Dronavia

MADE IN FRANCE

USER'S MANUAL & INSTRUCTIONS

MOC2512 (M2) PARACHUTE RECOVERY SYSTEM & MOC2511 FLIGHT TERMINATION SYSTEM FOR DJI MATRICE 3D

FLIGHT MANUAL (2511 - 2512) - PRS-FTS-MOC KRONOS AD MATRICE 3D

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SUMMARY

Kronos M3D MOC2512/MOC2511

SUMMARY

Kronos M3D MOC2512/MOC2511

INTRODUCTION
by our CEO

"At Dronavia, we've been developing a wide, innovative range of accessories to secure your professional drones since 2015. Based in France, we think up all our products in our design office, before bringing them to life in our workshop, with unique technological know-how.

The fruit of more than 8 years of research and innovation, our new range of Kronos parachutes and FTS has been developed and tested in accordance with the standards imposed by the EASA and the DGAC, to comply with MOC2511 and the MOC2512 (M2).

Thanks to its standardised safety accessories, Dronavia ensures that remote pilots have the best risk management and safety measures at their disposal during their flying missions. You'll be flying your DJI Matrice 3D/3TD in complete safety.

Thank you for your confidence & enjoy your flight!

Ludovic Pelletey, Dronavia's CEO.

GENERAL
presentation

Dear customer,

Congratulations on the purchase of your new accessories MOC2512 (M2) and MOC2511, including a Parachute Recovery System (PRS) & an autonomous external Flight Termination System (FTS) for your DJI Matrice 3D/3TD drone.

You've chosen what we're sure are the best performing systems of their type. Extensive research and testing have gone into making them as safe and effective as possible.

Based in Remiremont, France, DRONAVIA is at your service to advise you on the purchase of your safety accessories MOC2512 (M2) and MOC2511, for DJI Matrice 3D/3TD and to answer any questions of a technical or commercial nature.

GENERAL presentation

The MOC2512 (M2) Kronos PRS for DJI Matrice 3D /3TD and the MOC2511 Kronos external FTS for DJI Matrice 3D/3TD have been designed for DJI Matrice 3D/3TD aircraft with the aim of deploying as quickly as possible while keeping the sink rate to a minimum.

Multi-rotor UAVs, even when properly used and maintained, can sometimes find themselves in a critical emergency situation where immediate rescue is required, due to severe weather conditions, radio transmission failure, technical failure of the propulsion system, loss of GPS signal, and soon.

In such situations, the FTS coupled with the quick-release PRS can make the difference between a simple scare and a more serious accident. The MOC2512 (M2) Kronos PRS for DJI Matrice 3D/3TD and the MOC2511 Kronos external FTS for DJI Matrice 3D/3TD can be activated & deployed in less than a second.

GENERAL presentation

TO BE READ CAREFULLY

These emergency devices do not protect the integrity of the equipment or prevent damage to property or persons; they are a safety feature that complements other safety features. Neither DRONAVIA nor its distributors may be held responsible for any malfunction or operation deemed insufficient or even ineffective.

CERTIFICATION by EASA

The Kronos Matrice 3D/3TD MOC2512 (M2) PRS has been developed to meet the requirements of the Means of Compliance with Light-UAS.2512 published by the EASA:

The Light-UAS.2512 standard offers several options for complying with the SORA's M2 mitigation measures. M2 mitigation measures are designed to reduce the effect of ground impact once control of the operation is lost. This is done by reducing the effect of the UA impact dynamics (i.e. area, energy, impulse, transfer energy, etc). "

EASA European Aviation Safety Agency

The Kronos Matrice 3D/3TD MOC2511 FTS has been developed to meet the requirements of the Means of Compliance with Light-UAS.2511 published by the EASA:

"A Flight Termination System (FTS) is a system which, when activated, terminates the flight. By its very nature, it is an emergency measure and not a precautionary one. Its purpose is to ensure that an out-of-control UAS does not enter adjacent areas with an indefinite trajectory but, on the contrary and preferably, that it stops, and that its crash/debris zones are kept strictly within the ground risk buffer zone. "

EASA European Aviation Safety Agency

WARNINGS & precautions for use

TO BE READ CAREFULLY

Dronavia may suspend the warranty and disclaim all liability to any person who fails to comply with the basic safety instructions set out below.

Dronavia accepts no responsibility for damage or injury caused directly or indirectly by the use of CO2 cartridges or by the use of CO2 cartridges that do not comply with safety requirements and standards.

Before handling the Kronos systems for Matrice 3D/3TD you must read this manual carefully. It provides information on how to use the PRS and FTS. In addition to the important notes and information mentioned in this manual, the owner of the device must comply with all the important instructions set out below.

WARNINGS & precautions for use

TO BE READ CAREFULLY

The Kronos systems for DJI Matrice 3D/3TD consists of 2 safety devices which, under certain conditions, prevent the drone fitted with them from leaving its regulatory flight envelope by cutting the power supply to the engines, and prevent the drone fitted with them from free-falling.

Activation of the FTS and/or PRS inevitably involves the drone falling.

This equipment does not prevent technical problems occurring on the drone. Any flight with a drone implies the existence of a danger for the equipment and people in the vicinity, regardless of the safety equipment used. Using the Kronos FTS and PRS for the DJI Matrice 3D/3TD should in no way increase your risk.

15 INSTRUCTIONS
to follow

1. It is forbidden to carry out any manipulations other than those specified in the manual.

2. The device should only be used by or under the supervision of a responsible adult. Always keep the device out of the reach of children. Do not let them play with it.

3. Do not under any circumstances dismantle the various parts of the device, except when resetting it in accordance with the instructions in this manual.

4. Do not place the device in a damp or wet environment and keep it out of direct sunlight.

5. Do not expose the system to high temperatures, strong shocks, shock hazards, contact with chemicals or acids, or long-term storage in a high-humidity or dusty environment. Incorrect use could cause the CO2 cartridge to burst, endangering your life. The maximum operating temperature is 40˚C and the minimum operating temperature is -5˚C.

6. The condition of the Kronos PRS and FTS system for Matrice 3D/3TD should be checked before each flight. Do not use the device if it is damaged. If necessary, contact your reseller.

7. The Kronos PRS and FTS for Matrice 3D/3TD cannot prevent the drone from malfunctioning.

8. Any flight with a drone implies the existence of a risk for equipment and people in the vicinity, with or without the Kronos safety systems for Matrice 3D/3TD.

TO BE READ CAREFULLY

15 INSTRUCTIONS
to follow

9 The use of a Kronos PRS and FTS system for Matrice 3D/3TD should in no way increase your risk.

10 The Kronos PRS for Matrice 3D/3TD attempts to prevent a malfunctioning drone from free-falling. However, there are fall situations in which the effectiveness of the Kronos PRS for Matrice 350 may be limited or impeded.

11 The Kronos PRS and FTS system for Matrice 3D/3TD must be actively activated by the user. Regular training is necessary to be able to react correctly in an emergency.

12 The CO_2 cartridge and ejection system work only once. You can recharge the system yourself by following the instructions in this manual. It is your responsibility to ensure that the system is covered by warranty.

13 When reloading, it is forbidden to do so with people nearby, and especially with the barrel pointing in their direction. You must take the same precautions as when handling a loaded rifle. In the event of accidental firing during this stage or mishandling, the firing pin could be ejected and cause serious injury. Safety glasses must be worn.

14 After the device has been deployed, it is advisable to inspect each component carefully to ensure its integrity. If in doubt, contact your resseler.

15 After switching on the system, if the LED changes to a steady red, do not use it and contact your reseller for assistance.

16 It is forbidden to replace the batteries in the DJI Matrice 3D/3TD drone when it is switched on (Hot Swap), as this may damage the system. To change the drone's batteries, first switch the drone off.

TO BE READ CAREFULLY

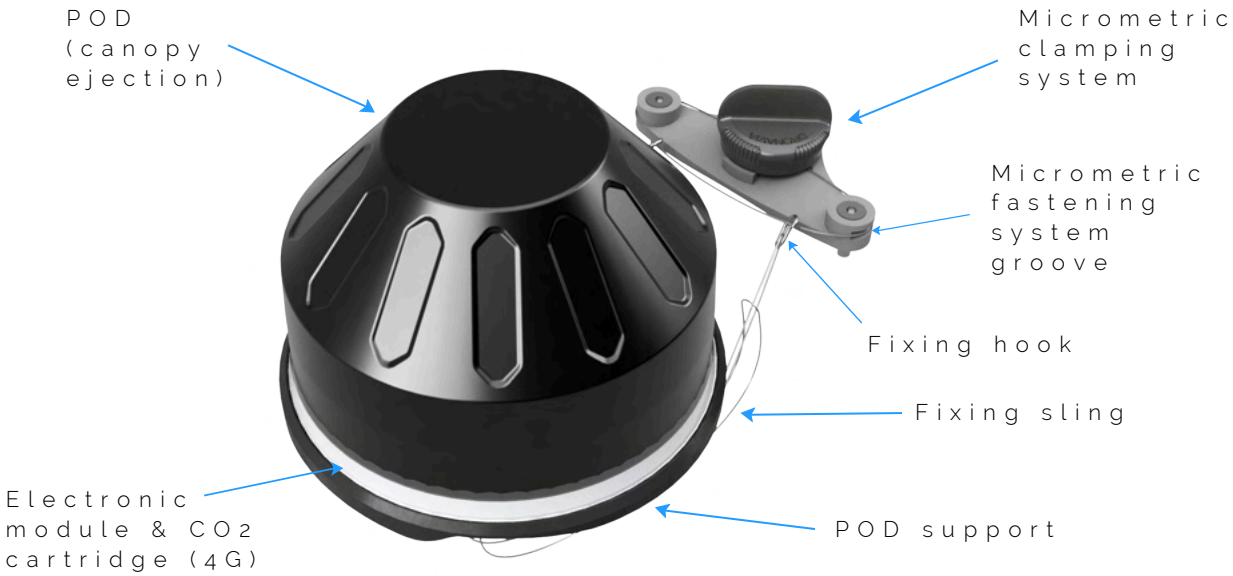
MOC 2512
COMPLIANCE

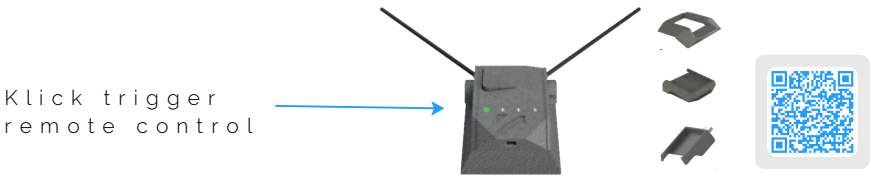
KRONOS SYSTEMS

MOC2512 (M2) PARACHUTE RECOVERY SYSTEM FOR DJI MATRICE 3D/3TD

COMPONENTS

presentation





ADDITIONAL ACCESSORIES SUPPLIED

Micro-USB cable

Screw x2 (H2 M3x10)

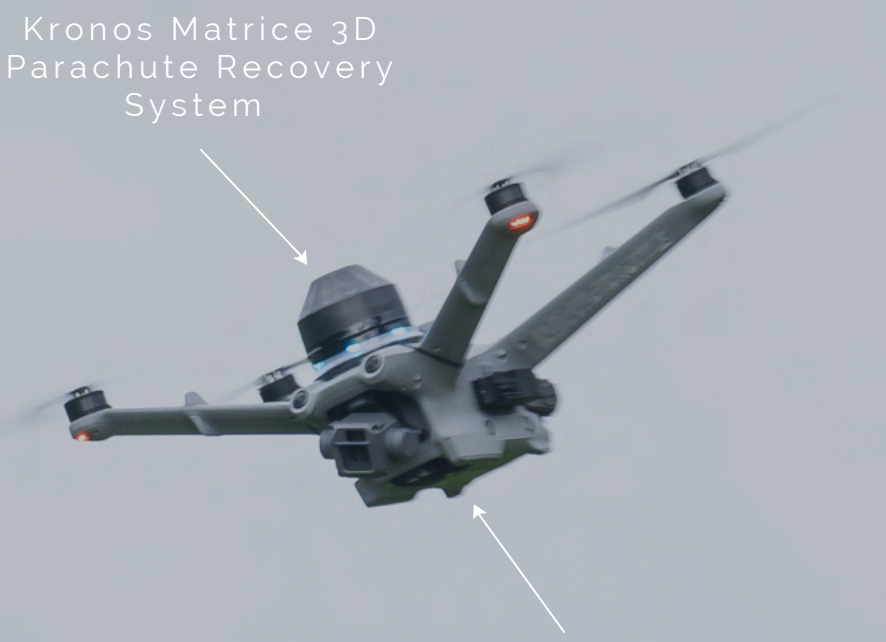
Positioning screw x2 (T6)

Allen Key 2mm/1.5mm

Reset tool

KRONOS M3D

System image

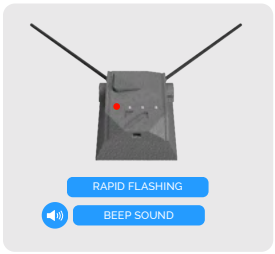


KRONOS M3D

System image

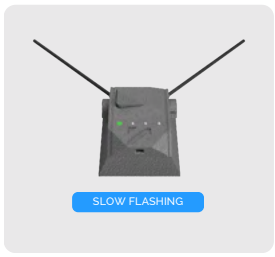
THE STATES
system

STARTING



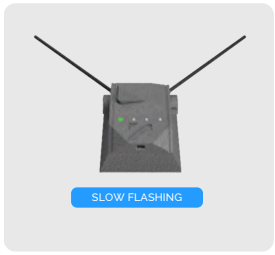
System start-up

CONNECTION



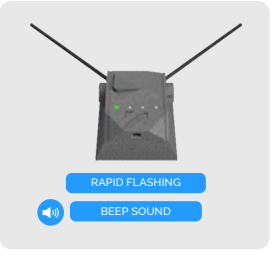
FTS only connected

FTS & PRS connected



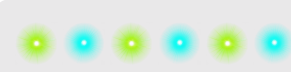
FTS & PRS connected with autonomous deployment

ACTIVATION AND DEPLOYMENT



Single FTS triggered

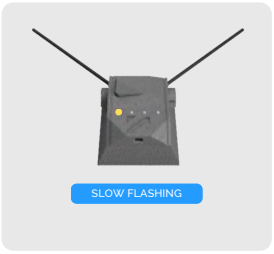
FTS triggered & PRS deployed



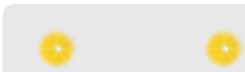
FTS triggered & PRS deployed with autonomous deployment

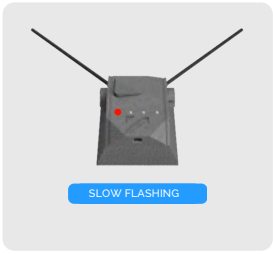
THE STATES
system

SYSTEM & BATTERY ALERTS

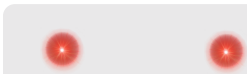


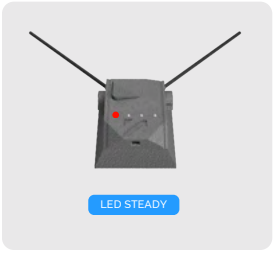
No remote control signal (Klick)





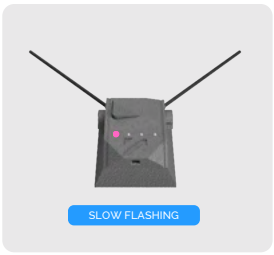
Low battery



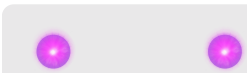


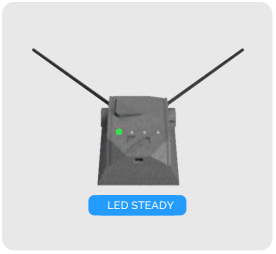
System error

Battery charging

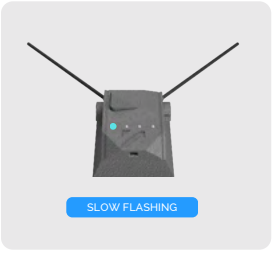


Signal scrambled

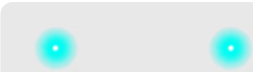




Battery charged



FTS not connected (Only PRS connected)

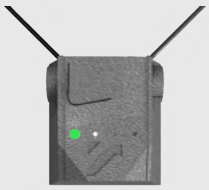
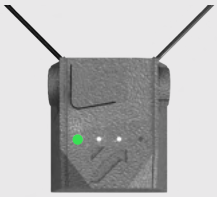
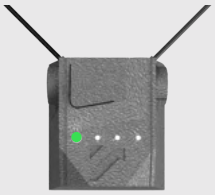


PRS not connected to SDK

THE STATES
signal

Four indicator lights let you check the signal level between the Klick trigger remote control and the accessory kit (PRS and FTS). Signal level is defined by the number of indicators lit.

The different LED states

Lost signal	Low signal	Medium signal	High Signal
			
LED STEADY LONG BEEP	SLOW FLASHING DOUBLE SHORT BEEP	SLOW FLASHING	SLOW FLASHING

Warning

In the event of signal loss, manual deployment of the PRS and FTS is impossible. Reduce the distance between your drone and your Klick trigger remote control.

KRONOS M3D

system figures

KRONOS M3D

Technical specifications

*TOTAL WEIGHT (PRS+FTS) : 268 G

PRS WEIGHT*	190 G
EJECTION DEVICE	CO2 CARTRIDGE 4 GRAMS
MINIMUM HEIGHT EFFICIENCY	20 METERS
COMMUNICATION WIRELESS RADIO	SRD860 WITH ENCRYPTED KEY (869 MHZ / 100 MW)
RANGE OF THE KLICK REMOTE CONTROL	1.5 KILOMETERS
PARACHUTE AUTONOMY	UNLIMITED WHEN CONNECTED TO THE DRONE
KLICK REMOTE CONTROL AUTONOMY	20 HOURS
ENERGY GROUND IMPACT	14 J
OPERATING TEMPERATURE	-5°C À 40°C
WATERPROOFING LEVEL	IP54

KRONOS M3D

Operational limits

MAXIMUM WIND SPEED AT GROUND LEVEL	9 m/s
MINIMUM FLIGHT ALTITUDE (AGL)	20 m
OPERATING TEMPERATURES	MINIMUM TEMPERATURE: -5 °C MAXIMUM TEMPERATURE: 40 °C
USABLE IN RAINY WEATHER	Yes (IP54)

KRONOS M3D

Dimensions and weights

DRONE

33.5 x 39.8 x 15.3 cm

1410 g

PARACHUTE

8 x 6.1 cm

190 G

PARACHUTE + DRONE

33.5 x 39.8 x 15.3 cm

1600 g

KRONOS M3D

Minimum size of buffer zone for ground-related risks (in metres)

OPERATING VOLUME VERTICAL LIMIT	GROUND RISK BUFFER ZONE
20	47
30	71
40	95
50	120
60	144
70	168
80	193
90	217
100	241
110	265
120	290

The ground risk threshold can be calculated as a function of different drone parameters and different assumptions. Please refer to the document dedicated to calculating the ground risk threshold, if you need to calculate more precise ground risk thresholds for your application.

INSTALLATION
of the parachute system

The Kronos Matrice 3D Parachute Recovery System (PRS) can be installed in just a few minutes. To install the parachute, please follow the instructions below in order:

Skills & tools required

Installing the Parachute Recovery System (PRS) requires no special technical skills. A 2mm and 1.5mm allen key (supplied by Dronavia) is required for installation.

Instructions

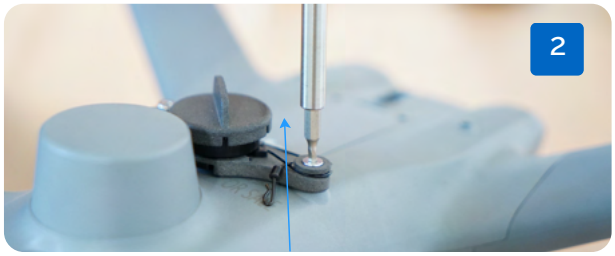
1 Attach the micrometric clamping system to the rear of the DJI Matrice 3D UAV using the 2 T6 screws supplied.

Warning

Make sure that the fixing direction is correct. The flat side of the micrometric clamping system must be positioned towards the DJI logo. The DJI logo must remain visible

INSTALLATION
of the parachute system

2 Unclip the micrometric clamping system by pulling it upwards. You must hear a 'click' sound. Then give the clamping cable some slack.



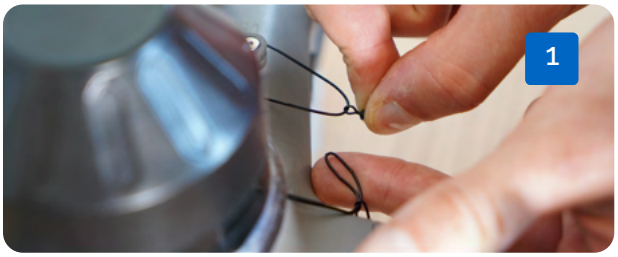
3 Insert the two positioning screws supplied into the space provided on the front of the DJI Matrice 3D drone.

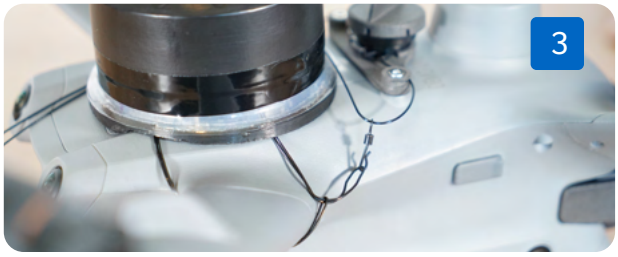
4 Spread the slings, then insert the parachute into the USB-C socket on the DJI Matrice 3D drone and the two positioning screws previously installed. Check that the parachute is firmly attached by turning it slightly.

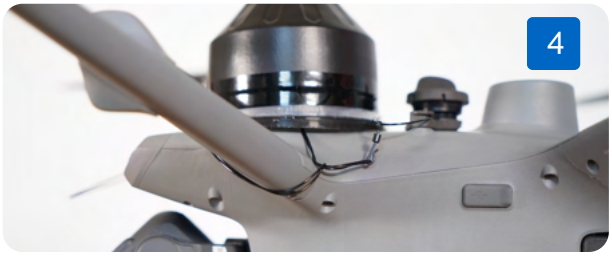
INSTALLATION
of the parachute system

5 Take the left front sling (the longer one), hold it on the arm of the drone, then take the left rear sling (the shorter one) and pass it through the loop of the front sling. Keep the two slings together under pressure before the next step.

6 Use the hook located on the micrometric clamping system, then attach it to the loop on the rear sling.

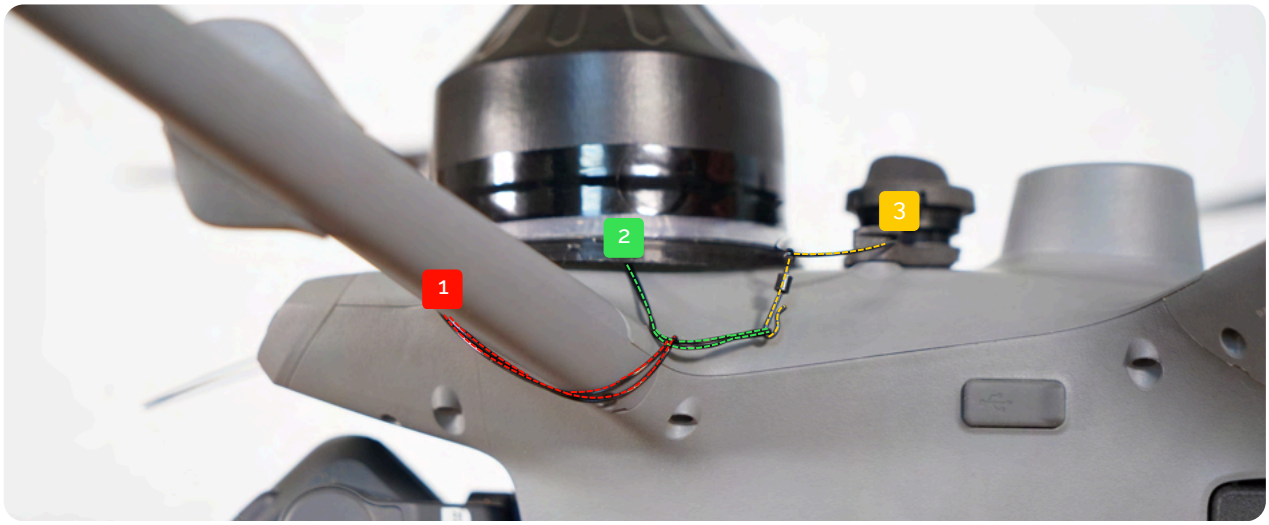


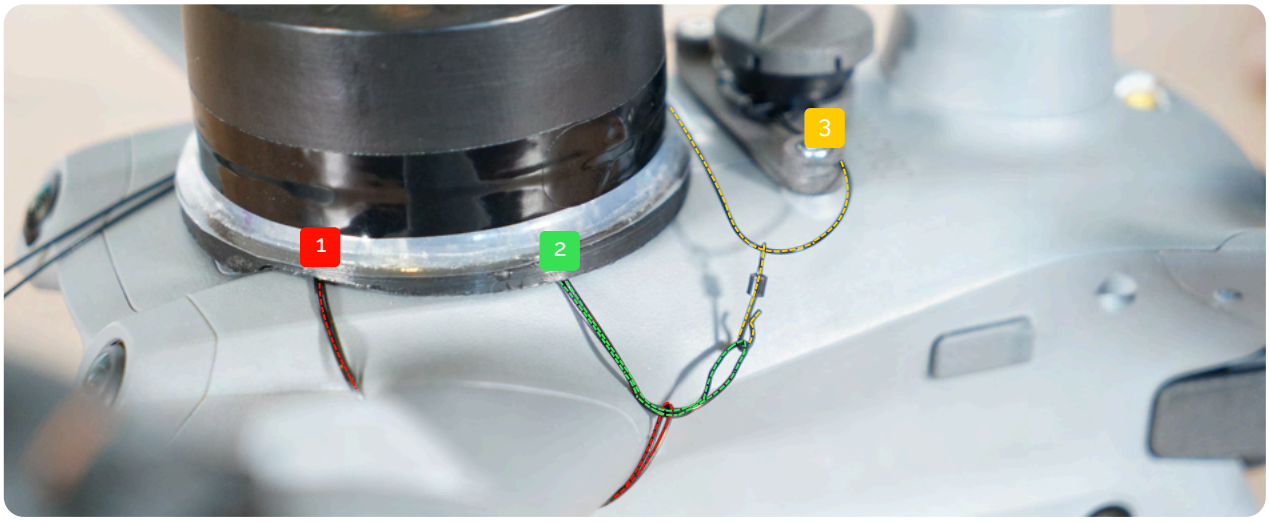




INSTALLATION
of the parachute system

7 To check the installation, make sure that sling 2 fits into the loop of sling 1. Sling 3 must attach Sling 2 using the hook.

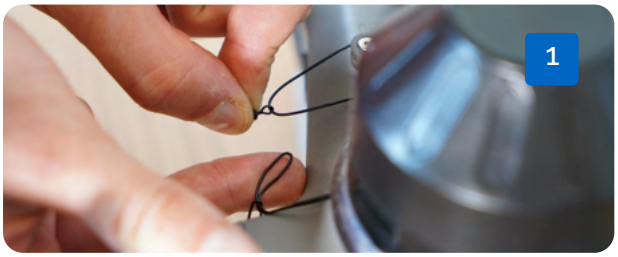


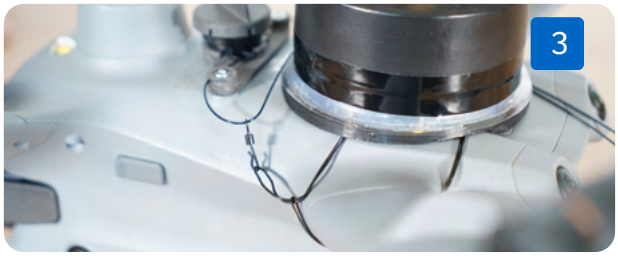


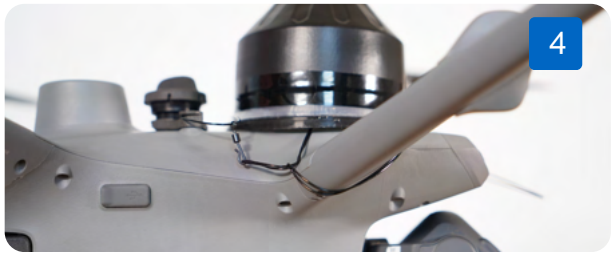
INSTALLATION
of the parachute system

8 Take the right front sling (the longer one), hold it on the arm of the drone, then take the right rear sling (the shorter one) and pass it through the loop of the front sling. Keep the two slings together under pressure before the next step.

9 Use the hook located on the micrometric clamping system, then attach it to the loop on the rear sling.

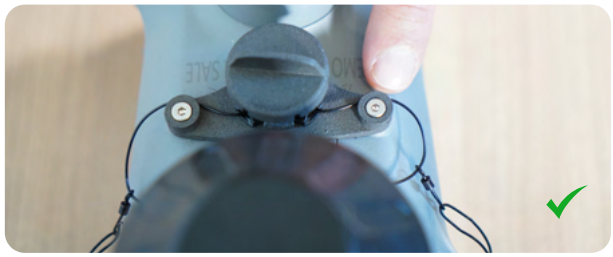




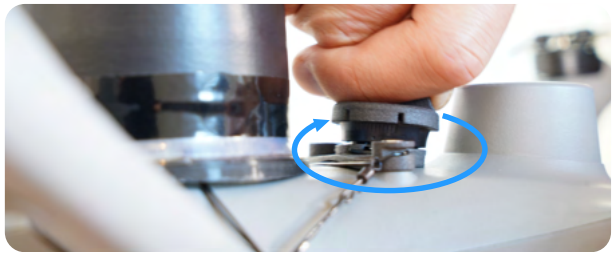


INSTALLATION
of the parachute system

10 Check that the tightening cable of the micrometric clamping system fits into the groove on the support.



11 Press down on the micrometer lock to unlock it. You should hear a 'click' sound to indicate that it has unlocked properly. Then turn the micrometer clamp to tension the cable. The slings should be sufficiently taut. Then press the micrometer clamp to lock it again.



12 Your Kronos Matrice 3D Parachute Recovery System (PRS) is installed.

START-UP
of the parachute system

To start-up the Parachute Recovery System, follow the instructions below in order:

Instructions

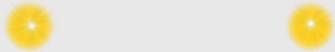
1 Switch on your DJI Matrice 3D drone. If you have connected the parachute to the drone the PRS and FTS will switch on automatically.

Installation of the FTS on the DJI Matrice 3D drone is described on page 61.

2 Your Kronos Matrice 3D parachute is switched on.

The different LED states

System initialisation



Parachute on, awaiting activation

PRS not connected to SDK

Battery shortage /
Weather conditions too cold (-20)

Si votre drone est bloqué au sol avec une led jaune fixe il s'agit d'un problème de batterie ou de température

ACTIVATION
of the parachute system

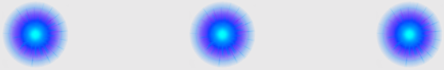
To activate the Parachute Recovery System, follow these steps in order:

1 The parachute autonomously detects when the DJI Matrice 3D drone's motors are activated. When detection is effective, the parachute LEDs turn purple after a few seconds and the parachute is active. Once the drone has taken off and reached a height of more than one metre, the autonomous parachute deployment function is automatically activated.

2 Your Kronos Matrice 3D parachute is active with autonomous deployment.

The different LED states

Take-off detection

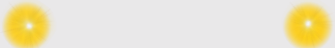


Autonomous deployment activated

2 SHORT, LOUD BEEPS

Warning

If the parachute LEDs remain yellow or purple, check the installation of the parachute. Switch your drone off, wait at least two minutes and then switch it on again.



Parachute on, awaiting activation

DEACTIVATION
of the parachute system

To deactivate the parachute system, follow these instructions in order:

1 The parachute detects when the DJI Matrice 3D drone's motors are switched off and terminates the autonomous deployment function.

The different LED states

Parachute on and not connected to Klick trigger remote control

BEEP SOUND

Parachute on and connected to Klick trigger remote control

BEEP SOUND

2 The autonomous deployment function of the parachute system is deactivated, but your parachute remains active and can be deployed using the Klick tirgger remote control.

3 To deactivate your parachute system completely, switch off the parachute system by switching off the DJI Matrice 3D drone. Please note that the parachute takes 2 minutes to shut down once the DJI Matrice 3D drone is switched off.

Warning

Be careful if the parachute is still switched on and connected to the Klick trigger remote control (be particularly vigilant during the 2 minute delay before the parachute stops completely), it is possible to trigger the parachute manually on the ground unintentionally. To avoid any unintentional deployment, the Klick remote control must be switched off.


YOUR PARACHUTE IS
ACTIVE AND
OPERATIONAL!

DEPLOYMENT
of the parachute system

To deploy the Kronos Matrice 3D parachute system (with autonomous deployment or manually), observe the following safety instructions:

Warning

1. Never attempt to deploy the parachute on the ground.

2. The Kronos Matrice 3D parachute is designed to be deploy at a minimum height of 20m from the ground in standard atmospheric conditions.

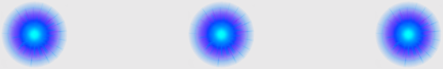
3. For a fall from a height of 120 m, the impact on the ground is less than 14 joules with the Kronos Matrice 3D parachute system, compared with 1930 joules without any device.

This data may vary according to altitude above sea level, relative wind and many other external factors. That's why we recommend a minimum height of 20 m above ground level to deploy the Kronos Matrice 3D parachute system and sufficiently limit the impact of your drone on the ground.

AUTONOMOUS
system deployment

1 When autonomous deployment is activated, no manual action is required to deploy the parachute. Our autonomous deployment technology implemented in our parachutes enables the parachute to be deployed automatically, should the drone find itself in a critical loss-of-control situation.

The different LED states



Autonomous deployment enabled

BEEP SOUND

Warning

If the parachute LEDs remain yellow or purple, check the installation of the parachute. Switch your drone off, wait at least two minutes and then switch it on again.

MANUAL
system deployment

To deploy the Parachute Recovery System manually, observe the following safety instructions:

Instructions

1. Find out how to deploy your Kronos Matrice 3D Parachute Recovery System manually using our Klick trigger remote control instruction and user manual.

KLICK

manual activation of the PRS

Consult our Klick user manual

STOP

& resetting the parachute system

To stop, switch off and reset the Parachute Recovery System, follow the instructions below in order:

Instructions

1 Switch off your DJI Matrice 3D drone. The PRS and FTS will switch off automatically.

3 Switch off your Klick trigger remote control.

Warning

To deactivate your parachute system completely, switch off the parachute system by switching off the DJI Matrice 3D drone. Please note that the parachute takes 2 minutes to shut down once the DJI Matrice 3D drone is switched off.

DISASSEMBLY

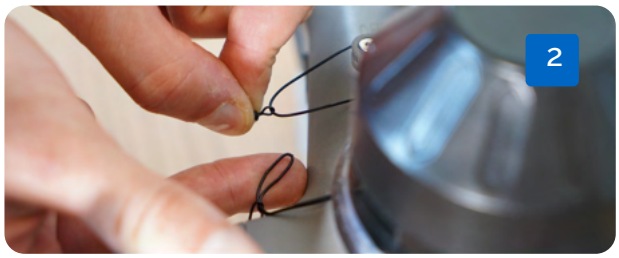
the complete parachute system

To disassemble the entire Parachute Recovery System, follow the instructions below in order:

Instructions

1 Unclip the micrometric clamping system by pulling it upwards. You must hear a 'click' sound. Then give the clamping cable some slack.

2 Remove the hook linking the micrometric clamping system and the slings.



DISASSEMBLY

the complete parachute system

3 Remove the parachute from the USB-C socket on the DJI Matrice 3D drone and the two positioning screws. Then remove the parachute from the drone.

4 Remove the two positioning screws. Remove the micrometric clamping system from the rear of the DJI Matrice 3D drone by unscrewing the two fixing screws.

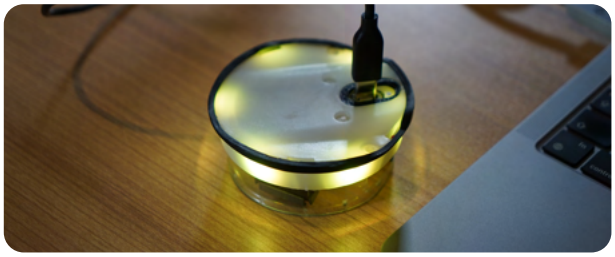
5 Each de-installation must be entered in the "List of installations, de-installations and maintenance operations" section on page 45.

CHARGING
of the parachute system battery

To charge the parachute battery, follow the instructions below in order:

Instructions

1 To recharge the parachute battery, simply connect the supplied USB-C cable to the parachute's USB-C socket located near the ignition button. Then plug the USB socket into a computer.



Warning

The parachute recharges automatically when it is connected to the DJI Matrice 3D drone when it is switched on. However, it is necessary to have a minimum amount of battery power before taking off. To ensure that your battery is fully charged, we recommend recharging it via a USB-C cable.

RESETTING
of the parachute system

In the event of a malfunction or any other bug, follow the instructions below in order:

Instructions

1 To reset the Parachute Recovery System, there is a small hole in the back of the parachute. Slide a paper clip or other thin object through the hole, and a short press will reset the entire parachute system.

Warning

If you inadvertently press this reset button, you need to connect the parachute to the drone, then disconnect it and wait 5 seconds. If the malfunction persists, contact Dronavia customer service or your reseller.

MAINTENANCE

parachute annual

TO BE READ CAREFULLY

Like all rescue systems (rescue parachutes for paragliders or parachutists, avalanche airbags, etc.) Dronavia parachutes must undergo preventive maintenance to be kept in optimum working order. The only preventive maintenance operation is to replace the POD. It's a quick and easy operation, which means that pilots never have to leave their drone standing idle.

A use-by date is set for each POD. Dronavia disclaims all liability and cancels the warranty if your POD has exceeded this use-by date.

PROCEDURES

maintenance requirements

To be kept in optimum working order, each Parachute Recovery System (PRS) must undergo preventive or post-deployment maintenance. Here is a summary table of the mandatory maintenance operations:

FREQUENCY	OPERATION	CAN BE MADE BY
Every year	Replacement of the POD **or** Repackaging of the canopy	Final user **or** DRONAVIA or any certified partner
Every 5 years	Mandatory manufacturer global maintenance	Manufacturer
After every deployment	Rearming of the parachute system	Final user **or** DRONAVIA or any certified partner
After every deployment	Inspection of the CO_2 system	Final user **or** DRONAVIA or any certified partner
After every deployment	CO_2 cartridge replacement	Final user **or** DRONAVIA or any certified partner
After every deployment	Replacement of the POD **or** Repackaging of the canopy	Final user **or** DRONAVIA or any certified partner
After 30 deployments	Mandatory manufacturer global maintenance	Dronavia

Warning

If you wish to carry out global maintenance yourself, Dronavia will disengage its responsibility for the system, in addition to cancelling the warranty.

LISTING
parachute deployment failures

If the Kronos Matrice 3D Parachute Recovery System (PRS) deployment fails during flight, record the following:

UAS Concerned with the failed activation	Accumulated Flight Hours at activation failure	Distance between Control Unit and UAS at activation attempt	Location of the operation	Presence of high power emitter in the operational volume

LISTING

voluntary and intensive parachute deployments

If the Kronos Matrice 3D Parachute Recovery System (PRS) is deployed during flight, record the following:

UAS Concerned with the failed activation	Accumulated Flight Hours at activation failure	Distance between Control Unit and UAS at activation attempt	Location of the operation	Was the activation commanded or un-commanded	Presence of high power emitter in the operational volume

Warning

If the probability of failure observed in service is greater than 10-2/FH (taking into account the statistical uncertainty), the operator must inform the competent authority.

LISTING

monitoring of installations / de-installations & maintenance operations

To be maintained in optimum working order, each parachute system must be monitored for installation, de-installation, firmware updates, preventive or post-deployment maintenance. Here is a table summarising the operations to be listed:

Date	Operation	Problems	Operator and signature

USE-BY DATE
for the POD

Each POD has a use-by date to ensure that it remains in optimum working order:

The optimum life of a POD is 1 year. The use-by date is shown on the label on the back of the POD.

Warning

If a POD is used after its use-by date, Dronavia accepts no liability for partial or slower activation of the parachute system.

PROCEDURE

return of the POD for maintenance

There are several options for exchanging your POD that is past (or close to) its use-by date:

Buy 99€

1 Buy a POD in advance from your reseller. You'll be able to continue flying during the annual maintenance of your first POD.

Exchange 49€

2 Return your POD to a reseller and receive a new one at a special price.

Warning

Plan in advance the time needed to contact your reseller (order, delivery time, etc.) so as not to exceed the expiry date and compromise your flight missions.

DISASSEMBLY

of the POD system for maintenance

To remove the POD from the Parachute Recovery System, follow the instructions below in order:

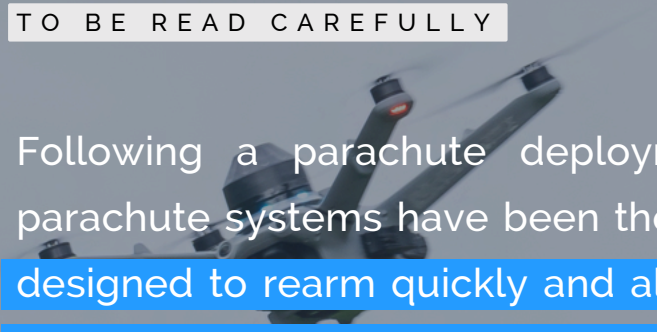
Instructions

1 Unlock the POD by disconnecting it from its central support. To do this, remove the fixing slings.

REARMING

Kronos Parachute Revovery System

TO BE READ CAREFULLY



Following a parachute deployment, Kronos parachute systems have been thought out and designed to rearm quickly and allow telepilots to continue their missions following a deployment.

Changing your POD, replacing your CO2 cartridge, checking the firing pin tip - all these procedures need to be carried out following a deployment. As some procedures are dangerous, we advise you to read this section carefully.

A use-by date is set for each POD. Dronavia disclaims all liability and voids the warranty if your POD has exceeded this use-by date.

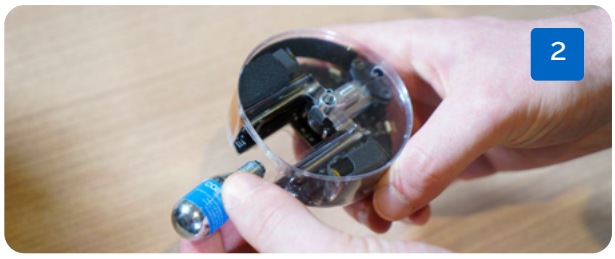
REARMING

of the parachute system

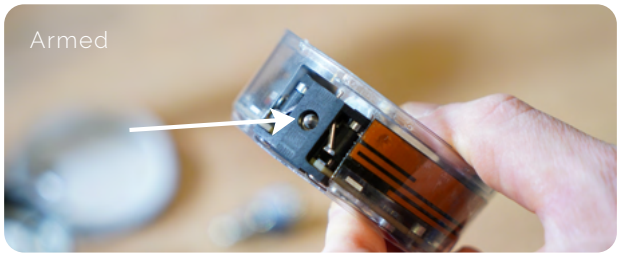
To rearm your Parachute Recovery System, follow the instructions below in order:

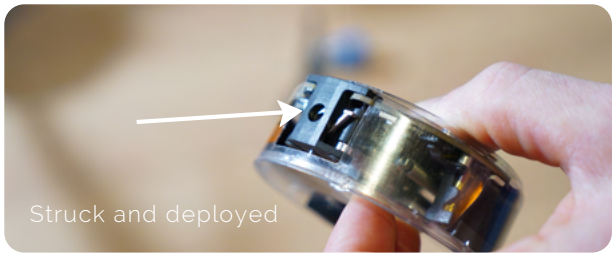
Instructions

1 Remove the CO_2 cartridge by unscrewing it.



2 Check the condition of the firing pin. If the firing pin comes out, the parachute is armed and has not been deployed. If the firing pin does not come out, the weapon has been hit and the parachute has deployed.

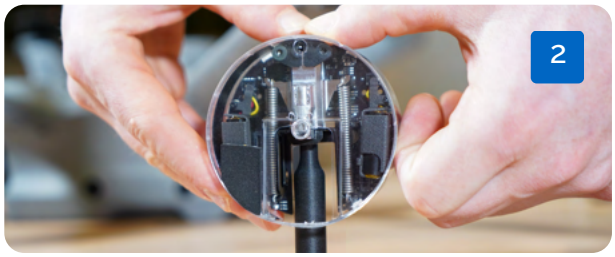




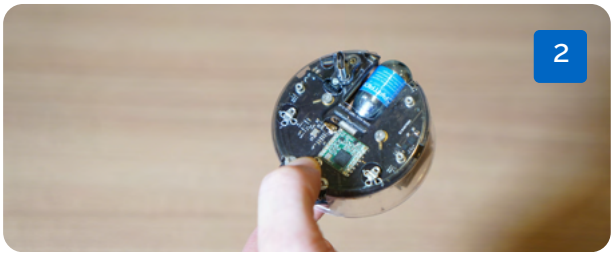
REARMING

of the parachute system

3 Take the reset tool and insert it into the firing pin until you hear a 'clik' sound. The parachute is rearmed.

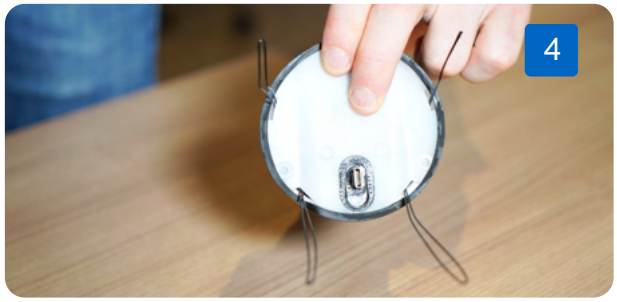


4 Now replace the CO_2 cartridge. For safety reasons, the parachute must face downwards. Then insert the parachute module into its base.



REPLACEMENT
of the POD system

5 Take your replacement POD. There are 4 guides on the POD to allow you to insert the slings. The two large slings must be inserted at the front of the parachute (USB-C side). The first sling to be positioned is the one located at the level of the CO_2 cartridge. The two small slings should be inserted at the rear of the parachute.



PROCEDURE
for returning a used POD

There are several options for returning your used POD:

Buy 99€

1 Buy a POD from your reseller. Then carry out maintenance on your used POD.

Exchange 49€

2 Return your used POD to a reseller and receive a new POD at a special price.

Warning

Plan in advance the time needed to contact your reseller (order, delivery time, etc.) so as not to exceed the expiry date and compromise your flight missions.


YOUR PARACHUTE IS
REARMED!

REPLACEMENT

the parachute's CO2 cartridge

TYPE	CARTRIDGE OF CO2
VOLUME	4 CC
TOTAL WEIGHT	18G (+/- 2G)
CAPACITY	4G (+/- 1G)
LID	WELDED
CONTAINER	UNWELDED STEEL
RECYCLING	100% RECYCLABLE
TRANSPORTABILITY	PLANE / TRAIN /BOAT

Warning

Only cartridges officially sold by Dronavia may be used, as they are subject to specific checks. Dronavia disclaims all responsibility and voids the warranty if any other type of CO2 cartridge is used.

12 INSTRUCTIONS
to follow

1. Keep the CO_2 cartridge at a temperature below 45°C.

2. Do not leave full cartridges in the car when the temperature is too high.

3. In the event of prolonged inactivity, store your CO_2 cartridges at normal temperatures between 10 and 20°C. CO_2 cartridges may burst at temperatures above 70°C.

4. High temperatures can increase the pressure in the cartridge and this can prevent the device from working, possibly damaging it.

5. Avoid hitting the cartridge.

6. If corrosion spots appear on the surface of the cartridges, change them immediately.

7. Make sure the used cartridge is completely empty before removing it.

8. Do not cut or puncture the cartridge.

TO BE READ CAREFULLY

12 INSTRUCTIONS
to follow

9 Only use certified CO_2 cartridges sold by Dronavia.

10 Once the gas cartridge has been installed, do not attempt to unscrew or remove it.

11 Do not dispose of the cartridge in a fire.

12 Keep out of reach of children.

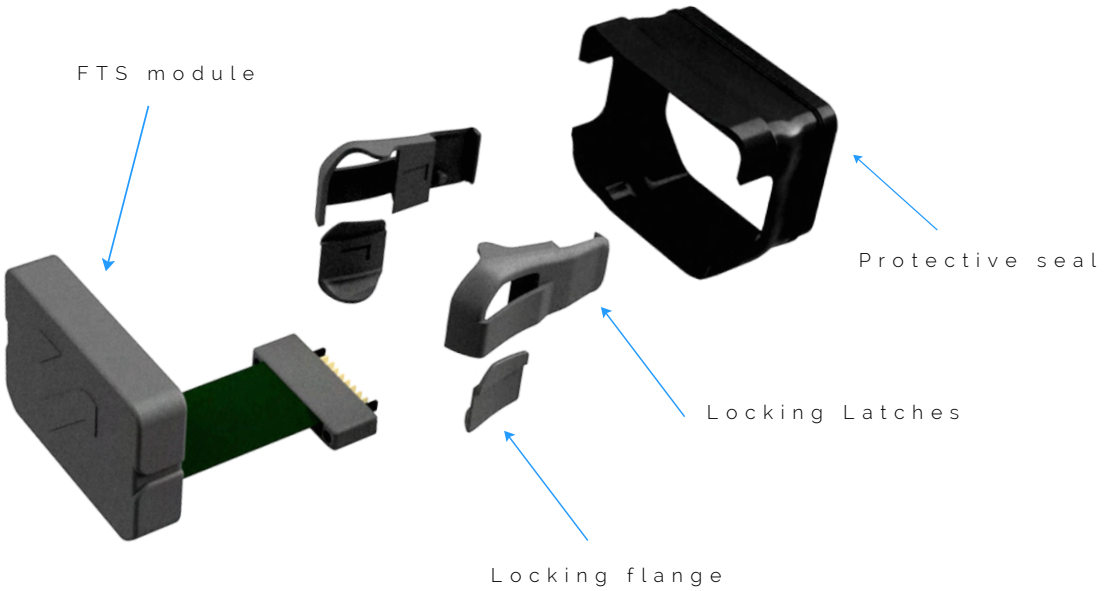
MOC 2511
COMPLIANCE

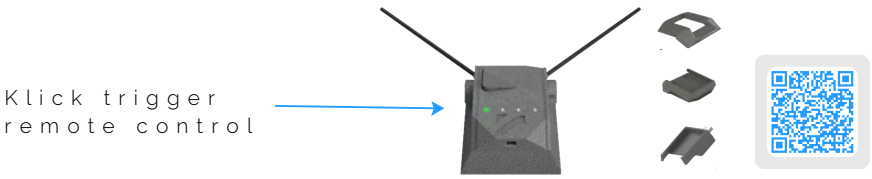
KRONOS SYSTEMS

MOC2511 EXTERNAL FTS FOR DJI MATRICE 3D / 3TD

COMPONENTS

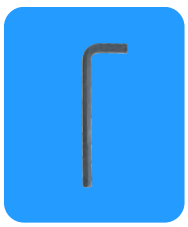
presentation





ADDITIONAL ACCESSORIES SUPPLIED

Double-sided adhesive



Allen Key 2mm

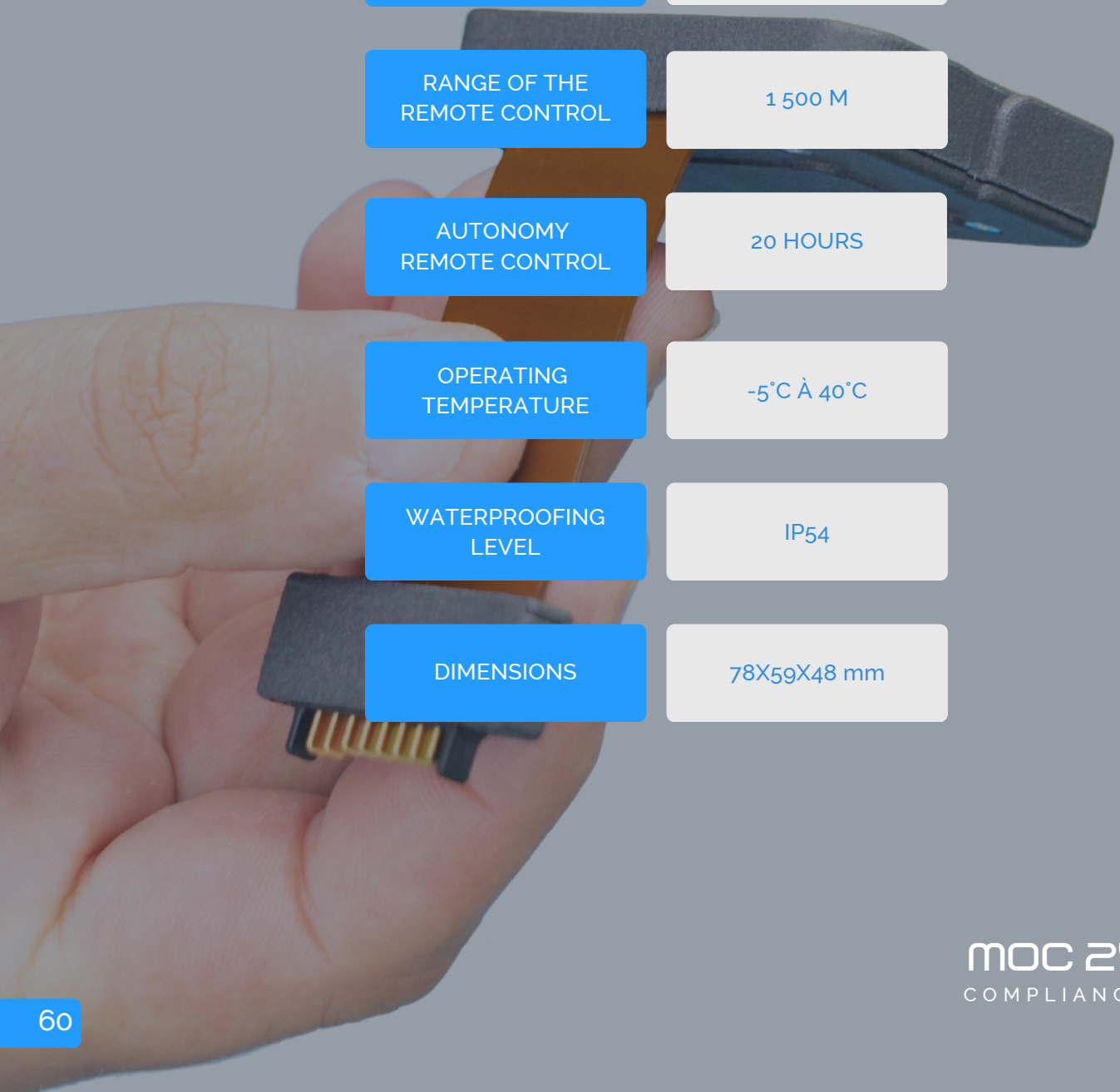
Screw x2

KRONOS M3D

Technical specifications

*TOTAL WEIGHT (PRS+FTS) : 268 G

*FTS WEIGHT	78 G
COMMUNICATION WIRELESS RADIO	SRD860 WITH ENCRYPTED KEY (869 MHZ / 100 MW)
RANGE OF THE REMOTE CONTROL	1 500 M
AUTONOMY REMOTE CONTROL	20 HOURS
OPERATING TEMPERATURE	-5°C À 40°C
WATERPROOFING LEVEL	IP54
DIMENSIONS	78X59X48 mm



MOC 2511
COMPLIANCE

INSTALLATION
of the FTS system

Kronos M3D Flight Termination System (FTS) can be installed in just a few minutes. To install the FTS, please follow the instructions below in order:

Instructions

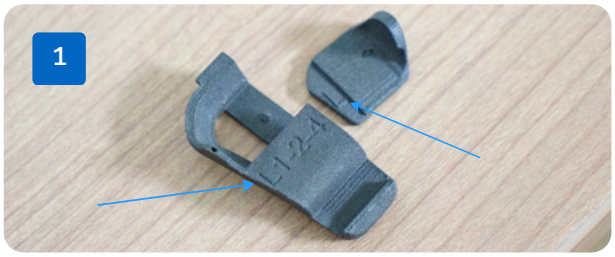
1 Remove the batterie from the DJI Matrice 3D.

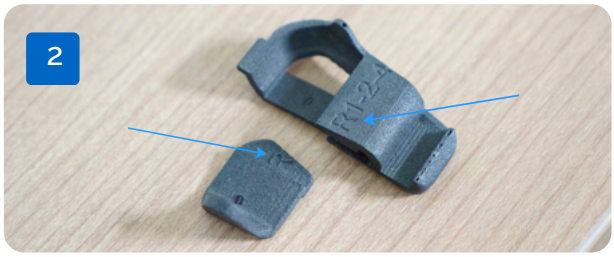
2 Insert the left Dronavia locking latch into the left DJI Matrice 3D battery latch. Then insert the Dronavia locking bracket. Insert the right Dronavia locking latch into the right battery latch on the DJI Matrice 3D. Then insert the Dronavia locking bracket.

INSTALLATION
of the FTS system

Warning

To ensure that the locking catches and locking clamps are positioned on the correct side, an L (Left) and an R (Right) are inscribed on each of them.





3 Next, fit the protective cover around the DJI Matrice 3D battery.

INSTALLATION
of the FTS system

Warning

Before inserting the protective cover, make sure that the 3 small holes are located on the underside of the battery.

Warning

Check that the protective cover fits tightly around the perimeter of the DJI Matrice 3D battery, to ensure a perfect seal.

INSTALLATION
of the FTS system

4 Attach the double-sided adhesive to the FTS module. Then connect the FTS to the DJI Matrice 3D drone battery connector. Finally, attach the FTS module to the battery by applying pressure to secure the adhesive.

INSTALLATION
of the FTS system

5 Insert the battery into the DJI Matrice 3D drone. Lock the DJI Matrice 3D drone latches by lowering them.

Warning

You need to hear a 'click' sound to ensure that your battery is correctly inserted.

6 Your external FTS for DJI Matrice 3D is operational.

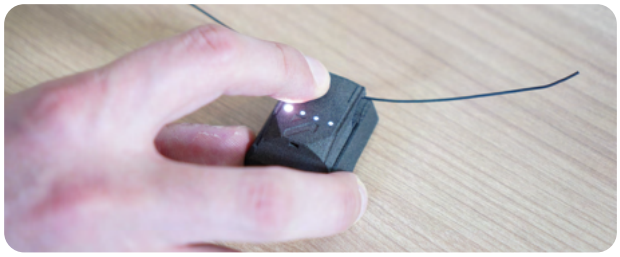
START-UP
of the FTS system

To activate the Flight Termination System (FTS), follow the instructions below in order:

Instructions

1 Switch on your DJI Matrice 3D drone. The FTS will switch on automatically.

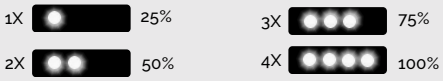
2 Switch on your Klick trigger remote control. When the FTS is properly connected, a green LED flashes on the Klick trigger remote control.



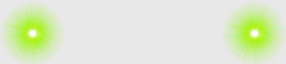
START-UP
of the FTS system

The different Klick remote control LED states

System initialisation



Battery level indicator



FTS only connected


YOUR FTS IS
ACTIVE AND
OPERATIONAL!

KLICK

manual activation of the FTS

Consult our Klick user manual

PROCEDURE

FTS system test

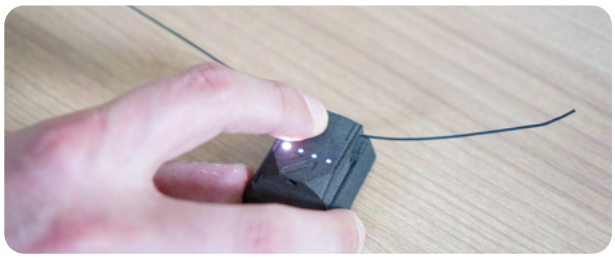
Before the flight or before the first flight of the day, you can test the Flight Termination System (FTS). Follow the instructions below in order:

Warning

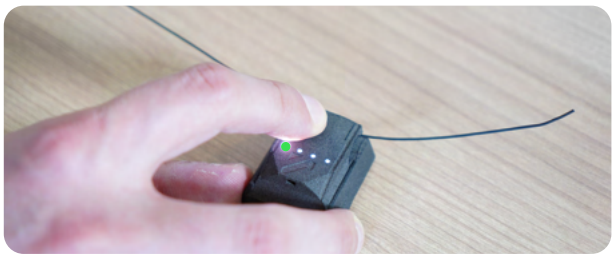
If your drone is equipped with a parachute, remember to disconnect the parachute from the drone before carrying out the test procedure below. Otherwise, the Parachute Recovery System will deploy at the same time as the Flight Termination System.

Instructions

1 Switch on your DJI Matrice 3D and Klick trigger remote control.



2 Check that the LEDs on your Klick trigger remote control is flashing green. If your drone is equipped with a parachute, check once again that it is switched off.



PROCEDURE

FTS system test

3 Arm the motors and initiate rotation while keeping the drone on the ground.

4 Stop the rotation of the motors by pressing the release button on the Klick trigger remote control. Check that the motors stop correctly and that the green light on the Klick trigger remote control.

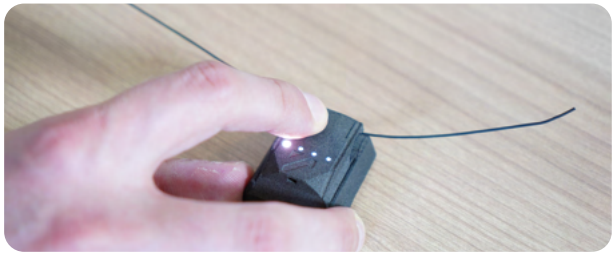
STOP
& resetting FTS system

To stop, switch off and reset the Flight Termination System (FTS), follow the instructions below in order:

Instructions

1 Switch off your DJI Matrice 3D drone and the FTS will shut down automatically.

2 Switch off your Klick trigger remote control.



DISASSEMBLY
of the FTS system

To dismantle the Flight Termination System, follow the instructions below in order:

Instructions

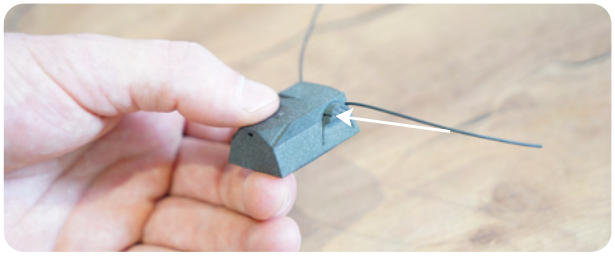
1 To disassemble the system, simply follow the installation instructions in reverse order. The Klick trigger remote control module can remain installed on the DJI Matrice 3D radio controller without affecting its operation.

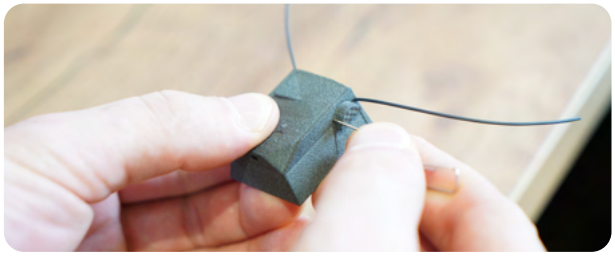
RESETTING
of the FTS system

In the event of a malfunction or any other bug, follow the instructions below in order:

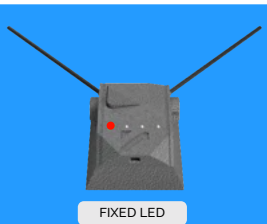
Instructions

1 To reset the Klick trigger remote control, you'll find a small hole on the left-hand side. Insert a paper clip or other thin object into the hole and press it down briefly.





If the malfunction persists



Contact Dronavia customer service, or your reseller.

MAINTENANCE & guarantees

STORAGE

Store the Kronos Matrice 3D for DJI Matrice 3D/3TD in a dry place, at a temperature between 10°C and 30°C, clean and protected from UV light.

SPECIFIC MAINTENANCE

In the event of contact with moisture, chemicals or other substances, the POD must be replaced immediately.

GUARANTEE

Dronavia takes great care in the design and production of its products. We guarantee our accessory kit for one year from the date of purchase against any defect or design fault that may arise during normal use of the product. Any abusive or incorrect use, or exposure to aggressive factors (high humidity, excessively high temperatures, etc.) that could lead to damage will invalidate this warranty. It is strictly forbidden to replace the batteries in the DJI Matrice 3D/3TD drone when it is switched on (Hot Swap), as this may damage the system and invalidate the warranty.

NOTICE OF LIABILITY

Flying a drone, whether manual or automatic, is an activity that requires attention, specific knowledge and good judgement. Be cautious, get trained in appropriate structures, take out insurance and comply with the requirements defined by the DGAC decrees of 11 April 2012 and 17 December 2015 and the EASA.

Ask our sales team your questions

LINKS to know

For France, we recommend that you consult the website of the Ministry of Ecology, Sustainable Development and Energy if you have any doubts or questions. For Europe, we recommend that you consult the EASA website. Remember that you are flying under your own responsibility.

Website of the Ministry of Ecological Transition and Territorial Cohesion

Details of MOC 2511 published by EASA :

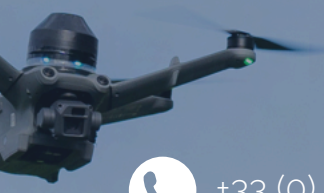
The IGn map of restricted areas for drones

Details of the M2 MOC published by EASA :

The French Civil Aviation Authority (DGAC)

European Union Aviation Safety Agency (EASA)

Ask our sales team your questions



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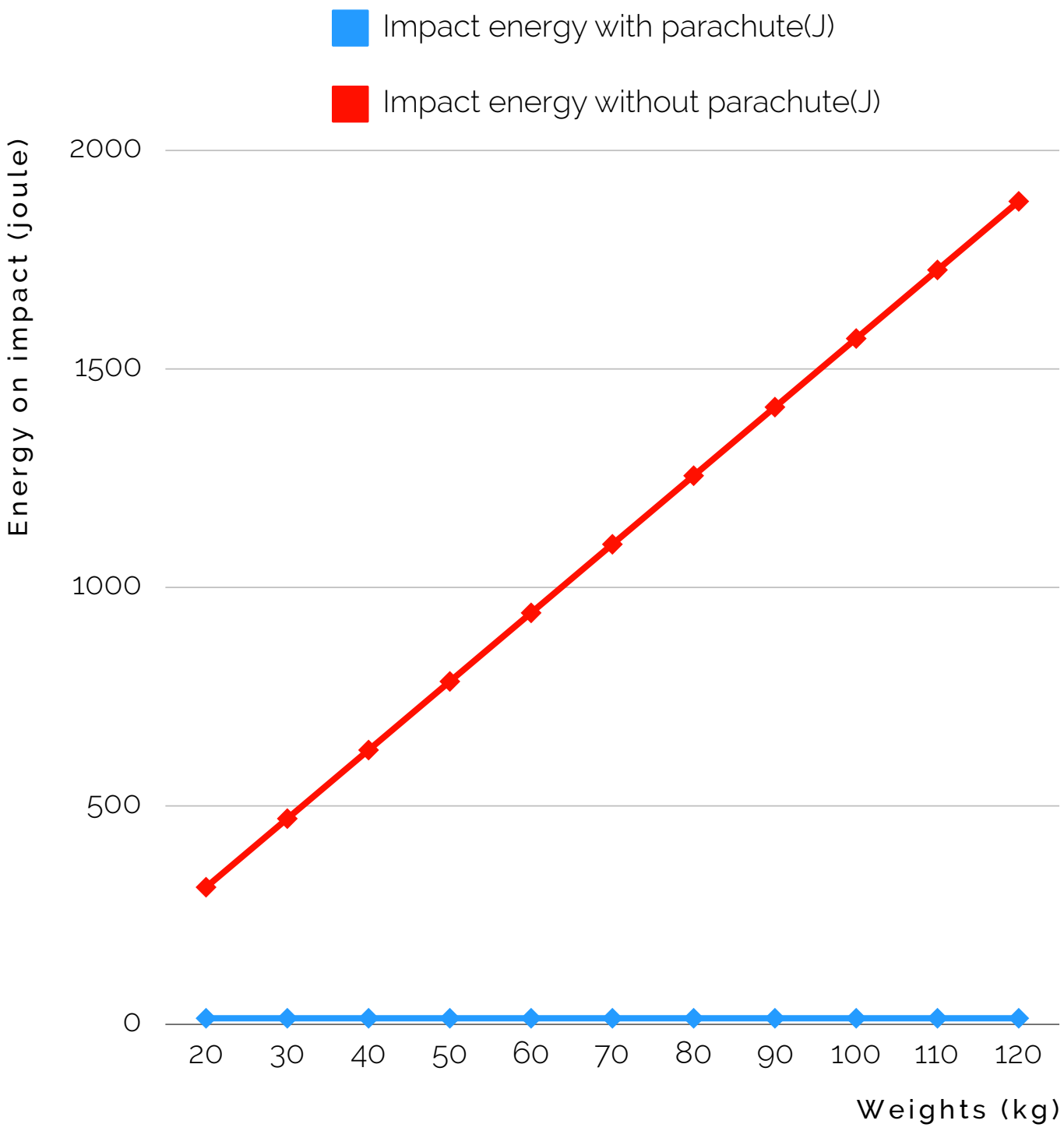
APPENDICES

Impact energy (joule) X Weight (kg)



APPENDICES

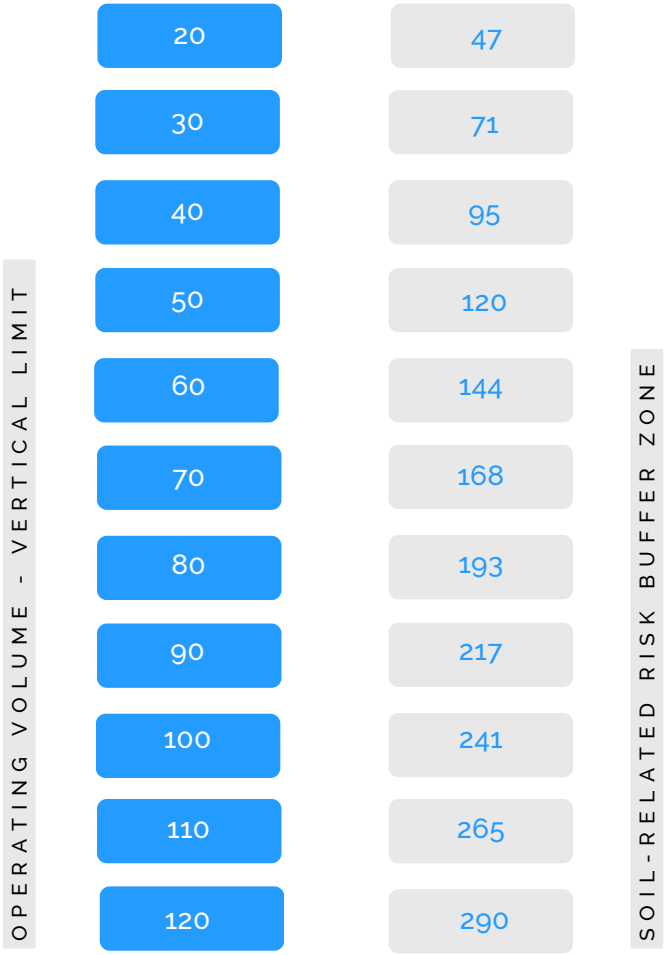
Falling speed (m/s)) X Weight (kg)

Weight (kg)	Falling speed (m/s)	Fall speed without parachute (m/s) *
1.60 kg	4,08 m/s	19,72 m/s

*for a fall from a height of 20 metres

APPENDICES

Deployment height (m) / Minimum extent of buffer zone for ground-related risks (m)



The ground risk threshold can be calculated as a function of different drone parameters and different assumptions. Please refer to the document dedicated to calculating the ground risk threshold, if you need to calculate more precise ground risk thresholds for your application.

FLIGHT MANUAL (2511 - 2512) - PRS-FTS-MOC
KRONOS AD MATRICE 3D

Version 1 (29/11/2024)

VERSIONS note