≤2 m/s; faster rewind requires a custom configuration.



1.3 Instructions for Use

1.3.1 Tether Box Panel Description

1. Main Circuit Breaker: General switch for all circuits, including control power and main power.
2. Main Power Switch Button: Switch for drone power supply. Once pressed, the system delivers DC high voltage (1000 V) to power the onboard module.
3. Main Power Indicator (integrated in the switch ring light): Indicates power supply status of the tether box.
4. Torque Adjustment Knob: Adjusts the winding torque.
5. Transparent Panel: Allows direct observation of cable length and status on the drum.
6. LCD Display Information:
   - Output Voltage: Displays current DC output voltage.
   - Output Current: Displays current DC output current.
   - Output Power: Displays current DC output power.
   - Ui: Displays input line voltage of two phases among the three-phase input (Uab / Ubc).
   - T: Displays internal power supply temperature.



1.3.2 Wiring Instructions

1. Connect the supplied power cable between the tether box and mains or generator. One end plugs into the tether box aviation connector, and the other connects to mains or generator.



2. The tether box high-voltage output uses an XT90 connector. Connect the cable to the drone's onboard power supply, and fix the load-bearing hook (the cable load should be borne by the hook).





1.3.3 Operating Instructions

1. Before operation, turn the torque adjustment knob to the minimum, then switch on the main circuit breaker. The system powers up and the display lights up.
2. To power the drone, press the Main Power Switch. The cooling fan starts, the main power indicator stays on, and the display shows output voltage, current, and power. Once load current is detected, the indicator flashes (breathing mode), indicating the drone is powered.
3. For takeoff, keep the torque knob at minimum (or slightly increased in windy conditions). The

drone pulls out the cable passively. During retraction, gradually increase the torque knob to match descent speed. Alternatively, set a suitable torque from the start so the cable is always under tension—when the drone pulls, it unspools; when descending, the tension automatically retracts the cable.

4. After completing the mission, first switch off the Main Power Switch (disconnect high-voltage DC), then retract the remaining cable to avoid accidental electric shock. Finally, switch off the Main Circuit Breaker and unplug the power cable.

1.3.4 Precautions

1. Place the equipment on a level surface before use, ensuring balance.
2. Operators must wear insulated gloves to prevent electric shock.
3. When adjusting the speed knob, increase gradually from low to high; do not turn it to maximum suddenly.
4. After operation, coil the power cable properly inside the box. Do not drag it on the ground.
5. During use, avoid dragging the tether cable on the ground to prevent abrasion. Ensure the ground is free of stones or sharp objects to avoid cable damage.