

SVTECH

SV-T30

Tethered UAV System

English technical reference prepared from the Chinese product document. Legacy contact details have been removed. Numeric values marked [verify] require confirmation before ordering or operation.

****Product Manual: SV-T30 Tethered UAV System****

****1. SV-T30 Tethered UAV****

****2.0 Aircraft Specifications****

Parameter	Value
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Wheelbase	1500 mm
Open Dimensions	1500 x 1500 x 800 mm
Folded Dimensions	650 x 650 x 800 mm
Number of Motors	4
Max Output Power (Single Motor)	32 [verify]
Max Thrust (Single Motor)	3 [verify] kg
Rated Payload	10 A [verify]
Rated Current	DC 400-500 V
Rated Voltage	Carbon Fiber Composite
Material	32 x 12 inch
Diameter/Pitch	32 x 12 inch

****2.2 Power System****

****2.3 Electronic Speed Controller (ESC)****

****2.4 Propeller****

****2.5 Remote Control Stick Definition****

****SV-T30 Tethered UAV Remote Controller****

- ****Control Sticks (Yaw, Throttle, Roll, Pitch):**** Default is left-hand throttle (throttle auto-centering), Mode 2 (American hand).
- ****Carabiner Ring:**** For securing a mobile device holder and connecting the remote controller lanyard.
- ****Power Switch:**** Turns the remote controller on/off. Press and hold both switches simultaneously for 2 seconds to turn on/off.
- ****Flight Mode Switch:**** 2-position, self-locking (non-return), long lever. Up/Down positions correspond to: GPS Mode (default), Attitude Mode.
- ****Return-to-Home (RTH) Mode Switch:**** 2-position, self-locking (non-return), long lever. Up/Down positions correspond to: RTH Off (default), RTH On.
- ****Handle:**** For convenient carrying.
- ****Battery Cover:**** Prevents the battery from sliding out.

****2.6 Arming and Disarming****

The T30 has only one arming method. Regardless of Mode 1 (Japanese hand) or Mode 2 (American hand), perform the action shown in Figure 2-12 to arm, and the action shown in Figure 2-13 to disarm.

After landing, keep the throttle stick at the lowest position for at least 3 seconds; the aircraft will automatically disarm. After the flight controller calibration is complete, when arming, the motors will start in sequence. Once motor No. 1 starts, pushing the throttle will start all other motors simultaneously.

- Figure 2-12: Arming
- Figure 2-13: Disarming

****2.7 Compass Calibration****

Compass calibration procedure:

1. Push the throttle stick to the lowest position.

2. Quickly toggle the flight mode switch between the lowest and highest positions approximately 6-10 times until the status indicator LED shows a solid blue light.
3. Place the aircraft nose forward, level, and slowly rotate it clockwise at least one full turn until the status indicator LED shows a solid green light.
4. Point the aircraft nose down, with the fuselage vertical, and slowly rotate it clockwise at least one full turn until the status indicator LED shows a solid white light for 4 seconds.

If the status indicator LED shows a solid red light for 4 seconds, calibration has failed. Repeat steps 2 and 4 until successful.

- Figure 2-15: Compass Calibration Diagram

****2.8 Level Calibration****

Level calibration procedure:

1. Place the aircraft on a level surface, ensuring the fuselage is horizontal and free from vibration.
2. On the remote controller, perform the outward "V" disarm stick movement and hold for more than 10 seconds until the status indicator LED begins alternating blue and green flashes.
3. Release the remote controller sticks. After approximately 10 seconds, the status indicator LED will change to a single blue flash. After approximately 15 seconds, the status indicator LED will flash normally.

- Figure 2-16: Level Calibration Diagram

If, during subsequent flights, the aircraft still leans significantly after taking off in Attitude Mode, it is recommended to repeat the level calibration.

2.9 Flight Modes and Corresponding Responses

The T30 has multiple operating modes. Aircraft behavior varies by mode. Stick input and aircraft response are described in Table 3-1.

| Control Mode | Roll/Pitch | Yaw | Throttle |

| :--- | :--- | :--- | :--- |

| GPS Mode | Roll/Pitch tilt angle is proportional to stick input magnitude. | Yaw rate corresponds to yaw stick input magnitude. | Motor average output corresponds to the current throttle value; throttle input has highest priority. |

| Attitude Mode | Roll/Pitch tilt angle is proportional to stick input magnitude, but the corresponding flight speed is limited to a maximum horizontal speed of 2 m/s. | Yaw rate corresponds to yaw stick input magnitude. | Yes, throttle neutral position corresponds to altitude hold; throttle up/down amplitude corresponds to ascent/descent speed. |

2.10 LED Indicator Description

- R=Red, G=Green, B=Blue, Y=Yellow, P=Purple, C=Cyan, W=White.

- The three primary colors of light are RGB. Other colors are synthesized from these. At equal brightness: R+G=Y, R+B=P, G+B=C, R+G+B=W.

- Numbers in the color definition boxes represent the duration of that color state.

- The "Count" column indicates how many times the state repeats; "-" indicates continuous flashing.

| Color | Definition | Frequency | Meaning |

| :--- | :--- | :--- | :--- |

| R2Y1 | 0.2s | Cycle | Attitude Mode, GPS satellites < 7 |

| R2 | 0.6s | Cycle | Attitude Mode, GPS satellites <= 7 (poor accuracy) |

| G1Y1 | 0.6s | Cycle | Attitude Mode, GPS satellites > 7 (good accuracy) |

R1P1	0.6s	Cycle	GPS Mode, GPS satellites <= 7 (poor accuracy)
G1P1	0.6s	Cycle	GPS Mode, GPS satellites >= 7 (good accuracy)
R1B1	0.6s	Cycle	System initialization complete
Y1B1	0.6s	Cycle	Remote controller signal lost
Y1G1	0.6s	Cycle	Compass data abnormal
G0	Solid	4S	First level low voltage alarm
White	Solid	4S	Second level low voltage alarm
R2	Solid	4S	Start compass horizontal calibration
G1Y1	Solid	4S	Start compass vertical calibration
R1P1	Solid	4S	Compass calibration successful
G1P1	Solid	4S	Compass calibration failed
R1B1	Alternating	-	

****2.11 First Flight****

For the first flight, follow these steps for pre-flight inspection and flight.

****Pre-flight Inspection****

Check the following to avoid flight incidents:

- 1. Aircraft nose direction.**
- 2. GPS/Compass module orientation.**
- 3. Main controller installation direction.**
- 4. Correct rotation direction of each rotor.**
- 5. All electrical connections are secure.**

6. The tether cable receives 380V AC. Open the winch switch on the tether box and pull out the tether cable.

7. Connect the aviation plug on the aircraft to the aviation plug on the tether box. Secure the strain relief buckle to the aircraft.

****Power-On Self-Test****

Refer to the "LED Indicator Description" for LED status meanings.

- 1. Turn on the remote controller first, then connect the main flight controller power.**

2. After the main controller is powered on, avoid moving the aircraft until the [verify] combination flashing is complete, otherwise, flight attitude may be poor.
3. Observe the LED status indicator. Wait until the GPS/Compass module satellite status is normal and positioning is possible before proceeding.
4. Toggle the flight mode switch back and forth. Observe if the LED flight mode indication matches the switch position.
5. Place the aircraft at least 20 meters away from the remote controller operator and wait for the flight control system to acquire satellites normally (red flashing LED changes to green flashing LED).
6. Turn on the aircraft's backup power switch. Ensure the backup battery is connected to the aircraft, then turn on the 500V [verify] switch on the tether box.
7. In Attitude Mode, move both remote controller sticks to the bottom right corner simultaneously. The motors will arm and start sequentially from motor No. 1. If the throttle stick input exceeds 20% during the sequential start, all motors will start immediately.
8. After all motors have started, gently push the throttle stick to approximately 30% and hold. Apply small roll and pitch stick inputs. Observe if the motor speed increase corresponds to the stick input. If consistent, return roll and pitch sticks to center. Continue pushing the throttle until the aircraft lifts off.
9. At an altitude below 2 meters, test the feel of each control channel. If response is normal, you may continue to explore the flight controller's maximum potential.
10. After flight, check if the temperatures of the clockwise and counter-clockwise rotating motors are consistent. If temperatures are inconsistent, the aircraft may have an unbalanced load. Calibrate the propeller plane to ensure all propeller planes are consistent.

****2.12 Failsafe (Signal Loss)****

If the remote controller signal is lost, the LED indicator will first show [verify]. After hovering for 5 seconds, the aircraft will return to the takeoff point, land, and disarm. If the remote controller signal is restored during this process, the aircraft will continue the automatic return-to-home procedure. To interrupt the RTH action, toggle the remote controller flight mode switch at least once.

****2.13 Power Loss Protection****

If the generator fails or the tether box malfunctions and stops supplying power to the aircraft, the aircraft will activate power loss protection and land in place.

****3. Ground Tether Box System****

****3.1 Ground Tether Box Specifications****

| Parameter | Value |

| :--- | :--- |

| Weight | 45 kg |

| Generator Power Supply Flight Time | 5 hours [verify] |

| Tether Box Dimensions | [verify] |

| Rated Input Voltage | 380 V AC, 50-60 Hz |

| Rated Output Voltage | 500 V DC [verify] |

| Rated Output Power | 20 [verify] |

| Tether Cable Length | 100 m |

| Automatic Reel Speed | [verify] |

****3.2 Ground Tether Box External Features Diagram****

No.	Name	Function
1	Knob Switch	Locks the tether box top cover
2	[verify]	Cools the tether box
3	Voltage Display	Shows current tether box output voltage
4	Current Display	Shows current tether box output current
5	500V Power Switch	Press button; tether box outputs 500V DC to power the aircraft
6	Automatic Reel System Switch	Activates the automatic reel system
7	Cable Length Display	Shows how many meters of cable the aircraft has deployed
8	Main Power Switch	Tether box main power switch
9	Protective Cover	Protects the aviation plug. Turn clockwise to open, counter-clockwise to lock.

****3.3 Ground Tether Box Operation Sequence****

1. Connect the tether box to the mains 380V AC power supply.

2. Press the main power switch on the tether box.

3. Press the automatic reel system switch.

4. Pull the tether cable out from the box. Connect the aviation plug on the tether cable to the aviation plug on the tethered aircraft.

5. After ensuring the aviation plugs are connected, press the 500V power switch. Check if the current display and voltage display are normal.

6. If everything is normal, the aircraft is ready for takeoff.

****Safety Information and Disclaimer****

(If you have any doubts about the safety of this product, please contact our company for a technical inspection.)

1. The tethered UAV, tether box, and tether cable contain high voltage internally. Do not disassemble them yourself to avoid electric shock.
2. Do not approach or touch the motors or propellers when they are rotating to avoid cuts.

3. Ensure propellers are correctly installed on their corresponding motors.

4. Do not touch rotating parts with hands or fingers while powered on. This can easily cause injury; installers must be careful.

Users must read this manual carefully before using this product. Use of this product implies acceptance of all terms in this statement.

This product is suitable for persons aged 18 years and older. Under normal power supply and correct connections, it can provide an excellent flight experience. When debugging parameters or performing firmware updates on this aircraft system, we strongly recommend removing the propellers and ensuring normal power supply and correct wiring of relevant functional modules. Always keep away from crowds, dangerous objects, and fragile items during use. Shuangjie Technology assumes no liability for personal injury or property damage caused directly or indirectly by the following:

1. User failure to assemble and use the product according to this manual.

2. User operating the aircraft under the influence of alcohol, drugs, fatigue, or in a poor physical or mental state.

3. User actively or intentionally operating the aircraft to cause harm.

4. User disassembling the product or modifying it with non-Shuangjie Technology parts, rendering the aircraft inoperable.

5. Injury caused by user operational error or misjudgment.

6. Injury caused by abnormal aircraft operation, such as natural wear or circuit aging.

7. Injury caused by user operating the aircraft while knowing it is in an abnormal working condition.
8. User operating the aircraft in severe weather conditions such as typhoons, hail, or heavy fog.
9. User flying in areas with magnetic interference, radio interference, or government no-fly zones.
10. User operating the aircraft in poor visibility or when the line of sight is obstructed.
11. Infringement caused by any data, images, or other materials obtained by using this product to operate the aircraft.

12. Other losses not within the scope of Shuangjie Technology's responsibility.

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