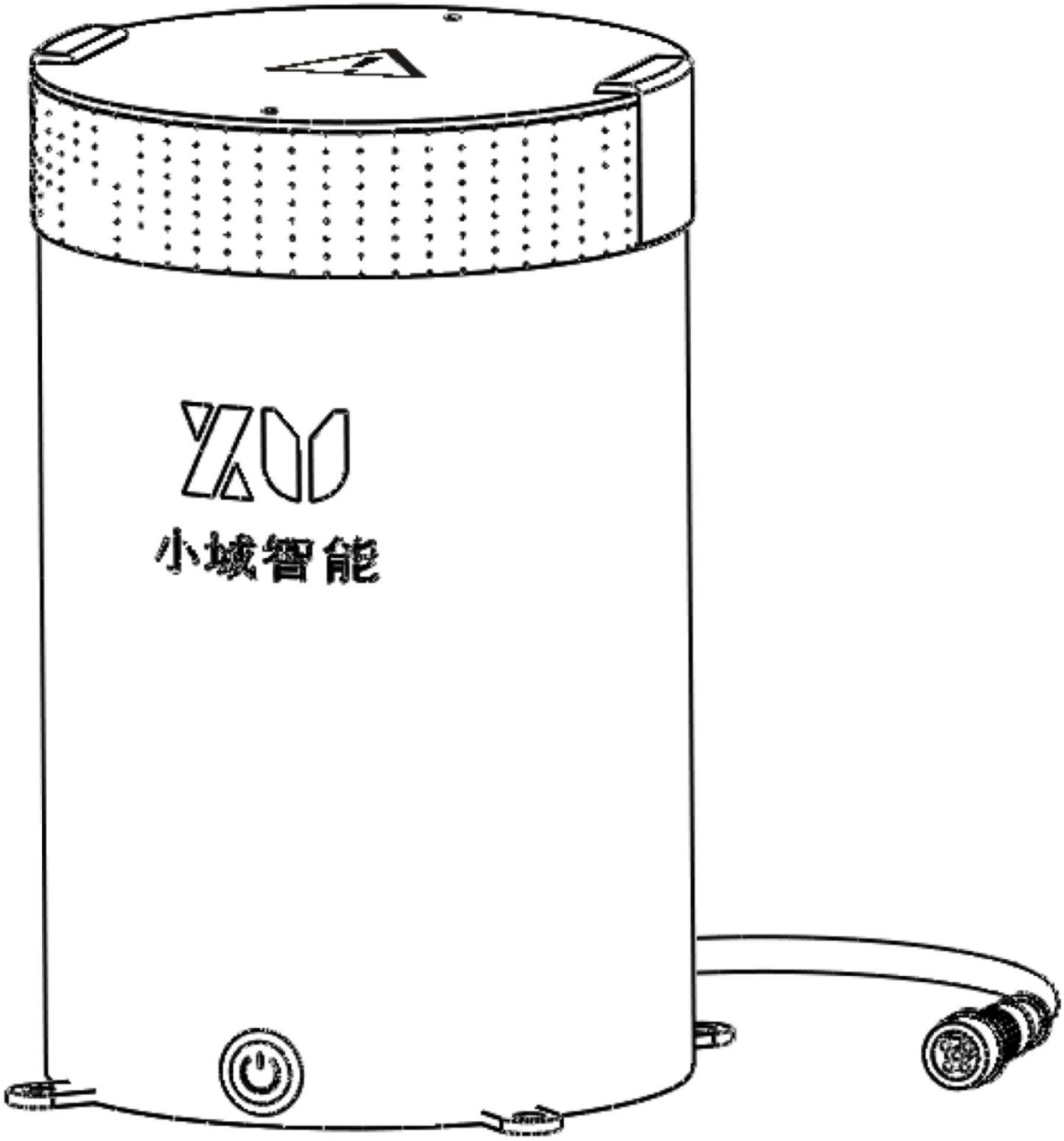
小域智能

XYU DPS20

UAV INTELLIGENT EMERGENCY PARACHUTE LANDING SYSTEM

THE USER MANUAL V1.3

2021.01.08



Disclaimer

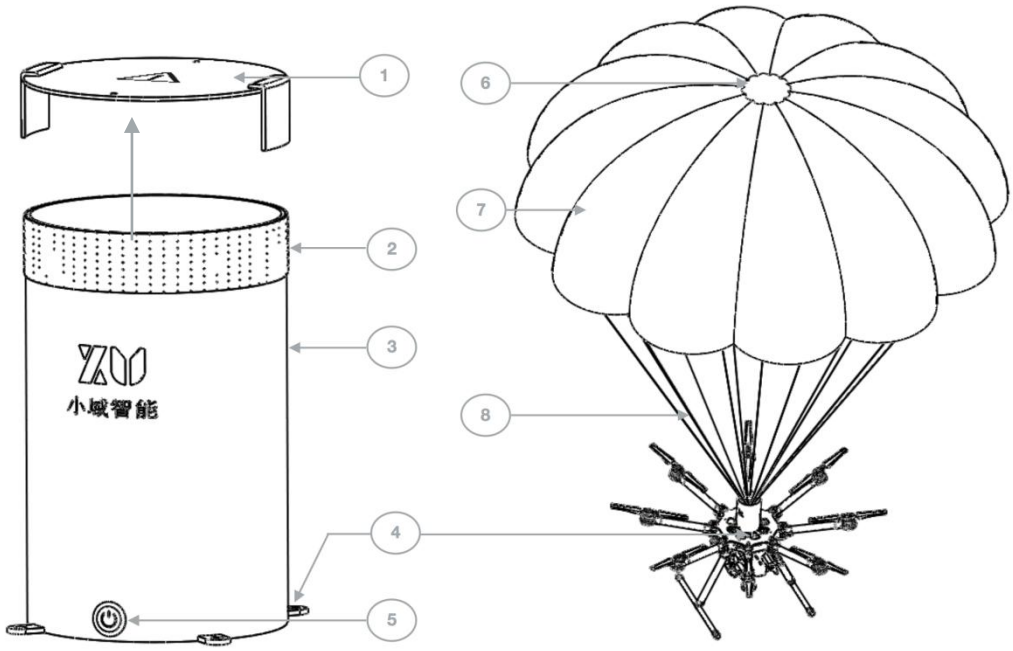
Thank you for purchasing XYU DPS series products. Please read this statement carefully before using it. Once used, this statement shall be deemed to be accepted and accepted in its entirety. Please follow this article to install and use the product. Changzhou XYU Intelligent Technology Co., Ltd. and its affiliates shall not be liable for any loss or loss caused by improper use, installation or modification by users. This system is only used to slow down the falling speed of aircraft in an emergency, and cannot fully guarantee that users, equipment, other objects and third parties will not suffer any damage.

Notes for product use

1. The device will start automatically after being connected with power.
2. Parachute drop system power supply range 4.5V-5.5V. If the voltage is too low will not charge, too high will burn out the main control board
3. The system is initialized within 5 seconds of system startup, and the parachute descent device cannot be shaken during the initialization process.
4. Please fold the parachute and place the propellant according to the teaching video.
5. As the solid fuel propellant is flammable, do not contact with open fire. The propellant can be used at -40-85 ℃.
6. Please store the propellant in a cool and dry place. The propellant shall be valid for 12 months.
7. Installation of parachute landing equipment should be placed as far as possible in the center of gravity of the aircraft and fixed.
8. The strength of the connection position of the built-in parachute rope equipment and aircraft shall be able to withstand the upward pulling force to prevent breakage.
9. The outer parachute rope connects the main parachute rope to the main structural parts of the aircraft to ensure that the structural strength after the parachute is opened meets the tensile force.
10. Do not let the exit turn to person to prevent damage caused by accidental triggering.
11. Please do not block out the top of the parachute landing system or the parachute will not eject normally.
12. Check the parachute and cord when used repeatedly, and replace them in time if there is any damage.
13. When the equipment light is on, do not shake or overturn the equipment violently.
14. Propellant is used for parachute ejection only. Do not use propellant for other scenarios.

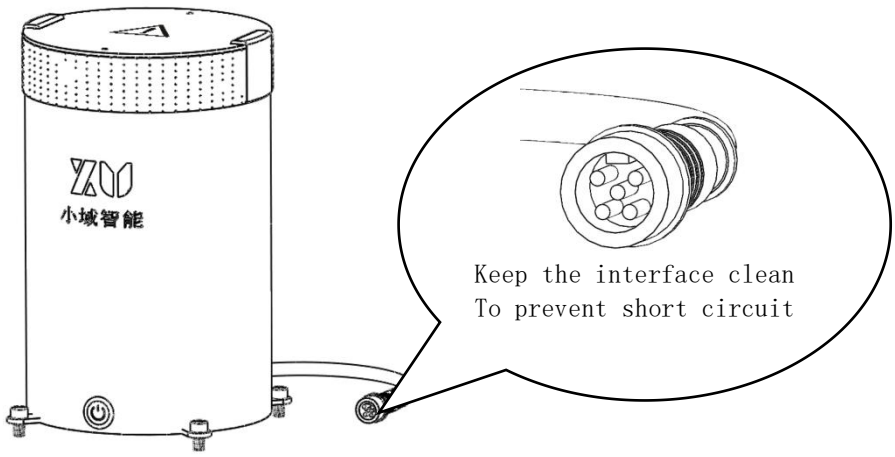
How To Use

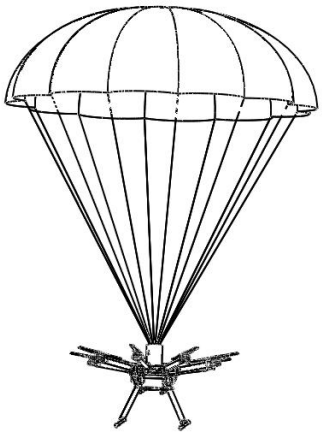
The UAV emergency deceleration equipment is equipped with built-in sensors and electric cells, which can automatically detect the status of the aircraft. When the detection of the aircraft out of control, it will automatically trigger the opening of the parachute and slow down. The reserved serial port of parachute landing equipment can also be connected with the flight control to realize the remote control of parachute opening and stopping. After getting the product, please install the product vertically and horizontally on the parachute landing equipment above the aircraft without shielding the exit. The equipment should be installed as close to the center of the aircraft as possible. If the center position cannot be installed, other positions on the top can be selected for installation, but the transfer fixed rope should be installed in place. Please keep the switch off and the external power off when the equipment is transported or not in flight. Before taking off, turn on the power switch or connect the device to power on. The blue light flashes quickly and the device enters the working state after initialization. After entering the working state, the parachute opening can be triggered automatically under the following conditions: the attitude tilt Angle exceeds the threshold or the fall acceleration exceeds 0.5g for 1.6 seconds; External trigger conditions : PWM trigger and serial port trigger.
The device reserves 5PIN waterproof and anti-reverse interface. The 5PIN bus can be used for power self-waking and charging as well as reading data. The receiver or flight control can be connected with the corresponding 5PIN adapter. The mechanical switch is a power supply switch for the built-in electric cell, and it will supply power for the built-in electric cell after being turned on. When the device is switched on automatically after external power supply, the mechanical switch will enter the boot state whether it is switched on or not. If the mechanical switch is not turned on, after the parachute system is energized self-working , the external power supply will be disconnected and the system will automatically shut down after 10 seconds delay.If the mechanical switch is on and the external power supply is off, it will automatically switch to the internal power supply. After landing, please turn off the switch and disconnect the external power supply in time to prevent unnecessary loss caused by incorrect triggering. Propellant and parachute are consumables, please consult manufacturer for purchase.



①：Cover ②：Velcro ③：Parachute barrels ④：Fixed hole ⑤：On-off ⑥：Gas port ⑦：Parachute ⑧：Main cord

Model	DPS20
Size	Diameter 105mm/ High 150mm
Installation position	116mm*116mm （M4*4）
Port	5PIN Waterproof interface
Load	<20kg
Diameter	3000mm
Service voltage	5v
Cell capacity	380mAh
Attitude perception range	±90°
Trigger Angle	± 80°
Falling trigger	0.5g/1.6s
Working hours	8h
Trigger method	Attitude/Fall/PWM/SDI
Data communication	Bi-directional
PWM pulse width	1000-2000us（50Hz，1750-2000us Trigger open）
Power off	10s
Power on and self-working	yes
Ejection way	PT20 propellant
Weight	550g
Parachute shield folding frequency	6 months / 3 months in humid environment（regional environment）
Working Temperature	-10—45℃





Definition of switch indicator light（Often flash：—；Short flash：●；Double flash：●●；Quick flash：●●●●；Interval flash：● ● ● ●）	
●●●●●●●●●●●●●●	Flash for 18 seconds：Boot initialization/Unit exception
———————————	Flash continuously：Trigger parachute opening

Indicator light of normal working state, flashing three times for a group	
The first flash（photosensitive）	—：Detect the light [Capping open Parachute eject]；●Detect no light [Capping and Parachute closed]
The second flash（PWM）	—：PWM LOS；●：PWM connect normally
The third flash（charging）	—Charging；●Fully charged；●●：No external power supply

This product is an emergency parachute landing equipment, which is only used to decelerate and slow down the aircraft in sudden situations. The warranty period is 1 year or 30 times, exceeding any requirement will be deemed over shelf life. The parachute compartment catapult design can be reused for 30 times, and its performance will not be guaranteed if it exceeds 30 times. The number of times the parachute is designed to be used is 30. Before the second use and reloading, check whether the parachute body is damaged or burned, and whether the parachute cord is seriously worn or broken. If the above situation occurs, the parachute should be replaced so as not to affect the secondary use. The equipment can record hundreds of sets of boot data. If the parachute descent system fails and the reason needs to be checked, please shut down the parachute system and save data for returning to the factory for reading records. This process should not be started up or triggered for multiple times to prevent data loss or data confusion.

Inventory	
Parachute barrels	1
Parachute	1
Seal cover	1
External wiring	1
Screw	4 groups
Spanner	1
Propellant	3

Wire definition	
BLACK	**GND**
RED	**VIN**
WHITE	**PWM**
YELLOW	**RXD**
GREEN	**TXD**

WeChat scan follow XYU

Product technical support and customized mailbox：support@xyuzn.con

You can go to the XYU Intelligent official website query download the latest version:**www.xyuzn.com**

Attachment I

XYU Intelligent XYU-3 communications protocol	
Communication Formats：	**19200 baud rate，8,N,1**

Data frames return in real time		**Stored data format**	
Byte		**Byte**	
1	**Fix 0x00**	**1**	**Boot times**
2	**Trigger state**	**2**	**Trigger state**
3	**Working state**	**3**	**Working state**
4	**Battery voltage，0.02V**	**4**	**Battery voltage，0.02V**
5	**Power on more than 8 seconds**	**5**	**Power on more than 8 seconds**
6	**Power on less than 8 seconds**	**6**	**Power on less than 8 seconds**
7	**reserve**	**7**	**Reserve**
8	**reserve**	**8**	**Reserve**

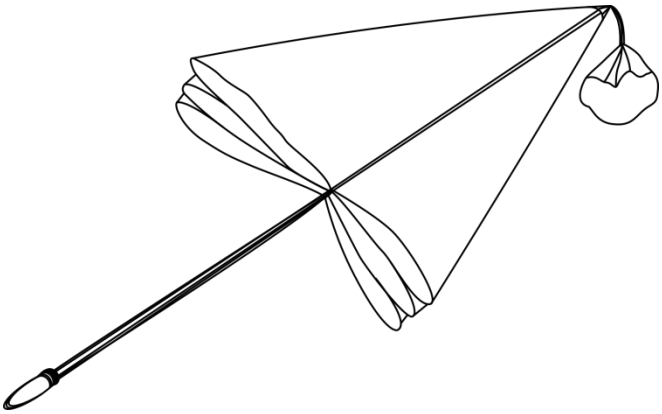
Trigger state							
BIT							
7	6	5	4	3	2	1	0
Reserve（*）	Reserve（*）	Reserve（*）	Data Trigger（optional）	PWM Trigger（optional）	external battery（reserved）	Acceleration trigger（automatic）	Attitude trigger（automatic）

Working state							
BIT							
7	6	5	4	3	2	1	0
Electricity protection	External power supply	Reserve	Reserve	Ignition	Charging	PWM lose	photosensitive signal

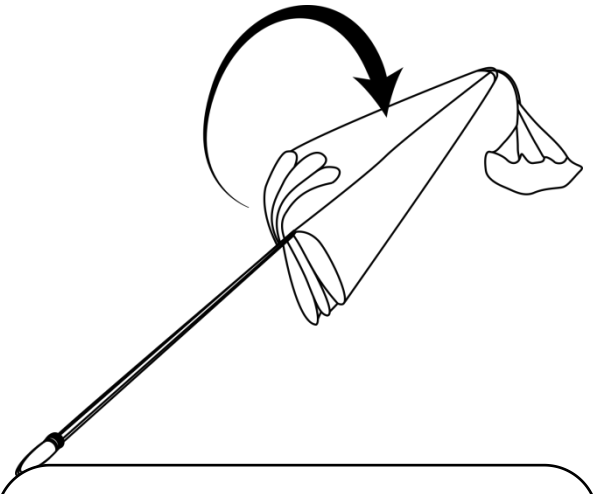
Communication command（Other command words must not be used ! Leave at least 100ms between 2 commands)		
Command words	Implication	Note
0x5a	Trigger open parachute !	Command interval should be 3 seconds (each trigger will last 3 seconds)
0xe0	Stop data return in real time	Sending e0 before reading the data and then sending 80 makes it easier to read the data
0xf0	Start data return in real time	E0 turning off real-time data enables to turn on real-time output via F0
0x80	Read 1-32 records	Note: Position order does not indicate record order! The data coverage logic automatically clears the earliest 64 pieces of data for every full 128 pieces of data to re-record.
0x81	Read 33-64 records	
0x82	Read 65-96 records	
0x83	Read 97-128 records	

Attachment II

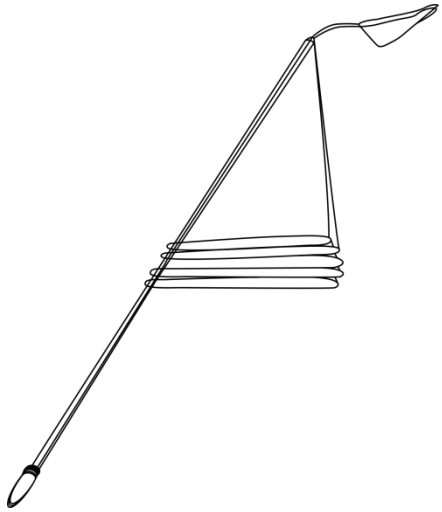
DPS UAV Parachute Landing equipment folding tutorial



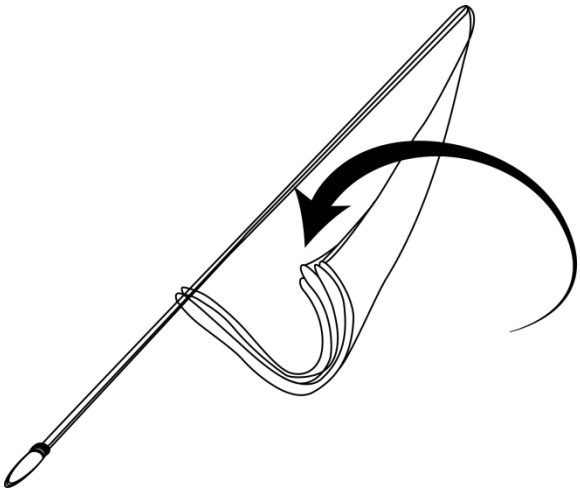
Step 1: Fix the top of the parachute, straighten the parachute and put it in order.



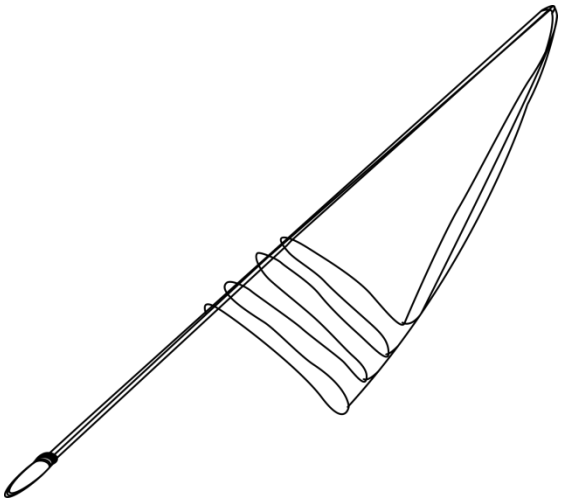
Step 2: Arrange the parachute surface to one side and sort out the parachute rope



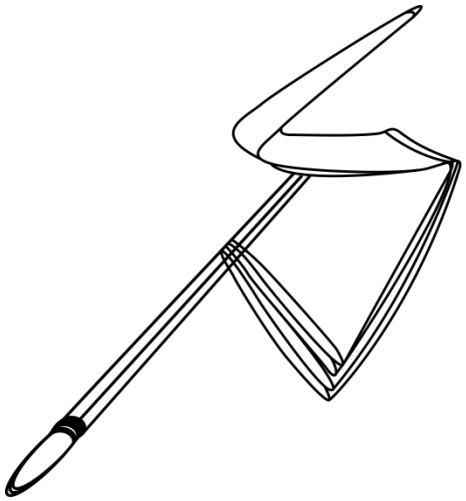
Step 3: Arrange the parachute to one side and then compress it.



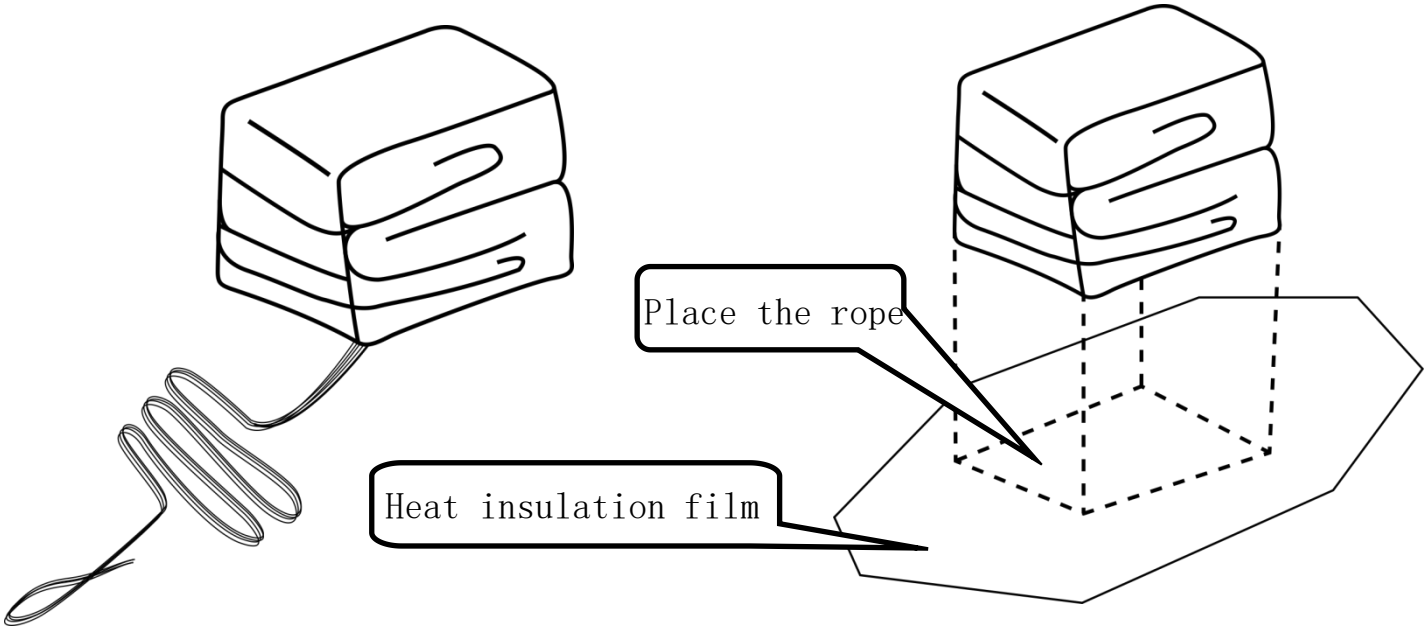
Step 4: Fold the parachute horizontally back according to "Z".



Step 5: Fold the parachute horizontally according to "Z" and then compress it.

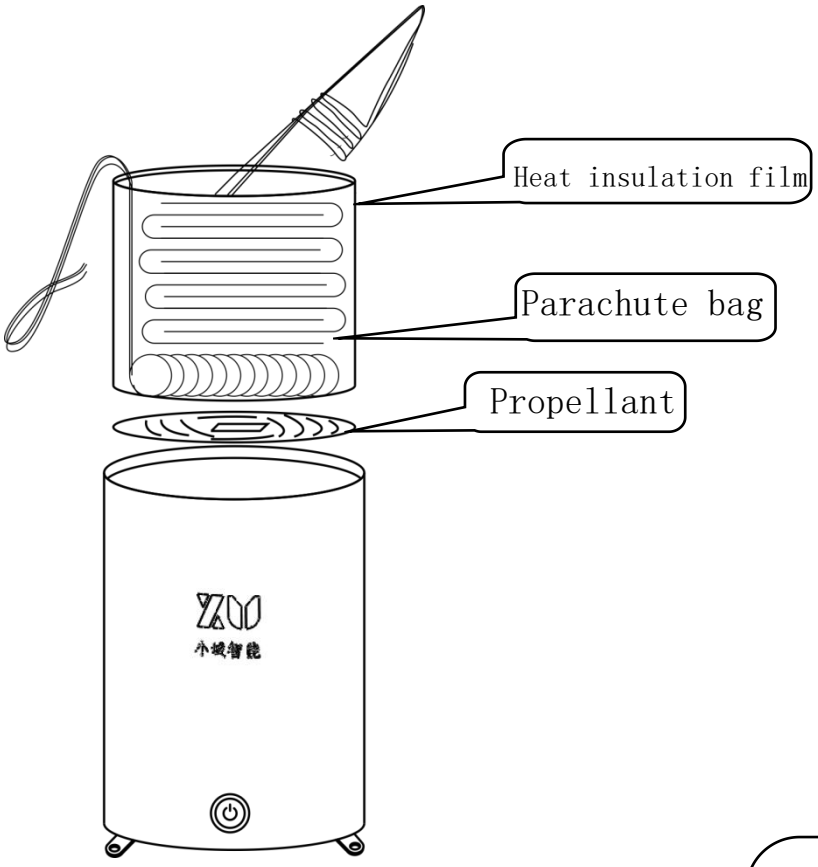


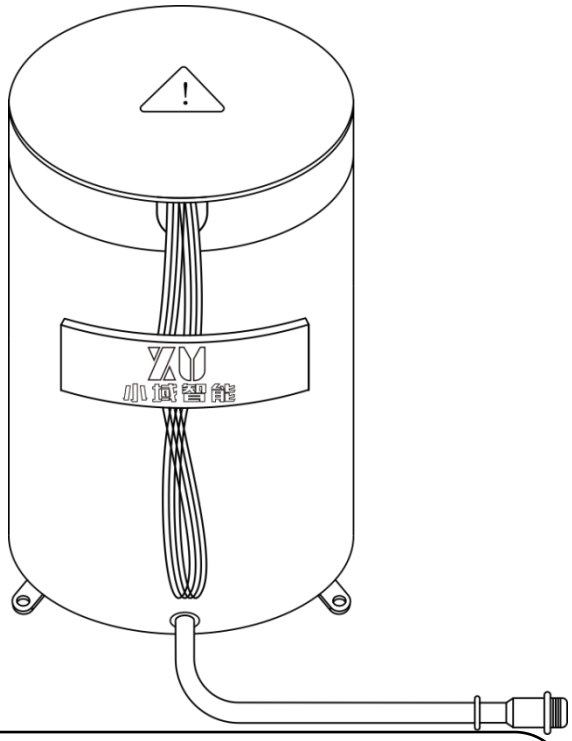
Step 6: Fold the parachute vertically according to "Z".



Step 7: Fold the parachute into cuboids and arrange the parachute rope according to "Z".

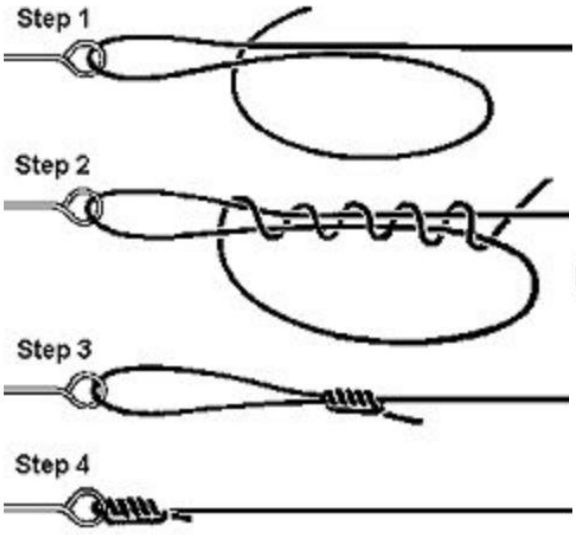
Step 8: Place the cord on the heat insulation film, then place the folded parachute on the cord.

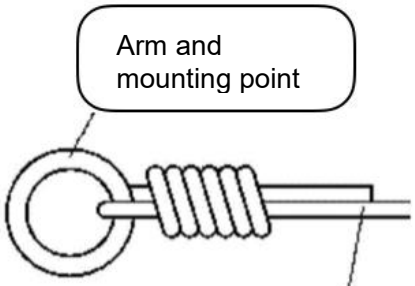


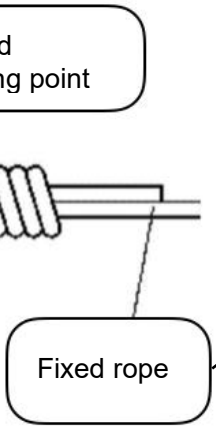


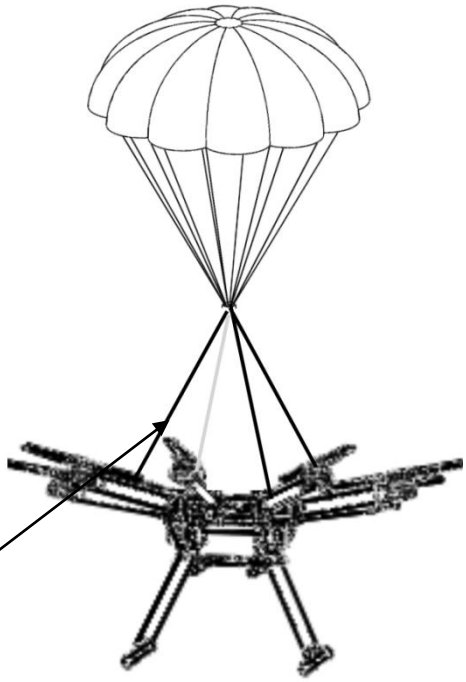
Step 9: Wrap the parachute with heat insulation film according to "U". Place the propellant in the barrels and then put the parachute into the barrels for compaction. Take care that the main cord does not exceed the surface of parachute.

Step 10: Arrange the parachute, cover the parachute, leave the rope through the u-shaped hole at the top of the barrels, and fix it on the side wall of the barrels with Velcro.









The knot way for the fixed rope with fixed points on the aircraft.

The rope is fixed and then pulled up in a "pyramid" shape