Dronavia

USER MANUAL & INSTRUCTIONS

C5 CONVERSION KIT FOR **dji** *MATRICE 4*

Flight Manual (C5) - PRS-FTS-MOC Kronos AD Matrice 4 V1.0

SUMMARY

SUMMARY

WE
MAKE
YOUR
DRONE
SAFER

Since 2015, Dronavia has been designing and manufacturing innovative safety accessories for professional drones in France. Developed in our workshops, the Kronos range of devices, including Parachute Recovery Systems (PRS) and Flight Termination System (FTS), are the result of 10 years of research and development and meet the highest standards set by EASA.

Thanks to these solutions, which comply with European regulations, professional drones operator benefit from the best guarantees in terms of safety and risk management for their flight missions.

Thank you for your trust and have a good flight.

Ludovic Pelletey, CEO of Dronavia

Version 1.0

- Initial version

VERSION NOTE

TUTORIAL

Parachute Recovery System Rearming

Flight Termination System Testing Procedure

User's manual Klick trigger remote control

DRONAVIA UPDATER

Dronavia has recently launched an innovative software solution specifically designed to simplify the updating of Kronos systems. Thanks to this new software, Dronavia customers can now manage and update their systems more quickly and easily.

Download Dronavia Updater software

GENERAL
presentation

Congratulations on acquiring your Kronos M4 C5 conversion kit, which includes a Parachute Recovery System & autonomous Flight Termination System, specifically designed for the DJI Matrice 4 drone.

The Kronos M4 C5 conversion kit complies with the technical requirements of the EASA-defined C5 Class category and has been developed through a rigorous R&D process, ensuring the highest level of safety for flight operations under STS-01 scenarios.

Based in Remiremont, France, Dronavia is here to support you with the use of your Kronos M4 C5 conversion kit and to answer any technical or commercial questions you may have.

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The Kronos M4 Parachute Recovery System and internal Flight Termination System have been specifically designed for DJI Matrice 4 drones, with the primary goal of ensuring ultra-fast deployment to optimize deceleration and minimize impact energy in the event of an in-flight issue.

Multirotor drones, even when properly maintained and operated, can sometimes encounter emergency situations—such as severe weather conditions, radio transmission failure, propulsion system malfunction, or GPS signal loss—where immediate activation of a safety system is crucial.

In such critical scenarios, the combined deployment of the Flight Termination System and Parachute Recovery System can mean the difference between a minor incident and a serious accident. Kronos M4 systems are engineered to activate and deploy in under one second.

GENERAL
presentation

These safety devices do not guarantee the integrity of the equipment, nor the absence of damage to property or injury to persons. They are complementary safety features, designed to enhance existing safety measures. Under no circumstances shall Dronavia or its distributors be held liable for any malfunction, perceived performance shortcomings, or failure to deploy.

COMPLIANCE
with C5 Class

The Kronos M4 Parachute Recovery System and internal Flight Termination System form a conversion kit specifically designed to upgrade a Class C2 drone to Class C5, in full compliance with the technical and regulatory requirements set by EASA.

COMPLIANCE
with C5 Class

A Class C5 UAS complies with the requirements defined in Part 4, except for those specified in points 2) and 10) of Part 4.

In addition, it meets the following requirements:

1. It must be an aircraft other than a fixed-wing aircraft, unless it is a tethered aircraft;
2. If equipped with a geo-awareness function, it must comply with point 10) of Part 4;
3. During flight, it must provide the remote pilot with clear and concise information regarding the UA's height above the surface or take-off point;
4. Unless it is a tethered aircraft, it must be equipped with a selectable low-speed mode that limits the maximum ground speed to 5 m/s;
5. Unless it is a tethered aircraft, it must provide the remote pilot with a means to interrupt the UA's flight, which must:
6. a) Be reliable, predictable, and independent of the automatic flight guidance and control system —including its activation;
7. b) Force the descent of the UA and prevent horizontal powered movement;
8. c) Include a means to reduce the impact energy of the UA;
9. Unless it is a tethered aircraft, it must allow the remote pilot to continuously monitor the quality of the command and control link and provide:
10. a) An alert when the link is about to degrade or disconnect to the extent that safety is compromised;
11. b) A second alert when the link is fully disconnected;
12. In addition to the instructions specified in point 15(a) of Part 4, the manufacturer's instructions must also include a description of the flight termination method as defined in point 5);
13. A Class C5 UAS may be a Class C3 UAS fitted with an accessory kit that transforms it into a Class C5 UAS. In this case, the C5 class label must be affixed to all accessories.

The accessory kit may only transform a Class C3 UAS that complies with point 1) and includes the necessary interfaces for use with the accessories.

The accessory kit must not include any modifications to the software of the Class C3 UAS.

The accessory kit is designed and each component is identified in a way that ensures it can be completely and correctly installed by a UAS operator on a Class C3 UAS, following the instructions provided by the kit manufacturer.

The accessory kit may be placed on the market independently of the Class C3 UAS it converts. In this case, the kit manufacturer must place on the market a conversion kit that:

1. Does not compromise the compliance of the Class C3 UAS with Part 4 requirements;
2. Ensures that the UAS equipped with the accessory kit meets all additional requirements outlined in this part, except for point 3) above;
3. Is accompanied by manufacturer's instructions that include:
4. i) A list of all Class C3 UAS models compatible with the kit;
5. ii) Detailed instructions on how to properly install and operate the accessory kit.

COMPLIANCE
with C5 Class

The Kronos AD Matrice 4 Pro drone, designed and tested by Dronavia, is based on the DJI Matrice 4 Pro originally classified with a C2 marking. The information provided in this manual is intended as a supplement to the original DJI manual, and in the event of any overlap, the information contained in this manual shall prevail.

The Kronos AD Matrice 4 Pro is classified with a C5 marking, derived from the original C2 marking of the DJI Matrice 4 Pro.

The modification of the DJI Matrice 4 Pro consists of the integration of a Parachute Recovery System (PRS), a Flight Termination System (FTS) independent from the flight controller, a dedicated remote control for triggering both the FTS and PRS (FT link) operating independently from the drone's main control link (C2 link), as well as additional components designed to minimize potential damage to the drone in case of parachute deployment. The C5 marking is valid only if all these elements are present during flight, namely the PRS, the FTS, the remote control and the additional components.

The original DJI warranty remains valid provided the drone is restored to its original configuration before being sent to DJI after-sales service. For further information, please contact Dronavia or your authorized reseller.

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WARNINGS
& safety precautions

The Kronos M4 conversion kit includes two safety accessories designed to, under certain conditions, prevent the equipped drone from exiting its regulatory flight envelope by cutting its motors, and to avoid free fall in the event of a critical failure.

Activating the Flight Termination System and/or the Parachute Recovery System will inevitably result in the drone falling.

These systems do not prevent technical failures from occurring. Any drone operation inherently involves a risk to equipment and nearby individuals, regardless of the safety systems in place. The use of the Kronos M4 Flight Termination System and Parachute Recovery System must never lead to increased risk-taking during flight operations.

WARNINGS
& safety precautions

Dronavia may suspend the warranty and disclaim any responsibility for anyone who fails to adhere to the basic safety instructions outlined below.

Before handling the Kronos M4 systems, you must carefully read this manual. It provides information on the deployment of the Parachute Recovery System and the Flight Termination System. In addition to the important notes and information mentioned in this manual, the device owner must comply with all the essential safety instructions outlined below.

SAFETY
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. The maximum operating temperature is 40°C and the minimum operating temperature is -5°C.*
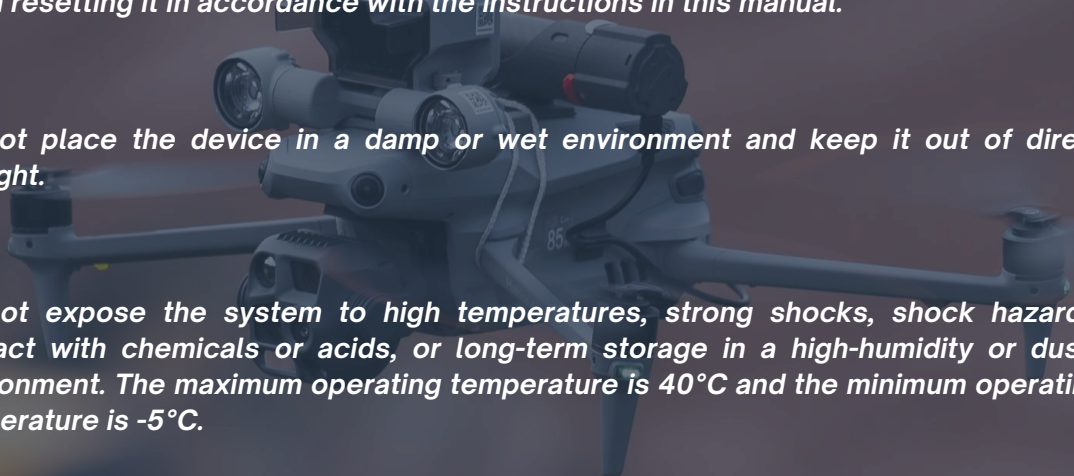
6   *Check that the Kronos Parachute Recovery System and Flight Termination System is in good condition before each use. Do not use the device if it is damaged. If necessary, contact your dealer.*

7   *The Kronos Parachute Recovery System and Flight Termination System 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 Kronos safety systems.*

9 *Using a Kronos Parachute Recovery System and Flight Termination System should in no way increase your risk.*

10 *The Kronos Parachute Recovery System and Flight Termination System attempts to prevent a drone experiencing a malfunction from free-falling. However, there are fall situations in which the effectiveness of the Kronos Parachute Recovery System may be limited or impeded.*

11 *The Kronos Parachute Recovery System and Flight Termination System can be actively deployed by the user. Regular training is necessary to be able to react correctly in an emergency.*

12 *The spring ejection system only works once. You can recharge the system yourself by following the instructions in this manual. It is your responsibility to ensure that the system is under warranty.*
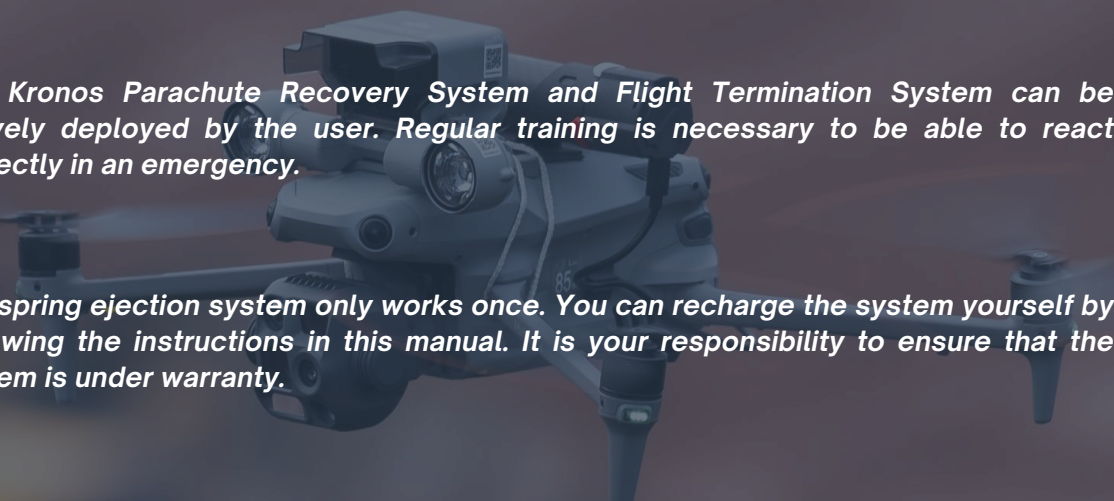
13 *When reloading, it is forbidden to do so with people nearby, and especially with the barrel pointing in their direction. You must take the same precautions as when handling a loaded rifle. In the event of accidental firing during this stage or mishandling, the spring could be ejected and cause serious injury. Safety glasses must be worn.*

14 *After deploying the device, we recommend that you carefully inspect each component to ensure its integrity. If in doubt, contact your reseller.*

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

LISTING

and identification of accessories

PART	QUANTITY	IMAGE	C5 LABEL	DESCRIPTION
PRS	1		YES	*The Kronos Matrice 4 plug & play Parachute Recovery System for DJI Matrice 4 makes your flights safer by slowing your drone's fall speed and impact energy in the event of a problem. The parachute can be deployed automatically or manually using the Klick trigger remote control.*
FTS	1		YES	*The Kronos Matrice 4 internal Flight Termination System, developed for the DJI Matrice 4, prevents the drone fitted with it from leaving its regulation flight envelope by cutting (manually or automatically) the drone's power supply in less than a second.*
KLICK	1			*The Klick trigger remote control offers a fast, secure way of remotely deploying your Kronos safety accessories (parachutes and circuit breakers). Totally independent of the drone, this lightweight, ergonomic remote control features LED status indicators and a secure wireless connection.*

PART	SOFTWARE VERSION	VERIFICATION METHOD	DIMENSIONS	MASS
PRS	v1.1.1	*See 'System states' on page 30*	*18 x 3.9 x 4.5 cm*	*144 G*
FTS	v1.0.0	*See 'System states' on page 30*	*9 x 5.9 x 2 cm*	*3 G*
KLICK	Radio_MOC_v1.3	*See 'System states' on page 30*	*32 x 28 x 13 mm*	*20 G*

LISTING

of drones compatible with the C5 conversion kit

MODEL	MANUFACTURER	CONFIGURATION	VERSION OF SOFTWARE TESTED	ORIGINAL C2 DECLARATION OF CONFORMITY
Matrice 4 Pro	DJI	*Any payload if the take-off weight is less than 1.15 KG, including conversion kit.*		*See appendix*

CONFIGURATION

of the C2/C5 conversion kit

Depending on the nature of your missions and the associated regulatory requirements, two flight configurations are available: C2 and C5. To switch from one configuration to the other, follow the instructions below in order:

1 When the Kronos M4 conversion kit is installed on the DJI Matrice 4 drone, (PRS + FTS) your drone is in C5 flight configuration.

2 To operate in C2 flight configuration, simply uninstall the parachute system (PRS) from the DJI Matrice 4 drone.

Warning

If the drone is returned to DJI for after-sales service, it must first be taken to the Dronavia workshop (or an approved reseller) so that our technicians can remove the internal Flight Termination System. Once this operation has been carried out, the drone will be returned to its original C2 class configuration, guaranteeing that the DJI manufacturer's warranty will remain in force.
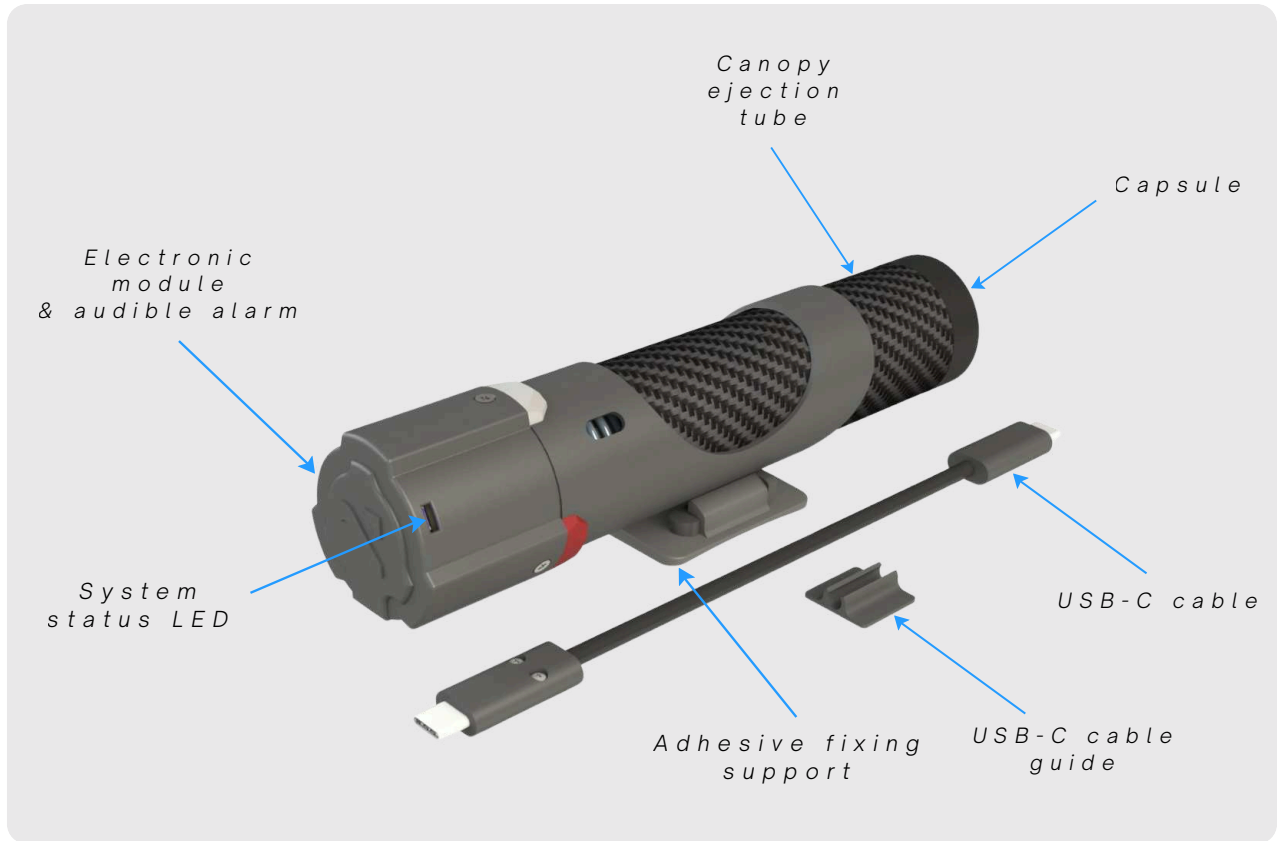
KRONOS M4

PARACHUTE RECOVERY SYSTEM FOR **DJI** MATRICE 4 ✔

COMPONENTS

presentation

Canopy ejection tube

Capsule

Electronic module & audible alarm

System status LED

Adhesive fixing support

USB-C cable

USB-C cable guide

KRONOS M4

System Visual Representation

Parachute Recovery System
Kronos M4

DJI Matrice 4 Drone

KRONOS M4

System Visual Representation

DJI Matrice 4 Remote
Controller

Klick trigger
remote control

KRONOS M4

Overview of Key System Figures

KRONOS M4

Technical specifications

TOTAL WEIGHT (PRS+FTS) : 147 G

TOTAL WEIGHT	144 GRAMS
EJECTION DEVICE	SPRING PRESTRESSED
MINIMUM HEIGHT EFFICIENCY	FROM 34 METERS
COMMUNICATION WIRELESS RADIO	SRD860 WITH ENCRYPTED KEY (869 MHZ / 100 MW)
RANGE OF THE KLICK REMOTE CONTROL	1500 METERS*
KLICK REMOTE CONTROL AUTONOMY	30 HOURS
ENERGY GROUND IMPACT	< 6 JOULES
OPERATING TEMPERATURE	-5°C TO 40°C
STORAGE TEMPERATURE	10°C TO 40°C

can reach up to 1.5 km, under optimum conditions and in an environment free of obstacles and interference.

KRONOS M4

Operating limits

MAXIMUM WIND SPEED AT GROUND LEVEL	*9,5 m/s*
MINIMUM FLIGHT ALTITUDE (AGL)	*34 metres*
OPERATING TEMPERATURES	*MIN : -5°C* *MAX : 40°C*
USABLE IN RAINY WEATHER	*No*

DRONE

| 22.1 x 9.6 x 9.03 cm | 1229 G |

PARACHUTE

| 18 x 3.9 x 4.5 cm | 144 G |

PARACHUTE + DRONE + ACCESSOIRES

| 22.1 x 9.6 x 9.03 cm | 1574 G MTOM |

KRONOS M4

Minimum Size of the Ground Risk Buffer (GRB)

OPERATING VOLUME VERTICAL LIMIT	SOIL-RELATED RISK BUFFER ZONE
30	78
40	114
50	150
60	186
70	222
80	258
90	294
100	331
110	367
120	403

The ground risk threshold can be calculated based on various drone parameters and assumptions. Please refer to the document dedicated to calculating the ground risk threshold if you need to calculate more accurate ground risk thresholds based on your application.
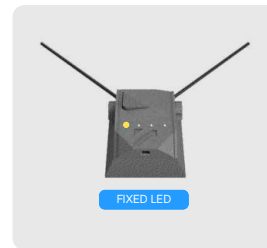
SYSTEM
states

RAPID FLASHING

AUDIBLE BEEP

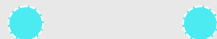System initialisation

FIXED LED

Waiting phase

SLOW FLASHING

FTS & PRS Connected

SLOW FLASHING

FTS & PRS Connected with Autonomous Deployment
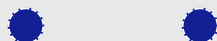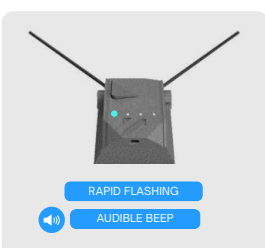
RAPID FLASHING

AUDIBLE BEEP

FTS triggered & PRS deployed with Klick

RAPID FLASHING

AUDIBLE BEEP

FTS triggered & PRS deployed with Autonomous deployment

30
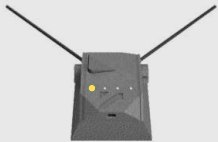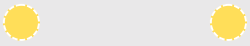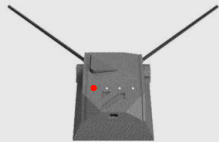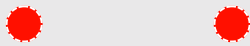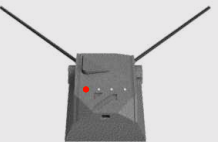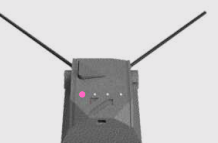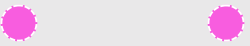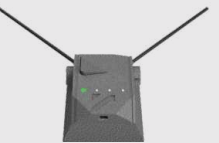
SYSTEM
states

SYSTEM & BATTERY ALERTS

Signal lost with remote control (Klick)

SLOW FLASHING

Low battery

SLOW FLASHING

System error

FIXED LED

Charging the battery

FIXED LED

Signal scrambled

SLOW FLASHING

Battery charged

FIXED LED

SIGNAL
states

Four LEDs let you check the status of the link between the Klick trigger remote control and your Kronos M4 conversion kit. The signal level is represented by the number of lights on: the more lights, the more stable the connection.

The different LED states

Lost signal	Low signal	Medium signal	Strong signal
FIXED LED	FIXED LED	FIXED LED	FIXED LED
🔊 LONG BEEP	🔊 DOUBLE SHORT BEEP		
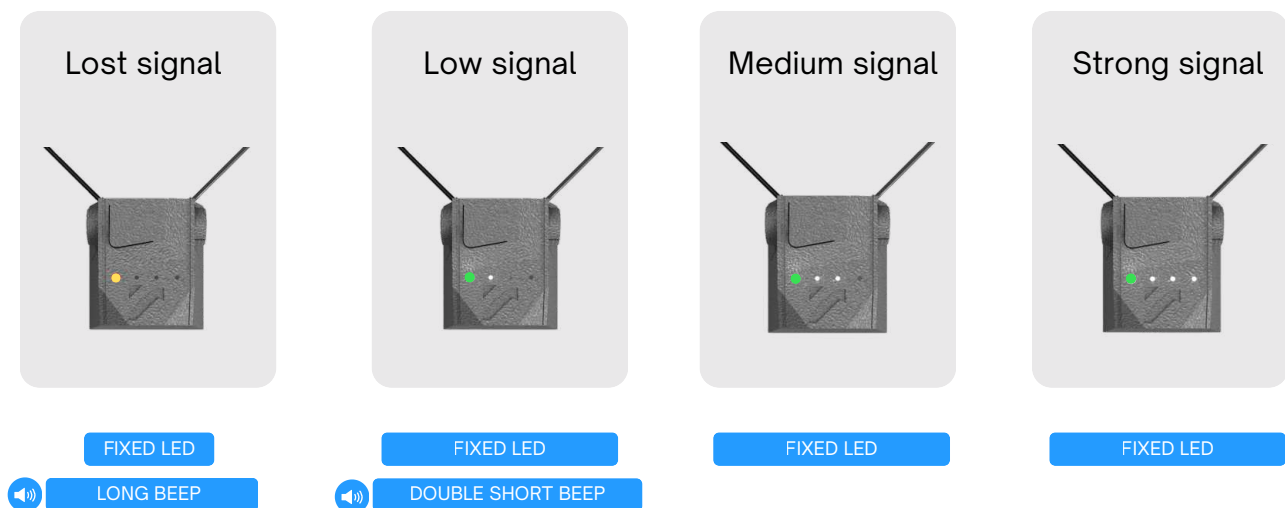
Warning

If the signal is lost, the manual release of the Parachute Recovery System and the Flight Termination System will become inoperative. Move closer to the drone to re-establish the link with the Klick remote control.

INSTRUCTIONS

To install the adhesive support supplied with the Kronos M4 Parachute Recovery System, follow the instructions below in order:

Instructions

1 Make sure that the support allows the battery to be changed and that no sensor has its field of vision obstructed.

2 Apply adhesive fixings at least 24 hours before use. Adhesive fixings should only be installed on smooth surfaces. Porous or textured surfaces will not provide sufficient adhesion. When installing the fixing, apply sufficient pressure to ensure full contact over the entire surface.

3 Apply adhesive fixings only to clean, dry surfaces. Wax, oil, dirt or other debris will reduce adhesion and may cause the mount and camera to fall off.

4 Install the adhesive fixings at room temperature.

5 The adhesive in the fixings will not adhere properly if applied in cold or damp environments or on cold or damp surfaces.

INSTALLATION
of the parachute system

The Kronos M4 Parachute Recovery System can be installed in just a few minutes. To install it, please follow the instructions below in order:

Skills & tools required

Designed to be quick and easy to use, the Parachute Recovery System can be installed without the need for special tools or technical skills.

Warning

For reasons of operational safety and to prevent inadvertent deployment, the M4 Parachute Recovery System incorporates an automatic lock that prevents deployment at altitudes below 20 metres. This limitation ensures that the parachute system can only be activated in conditions that guarantee the minimum effectiveness of the system. However, manual deployment of the parachute via the Klick trigger remote control remains possible. Be cautious when handling the powered-on parachute to avoid any unintentional ground deployment, which could cause physical injury or material damage.

Instructions

1 Install the adhesive parachute mounting bracket horizontally on the rear of the DJI Matrice 4 drone, positioning it 4 mm away from the RTK module.

Warning

Ensure that the support is installed in such a way as to guarantee full visibility of all on-board sensors, without obstructing their field of detection.

INSTALLATION
of the parachute system

2 Position the parachute module on the drone, then insert its fixing clip into the adhesive support fitted in the previous step until it locks into place.

3 Pass the main parachute sling under the front right arm of the drone, making sure that it is completely free and untwisted.

4 Pass the main parachute sling under the front left arm of the drone, making sure that it is completely free and untwisted.

INSTALLATION

of the parachute system

5 Hook the karabiner to the main sling by passing it under the canopy ejection tube. Then pass the elastic around the tube and the main sling. Move the elastic forward until the main sling is taut.

Warning

Make sure that the parachute's main attachment sling is correctly positioned on the drone's body and has no slack that could cause it to come into contact with the propellers.

6 Connect the USB-C cable to your parachute. The blue connector on the USB-C cable must be connected to the parachute.

INSTALLATION
of the parachute system

7 Pass the USB-C cable under the rear left arm of the drone. Then connect the USB-C cable to the drone. The red connector on the USB-C cable must be connected to the drone.

8 Position the USB-C cable guide so that it is perfectly aligned with the lower reference mark on the drone's frame, then secure it firmly in place.

9 Firmly insert the USB-C cable into the designated guide. Ensure it is securely held within the slot, and that the stopper is precisely positioned on the right side of the guide, as shown in the image below.

INSTALLATION
of the parachute system

| 10 | *Your Kronos M4 parachute is now operational.* ✅ |

| 11 | *Each installation must be entered in the 'List of installations and de-installations and maintenance operations' section on page 58.* |

INITIALIZATION

of the parachute system

To initialize the Kronos M4 Parachute Recovery System, follow these instructions in order:

Warning

For safety reasons, activation of the Kronos M4 Parachute Recovery System is fully automatic. No manual intervention is necessary or possible to activate the system.

Instructions

1 Switch on the DJI Matrice 4 drone, and the Kronos M4 Parachute Recovery System will automatically switch on. The parachute LED signals ignition with a sequence of colours, while the audible alarm emits three beeps to confirm correct operation. The LED then indicates the battery level, and a flashing yellow LED indicates that the parachute is powered up and ready for use.

2 *Your Kronos M4 parachute is initialization started.* ✔
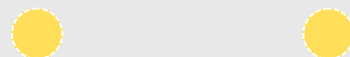
The different LED states

System initialisation

RAPID FLASHING   🔊 AUDIBLE BEEP

Parachute on, waiting to be activated

SLOW FLASHING

To activate the Kronos M4 Parachute Recovery System, follow the instructions below in order:

Warning

For reasons of operational safety and to prevent inadvertent deployment, the M4 Parachute Recovery System incorporates an automatic lock that prevents deployment at altitudes below 20 metres. This limitation ensures that the parachute can only be activated in conditions that guarantee the minimum effectiveness of the system.

Instructions

1 The Kronos M4 Parachute Recovery System automatically detects when your drone is ready to take off. During this phase, the LEDs on the parachute module and on the Klick remote control flash purple, and double beeps are emitted.

2 When the drone reaches an altitude of 20 metres, two distinct beeps confirm that the minimum threshold required to activate the autonomous parachute deployment function has been reached. The LEDs on the parachute module and on the Klick remote control then flash dark blue.

3 *Your Kronos M4 Parachute Recovery System is active with the autonomous deployment function.*

Warning

If there is no audible signal or dark blue LED, it is likely that the autonomous deployment function has not yet been activated due to insufficient altitude. To activate the autonomous deployment function, a minimum altitude of 20 metres is required.

ACTIVATION
of the parachute system

The different LED states

Parachute not connected to the Klick remote control

SLOW FLASHING   AUDIBLE BEEP

Parachute connected to the Klick remote control

SLOW FLASHING   AUDIBLE BEEP

Autonomous deployment being activated
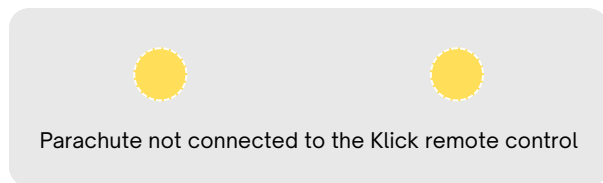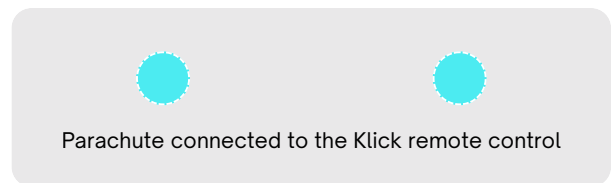
CONTINUOUS DOUBLE BEEP

SLOW FLASHING

Autonomous deployment activated
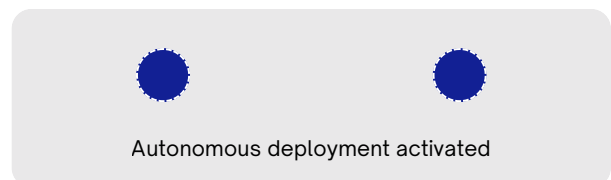
2 SHORT, LOUD BEEPS

SLOW FLASHING

DEACTIVATION
of the parachute system

To deactivate the Kronos M4 Parachute Recovery System, follow the instructions below in order:

Instructions

1 The Kronos M4 Parachute Recovery System automatically detects the landing of the DJI Matrice 4 drone. Approximately 5 seconds after detection, a beep is emitted and the LED stops glowing dark blue. The take-off detection module is then automatically deactivated. It will reactivate on the next flight, as soon as the drone reaches a minimum altitude of 20 metres.

Warning

If the dark blue LED on the Kronos M4 Parachute Recovery System remains lit, this indicates that the autonomous deployment function is still active. Do not manipulate the drone to avoid any risk of involuntary deployment. Wait a further 5 seconds for the automatic deactivation.

2 The autonomous deployment of the Kronos M4 Parachute Recovery System is deactivated, but your parachute remains active and can be deployed using the Klick trigger remote control.

3 To completely deactivate your Kronos M4 Parachute Recovery System, switch off the DJI Matrice 4 drone.

Warning

Do not perform any ground handling until the parachute system (PRS) has fully powered down.

DEACTIVATION

of the parachute system

The different LED states

Parachute not connected to the Klick remote control

CLIGNOTEMENT LENT   BIP SONORE
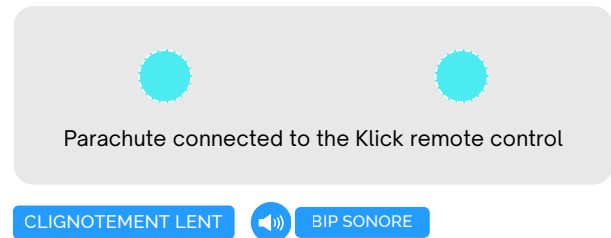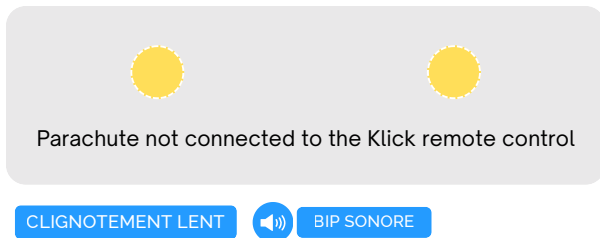
Parachute connected to the Klick remote control

CLIGNOTEMENT LENT   BIP SONORE

YOUR PARACHUTE IS OPERATIONAL & ACTIVE!

DEPLOYMENT
of the parachute system

To deploy the Kronos M4 Parachute Recovery System (with autonomous deployment or manually), observe the following safety instructions:

Warning

1   Never attempt to deploy the M4 Parachute Recovery System on the ground.

2   The Kronos M4 Parachute Recovery System is designed to be deployed at a minimum height of 34 metres from the ground in standard atmospheric conditions.

3   For a fall from a height of 34 metres, the impact on the ground is less than 6 joules with the Kronos M4 Parachute Recovery System, compared with 338 joules without any device.

Warnings

This data may vary depending on altitude above sea level, relative wind and many other external factors. That's why we recommend a minimum height of 34 m above ground level to deploy the Kronos M4 Parachute Recovery System and sufficiently limit the impact of your drone on the ground.

For reasons of operational safety and to prevent inadvertent deployment, the M4 Parachute Recovery System incorporates an automatic lock that prevents deployment at altitudes below 20 metres. This limitation ensures that the parachute can only be activated in conditions that guarantee the minimum effectiveness of the system.

AUTONOMOUS

deployment of the parachute system

Instructions

1 When autonomous deployment is activated, the parachute system analyses the flight parameters (altitude, acceleration, inclination, angular velocity) in real time. If any abnormal behaviour is detected, indicating a loss of control, the M4 Parachute Recovery System is automatically triggered, without pilot intervention.

The different LED states

Parachute deployed with autonomous deployment function

🔊 AUDIBLE BEEP   RAPID FLASHING

MANUAL
deployment of the parachute system

To manually deploy the Kronos M4 Parachute Recovery System, follow the instructions below in order:

Instructions

1. Find out how to deploy your Kronos M4 Parachute Recovery System manually with the help of our user and instruction manual for the Klick remote activation system.

KLICK

Manual activation of the Flight Termination System

CONSULT THE KLICK USER MANUAL
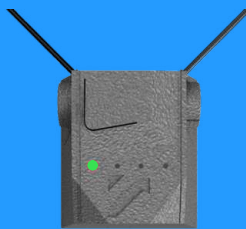
LOW-SPEED
mode

European EASA regulations require the inclusion of a low-speed mode that can be selected on the drone and activated manually by the drone operator. When the low-speed mode is activated, the drone cannot exceed a speed of 5 m/s. To activate the low-speed mode (Mode T), follow the instructions below in order:

Instructions

1 Switch on your DJI remote control.

2 Access the camera view, then click on the menu represented by the 3 dots at the top right of the screen. Check that the T/S/N flight mode is selected.

3 Switch the flight mode selector on the DJI RC Plus radio control from mode N to mode F. Mode F corresponds to mode T.

The use of mode S (Sport) is prohibited when the C5 conversion kit is installed on the DJI Matrice 4 drone. All validation tests on the Kronos M4 system were carried out exclusively in N (Normal) mode, guaranteeing behaviour that complies with safety requirements.

Warning

When using SPORT mode, Dronavia accepts no responsibility for non-deployment, partial or delayed deployment of the parachute system, due to flight dynamics incompatible with the system's deployment parameters.

STATES
of DJI remote controller

Indicators on the DJI remote controller allow you to check the signal status between the DJI Matrice 4 drone and the DJI remote controller during a flight.

Strong signal

Low signal

Lost signal

STOP
of the parachute system

*To stop the Kronos M4 Parachute Recovery System, follow the instructions below in order:*

Warning

If the dark blue LED on the Kronos M4 Parachute Recovery System remains lit, this indicates that the autonomous deployment function is still active. Do not manipulate the drone to avoid any risk of involuntary deployment. Wait a further 5 seconds for the automatic deactivation.

Instructions

1 Switch off the DJI Matrice 4 drone and the Kronos M4 Parachute Recovery System will shut down automatically.

2 Remember to turn off your Klick trigger remote control.

3 *Your Kronos M4 parachute system has been shut down.* ✅

Warning

Do not perform any ground handling until the parachute system (PRS) has fully powered down.

DISMANTLING
of the parachute system

To dismantle the entire Kronos M4 Parachute Recovery System, follow the installation instructions in reverse order.

Instructions

1 *Each de-installation must be entered in the 'List of installations, de-installations and maintenance operations' section on page 58.*

ANNUAL *maintenance*

Like all rescue parachute 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 system 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 canopy	Final user *or* DRONAVIA ou revendeur certifié
Every 5 years	Mandatory manufacturer global maintenance	Manufacturer
After every deployment	Rearming of the parachute system	Final user *or* DRONAVIA or any certified reseller
After every deployment	Replacement of the canopy *or* Repackaging of the canopy	Final user *or* DRONAVIA or any certified reseller
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.

If the deployment of the Kronos M4 Parachute Recovery System fails during flight, record the following:

Drone affected by activation failure	Flight hours accumulated at the time of activation failure	Distance between the control unit and the drone during the activation attempt	Location of the operation	Presence of a high-power transmitter in the operational volume

LISTING

If the Kronos M4 Parachute Recovery System is deployed during flight, record the following:

Drone concerned by activation	Flight hours accumulated at the time of activation	Distance between the control unit and the drone during the activation attempt	Location of the operation	Was the activation commanded or uncommanded?	Presence of a high-power transmitter 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

To be maintained in optimum working order, each Parachute Recovery 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

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 parachute.

A new expiry date label is supplied inside the POD to replace the original label on the parachute.

Warning

If a POD is used after its use-by date, Dronavia accepts no responsibility for partial or slower deployment of the Parachute Recovery System.

PROCEDURE
of 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 dealer. 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 preferential price.

Warning

Please plan in advance how long it will take to contact your reseller (order, delivery time, etc.) so as not to exceed the use-by date and jeopardise your flight missions.
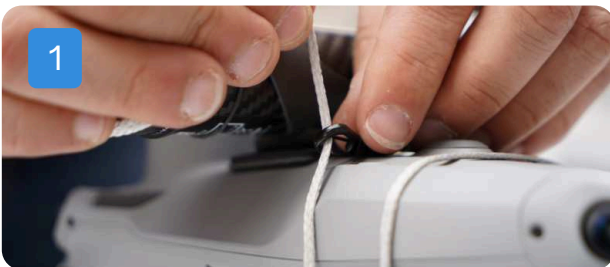
DISMANTLING
of the POD system for maintenance

To dismantling the POD from the M4 Parachute Recovery System, follow the instructions below in order:

Instructions

1 Switch off your DJI Matrice 4 drone.

2 Remove the karabiner, then remove the main sling from around the two front arms of the drone. Then remove the parachute from its fixing support

DISMANTLING

of the POD system for maintenance

3   Remove the adhesive tape from the back of the parachute, then remove the capsule.

4   Remove the canopy from the ejector tube.

5   Send the used POD to Dronavia or your reseller.

REARMING
of the Kronos Parachute

Once the Parachute Recovery System has been deployed, Kronos systems have been designed to be rearmed quickly, enabling telepilots to resume their missions without undue delay.

Simple reactivation procedures should be followed. As some of them may present risks, it is imperative that you read the instructions in this section carefully.

A use-by date is defined for each POD. Dronavia disclaims all liability and voids the warranty if your POD has exceeded this use-by date.
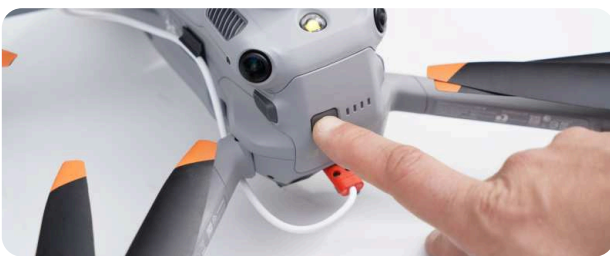
REARMING
of the parachute system

To rearm your M4 Parachute Recovery System, follow the instructions below in order:

Warning

For reasons of operational safety and to prevent inadvertent deployment, the M4 Parachute Recovery System incorporates an automatic lock that prevents deployment at altitudes below 20 metres. This limitation ensures that the parachute system can only be activated in conditions that guarantee the minimum effectiveness of the system. However, manual deployment of the parachute via the Klick trigger remote control remains possible. Be cautious when handling the powered-on parachute to avoid any unintentional ground deployment, which could cause physical injury or material damage.

Instructions

1   Switch off your DJI Matrice 4 drone.

2 Remove the karabiner, then remove the main sling from around the two front arms of the drone. Then remove the parachute from its fixing support.

3 Push the parachute piston back into the bottom of the tube using the tool provided.

4   Take your new POD and remove the adhesive tape to gain access to the canopy.

5   Remove the adhesive from the new POD, then pull the canvas out of the new POD.

6   Press the new canopy into the bottom of the tube of your Kronos M4 parachute.

Warning

Be sure to keep the main sling in line with the canopy when inserting it.
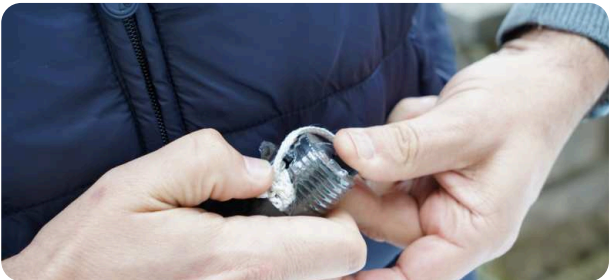
7 Maintain pressure while pulling the main sling out of the parachute.

8 Press down on the top part of the new POD to exert additional pressure and free up space for your thumb.

Warning

Remember to maintain firm pressure throughout.

9 Remove the plastic sleeve surrounding the new canopy by pulling it outwards.

10 While continuing to exert pressure on the inserted cloth, remove the top part of the new POD.

11 Position the capsule and close the parachute with it.

Warning

Check that none of the canopy lines are blocked by the capsule.

12 Stick the adhesive tape provided around the flat edge of the capsule.

Warning

Position the adhesive tape only on the flat edge of the capsule. If the adhesive tape supplied covers too much of the capsule, there is a risk that the parachute will not deploy or will deploy more slowly.

REARMING

of the parachute system

13 Position the parachute module on the drone, then insert its fixing clip into the adhesive support fitted in the previous step until it locks into place.

14 Pass the main parachute sling under the front right arm of the drone, making sure that it is completely free and untwisted.

15 Pass the main parachute sling under the front left arm of the drone, making sure that it is completely free and untwisted.
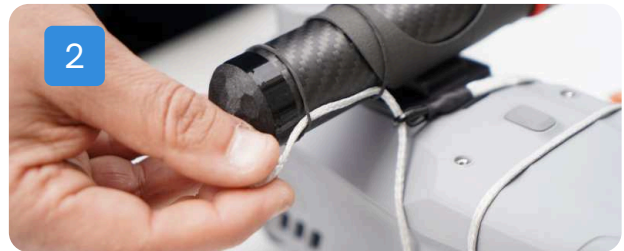
16 Hook the karabiner to the main sling by passing it under the canopy ejection tube. Then pass the elastic around the tube and the main sling. Move the elastic forward until the main sling is taut.

Warning

Make sure that the parachute's main attachment sling is correctly positioned on the drone's body and has no slack that could cause it to come into contact with the propellers.

17 Attach the USB-C cable holder to the left-hand side of the DJI Matrice 4 drone.

18 Connect the USB-C cable to your DJI Matrice 4 drone.

19 Pass the USB-C cable under the left rear arm of the drone, then pass it inside the cable guide previously installed.

20 Connect the USB-C cable to your parachute module.

REARMING
of the parachute system

21   *Each time the POD system is replaced, the information must be entered in the 'List of installations, de-installations and maintenance operations' section on page 58.*

22   *Your Kronos M4 Parachute Recovery System is rearmed.*

YOUR PARACHUTE IS REARMED!

PROCEDURE

There are several options for returning your used POD:

Buy 99€

1	Purchase a spare POD from your reseller in advance. This will allow you 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, while benefiting from a preferential rate.

Warning

Please plan in advance how long it will take to contact your reseller (order, delivery time, etc.) so as not to exceed the use-by date and jeopardise your flight missions.

KRONOS M4

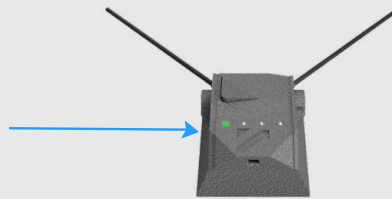## FLIGHT TERMINATION SYSTEM FOR dji MATRICE

PRESENTATION

of components

*Internal FTS module inside
the DJI Matrice 4 drone*

*Klick trigger
remote control*

KRONOS M4

Technical specifications

TOTAL WEIGHT	*3 GRAMMES*
COMMUNICATION WIRELESS RADIO	*SRD860 WITH ENCRYPTED KEY* *(869 MHZ / 100 MW)*
RANGE OF THE KLICK REMOTE CONTROL	*1500 METERS**
AUTONOMY KLICK REMOTE CONTROL	*30 HOURS*
OPERATING TEMPERATURE	*-5°C À 40°C*

*The range can be up to 1.5 km, under optimum conditions and in an environment free of obstacles and interference.

DESCRIPTION
of the Flight Termination System

Description

The Kronos M4 Flight Termination System, developed for the DJI Matrice 4, prevents a drone equipped with it from leaving its regulatory flight envelope by cutting (manually or automatically) the drone's power supply in less than a second.

Installation

The Kronos M4 Flight Termination System is installed between the autopilot and the drone's ESCs. It enables the motor control signal to be switched off.

Initialization

To start the Kronos M4 Flight Termination System, switch on your DJI Matrice 4 drone and the Flight Termination System will switch on automatically, then switch on your Klick trigger remote control by pressing and holding the start button. Activation is described in detail on page 81.

Activation

In order to keep the possibility of activation at your fingertips and to be as reactive as possible, a simple gesture allows you to cut the drone's power supply and deploy your parachute (if your drone is equipped with one). Simply press the triangular button on the Klick trigger remote control for at least 1 second. Activation of the M4 Flight Termination System is described in detail in the Klick trigger remote control user manual.

INITIALIZATION

of the Flight Termination System

To switch on the M4 Flight Termination System, follow the instructions below in order:

Instructions

1 Switch on your DJI Matrice 4 drone. The M4 Flight Termination System will switch on automatically.

2 Switch on your Klick remote control. When the Flight Termination System is properly connected, a cyan blue LED flashes on the Klick trigger remote control.
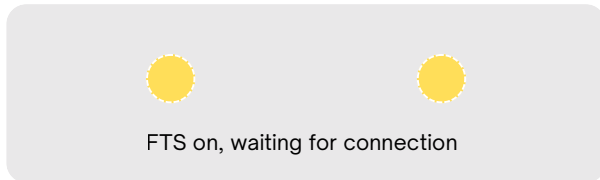

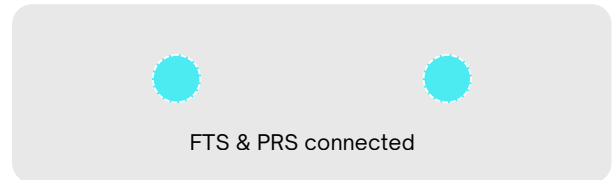**3** *Your FTS Kronos M4 is initialization started.*

INITIALIZATION
of the Flight Termination System

The different LED states

FTS on, waiting for connection

SLOW FLASHING

FTS & PRS connected

SLOW FLASHING   AUDIBLE BEEP

YOUR FTS IS ACTIVE AND OPERATIONAL!

MANUAL

To activate the M4 Flight Termination System, follow the instructions below in order:
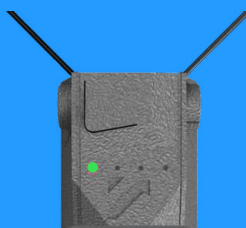
Instructions

1   Find out how to activate your Kronos M4 Flight Termination System manually using our user and instruction manual for the Klick trigger remote control.

KLICK

Manual activation of the
Flight Termination System

CONSULT THE KLICK USER MANUAL

AUTONOMOUS
activation of Flight Termination System

To automatically activate your M4 Flight Termination System, follow these instructions in order

Instructions

1 Switch on your DJI Matrice 4 drone. The Flight Termination System will switch on automatically.

2 Switch on your Klick trigger remote control. When the M4 Flight Termination System is properly connected, a cyan blue LED flashes on the Klick trigger remote control.

3 When the parachute is deployed, the Flight Termination System is automatically activated via a secure wireless link, established beforehand by Dronavia experts through precise pairing between the two modules.

AUTONOMOUS
activation of Flight Termination System

4   *Your FTS Kronos M4 has been triggered.* ✔

The different LED states

FTS & Parachute connected

SLOW FLASHING   🔊 AUDIBLE BEEP

FTS triggered & PRS deployed
with Autonomous Deployment

RAPID FLASHING   🔊 AUDIBLE BEEP

PROCEDURE
of Flight Termination System Test

Before the flight or before the first flight of the day, you can test the M4 Flight Termination System. Follow the instructions below in order:

Instructions

1 Install the parachute system onto its bracket. Connect the parachute's USB-C cable to the DJI Matrice 4 drone.

Warning

The parachute must be installed and connected to the drone. Rest assured, an automatic lock prevents any deployment below 20 meters of altitude, ensuring optimal ground safety during the Flight Termination System test.

2 Insert the battery, then power on your DJI Matrice 4 drone. Next, switch on the DJI remote controller. Finally, turn on your Klick trigger remote. Make sure the LED on the Klick remote is flashing cyan blue.

3   Arm the motors and initiate rotation while keeping the DJI Matrice 4 drone firmly on the ground.

If all four motors are running and no error message appears on the screen, proceed to test step 4. Otherwise, check the installation of the Flight Termination System.

4   Stop the motor rotation by pressing the trigger button on the Klick remote. Verify that the motors shut down properly and that the cyan blue LED flashes rapidly on both the Klick remote.

5   Perform a final flight test with the Flight Termination System powered on, without triggering it. If the flight proceeds normally and no error messages appear, the FTS is operational.

Warning

This final flight test (step 5) does not involve triggering the Flight Termination System in flight. For this step, simply perform a flight with the drone and check if any error messages appear during the flight. Warning: activating the Flight Termination System in flight will inevitably cause the drone to fall.

STOP

of Flight Termination System

To stop, switch off and reset the M4 Flight Termination System, follow the instructions below in order:

Instructions

1 Switch off your DJI Matrice 4 drone and the M4 Flight Termination System will automatically shut down.

2 Switch off your Klick trigger remote control.

DISMANTLING
of Flight Termination System

Dismantling the M4 Flight Termination System requires a workshop intervention, so that our qualified technicians can carry out this operation in complete safety.

Warning

If you dismantle or modify the M4 Flight Termination System yourself, Dronavia will not accept any responsibility and will void the warranty on your system.
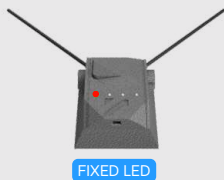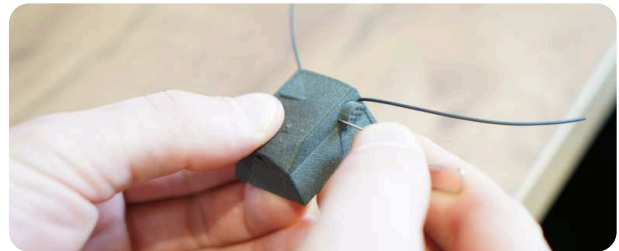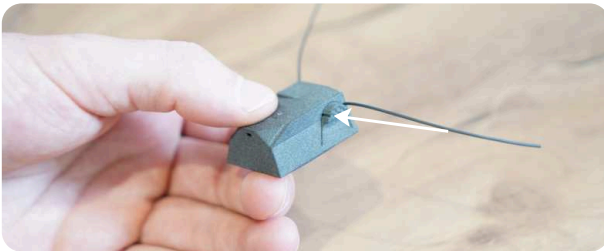
RESET
of Flight Termination System

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

Instructions

1 To reset the Klick remote control, locate the small hole on the left side. Insert a paper clip or other thin object into the hole and press briefly.

FIXED LED

System error

2 If the malfunction persists, contact Dronavia customer service or your reseller.

MAINTENANCE
& warranty

STORAGE

Store the Kronos safety accessorie 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.

WARRANTY

Dronavia takes great care in the design and production of its products. We guarantee our C5 conversion 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 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

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.

LINKS
to know

Website of the Ministry of Ecological Transition and Territorial Cohesion

Details of class C5 published by EASA :

The IGn map of restricted areas for drones

European Union Aviation Safety Agency (EASA)

The French Civil Aviation Authority (DGAC)

Ask our sales team your questions

CONTACT US

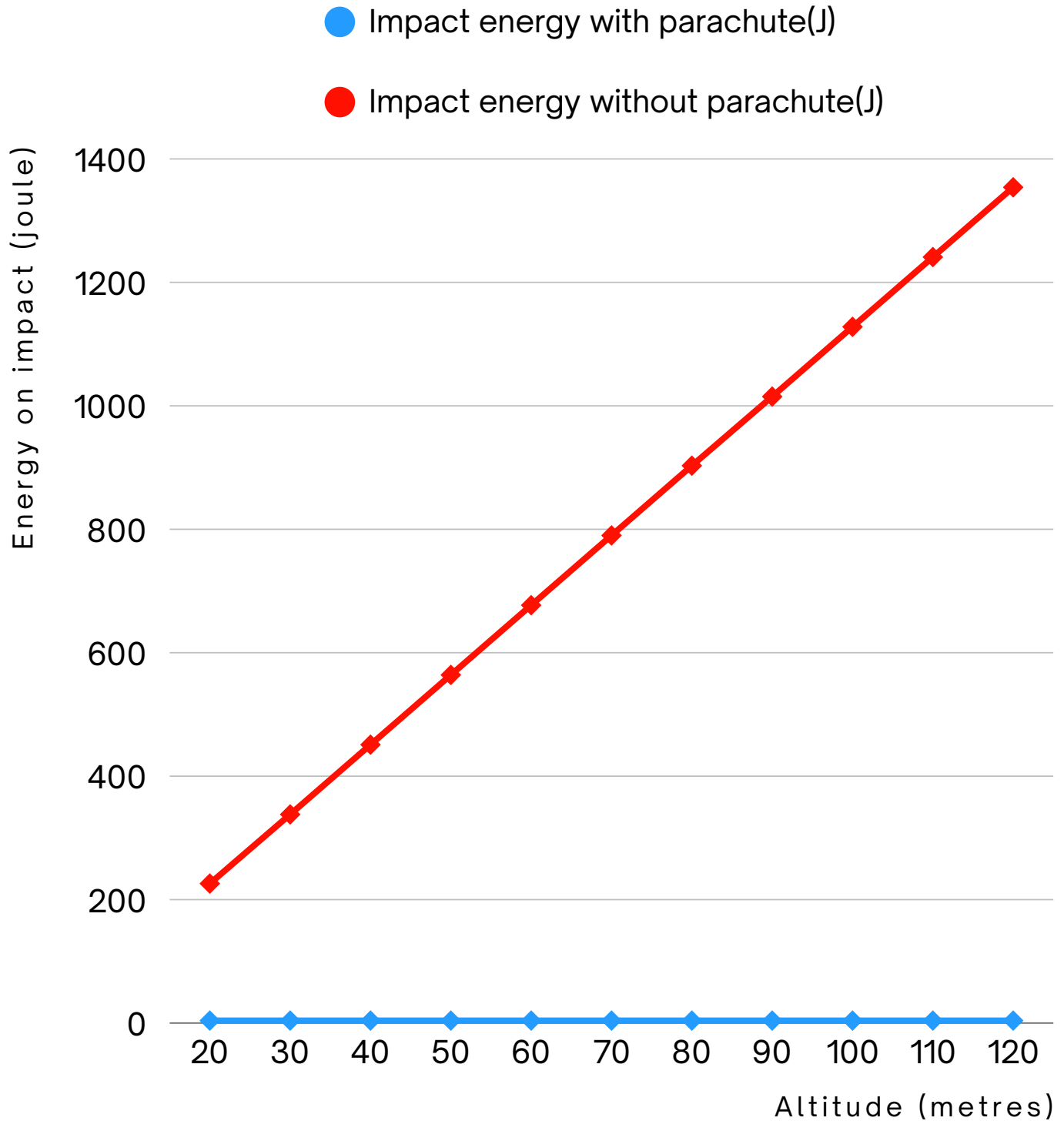📞 +33 3 54 40 00 78 ✉ distri@dronavia.com 🌐 www.dronavia.com

▶ | Dronavia Channel
in
f

APPENDICES

Impact energy (joule) / Altitude (metres)

● Impact energy with parachute(J)

● Impact energy without parachute(J)

APPENDICES

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

Weight (kg)	Falling speed (m/s)	Fall speed without parachute (m/s) * (m/s)
1.56 kg	3,11 m/s	25.8 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)

OPERATING VOLUME VERTICAL LIMIT	SOIL-RELATED RISK BUFFER ZONE
30	78
40	114
50	150
60	186
70	222
80	258
90	294
100	331
110	367
120	403

The ground risk threshold can be calculated based on various drone parameters and assumptions. Please refer to the document dedicated to calculating the ground risk threshold if you need to calculate more accurate ground risk thresholds based on your application.

DECLARATION
compliance with C2 class