Industrial Remote Controls

MarK Series

Installation and User Technical Manual

EN

ORIGINAL VERSION

Jay électronique - Conductix-Wampfler
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354840A

CONDUCTIX wampfler

Doc. ref.:
354840A - EN

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1. Service Information

Thank you for choosing the JAY Electronique radio control system which offers you a configuration adapted to your application, ease of use and maintenance, as well as a high level of safety.

If you have any questions regarding the installation or use of the radio control system, please contact our service department “**Client Service**”:

Monday-Friday

Tel: 04.76.41.44.00
Email: support.technique.jay@conductix.com

2. Introduction

JAY électronique radio remote control systems are designed to control industrial equipment and machinery such as overhead cranes, jib cranes, gantries, tower cranes, electric hoists, winches, monorails, conveyor belts, mining equipment and other wireless handling equipment.

Each set consists of a control transmitter and a radio control interface receiver.

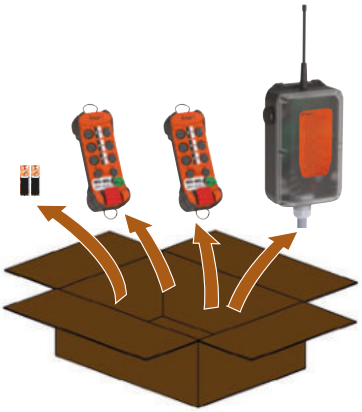
Below is a list of notable product specifications:

- **Radio Link** – Data exchanges between the transmitter and receiver are secured by Hamming codes and encoded in such a way as to protect against attacks by a malicious third party.
- **RF Power** – Radio emission power between the two equipments is regulated so as not to pollute the radio spectrum and thus not to disturb the other radio links in the vicinity.
- **Radio Channel** – Equipment is equipped with systems for analyzing radio signal quality, in order to protect against environmental disturbances.
- **Radio Pairing** – Two-way radio linking allows the pairing of the two equipments and the application configuration of the set.
- **Reliable Push Buttons** – The transmitter is equipped with reliable push buttons, they have been designed and qualified to hold more than 500 thousand maneuvers.
- **Low Consumption** – The transmitter runs on a standard AA battery.
- **Protection** – The protection class of the transmitter and receiver is IP65.
- **Compliance** – The transmitter and the receiver are in compliance with the standards in force.

3. Product Identification at Delivery

3.1. Unpacking Recommendations

When unpacking the product, do not throw away the supplied labels.



3.2. Product Identification at Delivery

The set consists of the following items:

- Two radio transmitters consisting of 6 function buttons, 2 auxiliary buttons, a rotary **ON / OFF** switch and a red stop button.
- A receiver box, equipped with a wire antenna, buzzer, internal lamp and output cable allowing connection to the interfaces to be controlled.
- A sheet of identification labels.

3.2.1. Client Output Interfaces

- 2 safety relays (safety stop)
- 12 function output relays
- 1 ON relay

3.2.2. Client Visual Interface

The receiver is equipped with the following visuals:

- Supply voltage indicator
- Radio link indicator
- White status lamp (receiver free, active, waiting, etc.)
- Buzzer
- Active safety relay indicator
- Function relay LED.

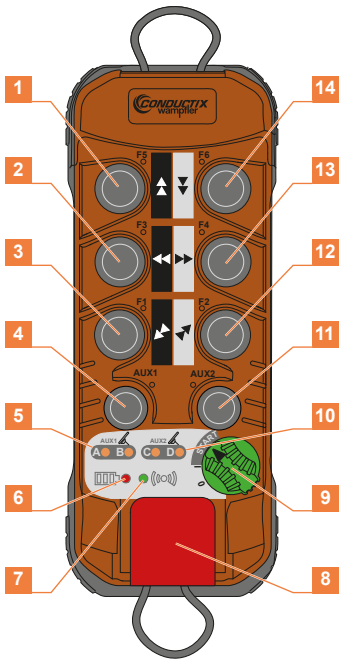
3.2.3. Client Visual Interface

The transmitter is equipped with the following:

- Battery charge level indicator
- Radio transmission indicator
- Four selection position indicators (LEDs A, B, C, and D).

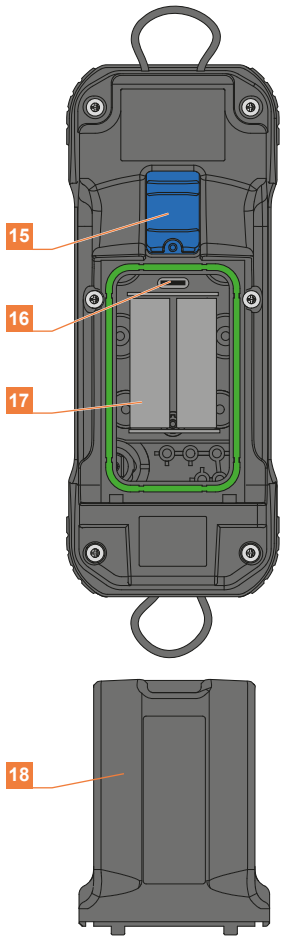
4. Product Illustration

4.1. Transmitter



Front Face

1	F5 double speed button	8	Stop punch
2	F3 double speed button	9	ON/OFF switch • position **0** = OFF • position **I** = ON • position **START** = Validation
3	F1 double speed button	10	Amber LEDs C and D
4	Push button AUX1	11	Push button AUX2
5	Amber LEDs A and B	12	F2 double speed button
6	Red “battery” LED	13	F4 double speed button
7	Radio LED green	14	F6 double speed button



Back Face

15	Battery compartment lock	17	2 AA batteries
16	USB-C plug	18	Battery compartment cover

4.2. Receiver

Front Face

1. **RF Antenna**
2. **Indicator LEDs**
3. **Built-in Buzzer**
4. **Transparent Cover with Wiring Label**
5. **Cable Gland**
6. **Numbered Wires**
7. **Built-in White Lamp**

5. Product Operation Principle

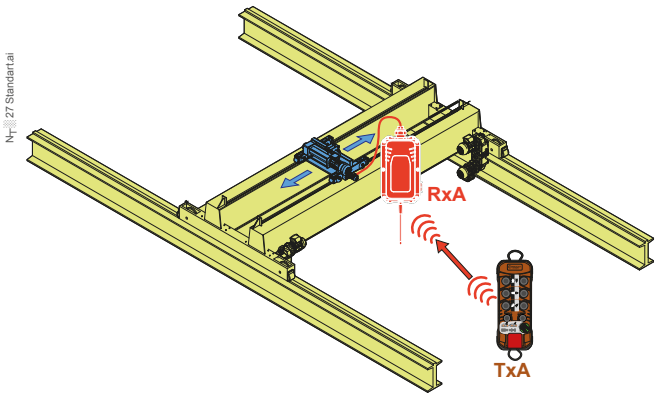
5.1. General

This set consists of a wireless command receiver and a transmitter.
Radio communication between the two is two-way. The transmitter transmits the orders to the receiver, which decodes them, and activates its relay outputs depending on the setting.

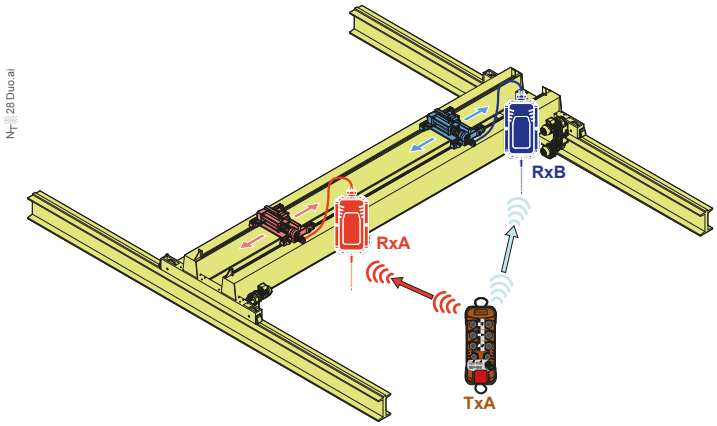
5.2. Operating Modes

MarK range products can operate in three distinct modes.

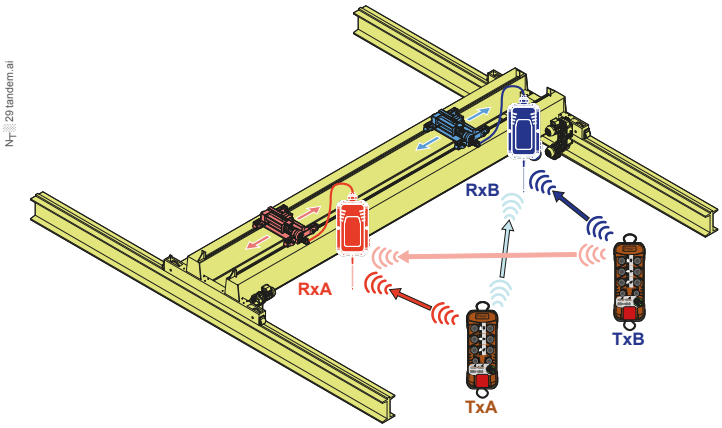
- Standard: a transmitter and a receiver that communicate over a radio channel



- Tandem: with two versions
  - a transmitter and two receivers that communicate over a single radio channel



  - two transmitters and two receivers that can communicate independently of each other.



6. Start up and Use

6.1. Receiver Electrical Connection Instructions

IMPORTANT:

IF THE TRANSCEIVER IS POWERED DIRECTLY FROM THE DISTRIBUTION NETWORK, THE “IT” TYPE ELECTRICAL DISTRIBUTION DIAGRAM CANNOT BE USED FOR THE TRANSCEIVER POWER SUPPLY

The electrical installation must be carried out by a trained and authorized professional.

To avoid any risk of electrocution, never open the housing of the receiver module when it is powered on. In order to access the inside of the receiver module, it is essential to ensure that the power supply cables and control cables are powered off.

The receiver’s power supply circuit must be directly connected to the power supply of the equipment to be radio-controlled.

The receiver module’s power supply must have a suitable separation medium (fuse(s) or circuit breaker) or use the one from the equipment to be radio-controlled.

Installation must comply with mechanical and fire insulation rules, in accordance with the standard in force in the country of use.

In the cable tray, it is advisable to separate the power cables from the control cables, respecting a minimum spacing (20 cm) between the different classes:

- **Class 1**: Radio, analog signals
- **Class 2**: Mains for supplying power to various elements
- **Class 3**: Power control of motors, drives, etc...

If only one cable path is available, cables of different classes must be separated as much as possible.

6.2. Rules of Use and General Precautions

A radio-control system is considered as a control device.
Its proper implementation must comply with resulting rules.

The use of the system allows the operator to focus their attention on the work they are doing by choosing the place of observation limited only by safety requirements (e.g.: not parking under a suspended load).

The radio-control system does not eliminate, but completes the classic safety circuits (e.g.: emergency stops).

To ensure safe use, it is essential to follow the instructions provided in this manual.

The user must be trained and authorized to drive by radio control.

The user must maintain visibility of the maneuver he is performing at all times. When the direct field of vision is insufficient, the controlled equipment must be fitted with auxiliary devices to improve visibility.

In the event of simultaneous movements of several pieces of equipment, these pieces of equipment must be fitted with means to reduce the consequences of a possible collision.

To avoid any risk of electrocution, never open the housing of the receiver module when it is powered on. The housing must be opened by ensuring that the power supply cables and control cables are powered off.

Do not leave the transmitter in any location even though it is equipped with an automatic shutdown feature called “Standby”.

Do not leave the transmitter in the sun (e.g. vehicle windshield), or near a heat source.

If several radio-control systems are used at the same site, it is advisable to work with different radio frequencies.

In the event of an anomaly, immediately stop the installation by pressing the transmitter “punch” stop button and remove the batteries.

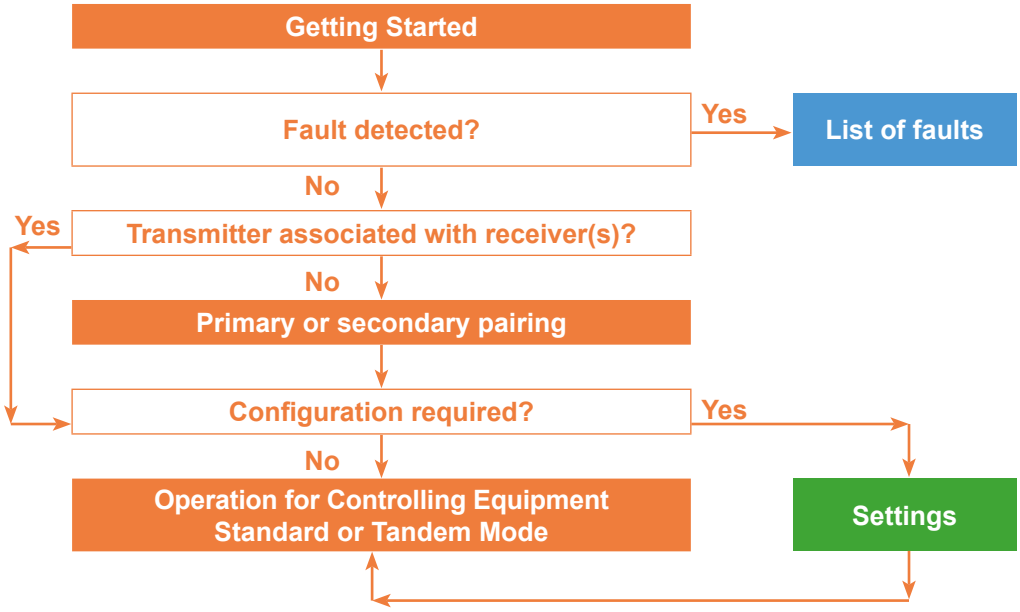
Maintain the equipment, and carry out periodic checks, depending on the intensity of use. It is essential to follow the cleaning instructions described in Chapter ***"Maintenance", page 52***.

Take all possible precautions so that a malevolent intelligence equipped with a means of listening and reproducing radio exchanges cannot impersonate the transmitter associated with the receiver and take control of the installation.

6.3. Factory Defaults

- A fixed radio channel is automatically assigned
- Radio power is set to level 4 Fixed mode
- Standby is set to 4 minutes
- Buzzer is set to sound level 2, automatic pattern (the pattern depends on the channel)
- Without start-up protection sequence
- In automatic release mode and active sign-of-life mode
- Behavior of continuous AUX1 and AUX2 (Rsel_1 and Rsel_2 at 0)

7. Product Use

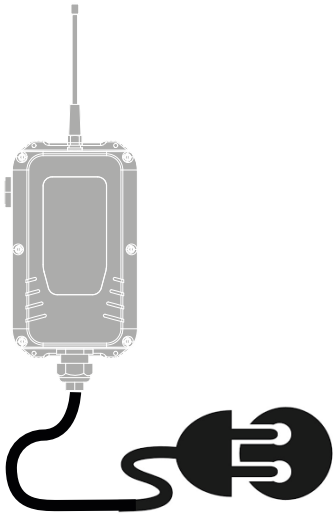


7. Use of Products	
7.1. Getting Started with Products	
7.2. Pairing	
Primary Pairing (AUX1 + F1)	off ● ● x1
Secondary Pairing (AUX1 + F2)	off ● ● x2
7.3. Transmitter UI	
7.3.3. Default Signaling	
7.4. Receiver Indicators, Relays, and Outputs	
7.5. Operation in Standard Mode	
7.6. Operation in Tandem Mode	
7.7. Stopping Products	
8. Product Settings	
8.1. Access to Settings	
8.2. Discarding a Setting	
8.3. Auxiliary Button Configuration (AUX1 + AUX2)	off ● ● x3
8.4. Sleep Mode Configuration (F1 + F3)	off ● ● x5
8.5. Radio Power Configuration (F1 + F4)	off ● ● x6
8.6. Protection Sequence Configuration (code with F1 – F6)	off ● ● x7
8.7. RF Channel Configuration (F1 + F2)	off ● ● x8
8.8. Receiver Buzzer Configuration (AUX2 + F1)	x1 ● ● x1
9. Specific Tandem Mode Settings	
9.1. Receiver Swapping A ↔ B (AUX1 + F5)	off ● ● x4
9.2. Release Function (Ungroup) (AUX1 + F3)	off ● ● x9
9.3. Sign of Life Between Receivers (F1 + F5)	x1 ● ● off

7.1. Getting Started with Products

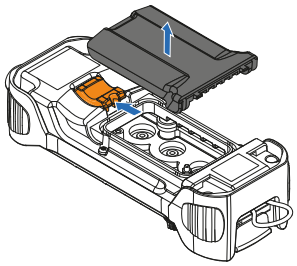
7.1.1. Powering On

1



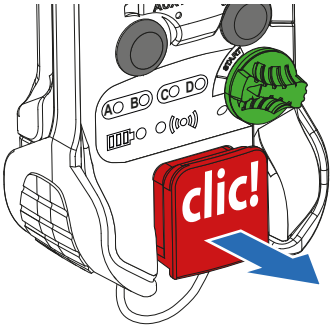
Power up the receiver, the amber power LED lights up.

2



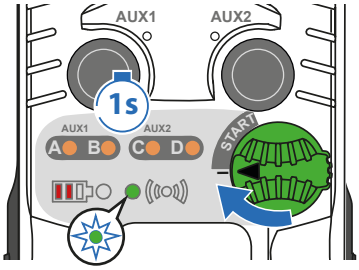
Insert two AA batteries into the back of the transmitter.

3



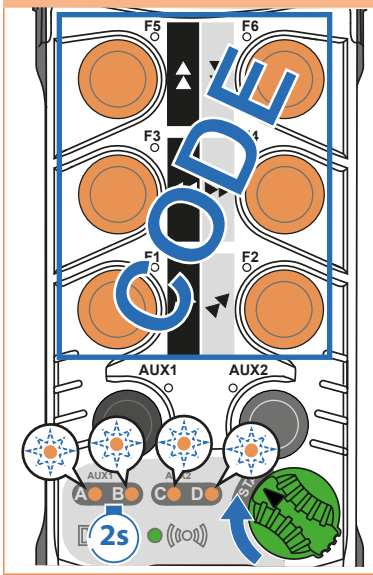
Unlock the transmitter by lifting the punch stop.

4



Start the transmitter by turning the **ON / OFF** switch to **I** (1) (2).
LEDs A, B, C, and D light up for 1 sec (initialization phase and self-test).
If there is no fault:
- The battery LED indicates the charge level
- The radio LED is continuously on.

5



If LEDs A, B, C, and D flash at the same time, the transmitter is locked by a protection sequence.
Re-enter the sequence (buttons **F1-F6**) and validate by turning the **ON / OFF** switch to **START**.
If the code is correct, initialization starts (the green LED lights up for 2 sec).

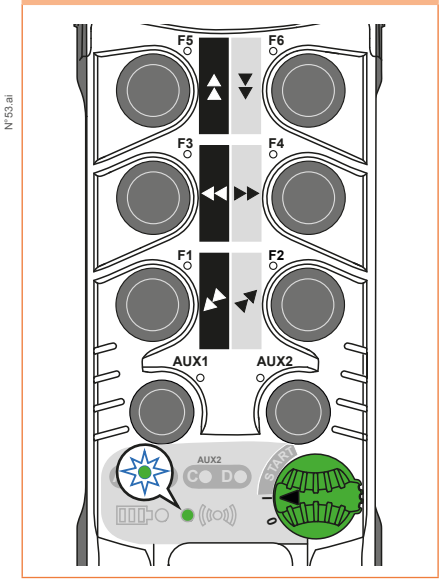
After three start-up attempts using the wrong code, the transmitter turns off.

To restart, turn the **ON / OFF** switch to **0**, then **I**.

If the code is incorrect, the red LED lights up for 2 sec.
The code can be restarted by turning the **ON / OFF** switch to **START**.

(1) If the **ON / OFF** switch is turned from **0** to **I** without unlocking the punch, LEDs A, B, C, and D are on steady and the battery and radio LEDs flash alternately.
A 20 second delay is enabled while waiting for unlock.

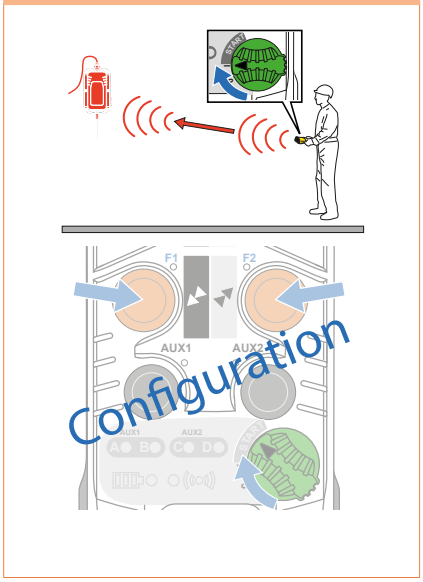
6



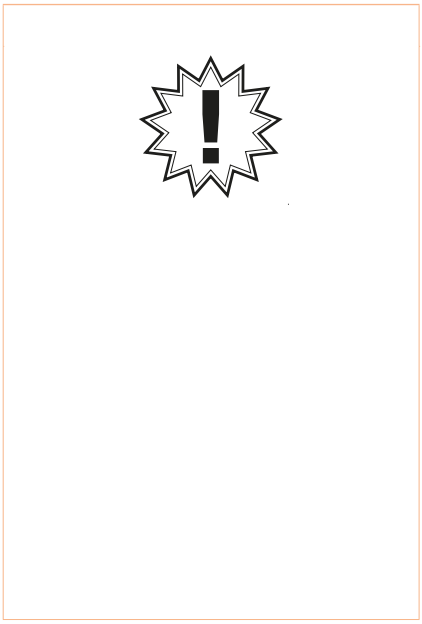
After successful initialization and if products have been configured:

- The radio LED is continuously on
- The battery LED indicates the charge level
- LEDs A and B resume the previous start status
- LEDs C and D resume the previous start status

7



- To start the radio link, turn the **ON / OFF** switch to **START**
- Or to go to product configuration, activation 2 buttons and turn the **ON / OFF** switch and **START** switch at the same time.



(2) In the event of initialization failure or when a fault appears on the transmitter, this is indicated by the various LEDs on the interface. For the fault type, refer to Chapter *7.3.3*.

7.1.2. Power-on Self-test (default OFF button)

After the transmitter is powered on (**ON / OFF** switch in position **I**), the buttons' OFF status is automatically checked.
If an error is detected (if one or more F1-F6, AUX1, AUX2 buttons remain pressed), the battery and radio LEDs flash simultaneously and the transmitter cannot be used.

7.2. Pairing

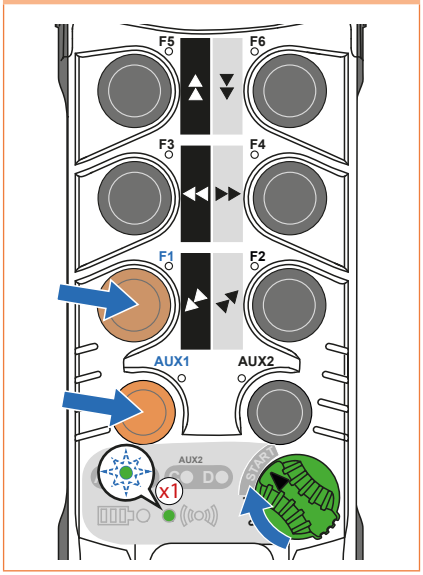
During a pairing, the transmitter and receiver exchange application settings and the radio channel over which they will communicate.

The procedure for a primary or secondary pairing is similar, only the mode selection (step 1) and corresponding visual indication differ.

Pairing Type	Access to Configuration Mode (via transmitter interface)	Visual Indication
Primary	AUX1 + F1	off ● ● x1
Secondary	AUX1 + F2	off ● ● x2

Products must be ready for configuration (if the transmitter and receiver are not powered on and unlocked, perform the steps in Chapter *7.1*).

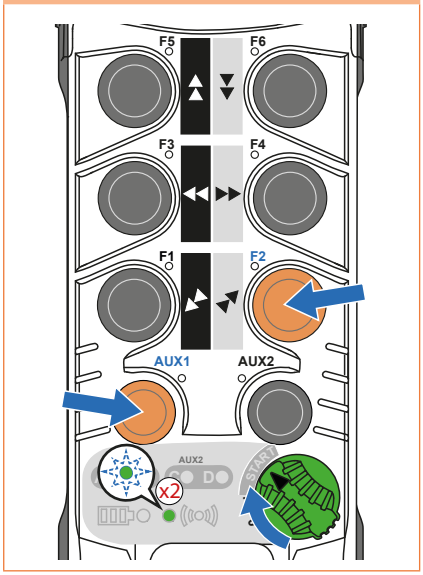
7.2.1. Primary Pairing 1



Press and hold the **AUX1 and F1** buttons and turn the **ON / OFF** switch to **START**:

- The battery LED turns off
- The radio LED flashes **1** time.

7.2.2. Secondary Pairing 1



Press and hold the **AUX1 and F2** buttons and turn the **ON / OFF** switch to **START**:

- The battery LED turns off
- The radio LED flashes **2** times.

A receiver can only be set up by the main pairing transmitter.

Pairing a second receiver automatically enables the operating mode with 2 receivers.
The Aux1 button becomes a bridge selector which is set
to selection mode A / B / A +B by default.

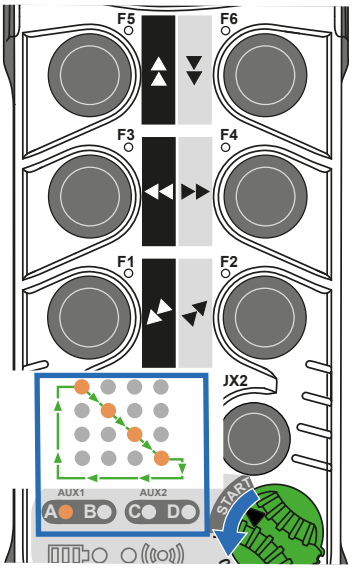
Steps 2-8 are the same for primary or secondary pairing.

1

Different step depending on pairing type

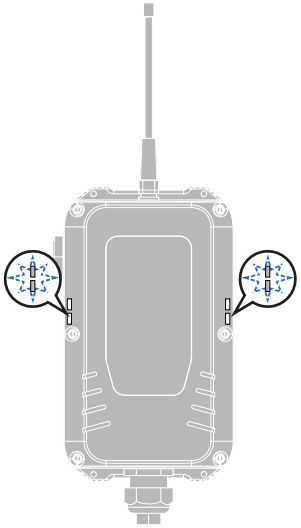
Primary Pairing: simultaneously press **AUX1 + F1**.
Secondary Pairing: simultaneously press **AUX1 + F2**.
Then, press and hold the 2 boutons, turn the **ON / OFF** switch to **START**.

2



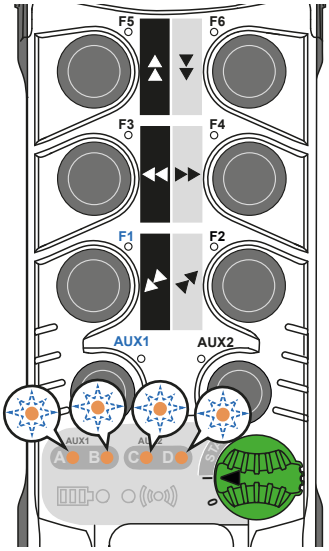
Release the **ON / OFF** switch to start pairing:
LEDs A, B, C, and D light up one after the other to indicate that a receiver search is in progress.

3



When a receiver is found, the lights flash quickly to indicate it has been selected and is ready for pairing.

4

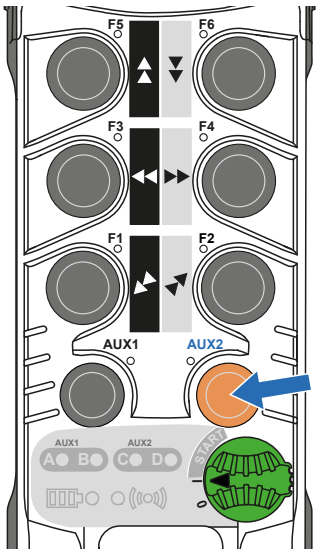


When receivers have been found, LEDs A, B, C, and D on the transmitter flash quickly.

⚠ Note: If no receivers are found, the battery LED lights up and the radio LED is off.

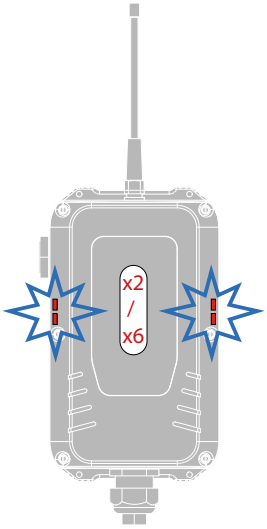
Turn the **ON / OFF** switch to **START** if is it the receiver that you want to pair and pass to step 6.
If not, pass to step 5.

5



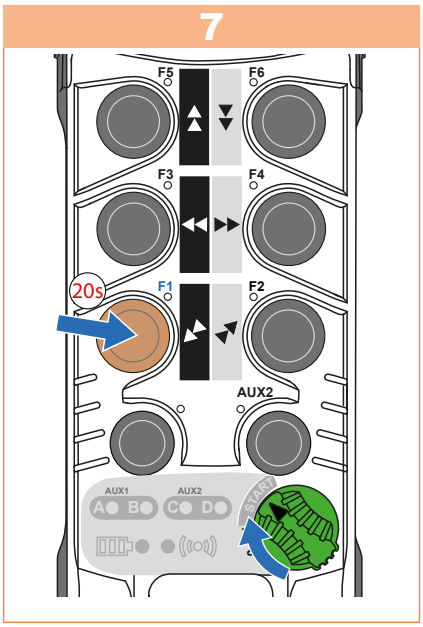
If several receivers have flashing white lights, it is possible to switch from one to the other by pressing the **AUX2** button : the preselected receiver is the one whose light flashes quickly.

6

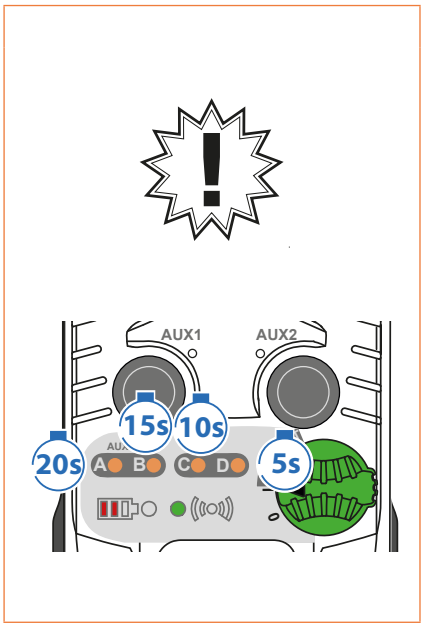


Wait for the receiver's built-in white light to flash quickly: from 2-6 periodic quick flashes.
Count the number of flashes.

⚠ The lights of other powered receivers within the same area may also flash slowly.

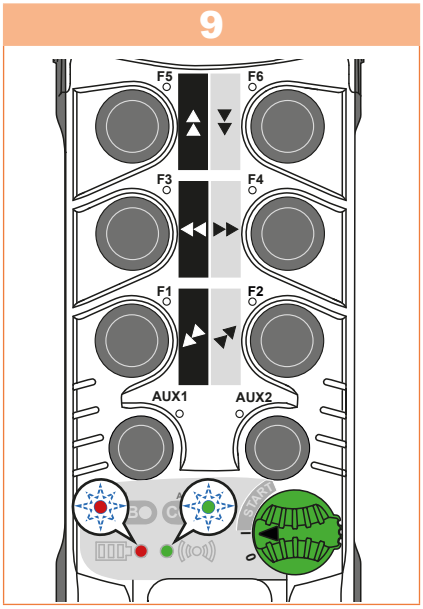


To start pairing, turn the **ON / OFF** switch to **START.** Within **20 sec**, press the **F1** button as many times as the number of receiver flashes.



LEDs A, B, C, and D indicate the remaining time by turning off successively every 5 sec in reverse alphabetical order: D after 5 sec, C after 10 sec, B after 15 sec, and A after 20 sec.

If the receiver does not receive the ID code within **20 sec** following switching the **ON / OFF** to **START**, the receiver aborts the pairing.



End of procedure:
- Battery and radio LEDs flash alternately.
- The receiver's white built-in light turns on for 2 sec
- And the products restart.

Each product knows the ID of one another, as well as the working channel.

It is possible to pair a second transmitter (emergency). To do so, follow the pairing procedure described in this paragraph. When the pairing of the second transmitter is done, the receiver knows that two transmitters are authorized to operate separately with the receiver.

If a third transmitter is paired to the same receiver, the last transmitter that started the receiver is retained and the second transmitter is replaced by the new one.

7.3. Transmitter UI

7.3.1. Safety Stop

The transmitter is equipped with a stop punch-type button. This button must be unlocked before turning the **ON / OFF** switch to **I**, otherwise the transmitter cannot be used.

To ensure that the stop punch works properly, the button must be manipulated once a year.

7.3.2. Transmitter LEDs

The transmitter is equipped with the following visual indicators:

- Power indicator (“battery”)
- Radio indicator
- Two indicators, A and B, for the AUX 1 button
- Two indicators, C and D, for the AUX 2 button.

7.3.2.1. Battery Indicator (red LED)

The red battery LED indicates the charge level. This level is visible after the transmitter is powered on (**ON / OFF** switch on **I**) or during operation of the radio control (radio transmission between the transmitter and the receiver). The table below shows the correspondence between LED status and the charge level of the transmitter:

Transmitter Status	Red “Battery” LED Status	Charge Status
Powering On	**Always OFF**	Battery charge is < 90%
	Flashes once periodically	Battery charge is between 10% and 90%
	Flashes quickly	Battery charge is < 10%
Operating	**Always OFF**	Battery charge is < 10%
	Flashes quickly	Battery charge is < 10%

When the battery charge level is less than 10%,
batteries must be replaced.

7.3.2.2. Radio indicator (green LED)

This visual indicator shows the status of the transmitter: powering it up or using it in radiocommunication:

Transmitter Status	Radio green LED status	Description
Powering On	**Always ON**	Transmitter ON
Operating	**Flashes regularly**	Transmitter during radio transmission

7.3.2.3. AUX Button Indicator

Each AUX1 or AUX2 button can be assimilated, depending on its configuration:

- to a 3-position or 2-position function switch
- or a bistable control
- or a maintained control

Button configuration changes from one type to another each time the corresponding AUX button is pressed and is indicated by a pair of two LEDs:

- LEDs A and B for the AUX1 button
- LEDs C and D for the AUX2 button.

When the transmitter is powered on, LEDs A, B, C, and D light up briefly during the initialization phase (2 sec), then resume the indication corresponding to the last positions saved before the last start performed previously.

Button configurations can be changed by setting, refer to Chapter 8.3 for details.

7.3.3. Default Signaling

When a fault appears on the transmitter, it is signaled via the various LEDs on its interface.

Transmitter LED Status	Description
The battery LED and radio LED flash alternately	Stop punch locked
The battery LED and radio LED flash simultaneously	Default buttons (F1 to F6, AUX1, AUX2) (remain pressed)
LED A or B flashes 5 times and the battery LED turns on	Transmitter/receiver link fault

7.3.4. Power Supply

The transmitter is equipped with 2 AA batteries. They are placed in the back slot of the transmitter.

7.4. Receiver Indicators, Relays, and Outputs

7.4.1. Receiver Visual Indicators

The receiver has 3 internal LEDs, these are used to indicate the following statuses:

- Amber power LED: indicates that the receiver is ON
- Green radio LED: indicates that the receiver is communicating with a transmitter
- Red diagnostic LED: indicates default statuses.

The receiver also has a light that is visible through the transparent cover. This allows you to see different operating phase statuses of the receiver:

Light Status	Safety Relay Position	Description
Light is OFF	Open	Receiver is free (“Tandem” mode)
Light is ON	Closed	Receiver is communicating with a transmitter
Light flashes once periodically	Open	Receiver is being used by one of the transmitters in “Tandem” mode
Light turns off once periodically	Closed	Receiver is being used by one of the transmitters in “Tandem” mode, but is not selected by the AUX1 switch
Light flashes continuously	Open	Receiver has entered pairing mode, and is waiting for a transmitter to pair
Light flashes quickly	Open	Pairing or configuration is in progress

7.4.2. Internal LEDs

These internal LEDs are visible when housing is open:

- One LED per function output which reflects the status of the function relay (red if relay is closed)
- One LED for the two safety relays which reflects the status of the safety relays (red if relay is closed)
- One power supply presence LED (amber)
- One radio LED which reflects the quality of radio reception (green)
- One fault LED which lights up if a fault is detected (red).

7.4.3. Receiver Buzzer

The receiver is equipped with 1 buzzer. This buzzer is activated for at least 2 sec when the start lever is activated and as long as it remains active.

7.4.4. Safety Relay

The receiver is equipped with 2 safety relays.
The two safety relays are active in operation as soon as the link is established between the transmitter and the receiver, as long as an active stop has not been received.

7.4.5. Function Relay Output Assignment

Function relay outputs are assigned to function buttons as shown below:

Function Buttons	K1 Relay	K2 Relay	K3 Relay	K4 Relay	K5 Relay	K6 Relay	K7 Relay	K8 Relay	K9 Relay	(K13)
F1 SV	■									
F1 DV	■		■							
F2 SV		■								
F2 DV		■	■							
F3 SV				■						
F3 DV				■		■				
F4 SV					■					
F4 DV					■	■				
F5 SV							■			
F5 DV							■		■	
F6 SV								■		
F6 DV								■	■	
BPON = Start										■

■ = active relay *Kx represents the physical designation of the relay on the board*

Note: When in "Tandem" mode in position A + B, function relays are conditioned by the sign-of-life exchanged between the receivers. If there is no sign-of-life, the function output relays contacts are open.

7.4.6. Sel1, Sel2, et Aux Relay Output

The selector relay outputs are assigned to the position selectors of the transmitter in several ways depending on the saved setting.

7.4.6.1. Aux Relay - AUX1 Function

Setting Switch 1	AUX Relay Behavior (K10)
Maintained control	Closed when Aux1 button is active
Bistable control	Every time the Aux1 button is pressed, the relay status changes (closed ↔ open)

In Tandem mode, the Aux relay statuses are as follows:

- When AUX1 button is positioned on A+B, the Aux Relay is always ON.
- In position A or B, the Aux Relay can be activated during 30 sec if there is at least one button press in first position and momentarily the **ON/OFF** switch has been push to **START**. The relay's hold time is reactived as soon as a button is pressed in the first speed.The Aux Relay is deactivated as soon as a button is pressed in the second speed.

7.4.6.2. Sel1 and Sel2 Relay - AUX2 Function

Setting Switch 1	RSel1 Relay Behavior (K11)	RSel2 Relay Behavior (K12)
Maintained control	ON when AUX2 auxiliary button is active	Reverse of relay RSel1 (K11)
Bistable control (C/0)	Each time the AUX2 button is pressed, the relay status changes (OFF ↔ ON)	Reverse of relay RSel1 (K11)
2 Position Selector Mode (C/D)	Pos 0: OFF Pos 1: ON	Reverse of relay RSel1 (K11)
2 Position Selector Mode (C/D/C + D)	Pos 0: ON Pos 1: OFF Pos 2: ON	Pos 0: OFF Pos 1: ON Pos 2: ON
3 Position Selector Mode (C/D/0)	Pos 0: ON Pos 1: OFF Pos 2: OFF	Pos 0: OFF Pos 1: ON Pos 2: OFF

Note: *when the radio link is stopped (safety relay open), relays RSel1 and RSel2 are open.*

7.4.7. Output Interlock

Interlocks are not fixed and cannot be configured. Pressing 2 function buttons in the same row disables the 2 function button commands.
Below are cases of interlocks that place output relays in the OFF state.

	K1 Relay	K2 Relay	K3 Relay	K4 Relay	K5 Relay	K6 Relay	K7 Relay	K8 Relay	K9 Relay
K1 Relay	NA	N							
K2 Relay	N	NA							
K3 Relay			NA						
K4 Relay				NA	N				
K5 Relay				N	NA				
K6 Relay						NA			
K7 Relay							NA	N	
K8 Relay							N	NA	
K9 Relay									NA

N = Relay OFF NA = Not Applicable

When an interlock is active, the control function common relay is also turned OFF. Cases are as follows:

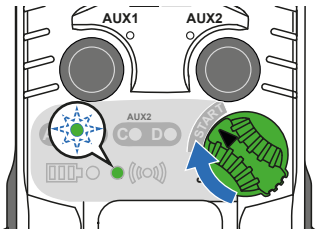
- Interlock K4/K5, so K6 = OFF
- Interlock K7/K8, so K9 = OFF
- Interlock K10/K11, so K12 = OFF.

7.5. Operation in Standard Mode

For a transmitter to start a receiver, the products must be paired first. Each product has its own ID code, and each knows the code of its contact.
These ID codes allow identification with the recipient of the message.

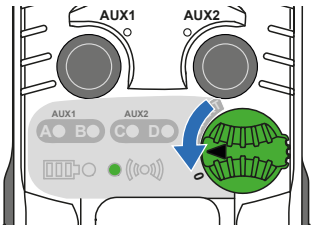
Products must be ready (if the transmitter and receiver are not powered on and unlocked, perform the steps in Chapter *7.1*).

1



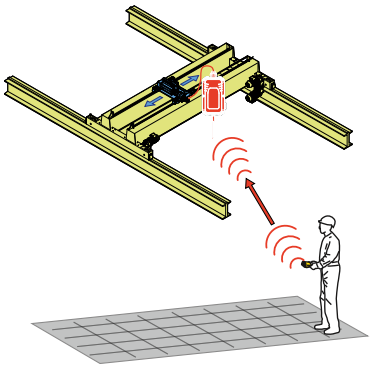
Turn the **ON / OFF** switch to **START** to start the radio linking:
- The radio LED flashes
- The receiver's safety relays are active.

2



Release the **ON / OFF** switch.

3

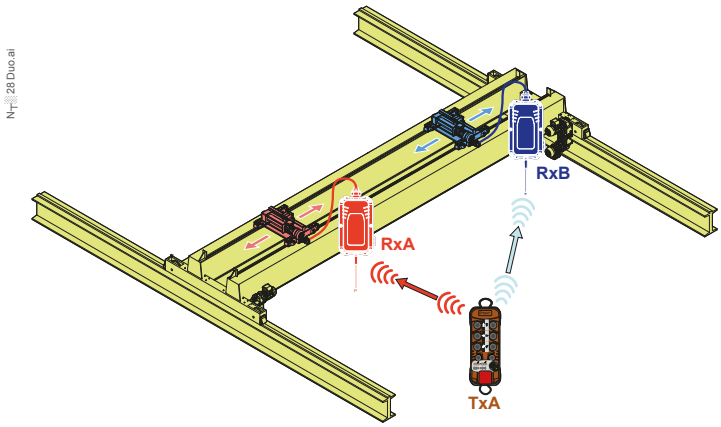


Use the remote control to steer your equipment.

7.6. Operation in Tandem Mode

This feature makes it possible to control two devices synchronously with a single transmitter and two receivers (one main and one secondary). This configuration can be symmetrical with another transmitter located within the same area.
The AUX1 auxiliary button on the transmitter is used to select the steering type: Independent operation (standard mode one transmitter and only one of the two receivers) or operation of the two associated receivers at the same time:

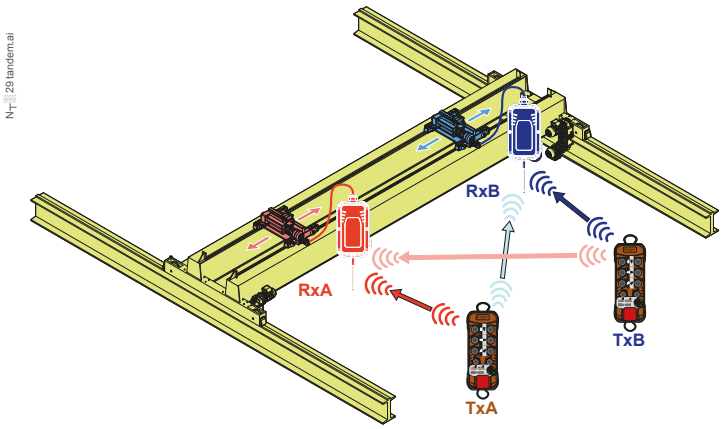
Tandem mode one transmitter (TxA) with two receivers (RxA and RxB)
The AUX1 auxiliary button on the transmitter is used to select the steering type: Independent operation (standard mode one transmitter and only one of the two TxA-RxA or TxA-RxB receivers) or operation of the two associated receivers at the same time (TxA - RxA + RxB).



Tandem mode two transmitters (TxA, TxB) and two receivers (RxA, RxB)
In this configuration, the TxA transmitter will be previously associated with the RxA receiver (primary pairing) and then associated with the secondary receiver RxB in the vicinity (secondary pairing). By symmetry, the TxB transmitter will have RxB as the primary receiver, while RxA will be the secondary receiver.

Pairing the second receiver automatically activates the operating mode with 2 receivers.
The Aux1 button then becomes a bridge selector. By default, this is set to selection mode A/B/A + B.

The RxA or RxB receiver can only be set by the primary pairing transmitter.



The AUX1 button can be configured and its configuration is indicated by the pair of LEDs A and B, refer to Chapter *8.3* for details.

7.6.1. Startup in Tandem Mode

In order to start in tandem mode, both receivers must be “free” That is, they are in safety mode and listening to the primary transmitter and neighboring transmitter.
To start in Tandem mode, follow the three steps below:

- Switch on the products: follow the instructions described in Chapter *7.1*.
- If starting in Tandem mode, check that the AUX1 button is set to selection A+B (LEDs A and B continuously ON). Otherwise press the AUX1 button as many times as necessary to reach this selection.

> It is possible to control one receiver at a time. In this case, the AUX1 button must be in position A or B before START.

- To start operating, turn the **ON / OFF** switch to **START**, then release it.

When the receiver(s) start in tandem mode, the RAux relay on the receiver(s) is turned ON.
This relay reflects the release status of the receiver.
Status of the RAux relay in Tandem:

- OFF: Free
- ON: Busy.

After the receiver has been switched on, it is in the free position, the RAux relay is open.
When a receiver is in safety mode and is busy, the internal light of the receiver flashes at a rate of 0.5 sec ON and 2 sec OFF.

7.6.2. Pairing One Transmitter to Two Receivers

For Tandem operation of one transmitter (Tx) with two receivers (RxA and RxB), follow the steps below:

- Switch on the Tx, RxA and RxB products.
- Perform the primary pairing of the Tx transmitter with the RxA receiver. By default, the AUX1 button is automatically configured in A/B/A + B selection mode.
- Set up the RxA receiver.
- Perform the secondary pairing of the Tx transmitter with the RxA receiver.

> In this configuration, the setting of the RxB secondary receiver cannot be carried out by the Tx transmitter.

> The untimely loss of the radio link during operation in A + B selection will stop the steering.

7.6.3. Pairing Two Transmitters and Two Receivers

For operation in Tandem mode with two transmitters (TxA and TxB) with two receivers (RxA and RxB) in the same area, follow the steps below:

- Switch on the TxA, RxA products.
- Perform the main pairing of the TxA transmitter with the RxA receiver.
- Set up the RxA receiver. By default, the AUX1 button on the TxA transmitter is automatically configured to A/B/A + B selection mode.
- Switch on the TxB, RxB products.
- Perform the main pairing of the TxB transmitter with the RxB receiver.
- Set up the RxB receiver. By default, the AUX1 button on the TxB transmitter is automatically configured in A/B/A + B selection mode.
- Re-pair the TxA transmitter with its second TxB receiver.
- Re-pair the TxB transmitter with its second TxA receiver.

> The untimely loss of the radio link during operation in A + B selection will stop the steering.

7.6.4. Auto Release

After a safety shutdown or power failure, the receivers are automatically released.
The receivers are again available and listening to the 2 transmitters.

7.6.5. Voluntary Release

Depending on the settings it is possible to manually release the receivers, to:

- release them for another use, or
- keep them, but make them unavailable to the neighboring transmitter.

When the receivers are not released, they keep the primary transmitter as the only contact.
A receiver can be released before the transmitter is turned off (safety stop or turning the **ON / OFF** switch to OFF):

- Hold the AUX1 button for 4 seconds: the transmitter sends release frames to the receiver. The receiver acknowledges the release by switching off the respective RAux relay.
- After 4 seconds, the A, B, C, and D LEDs turn off.

In some cases, release may not feasible (interference, receiver too far away), in this case the receiver remains busy.
Release is still possible by cutting the power supply to the receiver.

Caution, a receiver that has not been released can only be restarted by the last transmitter that used it.
For example, a primary receiver started by the primary transmitter but without release, cannot be released by the backup transmitter.

7.7. Stopping Products

7.7.1. Stopping in Standard Mode

To stop, turn the transmitter's **ON / OFF** switch to **0.**
Stopping is also possible by pressing the stop button on the transmitter.
When the radio control turns off:

- All transmitter LEDs are off
- The receiver's safety relays are in an idle state

7.7.2. Stopping in Tandem Mode

Before switching off a transmitter (**ON / OFF** switch to **0**), release the paired receiver(s).
Then stop the transmitter(s).

8. Product Settings

8.1. Access to Settings

All of the following settings must be configured after the primary pairing between the transmitter and the receiver. This operation must be done with the receiver powered on so that it can save the new settings.

8.1.1. Setting Entry

In Setting mode, the behavior of the battery and radio LEDs is as follows:

Transmitter Indicator Status	Description
The red battery LED and the green radio LED flash according to the Setting mode	A setting entry is active. The number of flashes of the battery LED/radio LED pair indicates the setting being modified as long as the **ON / OFF** switch is maintained in the **START** position. After releasing the switch, the battery and radio LEDs are off.

8.1.2. In Settings

The correspondence of the number of flashes of the radio LED according to the current setting is described below:

Status of transmitter's green radio LED	Description
Flashes once periodically	Primary Pairing
Flashes twice periodically	Secondary Pairing
Flashes 3 times periodically	Setting the AUX1 and AUX2 buttons
Flashes 4 times periodically	Setting the primary/secondary receiver data
Flashes 5 times periodically	Standby setting
Flashes 6 times periodically	Radio power setting
Flashes 7 times periodically	Protection sequence setting
Flashes 8 times periodically	Radio setting
Flashes 9 times periodically	"Tandem" mode release setting
Flashes 10 times periodically	Setting the sign-of-life mode "Duo" and "Tandem"
Flashes 11 times periodically	Buzzer setting

8.1.3. In Pairing

During pairing or after validation of a new setting, the battery and radio LEDs behave as follows:

Transmitter Indicator Status	Description
The red battery LED and the green radio LED flash alternately	Pairing in progress, or New setting sent to the receiver

When the sequence is complete, the transmitter will restart.

8.2. Discarding a Setting

It is possible to stop a setting at any time by turning the **ON / OFF** switch to **0** or by pressing the stop punch button.

8.3. Auxiliary Button Configuration (AUX1 + AUX2)

The transmitter's auxiliary pushbuttons can be configured in several ways according to needs: They can be associated with the Relay's function relays Raux, RSel1, and RSel2.
The **AUX1** and **AUX2** can be configured as follows:

- Pushbutton with maintained control (AUX1 and AUX2)
- Bistable button (AUX1 and AUX2)
- Bridge selector button (Tandem AUX1)
- Relay selector button (AUX2).

LEDs A and B indicate the current setting of the AUX1 button and LEDs C and D indicate the setting of the AUX2 button. The settings and corresponding light signals are listed in the table below:

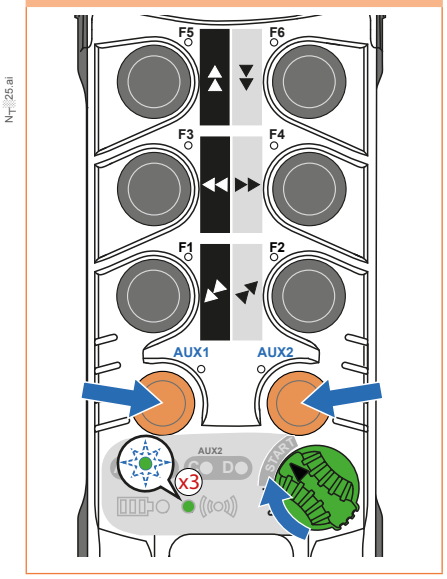
AUX1 button		LED A	LED B
Maintained control (RAux relay)		continuous	OFF
Bistable control (RAux relay)		flashing	OFF
Tandem mode	A/B selection (1)	A and B flashing alternately	
	A/B/A + B selection (1)	ON sequence: A, B, A + B	
	Continuous selection A (1)	A alone, then B flashing stealthily	
	Continuous selection B (1)	B alone, then A flashing stealthily	
	Continuous A + B selection (1)	continuous	continuous
AUX2 button		**LED C**	**LED D**
Maintained control (RSel1 relay)		continuous	OFF
Bistable control (RSel1 relay) (2)		flashing	OFF
Selection C (RSel1 relay)/D (RSel2 relay)		C and D alternately(3)	
Selection C (RSel1 relay)/D (RSel2 relay)/C + D		ON sequence: C, D, C + D	
Selection C (RSel1 relay)/D (RSel2 relay)/No relay		ON sequence: C, D, 0	

(1) *Choice only possible on a transmitter associated with 2 receivers. The selection of receiver A and receiver B is then made by software (no relay) and based on the position of the Aux 1 switch and the A and/or B LED.*

(2) *When AUX maintained control:*

- RSel1 is active when the AUX2 button is pressed
- RSel2 is active when the AUX2 button is released.

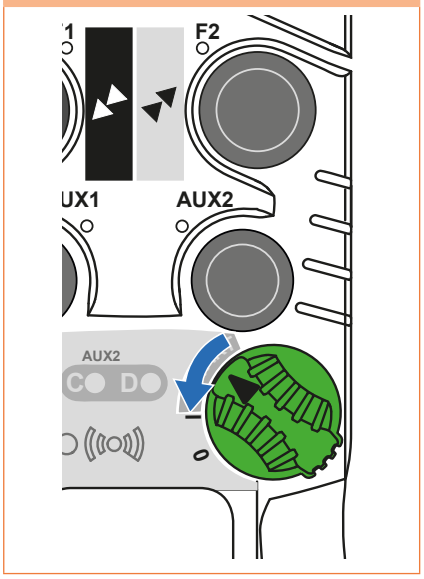
1



Press and hold the AUX1 and AUX2 buttons and turn the **ON / OFF** switch to **START**:

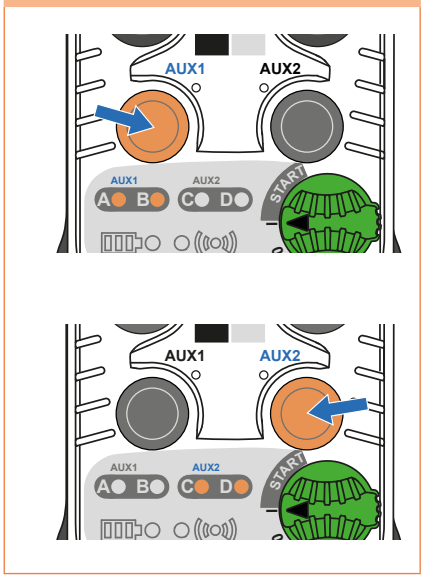
- The battery LED turns off
- The radio LED flashes **3** times.

2



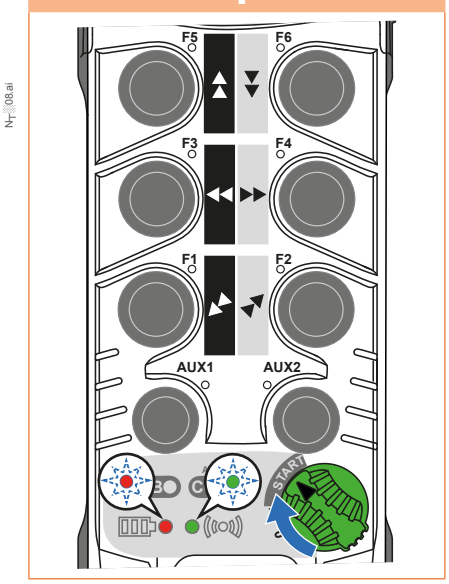
Release the **ON / OFF** switch to start the configuration.

3



Each time one of the **AUX1** or **AUX2** buttons is pressed, the lighting sequence of the 2 corresponding LEDs indicates the operating mode.

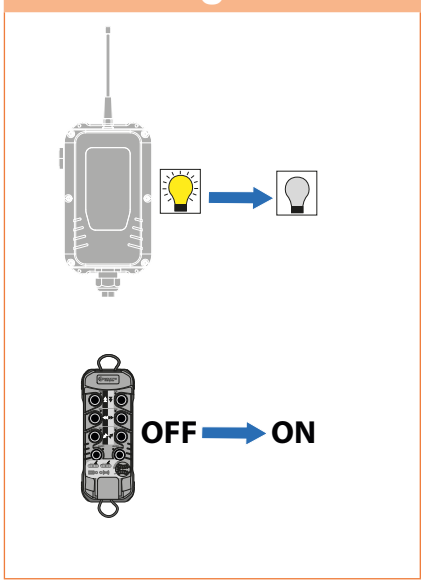
4



When the desired value is set, confirm it by turning the **ON / OFF** switch to **START**.
During transmission:

- Battery and radio LEDs flash alternately
- Receiver light turns on.

5



End of transmission:

- Receiver light turns off
- Transmitter shuts down

and restarts.

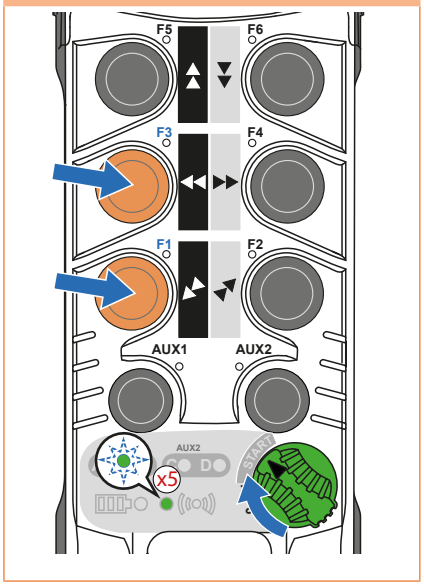
Note:

- If the auxiliary button is configured in receiver selection mode and the operator changes it to a standard or bistable function button, this will automatically disable the current “Tandem” mode and erase the IDs (ID code and channel) of the second receiver.
- For maintained and bistable control modes of operation of the auxiliary button Aux2, the Rsel2 relay is activated instead of relay Rsel1.

8.4. Sleep Mode Configuration (F1 + F3)

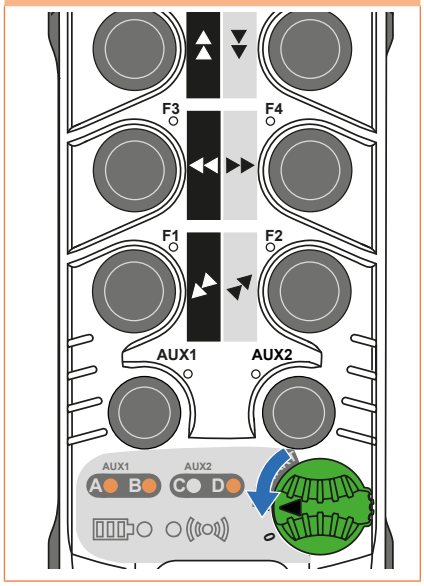
The transmitter is put into standby mode if no function button has been pressed in the set time. The sleep time can be set from 1 to 99 minutes maximum and from 10 to 59 seconds.
The factory setting is 4 minutes. Products must be ready for configuration (perform steps in Chapter *7.1*).

1



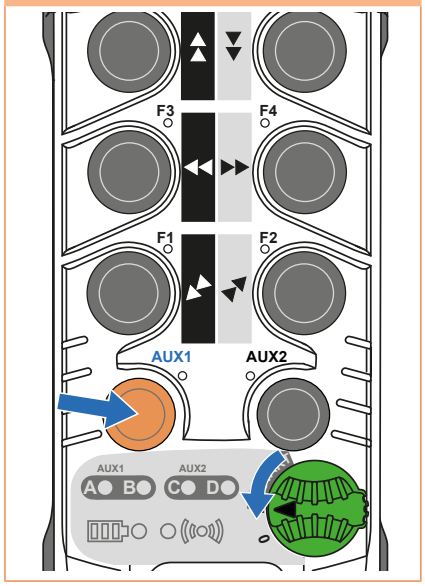
Press and hold the **F1 and F3** buttons and turn the **ON / OFF** switch to **START**:
- The battery LED turns off
- The radio LED flashes **5** times.

2



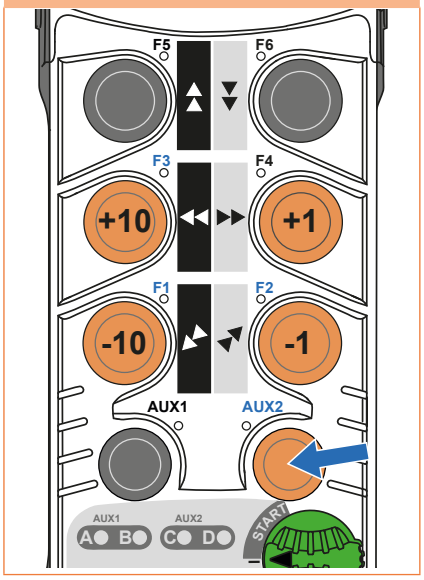
Release the **ON / OFF** switch:
- LED D indicates the unit of time (minutes = off, seconds = on)
- LED C indicates whether standby mode is active (off) or not (on)
- The value is given by LEDs A and B (A tenth and B unit).

3



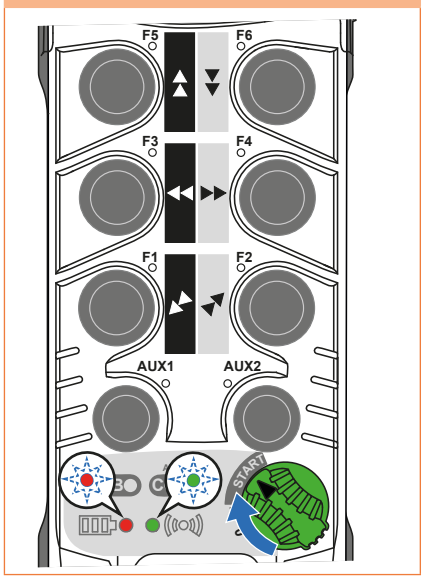
To disable sleep mode, press the **AUX1** button:
- LED C turns on
- LEDs A, B, and D are off.

4



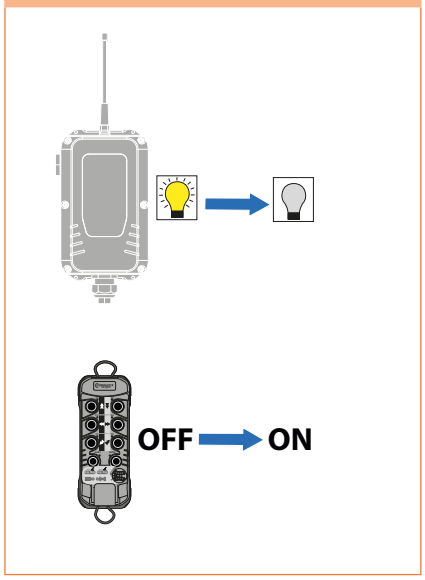
Set the desired value:
- Select the unit of time using the AUX2 button (min or sec)
- Re-enter the value: decrement/increment the tenths with F1/F3 and the units with F2/F5.

5



Confirm the value by turning the **ON / OFF** switch to **START**.
During transmission:
- Battery and radio LEDs flash alternately
- Receiver light turns on.

6



End of transmission:
- Receiver light turns off
- Transmitter shuts down and restarts.

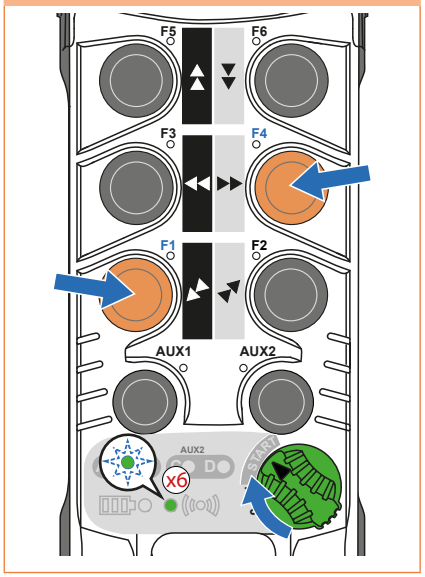
8.5. Radio Power Configuration (F1 + F4)

By default, the transmitter and receiver modules analyze the quality of the signal received from both sides and adapt the power level according to the environment. However, it is possible to set the radio power of the products. Power is factory set to Fixed Level 4. There are 2 power modes:

- **Auto** LED D is continuously on and A, B, and C are off
- **Fixed Manual**; LED D is off and LED A indicates the value of the power set in the range 1 (min) to 4 (max) by successive flashing.

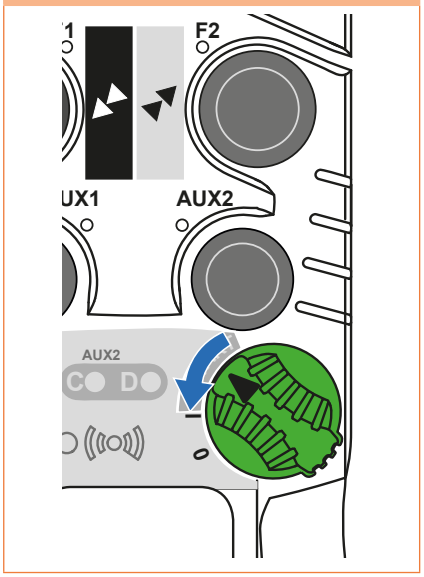
Products must be ready for configuration (perform steps in Chapter *7.1*).

1



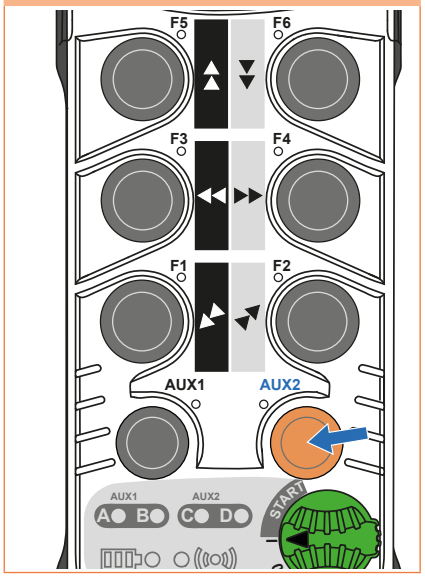
Press and hold the **F1 and F4** buttons and turn the **ON / OFF** switch to **START**:
- The battery LED turns off
- The radio LED flashes **6** times.

2



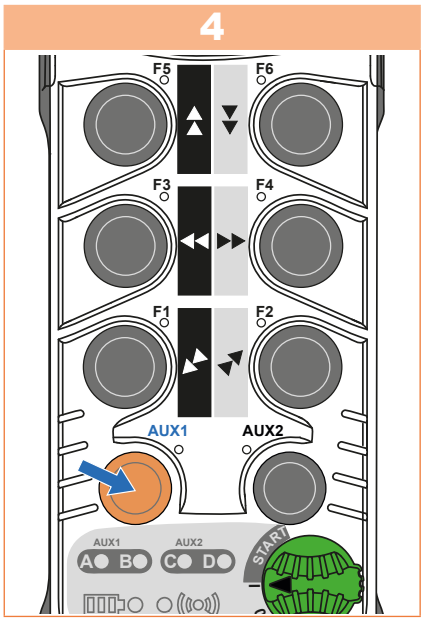
Release the **ON / OFF** switch to start the configuration.

3



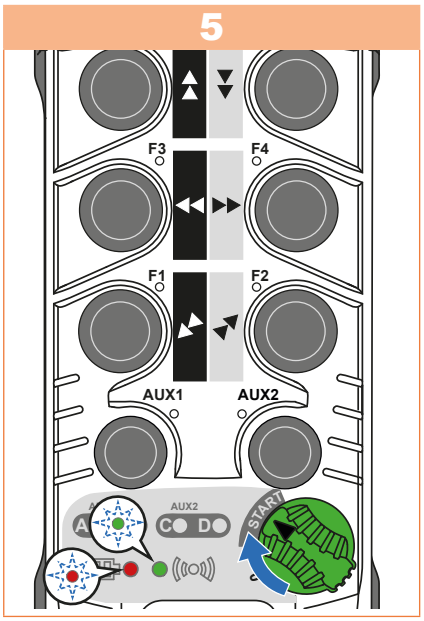
Press the **AUX2** button to enable automatic or manual mode.

4



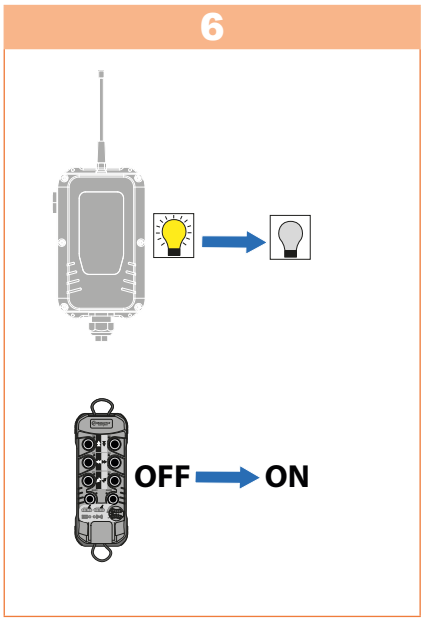
Press the **AUX1** button to scroll the power from 1 to 4.

5



Confirm the value by turning the **ON / OFF** switch to **START**.
During transmission:
- Battery and radio LEDs flash alternately
- Receiver light turns on.

6

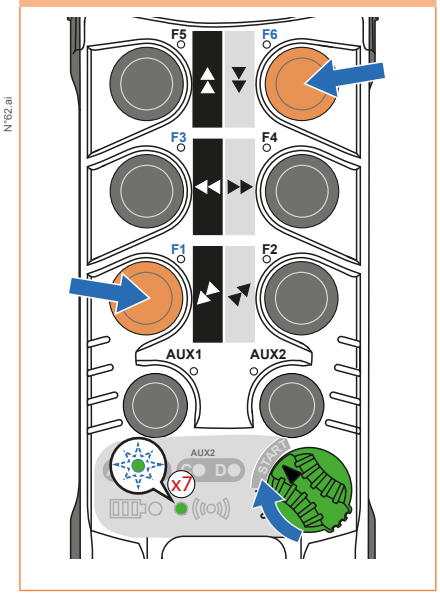


End of transmission:
- Receiver light turns off
- Transmitter shuts down and restarts.

8.6. Protection Sequence Configuration (code with F1 – F6)

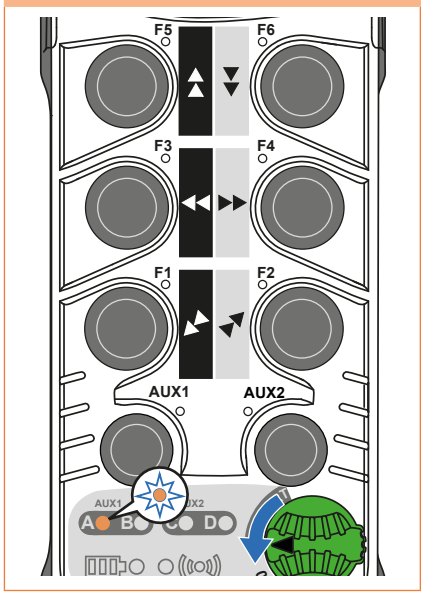
This setting protects the products with a code and prevents unauthorized use of the transmitter. The code represents a sequence obtained by **a combination of the six F1 to F6 buttons**.
The button sequence can be variable in length, from a minimum of 2 buttons to a maximum of 6 buttons.
It is possible to use the same button several times. Protection is not enabled in the factory setting.
Products must be ready for configuration (if the transmitter and receiver are not powered on and unlocked, perform the steps in Chapter ***7.1***).

1



Press and hold the **F1 and F6** buttons and turn the **ON / OFF** switch to **START**:
- The battery LED turns off
- The radio LED flashes **7** times.

2



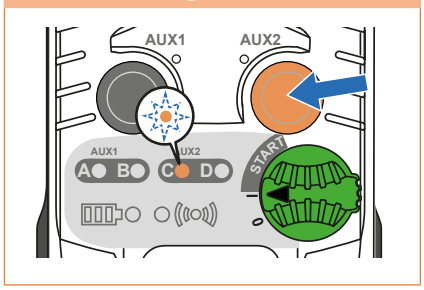
Release the **ON / OFF** switch to start the configuration.
The continuously on LED A indicates that the transmitter is waiting for the new sequence.

Two protection types are available: at product start-up or only on settings and pairing functions.

Each time the **AUX2** boutton is pressed, the **LED C** lights up and turns off to activate or desactivate the protection sequence on start-up or only on settings and pairing.

Active protection at start-up

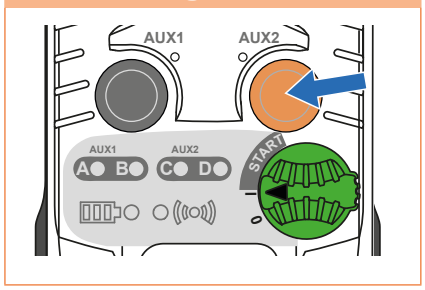
3 A



When **LED C** lights on: the protection is active au start-up.

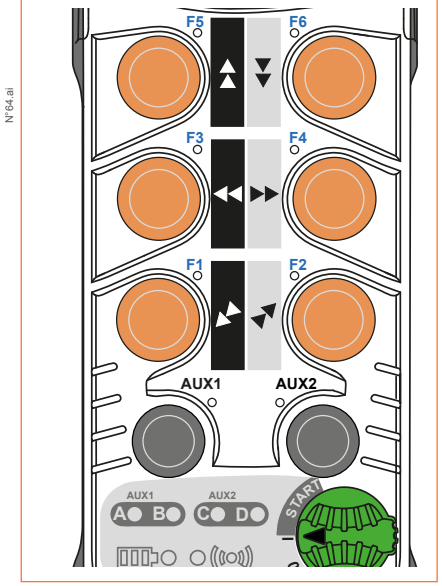
Active protection only on settings and pairing

3 B



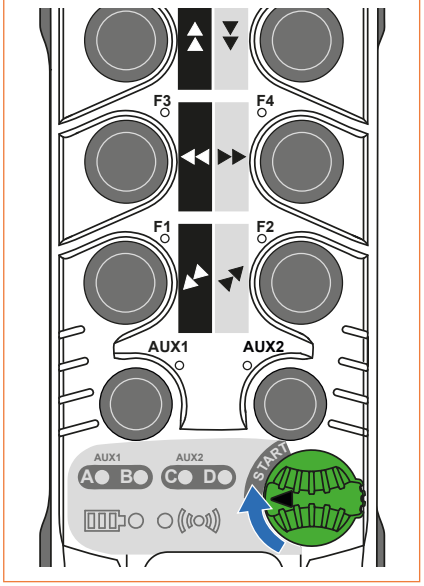
When **LED C** is off: the protection is active only on the settings and pairing functions.

4



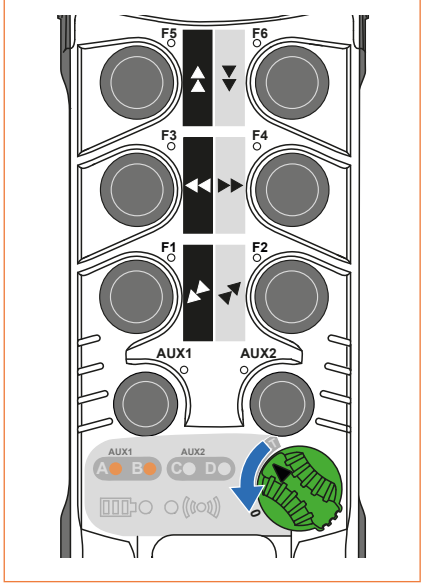
Re-enter the code by pressing successively on the buttons (chosen sequence): LED A turns off then on after each pressing of the F1 to F6 button.
Do not press any button to clear the previous code and disable it at power up.

5



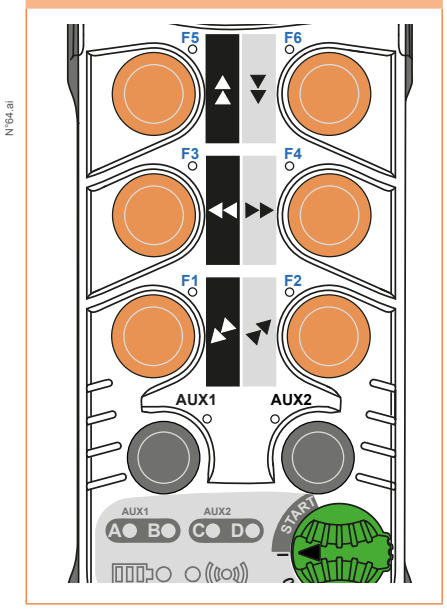
At the end of the sequence, confirm by turning the **ON / OFF** switch to **START**.
Note: If the sequence entered is incorrect (length), you are returned to Step 2.

6



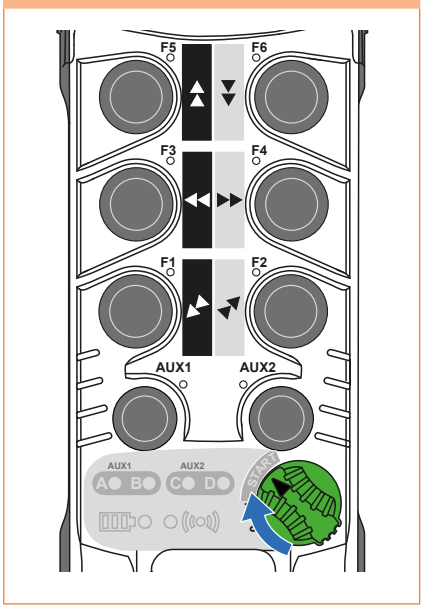
Release the **ON / OFF** switch: LEDs A and B are continuously on to indicate that the code must be re-entered to confirm it.

7



Re-enter the sequence: LEDs A and B go out after each pressing of the **F1 to F6** function buttons.

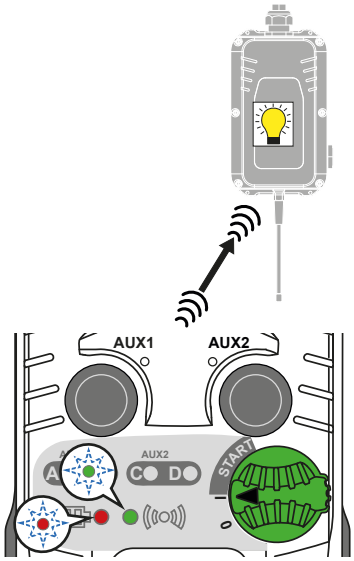
8



Confirm by turning the **ON / OFF** switch to **START**.

9

N°69.ai



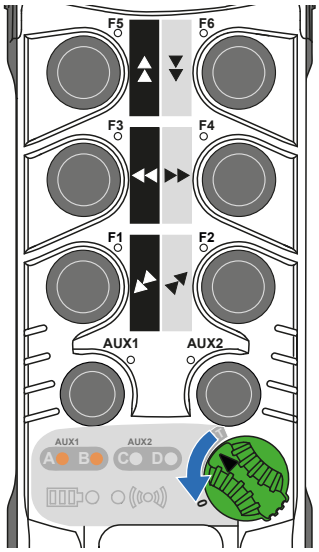
If the two codes entered are the same, the sequence is transmitted to the receiver.
During transmission:
- Battery and radio LEDs flash alternately
- Receiver light turns on.

When the sequence is incorrect, the red LED lights up for 2 sec and LEDs A, B, C and D flash.

If the second code is different from the first code, resume Step 2.

10

N°66.ai



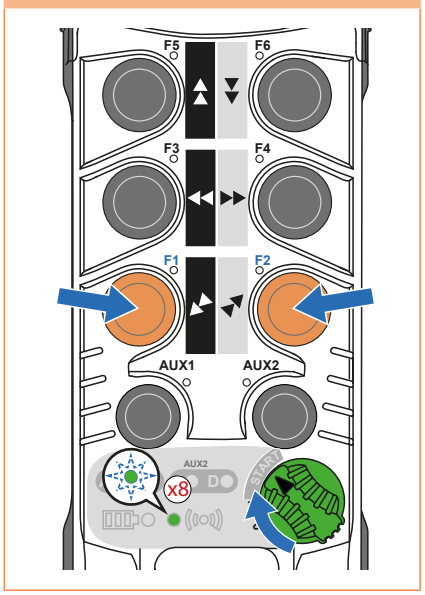
End of transmission:
- Receiver light turns off
- Transmitter shuts down and restarts.

8.7. RF Channel Configuration (F1 + F2)

8.7.1. Fixed Radio Channel Setting

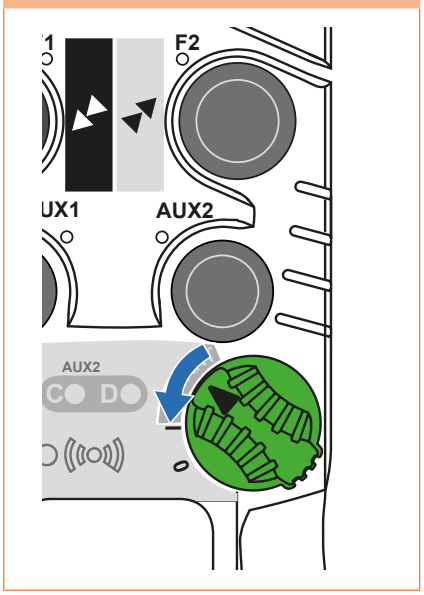
The radio channel of the transmitter and receiver can be set from **1-92** and the number of flashes of LEDs A and B indicate the radio channel number.
Products must be ready for configuration (if the transmitter and receiver are not powered on and unlocked, perform the steps in Chapter *7.1*).

1



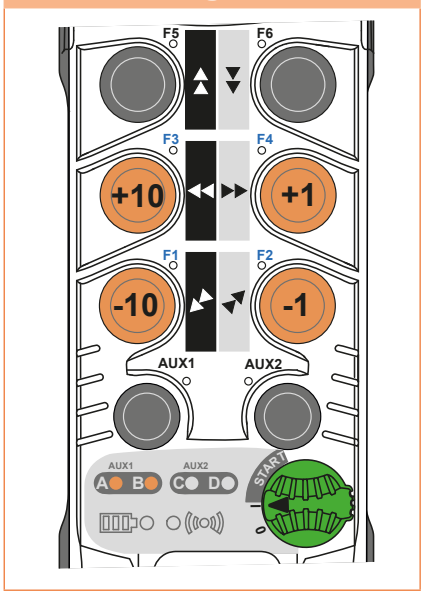
Press and hold the **F1 and F2** buttons and turn the **ON / OFF** switch to **START**:
- The battery LED turns off
- The radio LED flashes **8** times.
- LEDs C and D are off.

2



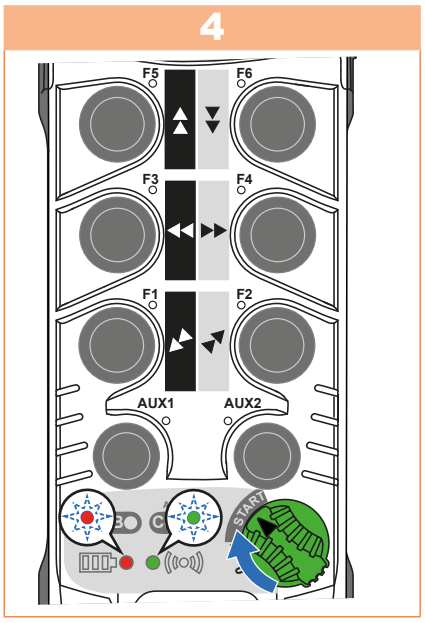
Release the **ON / OFF** switch to start the configuration.

3



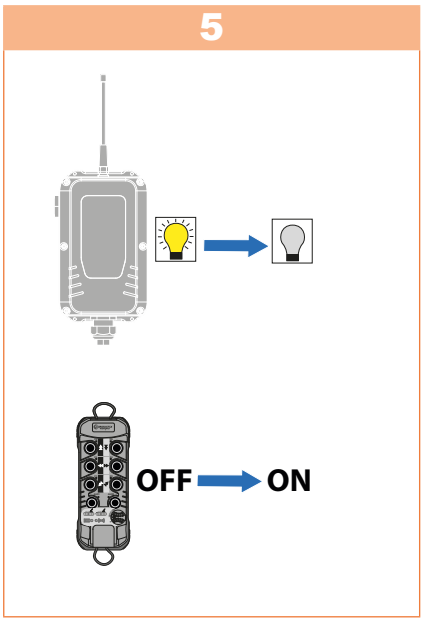
Set the channel:
- Decrement/increment the tenths with F1/F3
- Decrement/increment the units with F2/F4.

4



Confirm the channel by turning the **ON / OFF** switch to **START**. During transmission:
- Battery and radio LEDs flash alternately
- Receiver light turns on.

5

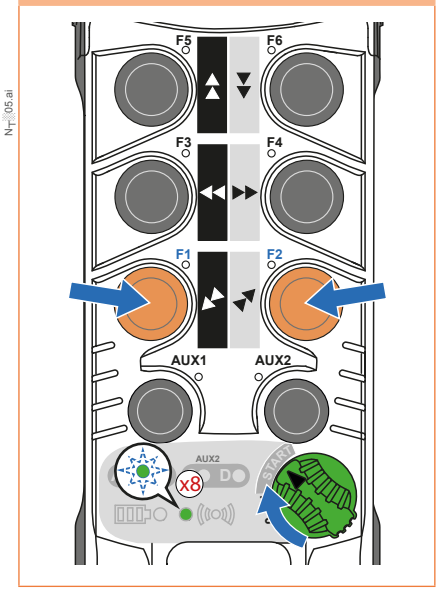


End of transmission:
- Receiver light turns off
- Transmitter shuts down and restarts.

8.7.2. Channel Auto Selection Setting (Aux2=Scanner)

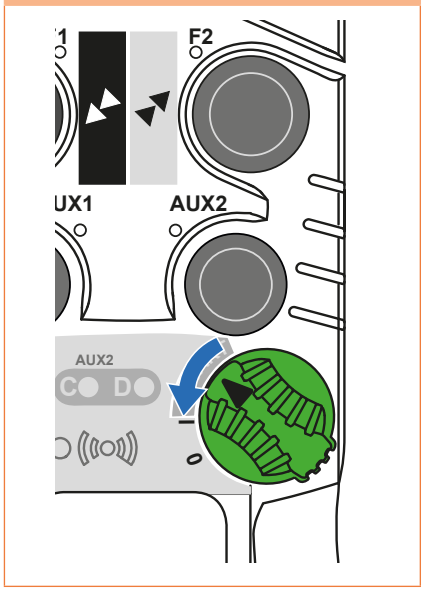
The **AUX2 function** scans the frequency band used in the area where products are installed and identifies channels not used in this area by other equipment. The scan must be started at the location of the transmitter and receiver and when there is the most “radio” activity in the area.
Products must be ready for configuration (if the transmitter and receiver are not powered on and unlocked, perform the steps in Chapter ***7.1***).

1



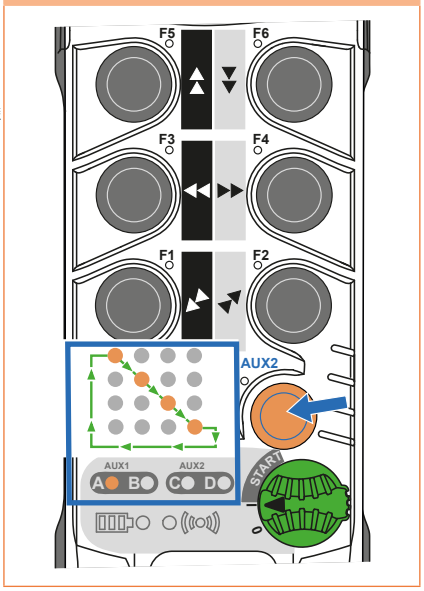
Press and hold the **F1 and F2** buttons and turn the **ON / OFF** switch to **START**:
- The battery LED turns off
- The radio LED flashes **8** times.

2



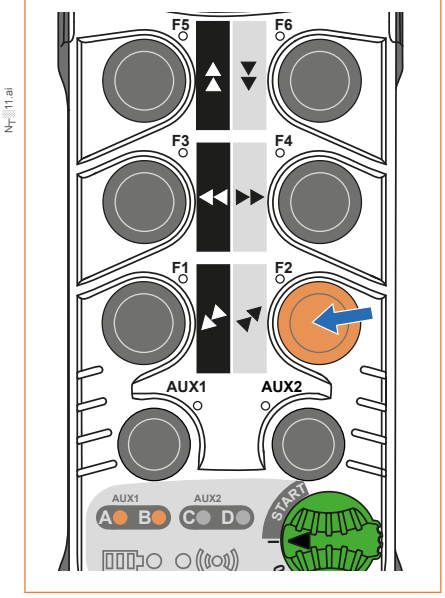
LED A indicates the tenths and LED B the units of the current channel. LEDs C and D are off Release the **ON / OFF** switch to start the configuration.

3



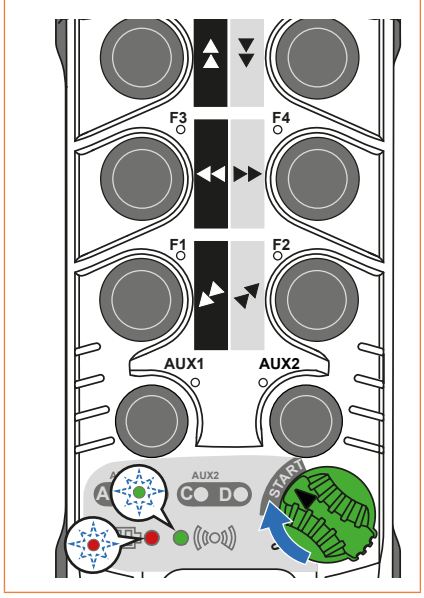
Press the **AUX2** button to start the procedure. During the scan, LEDs A, B, C, and D flash one after the other (one after the other).

4



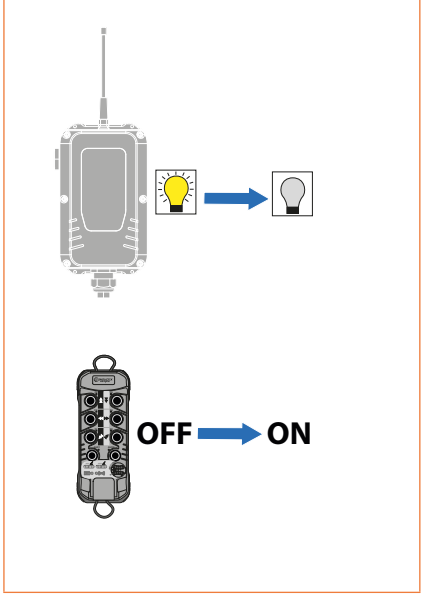
Press either button on the transmitter to stop the scan. LED A indicates the tenths and B the units of the best radio channel found.

5



Confirm the channel by turning the **ON / OFF** switch to **START**. During transmission:
- Battery and radio LEDs flash alternately
- Receiver light turns on.

6

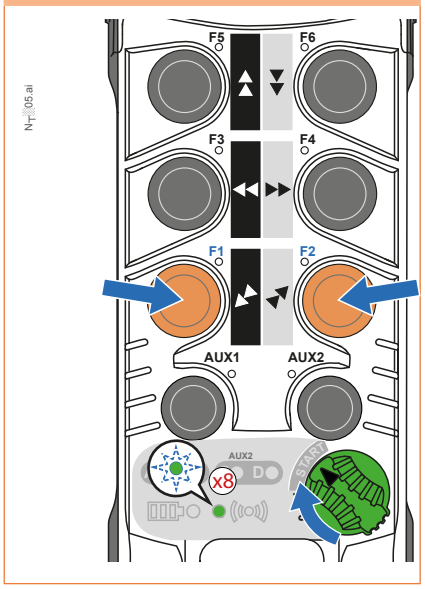


End of transmission:
- Receiver light turns off
- Transmitter shuts down and restarts.

8.7.3. Free Channel Startup Setting (F5)

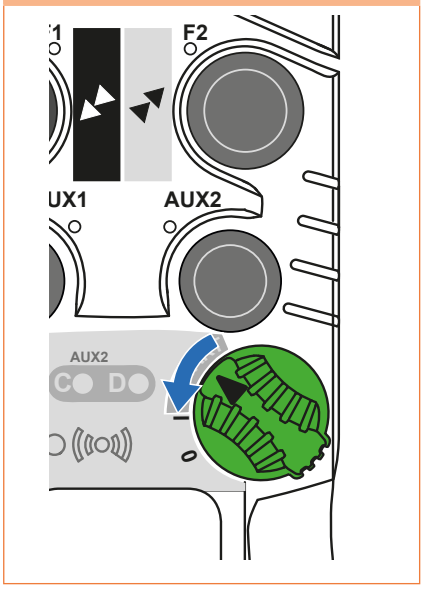
When the receiver is not communicating with the associated transmitter, it alternately listens to its current channel and the other channels of the frequency band. It then determines the channel that seems to be the best. **Function F5** informs the transmitter at start-up to use the best available channel selected by the receiver. Products must be ready for configuration (if the transmitter and receiver are not powered on and unlocked, perform the steps in Chapter ***7.1***).

1



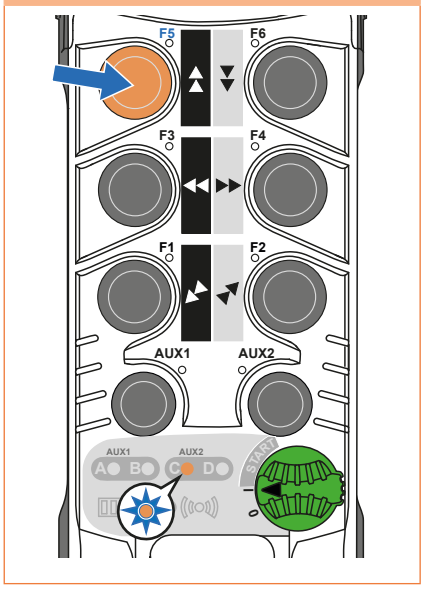
Press and hold the **F1 and F2** buttons and turn the **ON / OFF** switch to **START**:
- The battery LED turns off
- The radio LED flashes **8** times.

2



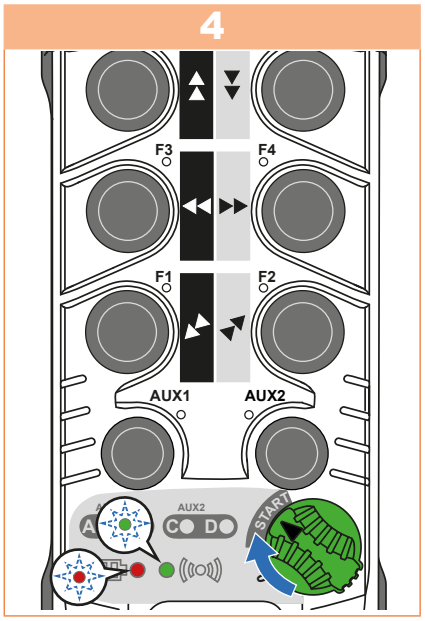
Release the **ON / OFF** switch to start the configuration.

3



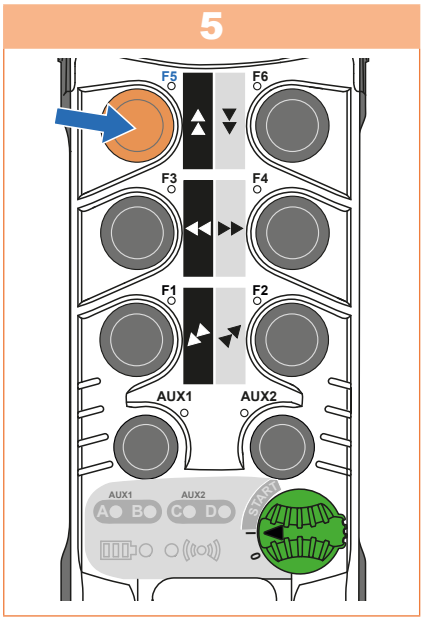
Press the **F5** button to enable the mode:
- Only LED C is continuously on
- LEDs A, B, and D are off.

4



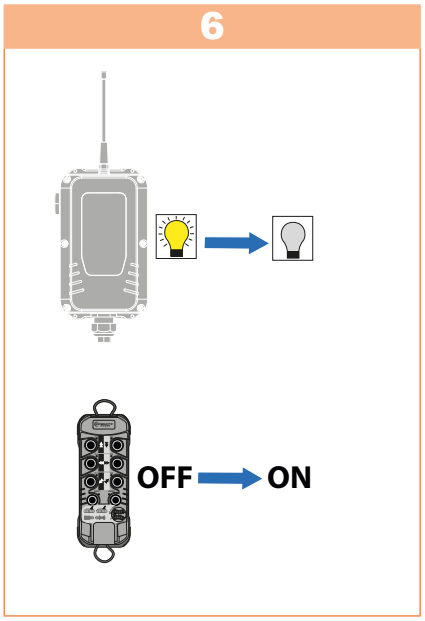
Confirm the value by turning the **ON / OFF** switch to **START**. During transmission:
- Battery and radio LEDs flash alternately
- Receiver light turns on.

5



To disable the mode, press the **F5** button. This returns to the fixed radio channel setting (refer to Chapter ***8.7.1***).

6

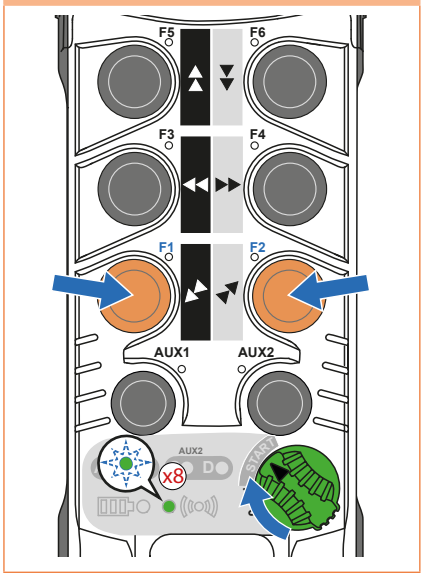


End of transmission:
- Receiver light turns off
- Transmitter shuts down and restarts.

8.7.4. Frequency Agility Setting (F6)

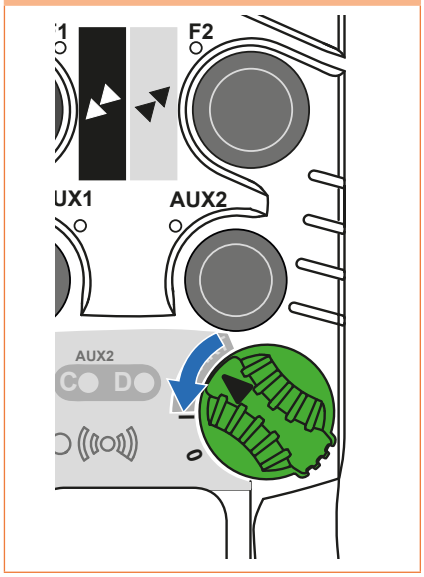
Function F6 changes the channel automatically when it has been identified as busy, following a priority algorithm. Changing the radio channel is initiated by the receiver which transmits this information to the transmitter. Products must be ready for configuration (if the transmitter and receiver are not powered on and unlocked, perform the steps in Chapter ***7.1***).

1



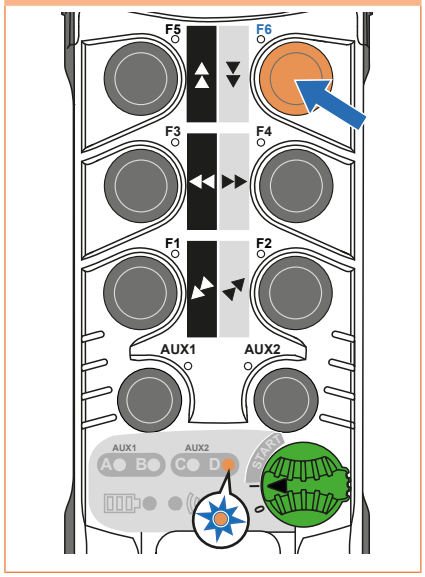
Press and hold the **F1 and F2** buttons and turn the **ON / OFF** switch to **START**:
- The battery LED turns off
- The radio LED flashes **8** times.

2



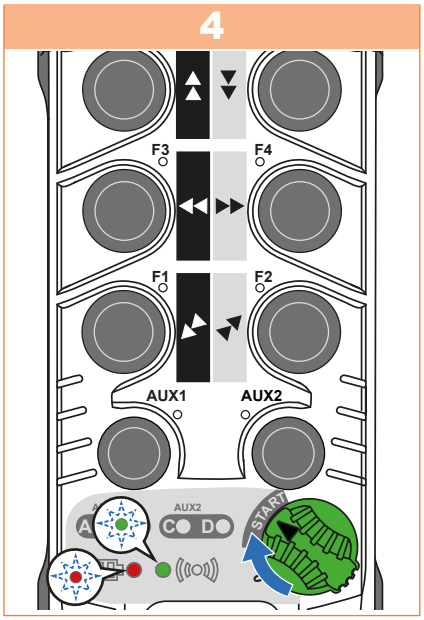
Release the **ON / OFF** switch to start the configuration.

3



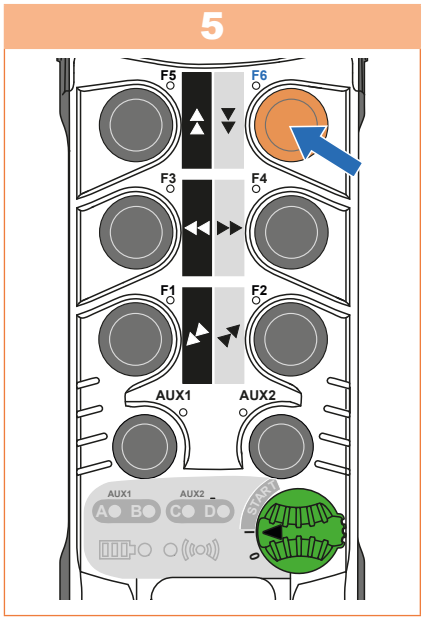
Press the **F6** button to enable the mode: LED D must be on and LED C must be off.

4



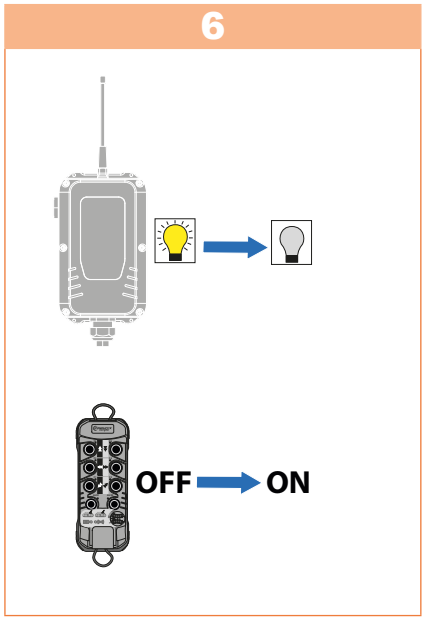
Confirm the value by turning the **ON / OFF** switch to **START**. During transmission:
- Battery and radio LEDs flash alternately
- Receiver light turns on.

5



To disable the mode, press the **F6** button. This returns to the fixed radio channel setting (refer to Chapter ***8.7.1***).

6



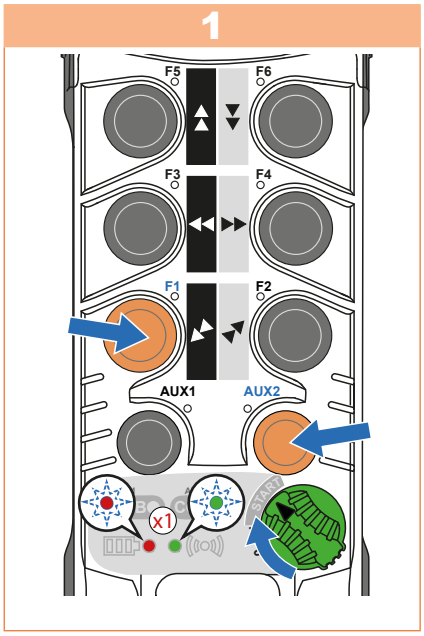
End of transmission:
- Receiver light turns off
- Transmitter shuts down and restarts.

8.8. Receiver Buzzer Configuration (AUX2 + F1)

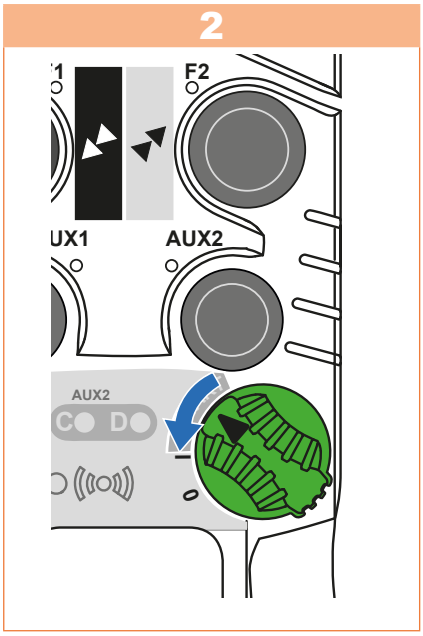
This setting allows you to define different modes of operation of the buzzer signal according to needs and LEDs A,B,C, and D indicate the pattern and the sound level:

- **Pattern Selection**: Configurable from 1 to 99 ↔ LED A indicates tenths and LED B indicates the units.
- **Automatic Pattern**: This depends on the radio channel used ↔ indicated by LED D (automatic when the LED is on and manual when the LED is off).
- **Sound Level**: Configurable from 1 to 2 ↔ indicated by LED C (high if the LED is on and low if the LED is off).

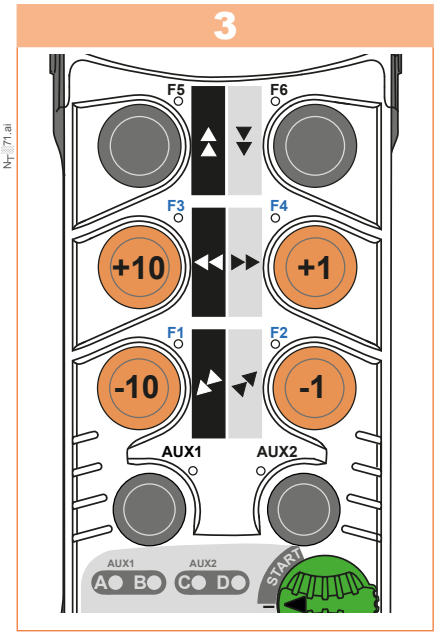
By default, products are delivered in automatic pattern mode and level 2.
The buzzer is active according to a pattern depending on the setting or radio channel (automatic) of the receiver.
Products must be ready for configuration (perform steps in Chapter *7.1*).



Press and hold the **AUX2 and F2** buttons and turn the **ON / OFF** switch to **START**: Battery and radio LEDs flash once in a loop.

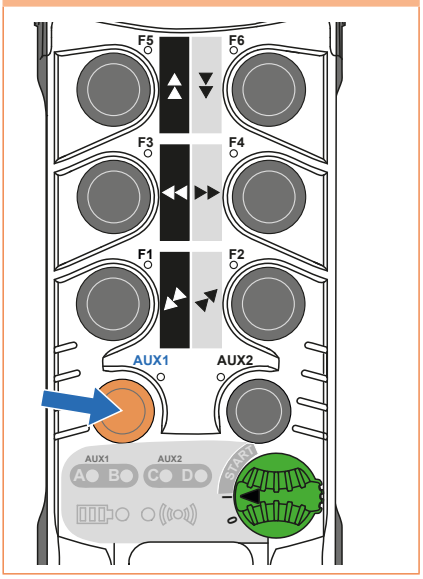


Release the **ON / OFF** button to start configuration. LEDs indicate the existing configuration.



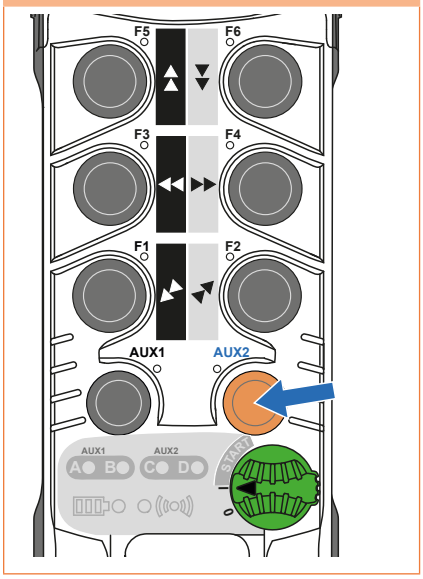
To change the pattern:
- Decrement/increment the tenths with F1/F3
- Decrement/increment the units with F2/F4.

4



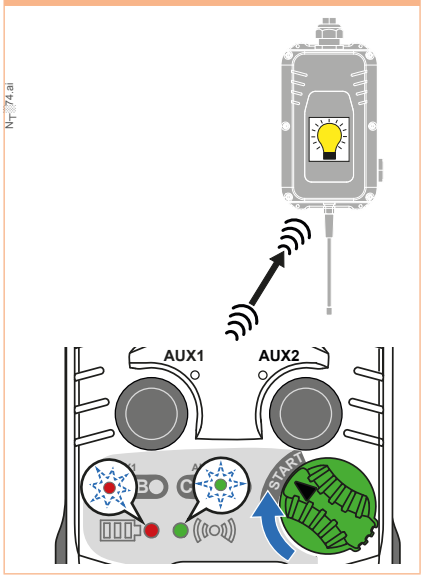
Select the desired sound level using the **AUX1** button.

5



The **AUX2** button enables automatic mode.

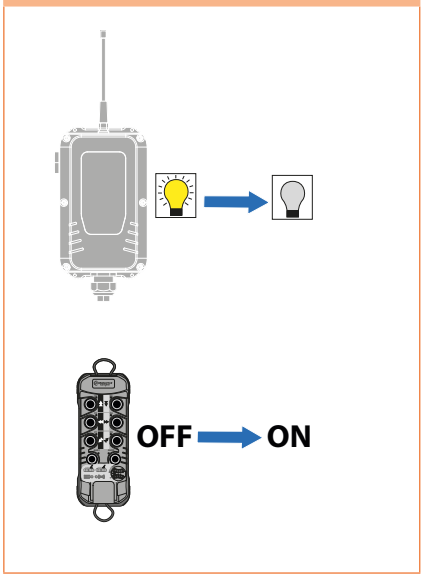
6



Confirm the value by turning the **ON / OFF** switch to **START**.
During transmission:

- Battery and radio LEDs flash alternately
- Receiver light turns on.

7



End of transmission:

- Receiver light turns off
- Transmitter shuts down

and restarts.

9. Specific Tandem Mode Settings

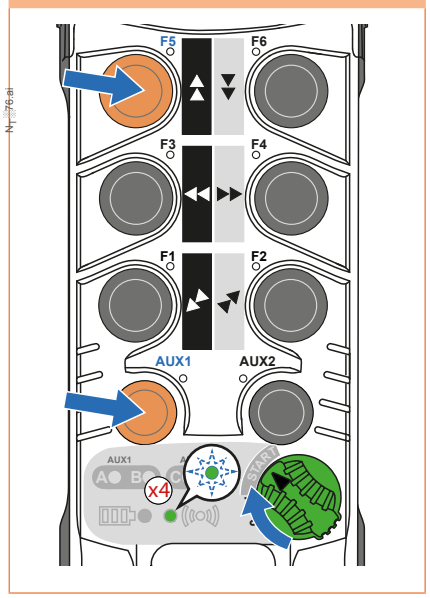
9.1. Receiver Swapping A ↔ B (AUX1 + F5)

This feature swaps the selection indicator of the AUX1 button.
Swapping configuration is indicated by LEDs A and B:

- The selection indicators of receivers A and B are not swapped if LED A is on and LED B is off
- The selection indicators of receivers A and B are not swapped if LED A is off and LED B is on.

Products must be ready for configuration (perform steps in Chapter *7.1*).

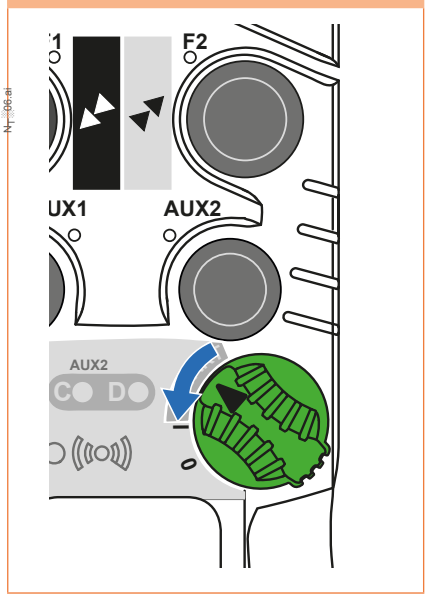
1



Press and hold the **AUX1 and F5** buttons and turn the **ON / OFF** switch to **START**:

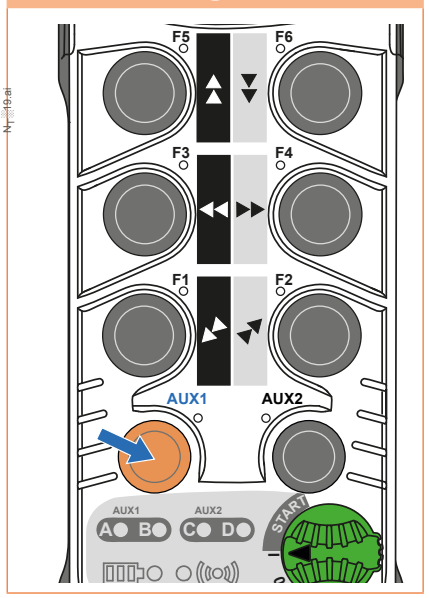
- The battery LED turns off
- The radio LED flashes **4** times.

2



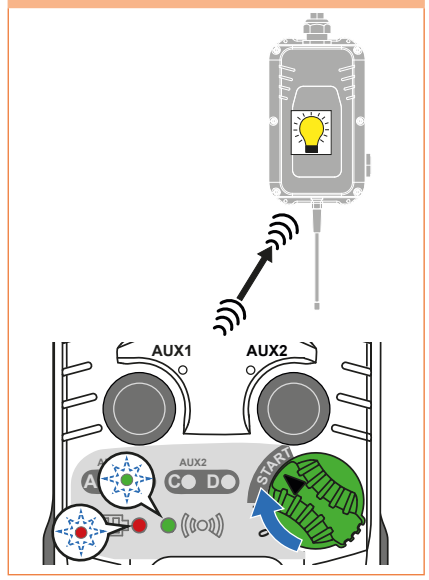
Release the **ON / OFF** switch: LEDs A and B indicate whether swapping is enabled or disabled.

3



To switch from one mode to another press the **AUX1** button.

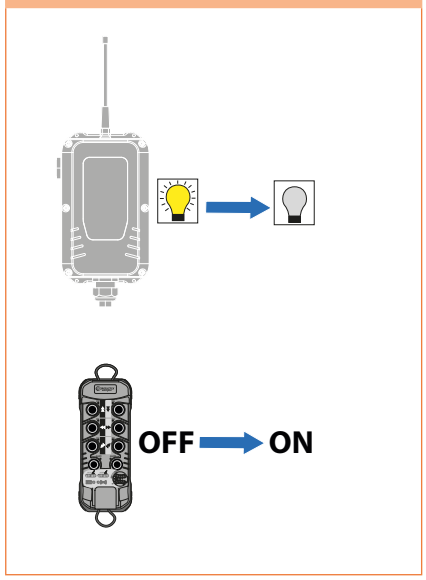
4



Confirm the value by turning the **ON / OFF** to **START**.
During transmission:

- Battery and radio LEDs flash alternately
- Receiver light turns on.

5



End of transmission:

- Receiver light turns off
- Transmitter shuts down

and restarts.

By default, after configuring an AUX1 function button and after pairing, swapping is disabled.

9.2. Release Function (Ungroup) (AUX1 + F3)

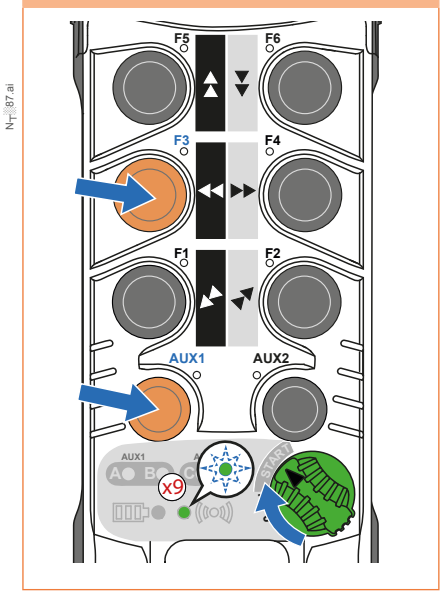
This setting allows you to configure the release of one or more receivers that work with the transmitter.
If automatic release mode is enabled, when the transmitter stops operating, the paired receiver(s) will be released and another transmitter can connect later.
In the voluntary release mode, the operator must voluntarily release or not the receivers.
Products are configured by default in automatic release mode.

Release mode is indicated by the pair of A and B LEDs:

- For automatic release, LED A is on and LED B is off
- For voluntary manual release, LED A is off and LED B is on.

Products must be ready for configuration (perform steps in Chapter *7.1*).

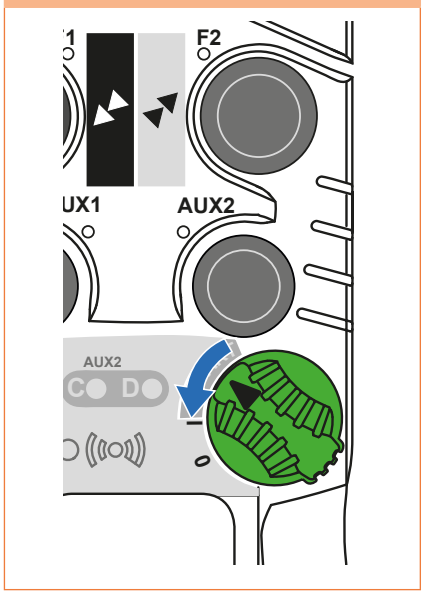
1



Press and hold the **AUX1 and F3** buttons and turn the **ON / OFF** switch to **START**:

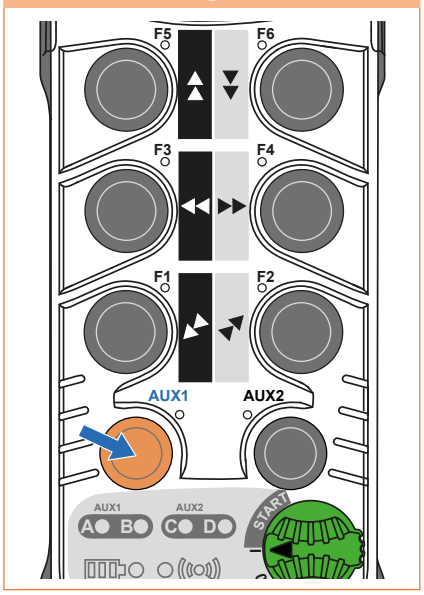
- The battery LED turns off
- The radio LED flashes 9 times.

2



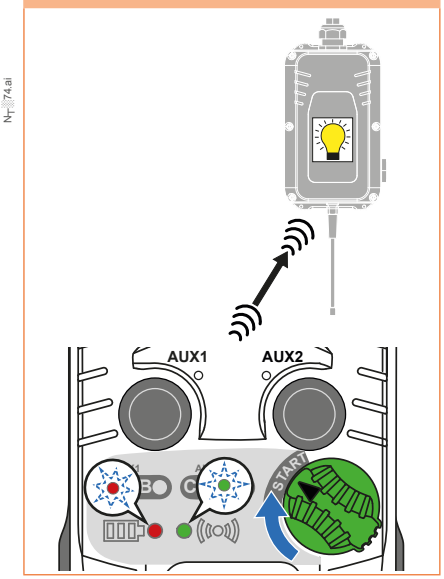
Release the **ON / OFF** switch: LEDs A and B indicate the active release mode (auto or voluntary).

3



To switch from one mode to another press the **AUX1** button.

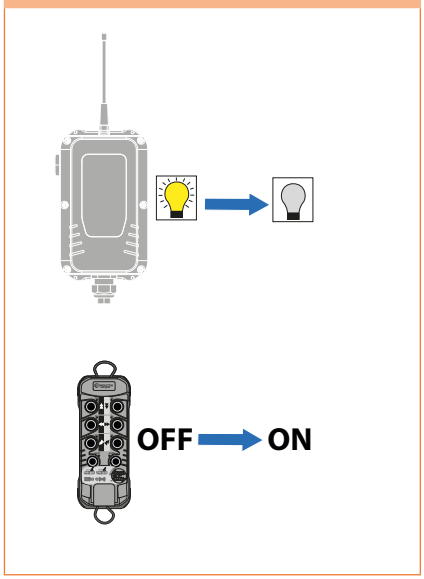
4



Confirm the value by turning the **ON / OFF** switch to **START**.
During transmission:

- Battery and radio LEDs flash alternately
- Receiver light turns on.

5



End of transmission:

- Receiver light turns off
- Transmitter shuts down and restarts.

9.3. Sign of Life Between Receivers (F1 + F5)

In Tandem mode a sign of life is exchanged between the two receivers. This function is only valid when the transmitter controls both receivers (A + B).
The sign of determines if one of the receivers has released its safety relays or if radio communication between the two is broken.
Products are configured at the factory in active life sign mode.

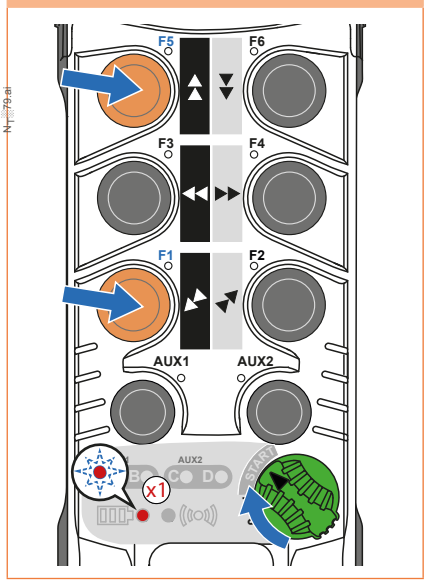
Configuration of the sign of life mode is indicated by the pair of A and B LEDs:

- Sign of life is enabled if LED A is on and LED B is off
- Sign of life is disabled if LED A is off and LED B is on.

> If the sign of life disappears and one of the receivers has gone to safety,
> the second receiver will go to safety.
>
> If the sign of life disappears but the two receivers are still in operation
> (safety relay active),
> only the function output relay commands are disabled.

Products must be ready for configuration (if the transmitter and receiver are not powered on and unlocked, perform the steps in Chapter ***7.1***).

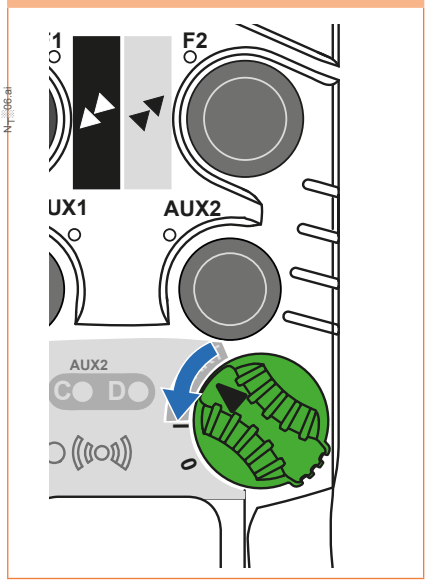
1



Press and hold the **F1 and F6** buttons and turn the **ON / OFF** switch to **START**:

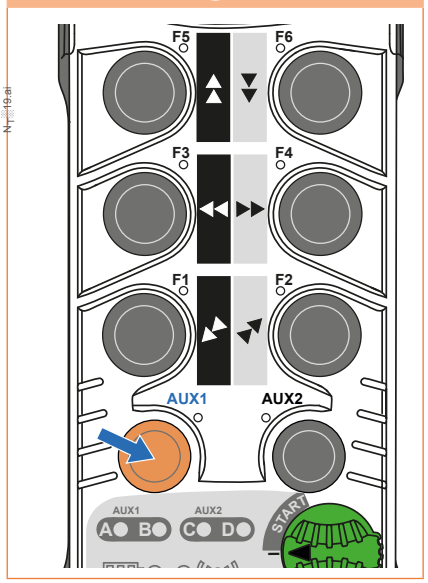
- The battery LED flashes once
- The radio LED turns off.

2

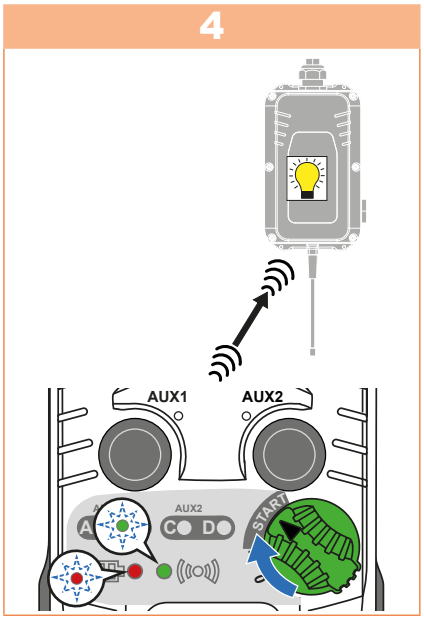


Release the **ON / OFF** switch: LEDs A and B indicate whether the sign of life is enabled or disabled.

3

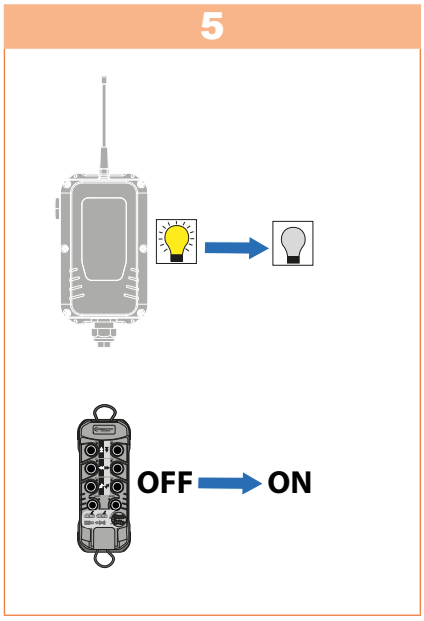


To switch from one status to another, press the **AUX1** button.



Confirm the selected status by turning the **ON / OFF** switch to **START**. During transmission:

- Battery and radio LEDs flash alternately
- Receiver light turns on.



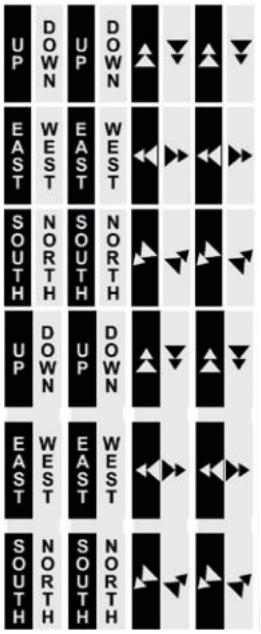
End of transmission:

- Receiver light turns off
- Transmitter shuts down and restarts.

10. Installation Instructions

10.1. Transmitter

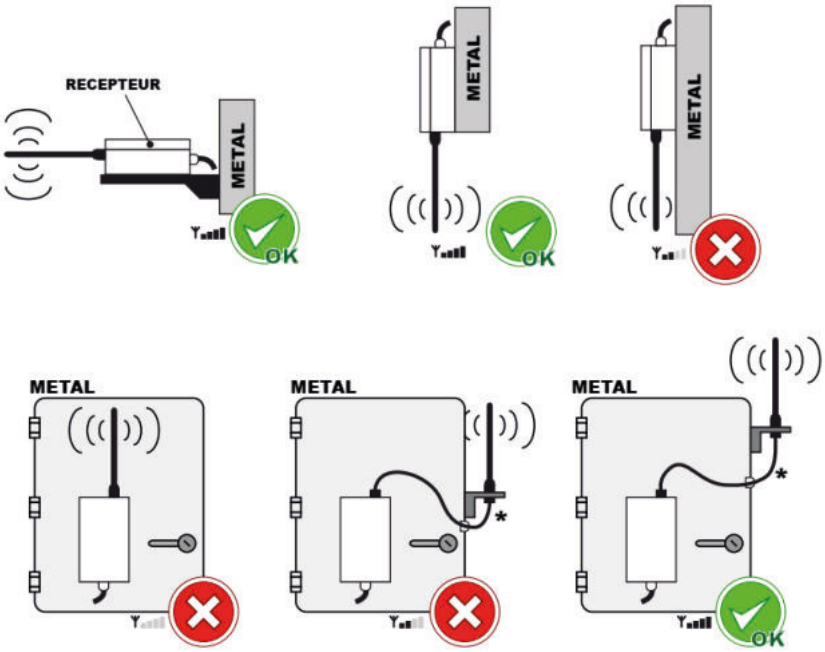
Different button functions are identified by self-adhesive labels to be stuck on the transmitter box in the space provided for this purpose each button.
Labels are delivered in sheets to be used according to the application.



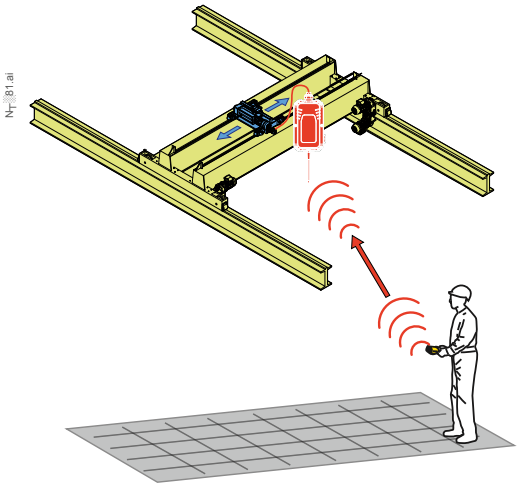
10.2. Radio Receiver Position

Preferably, the receiver should be mounted in a place that is protected from shock and weather.
The antenna should be as far away as possible from the power cables (power supply, motor, drive, etc.), but remain in an area favorable to radio reception. It must be located within sight of the operator handling the equipment. There should be no metallic masses near it.

- The antenna will be located high above the operator handling the transmitter. There should be no metal between the operator and the antenna.
- The antenna is directed towards the working areas of the transmitter (downwards in the case of a hoist).
- The correct orientation of the antenna is shown in the figure below:

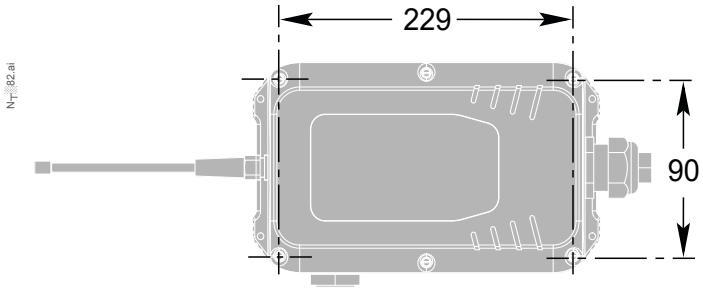


If the installation of the receiver does not allow the operator to see the antenna, it is advisable to offset the receiver antennas under the beams, and point them vertically towards the radio control area, as shown below:



10.3. Mounting the Receiver

See Retrieve mechanical plan for attaching the housing.



10.4. Antennas

10.4.1. Antenna Type

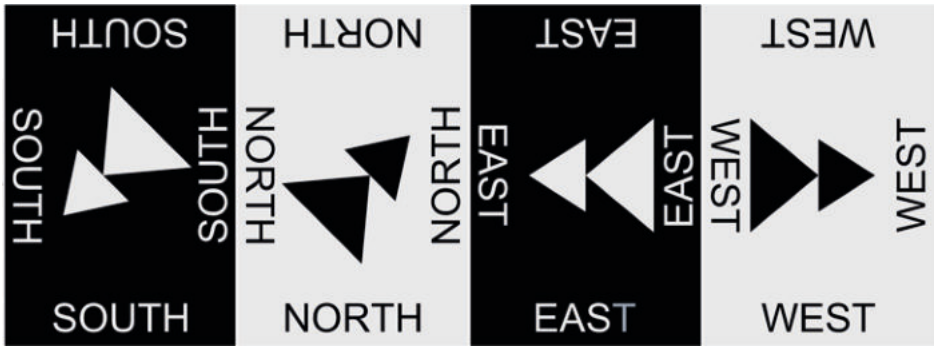
The receiver housing is equipped with a non-detachable antenna. However, it is possible to install a remote antenna. In this case, a BNC plug-in antenna kit must be purchased and installed (refer to Chapter ***19.2*** Accessories).

10.5. Locating Ordered Equipment

If several devices are equipped with radio controls, working in the same vicinity (e.g. in a factory), each transmitter must carry clear information that tells the operator which equipment it controls.
Similarly, the operator must be able to clearly identify the controls corresponding to the directions of movement of the equipment being steered. For this purpose, directional arrows are supplied with the receiver.

Place the different arrows on the label on the equipment to be controlled, so that each arrow corresponds to the arrow on the associated transmitter button. The direction of action of the control buttons should, as far as possible, be consistent with the movement of the device being controlled.

Symbols should be placed in such a way that there is a clear and unambiguous relationship between the action of the control buttons and the direction of movement.



10.6. Connection

The receiver is equipped with an output cable for connecting the power supply and relay outputs.

Below, the correspondence of the strand outputs and their assignments.

Function	Relay	Fuse	Marker Diagram	Strand Number
Power input 40-230Vac	-	Fus6	AC-1	1
Power input 40-230Vac	-	-	AC-2	2
Safety relay output 1	K14	Fus5	RS1	3
Safety relay output 2	K16	Fus5	RS2	4
Function ON output relay	K13	-	RM	5
ON relay output	K13	-	RM	6
AUX and selection relay common	-	Fus4	COM1	7
Function relay output	K10	-	Raux	8
Function relay output Aux 1	K11	-	Rsel1	9
Function relay output Aux 2	K12	-	Rsel2	10
Common 2	-	Fus2	COM2	11
Function relay output F1	K1	-	F1.1	12
Function relay output F2	K2	-	F2.1	13
Function relay output F1/F2	K3	-	F1.2/F2.2	14
Common 3	-	Fus1	COM3	15
Function relay output F3	K4	-	F3.1	16
Function relay output F4	K5	-	F4.1	17
Function relay output F3/F4	K6	-	F3.2/F4.2	18
Common 4	-	Fus3	COM4	19
Function relay output F5	K7	-	F5.1	20
Function relay output F6	K8	-	F6.1	21
Function relay output F5/F6	K9	-	F5.2/F6.2	22

11. Maintenance

BEFORE PERFORMING ANY MAINTENANCE, TURN OFF THE POWER TO THE PRODUCT

11.1. Receiver Maintenance

The housing can only be disassembled by trained personnel in a “controlled” environment.

Parts can only be replaced with identical spare parts.

- Check the connection of the antenna; it must be clean and unoxidized.
- Check the quality of power supply and control output wiring.
- Correct operation of shutdown circuits, active.
- Condition of cover gasket, tightness of fastening screws.
- Use only non-aggressive soap-based cleaners.

11.2. Transmitter Maintenance

The transmitter housing must not be opened.

- Regularly check the condition of the transmitter, paying particular attention to the batteries in the battery compartment. If the transmitter is not used for a long period of time, it is recommended to remove the batteries.
- If any of the function button membranes or the transmitter housing gasket are damaged, the equipment should not be used until these sealing parts are replaced.
Otherwise, any liquid, dust, or foreign object may damage the transmitter.
- The user's attention is drawn to the risks of using the remote control in an environment containing polymer solvents or glues that could degrade the proper functioning of the transmitter's mechanical parts.
- Clean the transmitter by removing any adhering foreign matter.
- Use only non-aggressive soap-based cleaners.

12. Warranty

All our devices are guaranteed for two years from the day of shipment.
Repairs, modifications or the replacement of a device during the warranty period shall not extend the warranty period.

Restriction:

The warranty does not cover defects resulting from:

- Transport
- Incorrect operation or failure to follow the connection diagrams during start up
- Lack of monitoring or maintenance, use not in accordance with the specifications in the technical manual and, in general, storage, operating or environmental conditions (atmospheric, chemical, electrical, mechanical or other influences) which are not suitable or not foreseen at the time of order

The warranty cannot be exercised if modifications, dismantling or additions have been made by the customer without the written consent of our Company.

The responsibility of JAY Electronique during the period of warranty is limited to any material or construction defect; this includes the repair in its workshops or the free replacement of parts recognized as defective according the expertise of its “technical services”. JAY Electronique cannot give right to any compensation for damages.

In the event of a dispute concerning supply or payment, THE COMMERCIAL COURT OF GRENOBLE is the only competent authority, even in the event of Appeal or of plurality of defendants.

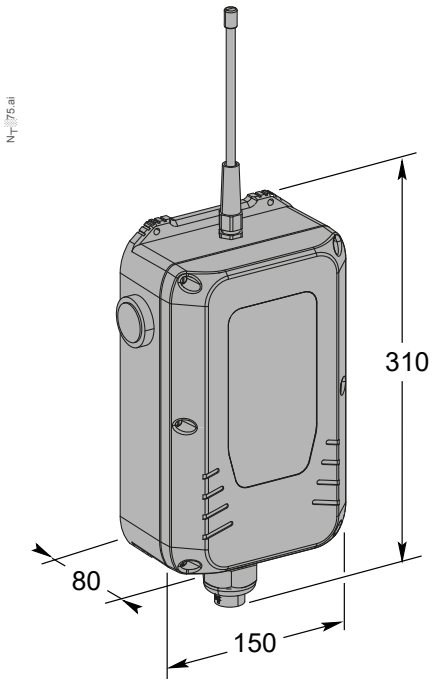
13. Technical Specifications

13.1. Receiver

Mechanical Specifications and Environmental Resistance	
Housing Material	PA66 GF 30 (PC cover)
Housing color	Black background and translucent/transparent cover
Protection Index	IP65
Mass	1.4kg (including cable)
Overall Dimensions	310 (without antenna, with PES) x 150 (with buzzer) x 80mm
Fastening	4x screws M3 – 229 x 90mm Possibility to add magnets with or without silent blocks
Operating Temperature	-20°C to +55°C
Storage Temperature	-20°C to +70°C
Connection	22-strands cable, section 0.75 mm², AWG 18 (0.8mm² Kcmil) Length 1.5m
Cable Entry	PE M32 diam 17-25
Power Indicator Light	Amber LED
Radio Indicator Light	Green LED
Safety relay active indicator light	Red LED
Function indicator light	White lamp
Sound indicator	Buzzer 95dB
Antenna	Wire antenna protected by cable gland and plastic tube
Breathable membrane (internal anti-condensation)	Yes, Goretex

Electrical Specifications	
Power Supply	
Supply voltage (steady state)	40Vac to 230Vac ± 10% - 50/60Hz
Protection	Fuse 0.5 A
Consumption	<15W
Safety relay outputs	
Number of outputs (2 relays in series)	2
Contacts	AgNi + Au
Contact Type	Guided contact relays
Break Capacity	250Vac @ 5A max (at max operating temperature) 12Vdc @ 50mA min
Max Power at cos ø = 1	2000VA
Switching Lifespan at 230VAC, 6A, cos ø = 1	100,000 (230Vac, 6A, cosphi=1)
Protection	Fuse 5 A
Control relay outputs	
Number of outputs	16 (3 x 3 movement + 3 function safeties + 3 AUX + 1 ON)
Contacts	AgNi + Au
Contact Type	Contact relays
Break Capacity	250Vac @ 5A max (at max operating temperature) 12Vdc @ 50mA min
Max Power at cos ø = 1	2000VA
Switching Lifespan at 230VAC, 6A, cos ø = 1	100,000 (230Vac, 6A, cosphi=1)
Protection	3 x Fuse 5A (on safety function relay outputs)

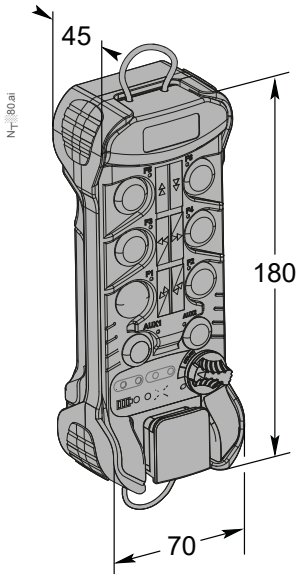
13.1.1. Dimensions



13.2. Transmitter

Mechanical Specifications and Environmental Resistance	
Housing Material	PA66 GF 30
Housing color	Orange RAL2010
Protection Index	IP65
Mass	300g max
Overall Dimensions	180 x 70 x 45mm
Operating Temperature	-20°C to +50°C
Storage Temperature	-30°C to +70°C
Transport	2 strap anchor points
Protection	Foam, protective cover
Breathable membrane (internal anti-condensation)	Yes
Electrical Specifications	
Power Supply	Battery (US)
Number of function buttons	6
Number of AUX buttons	2
Battery life (US)	300 hr transmission for 1min every 6min
Power Indicator Light	Red
Radio Indicator Light	Green
AUX position indicator 1, A and B	Amber
AUX position indicator 2, C and D	Amber

13.2.1. Dimensions



13.3. Radio

Radioelectrical Specifications (US)	
Transmission Frequency	433-440MHz
Number of Channels	92
Space Between Channels	75kHz
Receiver Sensitivity	-100dBm
Transmission Power	1mW
Modulation	FSK
Frame	Hamming 4 distance with encryption against external attacks
Medium Range*	50-100m in industrial setting* 400m in open space
Antenna Output Impedance	50 Ohms
Response Time at Startup	500ms
Command Response Time	300ms

**The range varies according to the environmental conditions of the transmitter and receiving antenna (frames, metal walls, etc.).*

13.4. Battery

Specifications	
Type	Alkaline
Format	LR6 (AA)
Voltage	1.5V
Operating Temperature	0°C to +50°C
Storage Temperature	-20°C to +70°C

14. FCC (Federal Communications Commission) Regulations

Products comply with the requirements of the Federal Communications Commission **FCC Part 15, Subpart C, Section 15.231 (b)(2) Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**.

14.1. FCC (Federal Communications Commission) Regulations

- Any changes or modifications to this equipment not expressly approved by JAY Electronique could result in cause harmful interference and void the FCC authorization to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the FCC Part 15.
These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.
This portable equipment and its antennas comply with FCC radiation exposure limits set forth for an uncontrolled environment.

To maintain compliance, follow the instructions below:

- 1. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.
- 2. Avoid direct contact with the antenna or keep contact to a minimum when using this equipment.

Authorized Antennas: see “Antennas” chapter

Antenna Installation Requirements: See Chapter “Receiver Installation”

FCC Product ID:
FCC ID: OQMKT Transmitter
FCC ID: OQMKR Receiver

IC (Industry Canada) Regulation

This Class (A) digital apparatus meets all the requirements of the Canadian NMB-003 standard.
This portable equipment and its antennas comply with CNR102 radiation exposure limits applicable for an uncontrolled environment.To maintain compliance, follow the instructions below:

- 1. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.
- 2. Avoid direct contact with the antenna or keep contact to a minimum when using this equipment.

This radio transmitter (IC transmitter: 3393A-KT, IC receiver: 3393A-KR depending on the model) has been approved by Industry Canada for use with the antenna types listed in the Section “Antennas”. This is the only way to ensure that the antenna will be able to operate with the same maximum allowable gain and impedance for each type of antenna listed. Antenna types not included in this list, and whose gain is greater than the maximum gain listed, are strictly prohibited for use with the transmitter.

Authorized Antennas: see “Antennas” chapter

Antenna Installation Requirements: See Chapter “Receiver Installation”

This device complies with Industry Canada’s RSS for license-exempt radio equipment.
Operation is permitted under the following two conditions:

- 1. The device must not cause interference
- 2. The user of this equipment must accept any radio interference received, even if the interference is likely to affect the operation of the equipment

Product IC:
IC transmitter: 3393A-KT
IC receiver: 3393A-KR

Transmitter RF Exposure

This device complies with the RF personal exposure requirement limit levels defined by ISDE. The unit should not be installed in close proximity to or used in conjunction with any other antenna or transmitter.

14. Réglementation FCC (Commission fédéral des communications)

Les produits sont conformes avec les exigences de la commission fédéral des communications **FCC part 15, Subpart C, Section 15.231 (b)(2) Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**.

14.1. Réglementation FCC (Commission fédéral des communications)

- Toutes modifications apportées à cet équipement non expressément approuvées par JAY Electronique peuvent causer des interférences nuisibles et annuler l'autorisation FCC d'utiliser cet équipement.

Cet équipement a été testé et déclaré conforme aux limites d'un appareil numérique de classe A, conformément à la FCC part 15.
Ces limites sont conçues pour fournir une protection raisonnable contre les interférences nuisibles lorsque l'équipement est utilisé dans un environnement commercial.
Cet équipement génère, utilise et peut émettre de l'énergie radiofréquence et, s'il n'est pas installé et utilisé conformément au manuel d'instruction, peut provoquer des interférences nuisibles aux communications radio.
Le fonctionnement de cet équipement dans une zone résidentielle est susceptible de provoquer des interférences nuisibles, auquel cas l'utilisateur devra corriger les interférences à ses propres frais.
Cet équipement portable avec ses antennes est conforme aux limites d'exposition aux rayonnements de la FCC définies pour un environnement non contrôlé.

Pour maintenir la conformité, suivez les instructions ci-dessous :

- 1. Cet émetteur ne doit pas être co-localisé ou fonctionner en conjonction avec toute autre antenne ou émetteur.
- 2. Evitez tout contact direct avec l'antenne ou gardez le contact au minimum pendant l'utilisation de cet équipement.

Antennes autorisées : voir chapitre « Antennes »

Exigences d'installation des antennes : voir chapitre « Installation du Récepteur »

FCC ID du produit :
FCC ID : Émetteur OQMKT
FCC ID : Récepteur OQMKR

Réglementation IC (Industrie Canada)

Cet appareil numérique de la classe (A) respecte toutes les exigences de la norme NMB-003 du Canada.
Cet équipement portable avec ses antennes est conforme aux limites d'exposition aux rayonnements de la CNR102 applicables pour un environnement non contrôlé. Pour maintenir la conformité, suivez les instructions ci-dessous :

- 1. Cet émetteur ne doit pas être co-localisé ou fonctionner en conjonction avec toute autre antenne ou émetteur.
- 2. Evitez tout contact direct avec l'antenne ou gardez le contact au minimum pendant l'utilisation de cet équipement.

Le présent émetteur radio (IC émetteur : 3393A-KT, IC récepteur : 3393A-KR en fonction du modèle) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés dans le chapitre « Antennes » ayant un gain admissible maximal autorisé et une impédance identique pour chaque type d'antenne indiqué. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'utilisation avec l'émetteur.

Antennes autorisées : voir chapitre « Antennes »

Exigences d'installation des antennes : voir chapitre « Installation du Récepteur »

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.
L'exploitation est autorisée aux deux conditions suivantes :

- 1. L'appareil ne doit pas produire de brouillage ;
- 2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

IC du produit :
IC émetteur : 3393A-KT
IC récepteur : 3393A-KR

Exposition RF de l'émetteur

Le présent appareil est conforme aux niveaux limites d'exigences d'exposition RF aux personnes définies par ISDE. L'appareil ne doit pas être installé à proximité ou être utilisé en conjonction avec une autre antenne ou un autre émetteur.

15. Standards and environmental specification

According to the standard:

Safety requirements for electrical equipment for measurement, control, and laboratory use;
- IEC 61010-1:2010/AMD1 :2016
- UL 61010-1:2012/R :2019-07
- CSA C22.2 No. 61010-1:2012/A1 :2018-11

Degrees of protection provided by enclosures (IP code):
- IEC 60529:1989/A1:1999

16. Recycling and Waste Management

When this device is worn, it should not be disposed of in any kind of dumping ground.
It can be taken to the specific collection centers, differentiated by local administrations, or to the distributors who take care of them.

The sorting of electronic waste avoids possible negative consequences on the environment, derived from an inappropriate elimination and allows the processing and recycling of its materials, which favors important savings in terms of energy and resources.

17. Manufacturer Information

Manufacturer and Factory:
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ZAC la Bâtie, rue Champrond
F38334 SAINT ISMIER Cedex
Tel: +33 (0)4 76 41 44 00
ww.jay-electronique.com

18. Compliance Statement

Product conformity statements are available at www.jay-electronique.com

19. Appendix

19.1. Radio Frequency Table

channel 1	433.1MHz	channel 32	435.425MHz	channel 63	437.75MHz
channel 2	433.175MHz	channel 33	435.5MHz	channel 64	437.825MHz
channel 3	433.25MHz	channel 34	435.575MHz	channel 65	437.9MHz
channel 4	433.325MHz	channel 35	435.65MHz	channel 66	437.975MHz
channel 5	433.4MHz	channel 36	435.725MHz	channel 67	438.05MHz
channel 6	433.475MHz	channel 37	435.8MHz	channel 68	438.125MHz
channel 7	433.55MHz	channel 38	435.875MHz	channel 69	438.2MHz
channel 8	433.625MHz	channel 39	435.95MHz	channel 70	438.275MHz
channel 9	433.7MHz	channel 40	436.025MHz	channel 71	438.35MHz
channel 10	433.775MHz	channel 41	436.1MHz	channel 72	438.425MHz
channel 11	433.85MHz	channel 42	436.175MHz	channel 73	438.5MHz
channel 12	433.925MHz	channel 43	436.25MHz	channel 74	438.575MHz
channel 13	434MHz	channel 44	436.325MHz	channel 75	438.65MHz
channel 14	434.075MHz	channel 45	436.4MHz	channel 76	438.725MHz
channel 15	434.15MHz	channel 46	436.475MHz	channel 77	438.8MHz
channel 16	434.225MHz	channel 47	436.55MHz	channel 78	438.877MHz
channel 17	434.3MHz	channel 48	436.627MHz	channel 79	438.95MHz
channel 18	434.375MHz	channel 49	436.7MHz	channel 80	439.025MHz
channel 19	434.45MHz	channel 50	436.775MHz	channel 81	439.1MHz
channel 20	434.525MHz	channel 51	436.85MHz	channel 82	439.175MHz
channel 21	434.6MHz	channel 52	436.925MHz	channel 83	439.25MHz
channel 22	434.675MHz	channel 53	437MHz	channel 84	439.325MHz
channel 23	434.75MHz	channel 54	437.075MHz	channel 85	439.4MHz
channel 24	434.825MHz	channel 55	437.15MHz	channel 86	439.475MHz
channel 25	434.9MHz	channel 56	437.225MHz	channel 87	439.55MHz
channel 26	434.975MHz	channel 57	437.3MHz	channel 88	439.625MHz
channel 27	435.05MHz	channel 58	437.375MHz	channel 89	439.7MHz
channel 28	435.125MHz	channel 59	437.45MHz	channel 90	439.775MHz
channel 29	435.2MHz	channel 60	437.525MHz	channel 91	439.85MHz
channel 30	435.275MHz	channel 61	437.6MHz	channel 92	439.925MHz
channel 31	435.35MHz	channel 62	437.675MHz		

19.2. Accessories

19.2.1. US Version

OWE20 Neck strap included with each transmitter
PWM111 Hand strap
UDWR38 Receiver magnetic mounting kit
UWE102 Shoulder strap
PWM113 Transmitter magnetic mount
UWE106 Transmitter belt clip
UWE320 Transmitter protective cover
UWE321 Transmitter belt carrying sleeve

19.2.2 External antenna option

The antenna of the receiver product is simple wire in standard version. It is possible to change this antenna by listed antennas below with an adaptor in option:

- **VUA110AH** (with 10m cable)
  Type: through insulated remote, 1/2 wave, BNC connection
  Approximate length: 320mm
  Required drill hole: 15mm

- **VUA103AM** (with 3m cable)
- **VUA105AM** (with 5m cable)
  Type: insulated magnetic remote, tuned, BNC connection
  Approximate length: 440mm

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