Dronavia

MADE IN FRANCE

USER MANUAL & INSTRUCTIONS

C5 CONVERSION KIT FOR DJI MATRICE 4D

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

SUMMARY

1 INTRODUCTION

2 PARACHUTE SYSTEM

3 ANNUAL MAINTENANCE

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 NOTE

Version 1.0

- Initial release

TUTORIAL

User's manual Klick trigger remote control

Flight Termination System Testing Procedure

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 M4D C5 conversion kit, which includes a Parachute Recovery System & autonomous Flight Termination System, specifically designed for the DJI Matrice 4D drone.

The Kronos M4D 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 M4D C5 conversion kit and to answer any technical or commercial questions you may have.

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GENERAL *presentation*

The Kronos M4D Parachute Recovery System and internal Flight Termination System have been specifically designed for DJI Matrice 4D 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 M4D systems are engineered to activate and deploy in under one second.

GENERAL *presentation*

TO BE READ CAREFULLY

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*

TO BE READ CAREFULLY

The Kronos M4D 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*

EXTRACT FROM REQUIREMENTS PUBLISHED BY EASA

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.

EASA European Aviation Safety Agency APPROVED

COMPLIANCE *with C5 Class*

The Kronos AD Matrice 4 Pro drone, designed and tested by Dronavia, is based on the DJI Matrice 4D 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 4D Pro.

The modification of the DJI Matrice 4D 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

TO BE READ CAREFULLY

The Kronos M4D 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 M4D Flight Termination System and Parachute Recovery System must never lead to increased risk-taking during flight operations.

WARNINGS
& safety precautions

TO BE READ CAREFULLY

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 M4D 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.

15 SAFETY

instructions to follow

TO BE READ CAREFULLY

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.*

15 SAFETY

instructions to follow

TO BE READ CAREFULLY

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 4D plug & play Parachute Recovery System for DJI Matrice 4D 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			*The Kronos Matrice 4D internal Flight Termination System, developed for the DJI Matrice 4D, 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 6 x 4.5 cm***	***209 G***
FTS	v1.0.0	*See 'System states' on page 30*		
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 4D	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 M4D conversion kit is installed on the DJI Matrice 4D drone, (PRS + FTS) your drone is in C5 flight configuration.

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

Warning

In the event of a return to DJI after-sales service, the entire parachute system must be removed. Once this operation is completed, the drone returns to its original C2 configuration, thereby preserving the DJI manufacturer warranty.

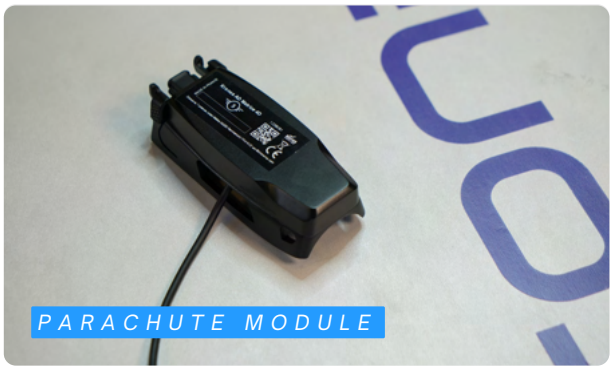
SECTION

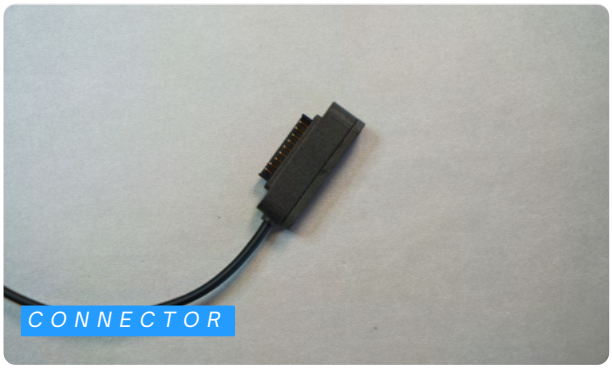
KRONOS M4D

PARACHUTE RECOVERY SYSTEM FOR DJI MATRICE 4

COMPONENTS

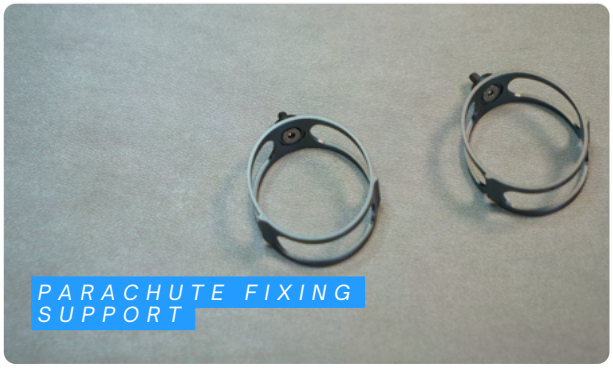
presentation


PARACHUTE MODULE


CONNECTOR


POD


POD USB-C PORT


PARACHUTE FIXING SUPPORT


BATTERY HOLDER


PARACHUTE STATUS LEDS

KRONOS M4D

System Visual Representation

KRONOS M4D

System Visual Representation

KRONOS M4D

Overview of Key System Figures

KRONOS M4D

Technical specifications

TOTAL WEIGHT	209 G
EJECTION DEVICE	SPRING PRESTRESSED
MINIMUM HEIGHT EFFICIENCY	27.9 MÈTRES
COMMUNICATION WIRELESS RADIO	SRD860 WITH ENCRYPTED KEY (869 MHZ / 100 MW)
RANGE OF THE KLICK REMOTE CONTROL	2300 METERS*
KLICK REMOTE CONTROL AUTONOMY	30 HOURS
ENERGY GROUND IMPACT	22.1 J
OPERATING TEMPERATURE	-5°C TO 40°C
STORAGE TEMPERATURE	10°C TO 40°C
LEVEL OF WATERTIGHTNESS	IP54

*can reach up to 2.3 km, under optimum conditions and in an environment free of obstacles and interference.

KRONOS M4D

Operating limits

MAXIMUM WIND SPEED AT GROUND LEVEL	*8.93 M/S*
MINIMUM FLIGHT ALTITUDE (AGL)	*27.9 METERS*
OPERATING TEMPERATURES	*MIN : -5°C* *MAX : 40°C*
USABLE IN RAINY WEATHER	*Yes*

KRONOS M4D

Dimensions and weights

DRONE

30 x 25 x 23 cm

2049 G

PARACHUTE

18 x 6 x 4.5 cm

209 G

PARACHUTE + DRONE

30 x 25 x 23 cm

2258 G (MTOM)

KRONOS M4D

Minimum Size of the Ground Risk Buffer (GRB)

OPERATING VOLUME VERTICAL LIMIT	SOIL-RELATED RISK BUFFER ZONE
30	52
40	83
50	113
60	144
70	175
80	205
90	236
100	267
110	298
120	328

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.

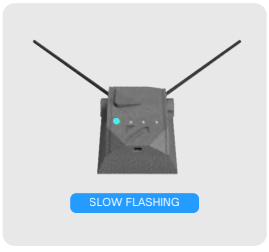
SYSTEM states

INITIALIZATION

System initialisation

Waiting phase

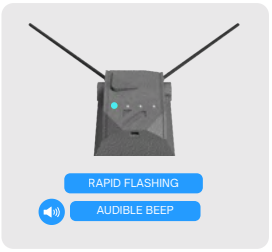
CONNECTION



FTS & PRS Connected

FTS & PRS Connected with Autonomous Deployment

ACTIVATION AND DEPLOYMENT

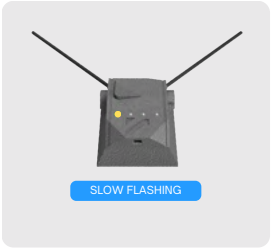


FTS triggered & PRS deployed with Klick

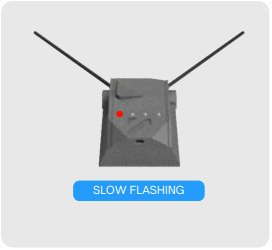
FTS triggered & PRS deployed with Autonomous deployment

SYSTEM states

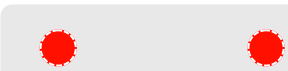
SYSTEM & BATTERY ALERTS

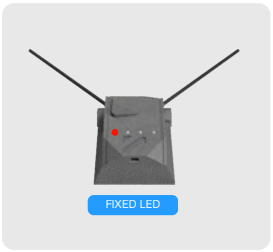


Signal lost with remote control (Klick)



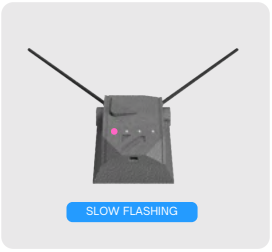
Low battery



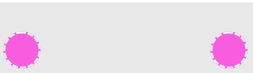


System error

Charging the battery



Signal scrambled

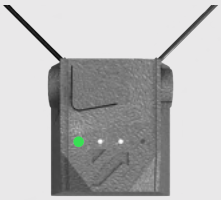
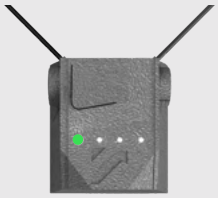


Battery charged

SIGNAL states

Four LEDs let you check the status of the link between the Klick trigger remote control and your Kronos M4D 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 LONG BEEP	FIXED LED DOUBLE SHORT BEEP	FIXED LED	FIXED LED

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.

INSTALLATION
of the parachute system

The Kronos M4D Parachute Recovery System can be installed in just a few minutes. To install it, please follow the instructions below in order:

Skills & tools required

No special technical skills are required to install the parachute system (PRS). A H2.0 screwdriver is required for installation.

Warning

For reasons of operational safety and to prevent inadvertent deployment, the M4D 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.

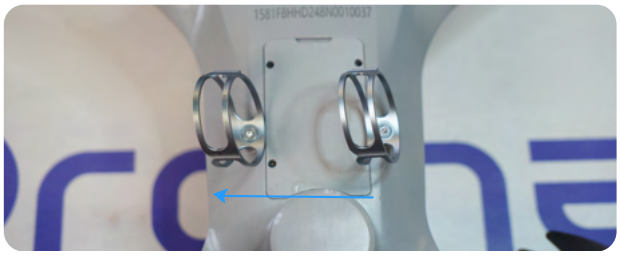
Instructions

1 Install the two parachute system mounting brackets on the top part of the DJI Matrice 4D drone, then secure them using the screws provided by Dronavia.

INSTALLATION
of the parachute system

Warning

Make sure both mounting brackets are correctly oriented: the curved side of each bracket must face to the left.



2 Install the battery mount in the designated battery slot of the DJI Matrice 4D drone. Secure it using the screws provided by Dronavia. Do not overtighten the screws to avoid damaging the drone—stop tightening as soon as you feel slight resistance.

INSTALLATION
of the parachute system

3 Next, insert the parachute module onto the two previously installed mounting brackets by sliding it from right to left into the groove provided for this purpose.

4 Position the parachute system cable under the rear left arm of the drone, then connect it to the power port (battery connector) of the DJI Matrice 4D.

INSTALLATION
of the parachute system

5 Insert the battery into the DJI Matrice 4D drone.

6 Insert the parachute system POD into the previously installed parachute module. Make sure the USB-C connector on the module and the one on the POD are perfectly aligned. Then press both latches and firmly snap the two parts together. It is important to hear a “click” confirming that the assembly is securely locked in place.

INSTALLATION
of the parachute system

7 *Your Kronos M4D parachute is now operational.*

8 *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 M4D Parachute Recovery System, follow these instructions in order:

Warning

For safety reasons, activation of the Kronos M4D Parachute Recovery System is fully automatic. No manual intervention is necessary or possible to activate the system.

Instructions

1 Turn on the DJI Matrice 4D drone; the Kronos M4D parachute system will power on automatically. The parachute module LED indicates power-up through a light sequence, while the audible alarm emits three beeps confirming that the system is functioning properly. The LED then displays the battery charge level.

2 The parachute module LED lights up solid yellow to indicate the system initialization phase. Once this phase is complete, a flashing yellow LED indicates that the parachute is connecting to the Klick remote controller.

Warning

A solid yellow LED remains on until the minimum charge level required for initialization is reached. This process may take up to 15 seconds.

INITIALIZATION
of the parachute system

3 ***Your Kronos M4D parachute system is initialized.***

The different LED states

1

System initialisation

RAPID FLASHING BEEP

2

Parachute in the waiting phase

FIXED LED

3

Parachute not connected to the Klick

SLOW FLASHING

POD not connected to the parachute module

FIXED LED

Warning

After the 15-second parachute system initialization phase, if the LED remains solid yellow and then turns red after about 2 minutes, it indicates that the POD is not properly connected to the parachute module.

ACTIVATION
of the parachute system

To activate the Kronos M4D 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 M4D 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 M4D 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

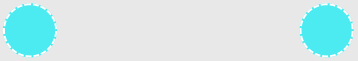
The different LED states

1

Parachute not connected to the Klick remote control

SLOW FLASHING — AUDIBLE BEEP

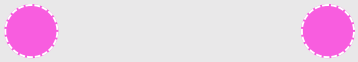
2



Parachute connected to the Klick remote control

SLOW FLASHING — AUDIBLE BEEP

3

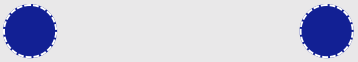


Autonomous deployment being activated

CONTINUOUS DOUBLE BEEP

SLOW FLASHING

4



Autonomous deployment activated

2 SHORT, LOUD BEEPS

SLOW FLASHING

DEACTIVATION
of the parachute system

To deactivate the Kronos M4D Parachute Recovery System, follow the instructions below in order:

Instructions

1 The Kronos M4D Parachute Recovery System automatically detects the landing of the DJI Matrice 4D 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 M4D 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 M4D parachute system is deactivated. To completely deactivate your Kronos M4D parachute system, turn off the DJI Matrice 4D drone.

Warning

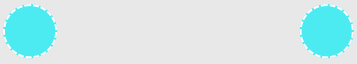
Do not perform any ground handling until the parachute system (PRS) has fully powered down.

DEACTIVATION

of the parachute system

The different LED states

1



Parachute connected to the Klick remote control

SLOW FLASHING

AUDIBLE BEEP


YOUR PARACHUTE
IS OPERATIONAL &
ACTIVE!

DEPLOYMENT
of the parachute system

To deploy the Kronos M4D Parachute Recovery System (with autonomous deployment or manually), observe the following safety instructions:

Warning

1. Never attempt to deploy the M4D Parachute Recovery System on the ground.

2. The Kronos M4D Parachute Recovery System is designed to be deployed at a minimum height of **27.9 metres from the ground in standard atmospheric conditions.**

3. For a fall from a height of 29.7 metres, the impact on the ground is less than **22.1 joules** with the Kronos M4D Parachute Recovery System, compared with **599 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 29.7 m above ground level to deploy the Kronos M4D 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 M4D 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 M4D Parachute Recovery System, follow the instructions below in order:

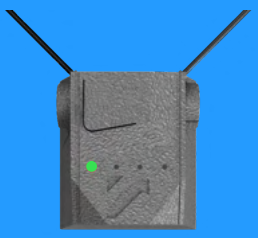
Instructions

1. Find out how to deploy your Kronos M4D 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



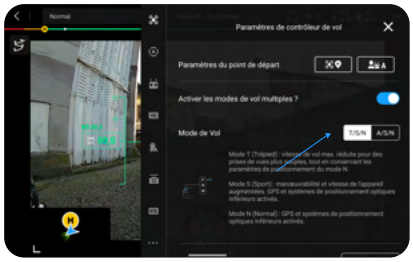
LOW-SPEED
mode

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.

SPORT mode

The use of mode S (Sport) is prohibited when the C5 conversion kit is installed on the DJI Matrice 4D drone. All validation tests on the Kronos M4D 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

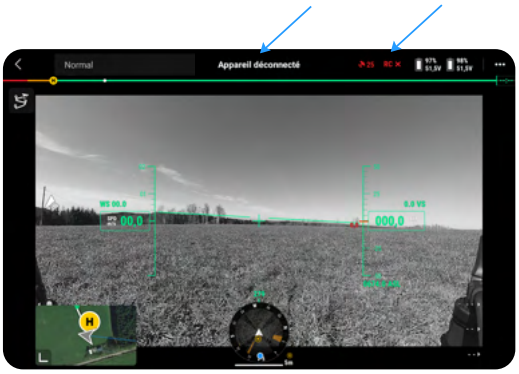
of DJI remote controller

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

Strong signal

Low signal

Lost signal



STOP
of the parachute system

To stop the Kronos M4D Parachute Recovery System, follow the instructions below in order:

Warning

If the dark blue LED on the Kronos M4D 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 4D drone and the Kronos M4D Parachute Recovery System will shut down automatically.

2. Remember to turn off your Klick trigger remote control.

3. ***Your Kronos M4D 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 M4D 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*

TO BE READ CAREFULLY

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.

LISTING

parachute deployment failures

If the deployment of the Kronos M4D 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

voluntary and untimely deployment of the parachute

If the Kronos M4D 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

monitoring of installations / de-installations & maintenance operations

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

POD
use-by date

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

The optimal lifespan of a POD is 1 year. The expiration date is indicated on the label located on the back of the POD.

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 M4D Parachute Recovery System, follow the instructions below in order:

Instructions

1 Remove the parachute system POD from the parachute module.

2 Send the used POD to Dronavia or to your authorized reseller.

REARMING
of the Kronos Parachute

TO BE READ CAREFULLY

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 M4D Parachute Recovery System, follow the instructions below in order:

Warning

For reasons of operational safety and to prevent inadvertent deployment, the M4D 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.

1 Take your new POD and insert it into the parachute module. Make sure the USB-C connector on the module and the one on the new POD are perfectly aligned. Then press both latches and firmly snap the two parts together. It is important to hear a “click” confirming that the assembly is securely locked in place.

REARMING
of the parachute system

Warning

If, after 15 seconds of initialization, the parachute LED remains solid red, turn off the DJI Matrice 4D drone and wait until it has completely powered down. Then turn the drone back on to restart the parachute system. If the issue persists, please contact Dronavia or your authorized reseller for assistance.

The different LED states

Parachute disarmed

FIXED LED

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 50.*

22 *Your Kronos M4D Parachute Recovery System is rearmed.*


YOUR PARACHUTE IS
REARMED!

PROCEDURE

for returning a used POD

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.


SECTION
KRONOS M4D
FLIGHT TERMINATION SYSTEM FOR DJI MATRICE 4D

DESCRIPTION

of Flight Termination System Test

Description

The Kronos M4D flight termination system, developed for the DJI Matrice 4D, prevents the drone from exceeding its regulatory flight envelope by cutting the drone's power supply—manually or automatically, in less than one second.

Installation

The Kronos M4D flight termination system connects directly to the drone's battery power port and supplies power to the parachute system. It allows for the instantaneous interruption of the motor control signal when activated.

Initialization

To start the Kronos M4D flight termination system, power on your DJI Matrice 4D drone. The flight termination system will activate automatically. Then, turn on your Klick trigger remote by pressing and holding the power button.

Activation

To ensure quick and easy access, the system can be activated with a simple gesture that allows you to cut the drone's power supply and deploy the parachute (if equipped). Simply press and hold the dual button on the Klick trigger remote for at least one second. The activation procedure for the Kronos M4D flight termination system is detailed in the Klick trigger remote user manual.

PROCEDURE

of Flight Termination System Test

Before the flight or before the first flight of the day, you can test the M4D Flight Termination System. Follow the instructions below in order:

Instructions

1 Connect the parachute module to the drone's power port. Install and connect the POD to the parachute module.

Warning

The parachute must be properly installed and connected to the drone. Rest assured, an automatic safety lock prevents any deployment below 20 meters of altitude, ensuring maximum ground safety during the flight termination system test.

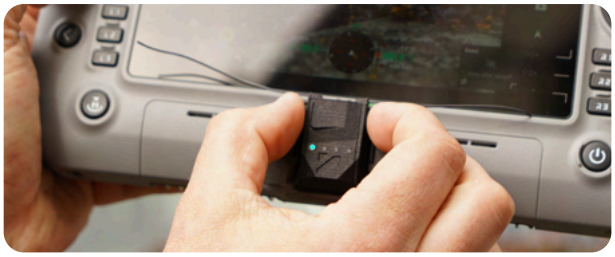
2 Insert the battery, then power on your DJI Matrice 4D drone. Next, turn on the DJI remote controller, followed by the Klick trigger remote. Check that the LED on your Klick remote controller is flashing cyan blue.

PROCEDURE
of Flight Termination System Test

3 Arm the motors and initiate rotation while keeping the DJI Matrice 4D 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

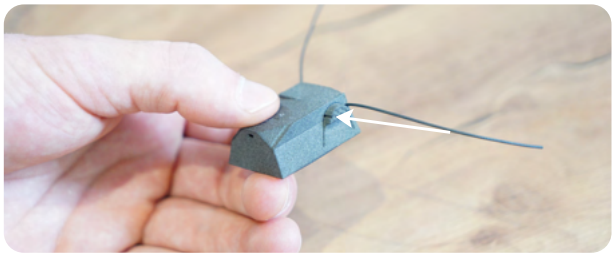
This final flight test (step 5) does not involve triggering the Flight Termination System in flight. For this step, simply perform a flight with the drone and check if any error messages appear during the flight. Warning: activating the Flight Termination System in flight will inevitably cause the drone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

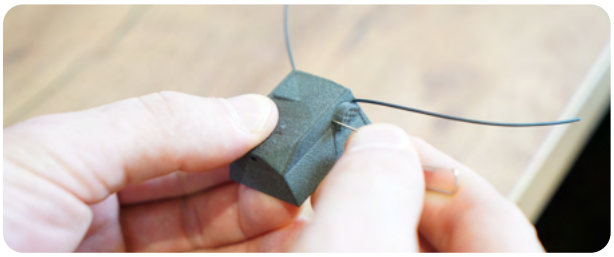
RESET
of Klick system

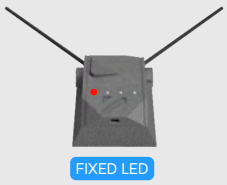
In the event of a malfunction or any bug, follow these instructions in order:

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.







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

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 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

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Dronavia Channel

APPENDICES

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

Weight (kg)	Falling speed (m/s)	Fall speed without parachute (m/s) * (m/s)
2.258 kg	*4,30 m/s*	*23.4 m/s*

*for a fall from a height of 29.7 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	52
40	83
50	113
60	144
70	175
80	205
90	236
100	267
110	298
120	328

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