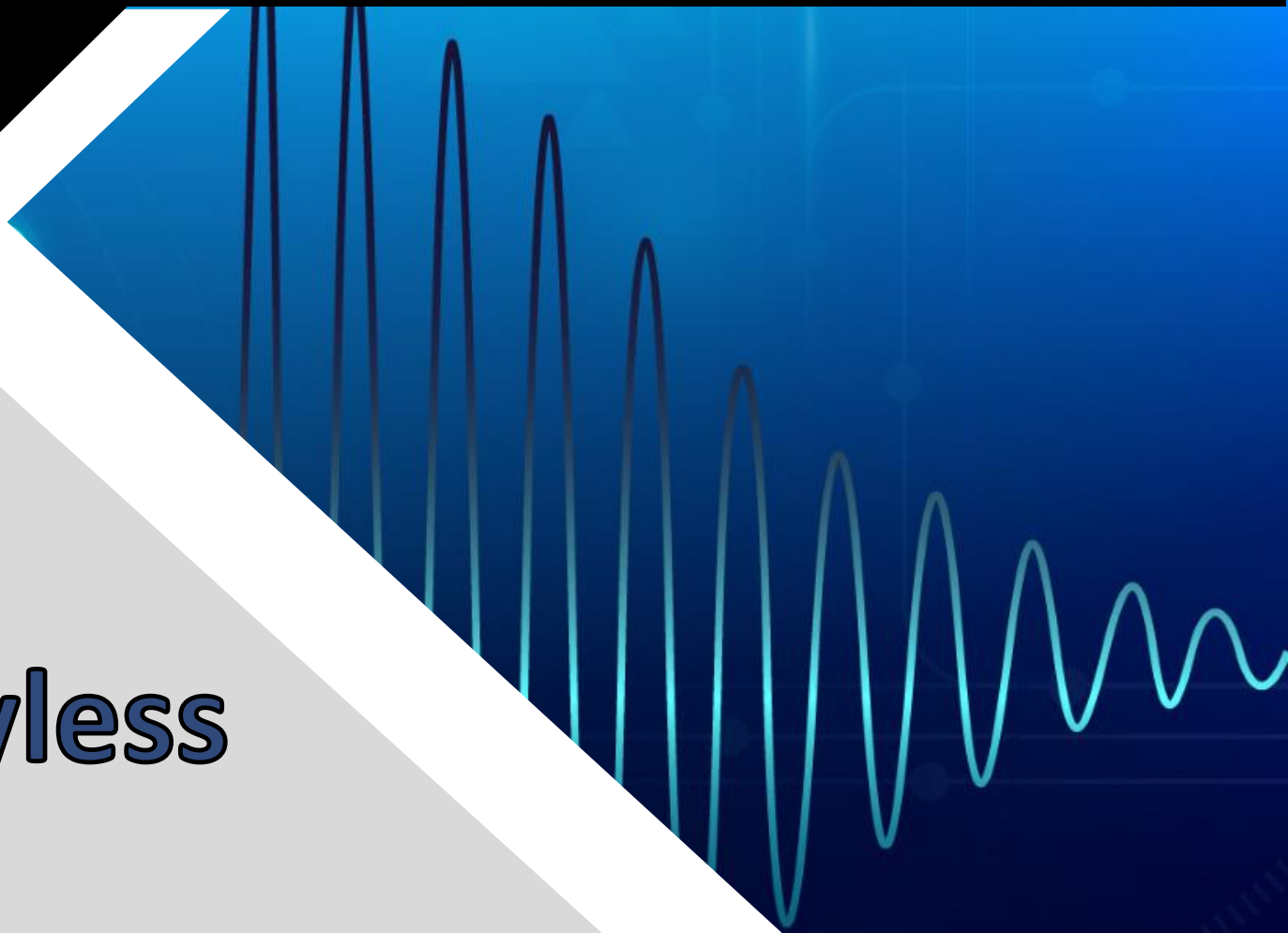
Wireless Batteryless

Product presentation



© COMEPI srl | Dario Broggi | Maggio 2020



NO BATTERIES,
NO CABLES,
NO LIMITS


EnOcean's seal for
battery-free switches
100% battery-free, 100% wire-free, 100% convenient.



SWITCH OFF YOUR LIMITS!! GO WIRELESS AND BATTERYLESS

Flexible
Suitable for any type of application
Modular construction
Fully configurable
Greater operator comfort

Reliable
High protection degree
No risk of damage to the cables
High mechanical durability and reliability

Sustainable
No battery to replace
No battery to dismantle or recharge
Immediate availability of needed energy
Minimized energy consumption

Simple
Reduced installation costs and times
Quick set-up and configuration
No cable and wirings on the transmitters
Freedom of movement while using the device











© COMEPI srl | Dario Broggi | Maggio 2020

Energy From Motion

SWITCH OFF YOUR LIMITS!!
GO WIRELESS AND BATTERYLESS

Energy Saving

Cost Saving

Time Saving

Making of 10 trillions of CR 2032 batteries requires 1 million tons of lithium

- Global annual lithium production is around 20.000 tons*
- Global lithium reserves amount to 11 million tons*

The batteries are discharged, needs to be replaced, disposed or recharged

A discharged battery often leads to maintenance, system downtime and avoidable technical support



*2017 data

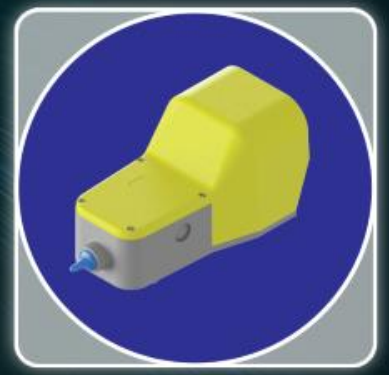
COMEPI

COMEPI

enocean®







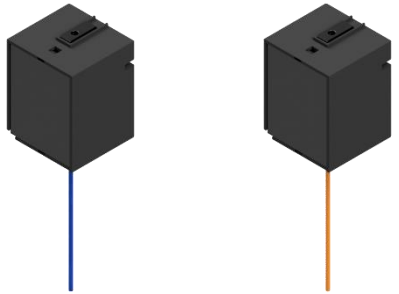




WIRELESS BATTERYLESS TRANSMITTERS OVERVIEW

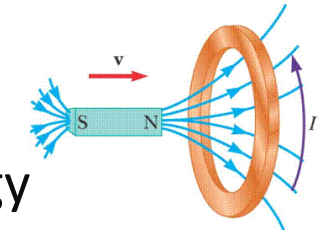
Transmitter

Modular microswitch, adaptable to most electromechanical COMEPI devices



Two versions currently available:

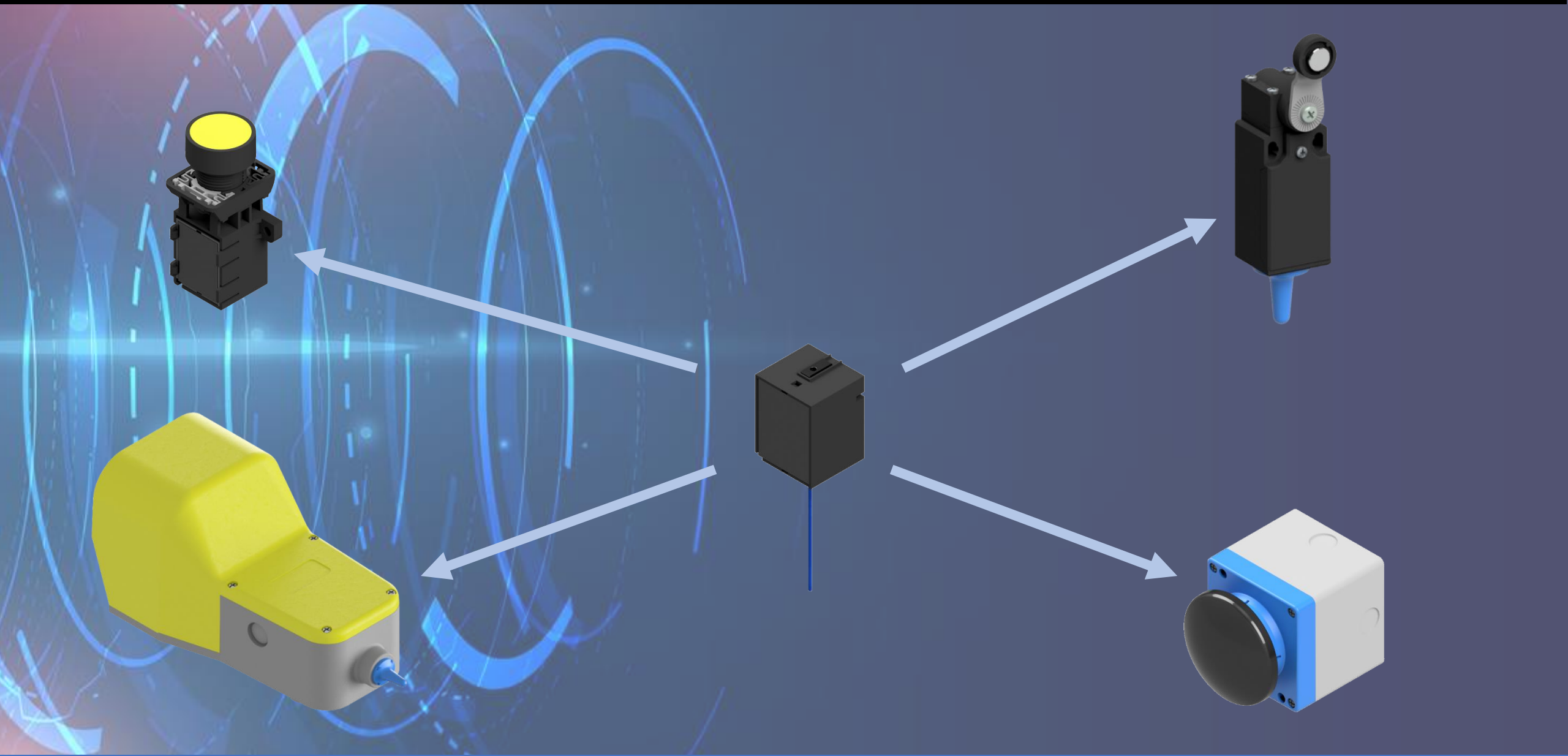
1. **RFH8** with 868MHz operating frequency
2. **RFH9** with 902MHz operating frequency



Kinetic energy produced by angular or linear movements is converted into electrical energy

A minimal impulse (150µWs) is enough to generate and encode a signal,
Repeating it 3 times, in order to maximize transmission reliability





Transmission reliability

ENOCEAN transmission protocol conform to EEP requirements

enocean alliance
EnOcean Equipment Profiles (EEP)



Safe transmission:

- Every transmitter has one unique 32Bit ID
- Transmission burst <1ms
- 3 asynchronous transmissions of the same signal
- Encoded signal with authentication protocol

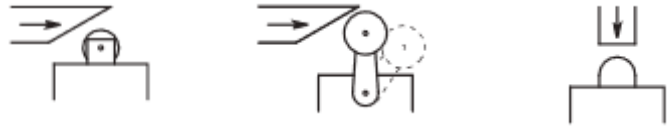
Transmission reliability

COMEPI wireless devices are tested and approved both mechanically and electronically

RFH8 and RFH9 micro switches have durability of 1.000.000 of operations
The transmission reliability is constant all along the product mission time

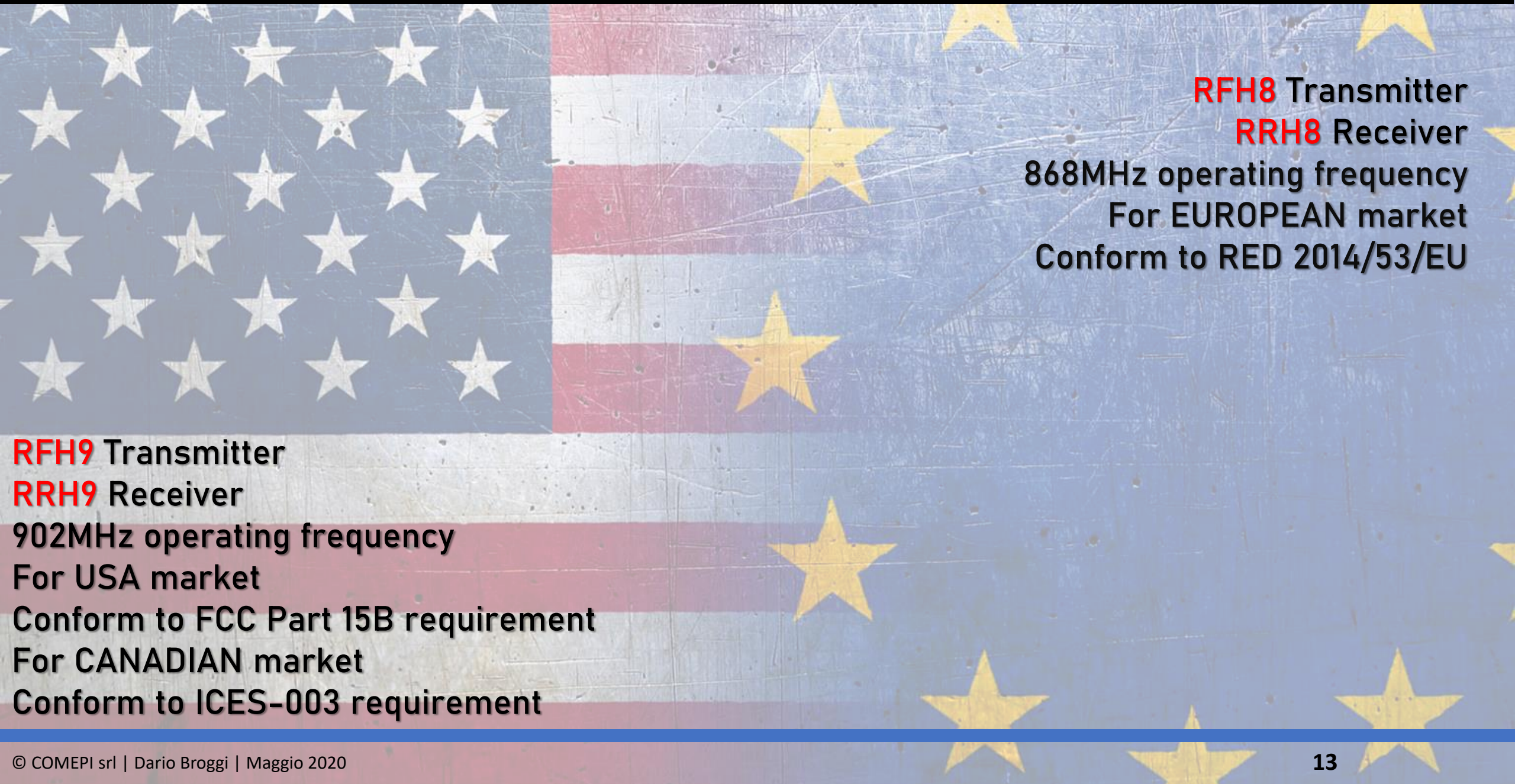
Complete products mechanical durability:

- Batteryless foot switches = 1.000.000 operations
- Batteryless limit switches = 1.000.000 operations
- Batteryless rope switches = 1.000.000 operations
- Batteryless pushbuttons = 500.000 operations
- Batteryless knob lever selectors = 300.000 operations









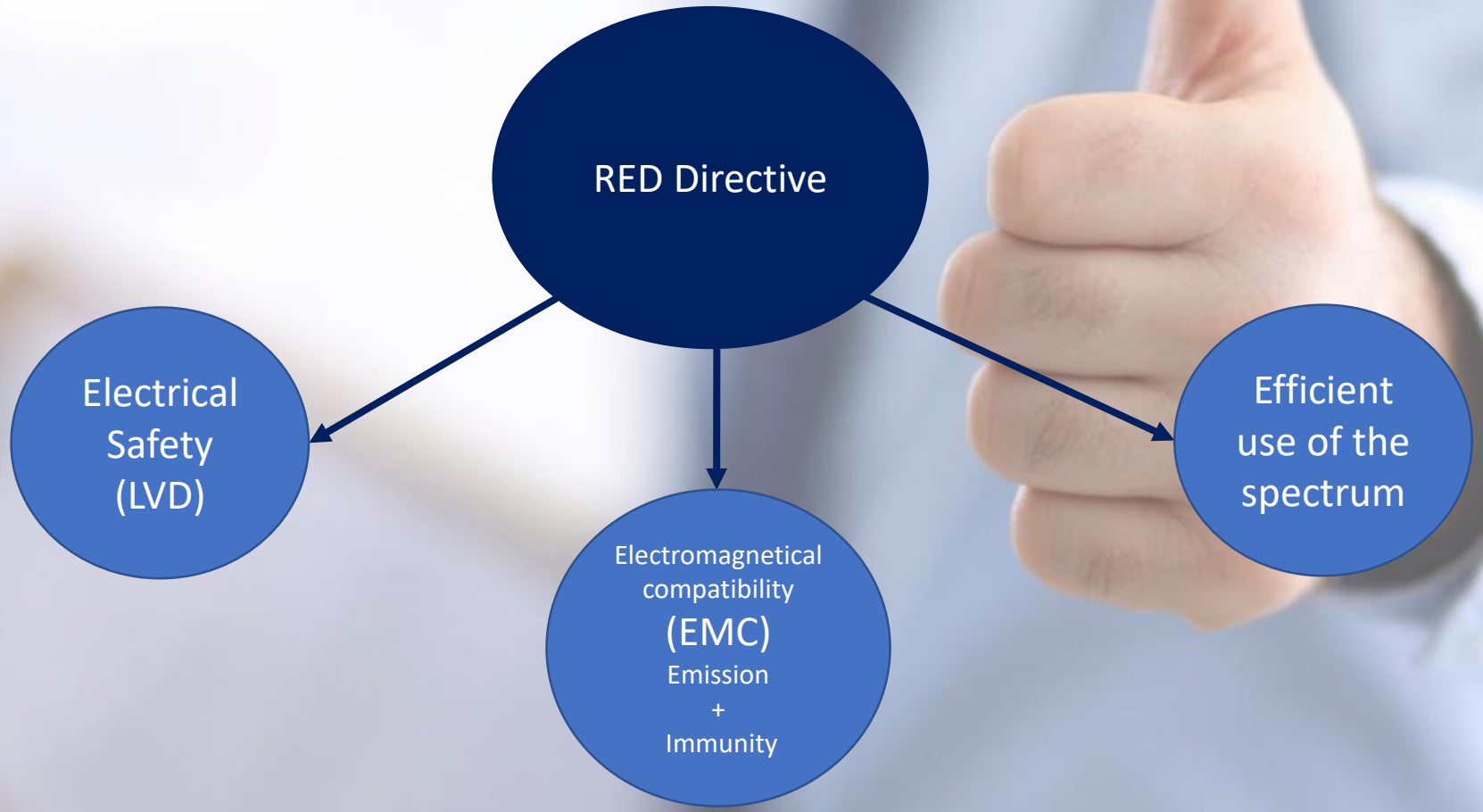
RFH8 Transmitter
RRH8 Receiver
868MHz operating frequency
For EUROPEAN market
Conform to RED 2014/53/EU

RFH9 Transmitter
RRH9 Receiver
902MHz operating frequency
For USA market
Conform to FCC Part 15B requirement
For CANADIAN market
Conform to ICES-003 requirement

Conformity to RED 2014/53/EU Directive

CE Declaration inside the device package
CE mark on the product label

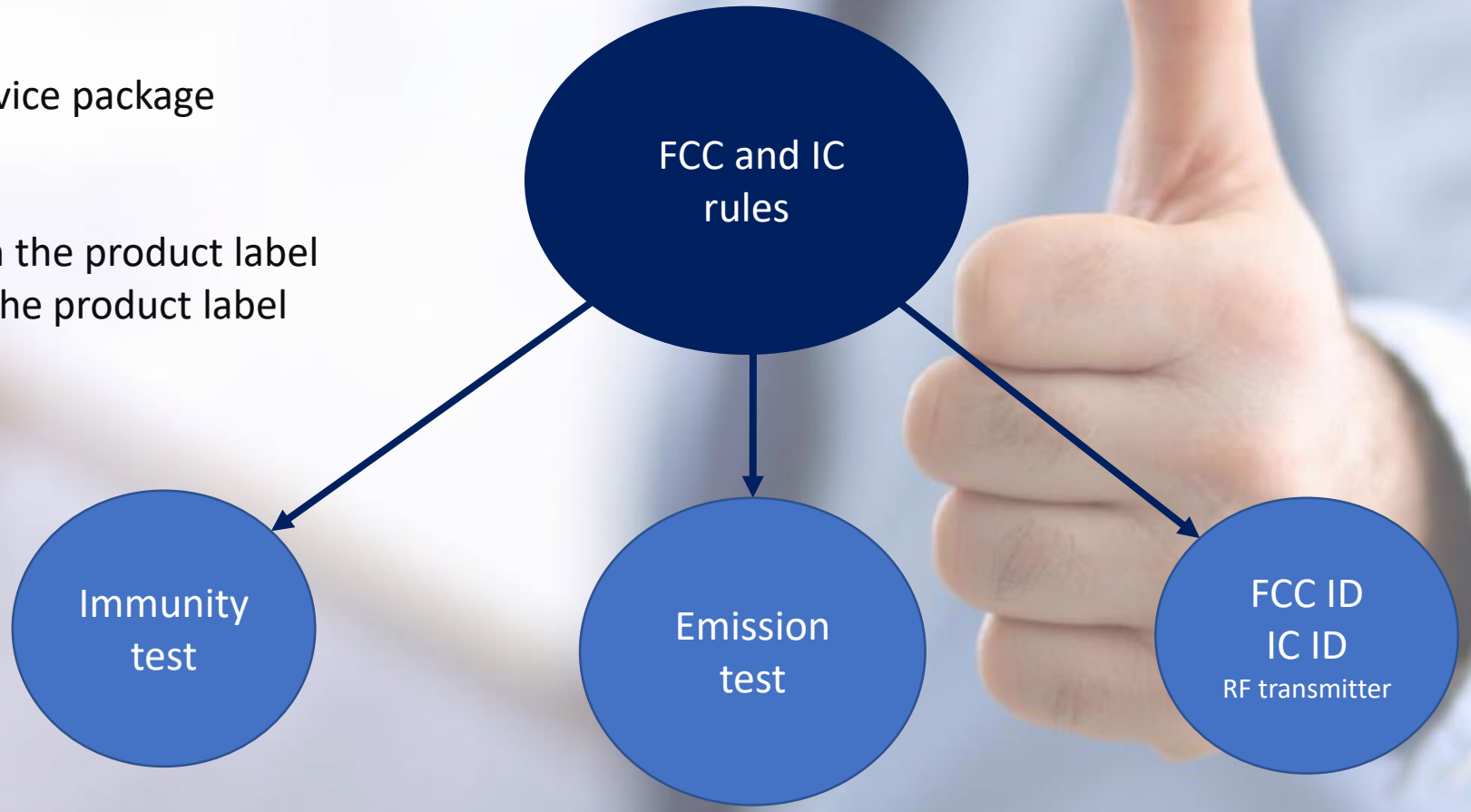
CE



Conformity to FCC and IC regulations

Receiver:
SDoC inside the device package

Transmitter:
FCC ID NUMBER on the product label
IC ID NUMBER on the product label





CE

FC

IC



WIRELESS BATTERYLESS TRANSMITTERS OVERVIEW

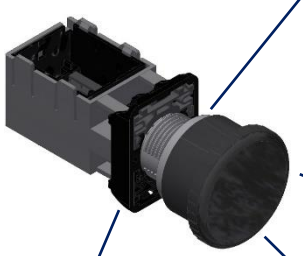
COMEPI

Application examples

Logistic plants and logistic hubs
Start command for automated machineries
Start command for AGV vehicles
Opening of automatic doors
Remote command for gates and entrance barriers
Automated production lines
Power and command for illumination and devices
Operator call button

Panel fixing
- Threaded ring fixing for plastic pushbuttons
- Screw fixing for metal pushbuttons

RFH8 or RFH9 transmitter

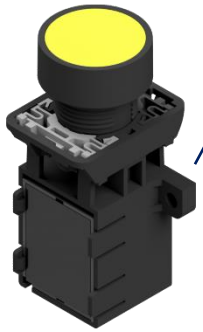


Comfortable operations thanks to the limitation of the actuation force

Support base
(supplied with the device)

Operator:
- Impulsive pushbuttons
- Simple mushroom pushbuttons
- Two position selectors
- Two position joystick
- Wobble pushbuttons

Version with fixing supports for free use without panel



Wireless pushbuttons

Absence of wires and possibility to be fixed anywhere on a surface make this product more flexible and make life easier for designers and operators!



Code example: **ECW4103RFH8**
Thermoplastic pushbutton
Momentary flush yellow
868MHz



ECW
Wireless pushbuttons

1
1 = Plastic body
4 = Metal body

102
Operator type

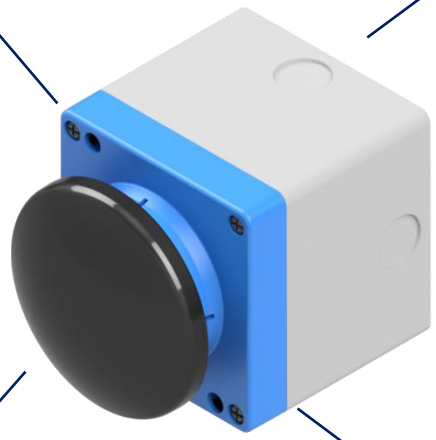
RFH8
RFH8 = 868MHz
RFH9 = 902MHz

-A
Null = Standard
–A = Panel free fixing

Wireless pushbuttons

It is possible to fix the device without opening the cover

Integrated RFH8 or RFH9 transmitter



ABS shock resistant enclosure

Operator:

- Impulsive pushbuttons
- Simple mushroom pushbuttons
- Two position selectors
- Two position joystick
- Wobble pushbuttons

Different dimensions with increasing holes number

Application examples

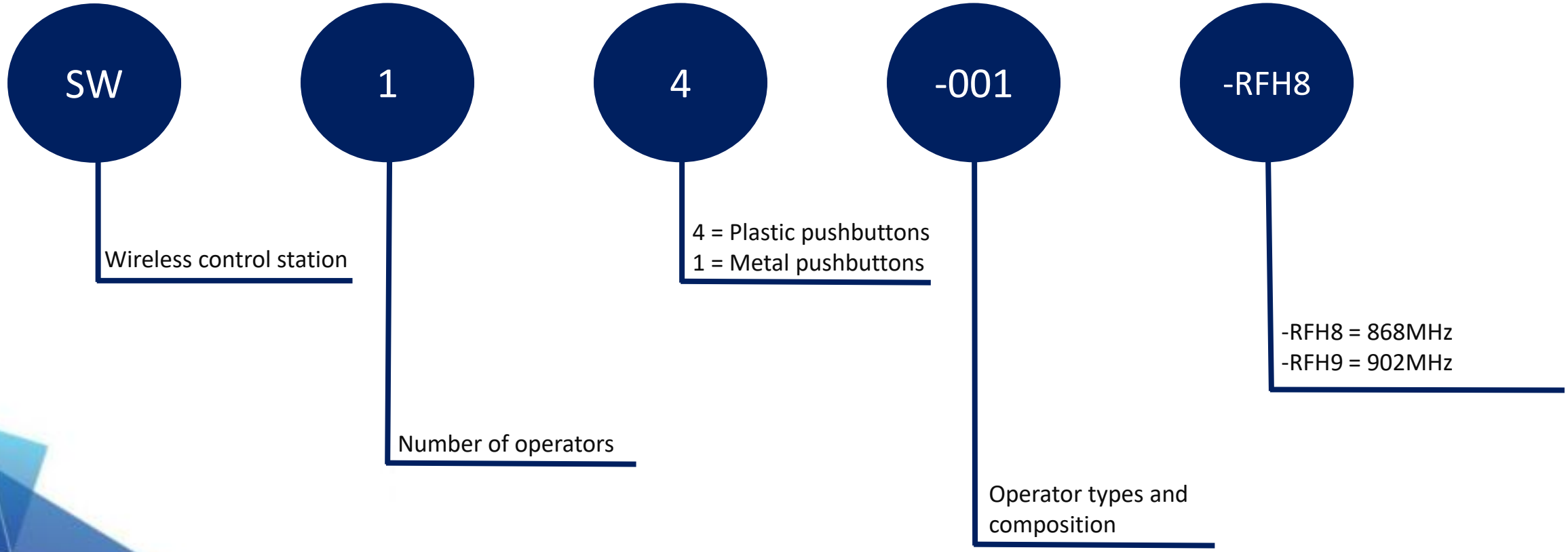
Logistic plants and logistic hubs
Start command for automated machineries
Start command for AGV vehicles
Opening of automatic doors
Remote command for gates and entrance barriers
Automated production lines
Power and command for illumination and devices
Operator call button

The operator can carry the device with himself, limiting the movement and associated risk. The control station can be carried on forklifts to facilitate workers opening the automatic doors, speeding up loading and unloading operations



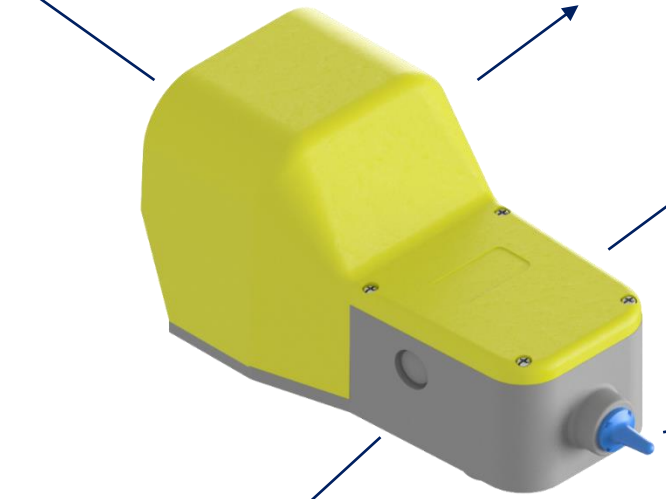
Wireless control stations

Code example: **SW14-081-RFH8**
Wireless control station
90mm wobble mushroom
868MHz



Wireless control stations

Wireless foot switches



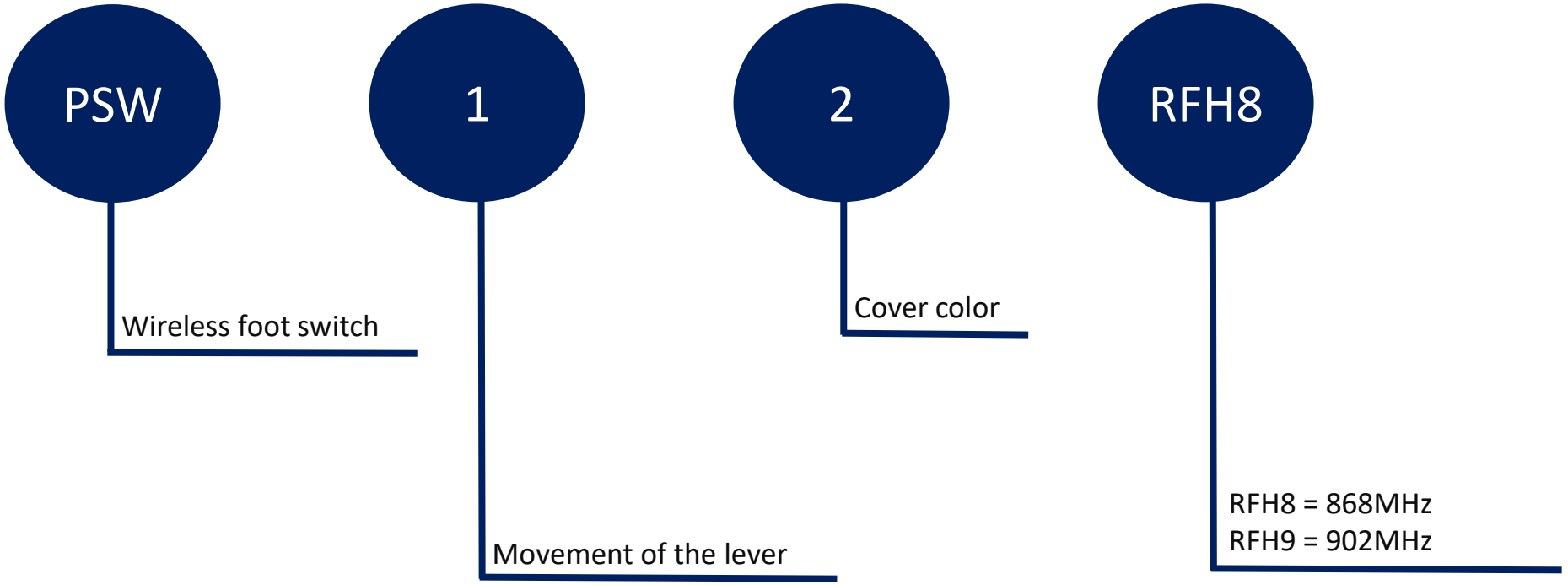
Application examples

Logistic plants and logistic hubs
Start command for automated machineries
Opening of automatic doors
Remote command for gates and entrance barriers

The foot switch can be easily moved and placed in the most comfortable position for the operator. The absence of cable and wirings minimize the risks when moving within the working area.



Wireless foot switches



Code example: **PSW11RFH8**
Wireless foot switch
Free movement of the lever and yellow cover
868MHz

Wireless limit switches

Available with all actuator shapes from COMEPI catalogue

Metal or plastic operating head to maximize adaptability to every working places and conditions



Integrated RFH8 or RFH9 transmitter

With metal or plastic casing, 30mm or 40mm width

Resistant antenna and limited size

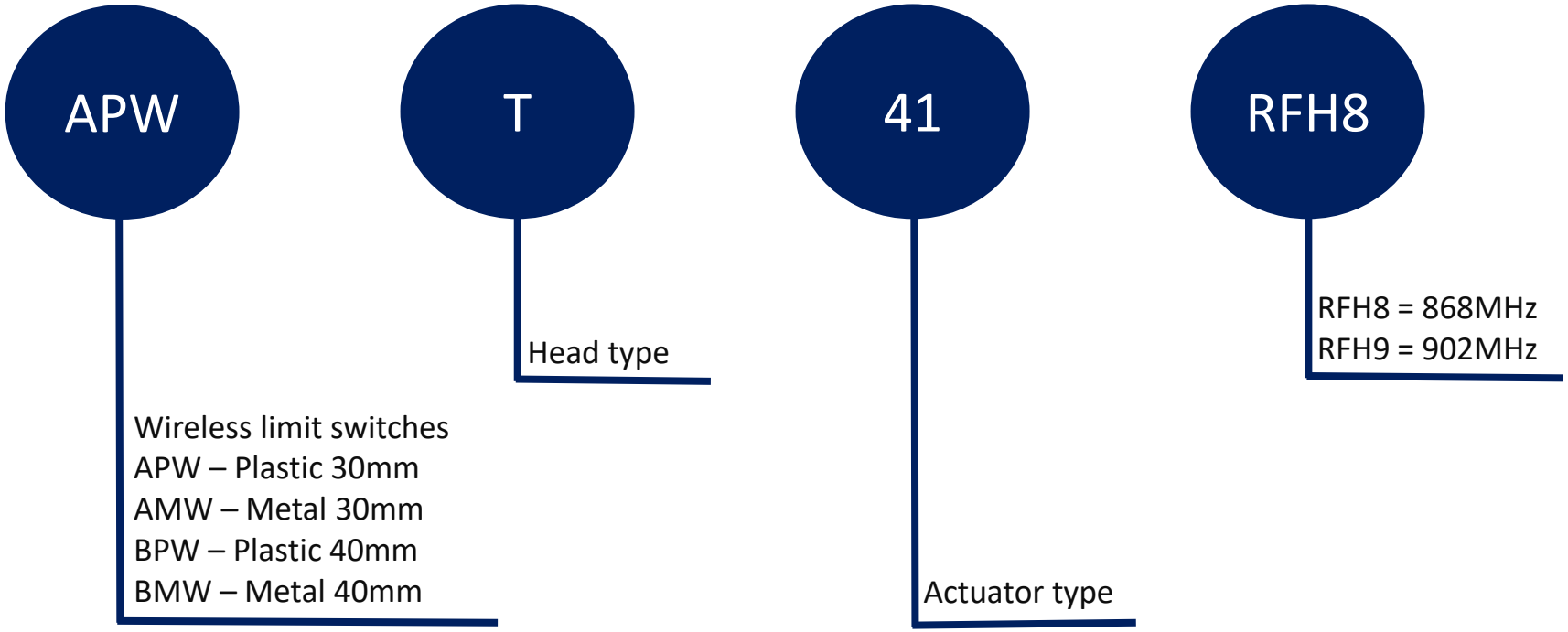
Application examples

Logistic plants and logistic hubs
Component supply in production lines
Opening and signalling on automated doors
Signalling on automated doors and entrance barriers
Automated production lines
Switsching and controlling lights and devices
Counter

The absence of wirings simplify and makes installation operations cheaper.
The flexibility of the product allows unthinkable positioning in ordinary configurations with cable.

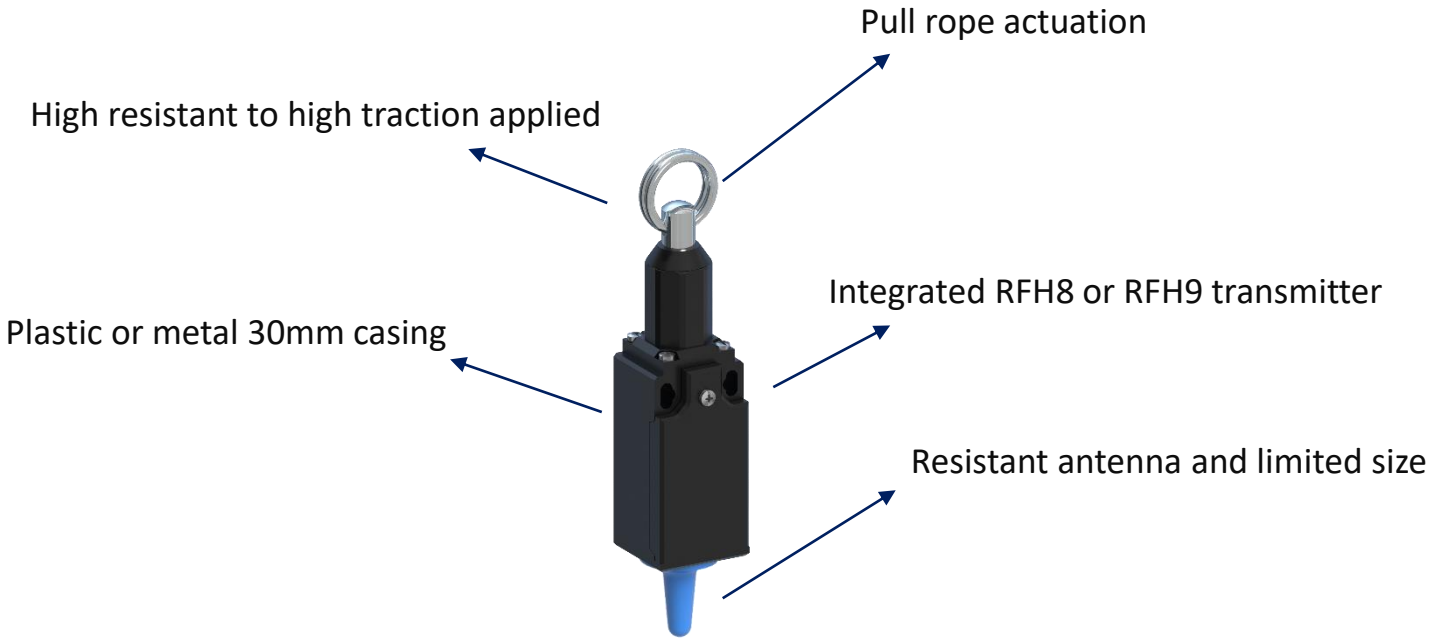


Wireless limit switches



Code example: **APWT41RFH8**
Wireless limit switch
Thermoplastic 30mm – Nylon roller lever
868MHz

Wireless rope switches



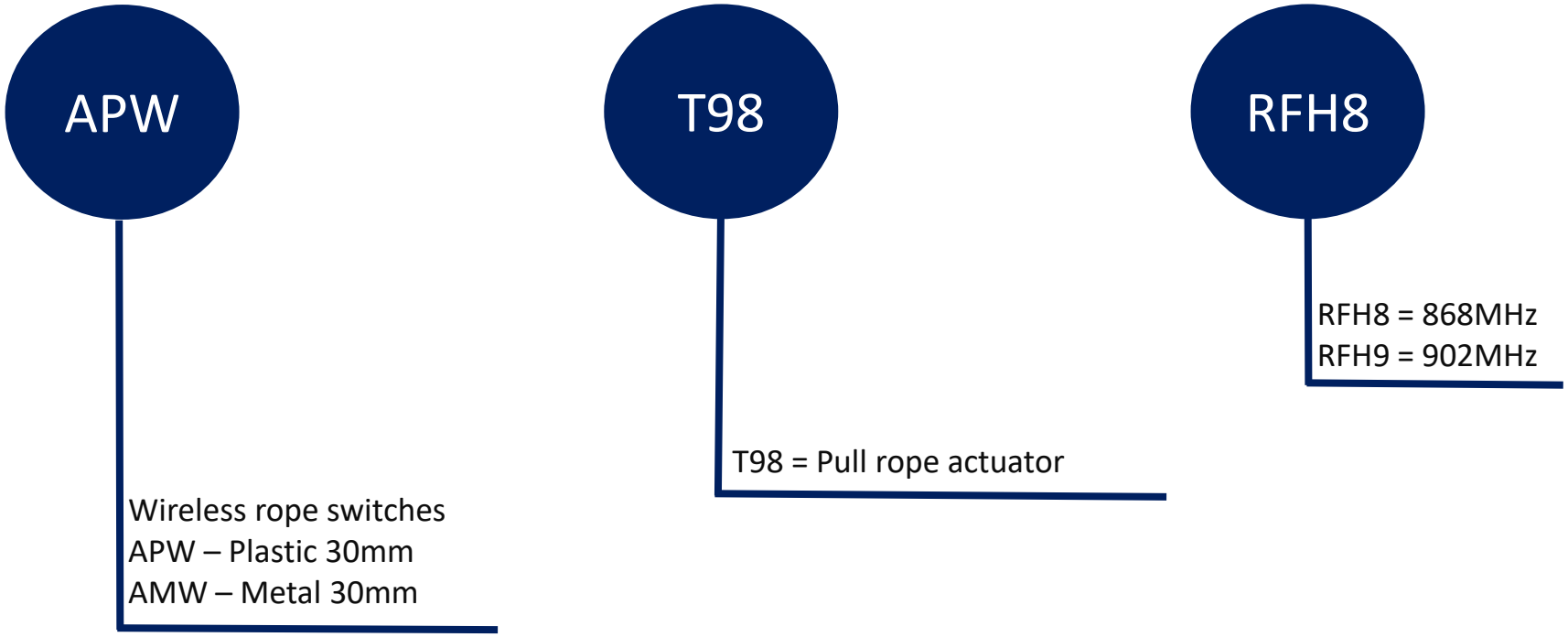
Application examples

Start command for automated machineries
Opening of automatic doors
Remote command for gates and entrance barriers
Automated production lines
Power and command for illumination and devices
Operator call button

The different modes of use available on the receiver make it possible to use the switch as a rope to turning the lights on and off in a production area, minimizing wirings and avoiding the use of a two stage relay

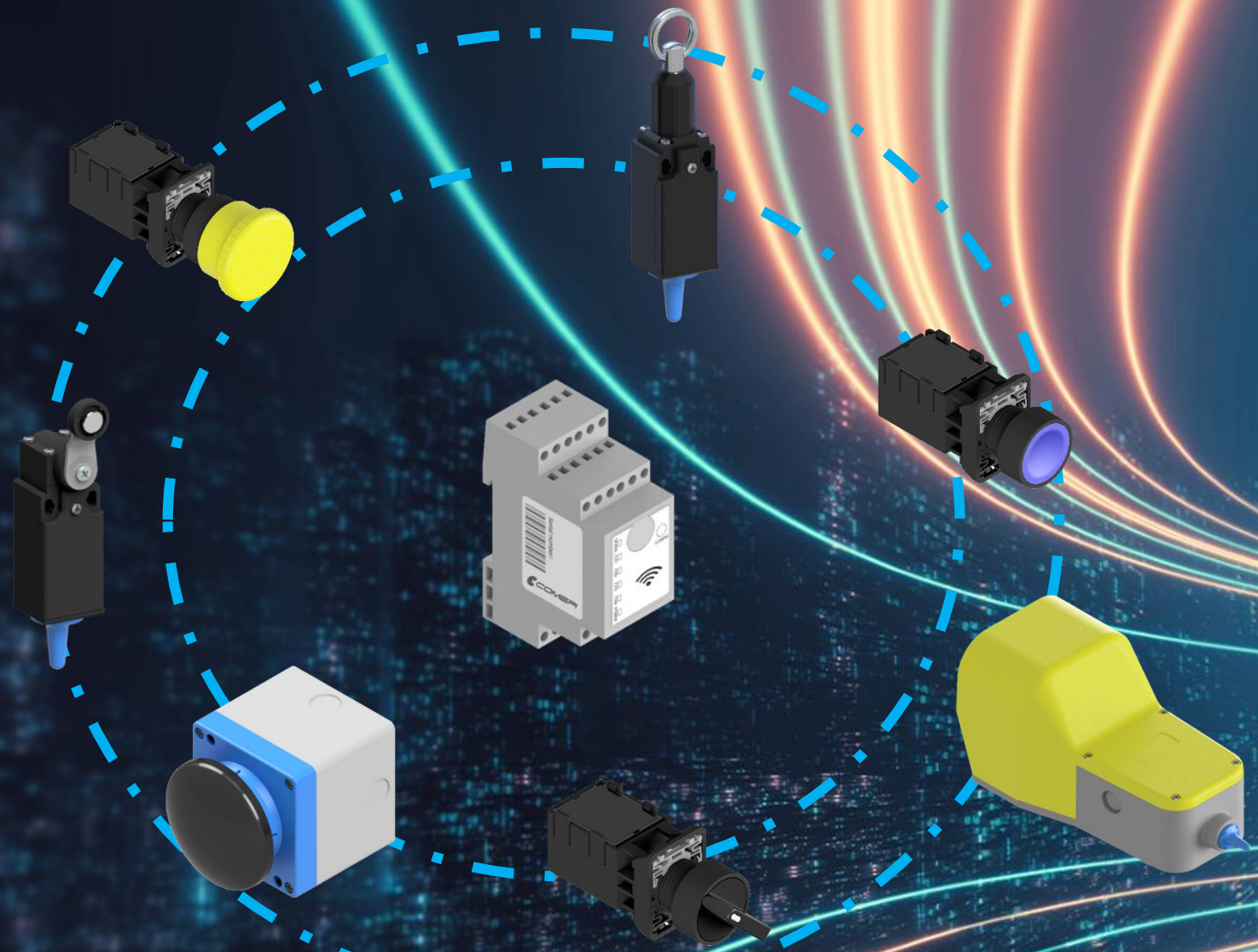


Wireless rope switches

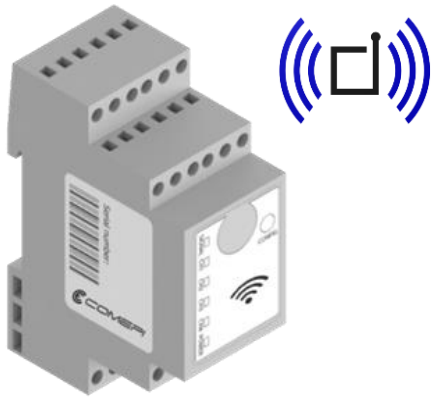


Code example: **APWT98RFH8**
Wireless rope switch
Thermoplastic 30mm
868MHz

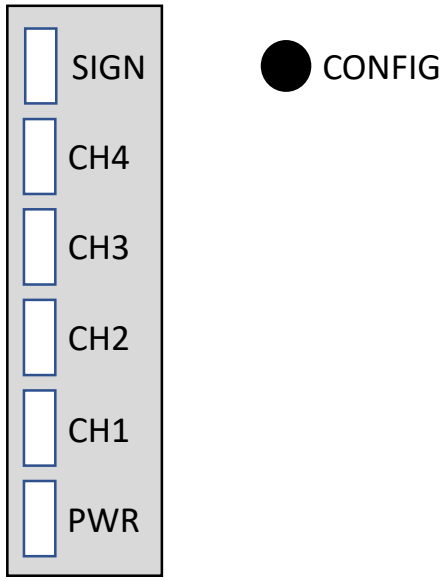
Wireless Receiver Overview

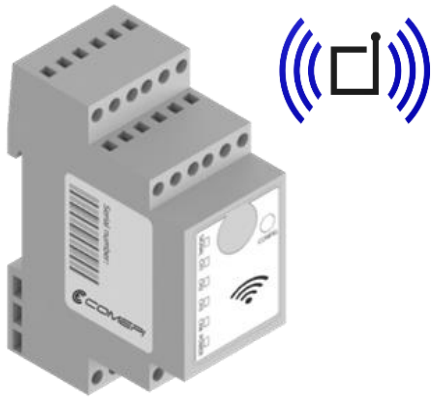


RRH8 (868MHz) and RRH9 (902MHz) receivers
Main features



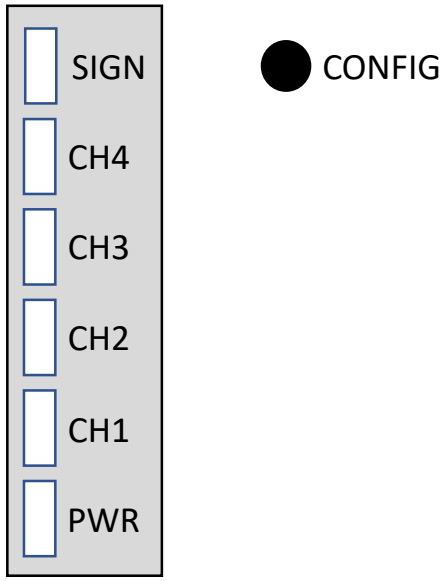
1. User interface
2. Supply and mounting
3. Device outputs
4. Configurable operating modes
5. Signaling LEDs
6. Antennas and installation tips

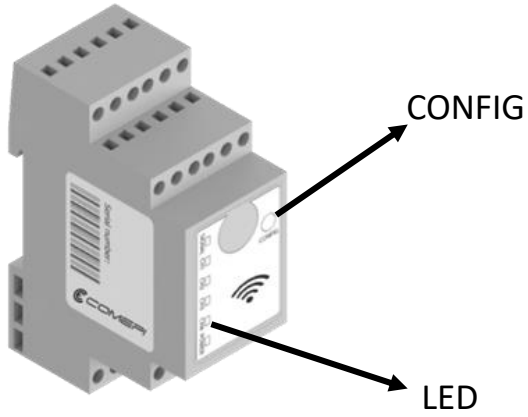




User interface

The user interface is given by six signaling LEDs and by the CONFIG button





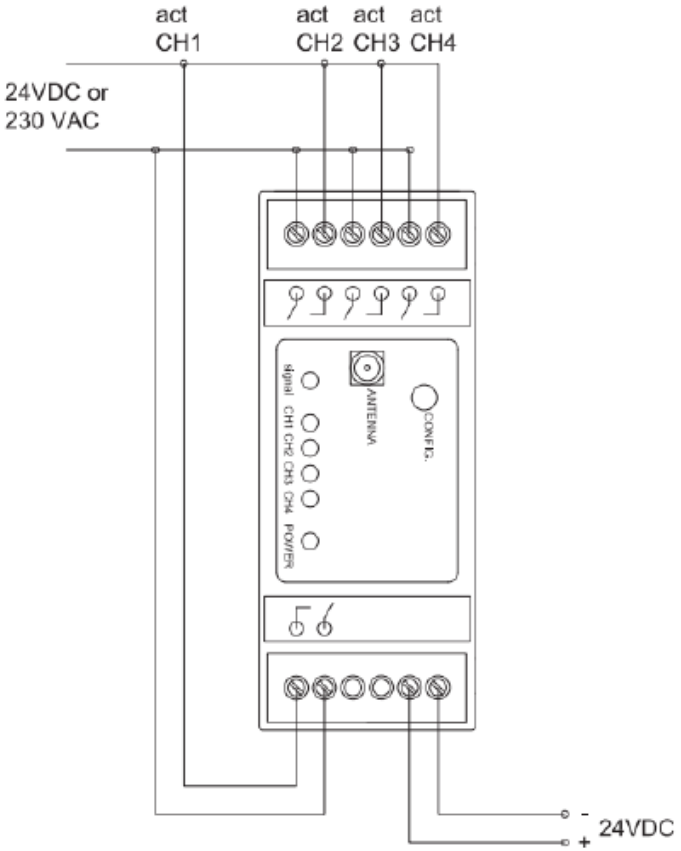


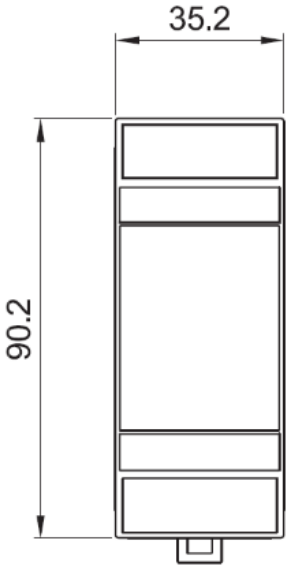


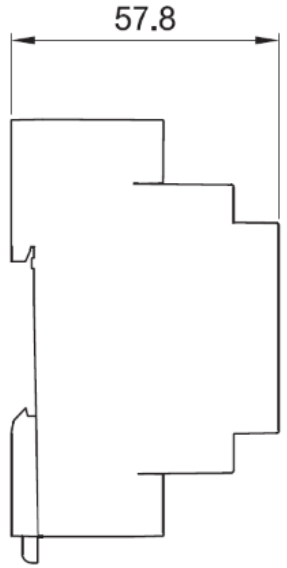
SIGN
CH4
CH3
CH2
CH1
PWR

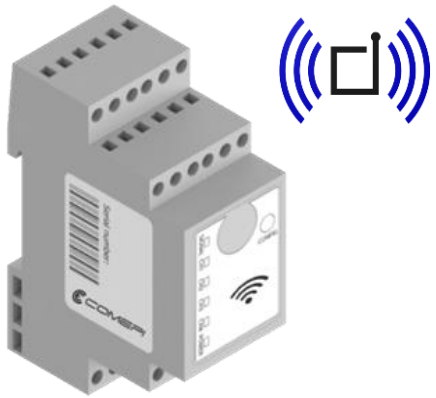
CONFIG

Electrical Scheme and Dimensions





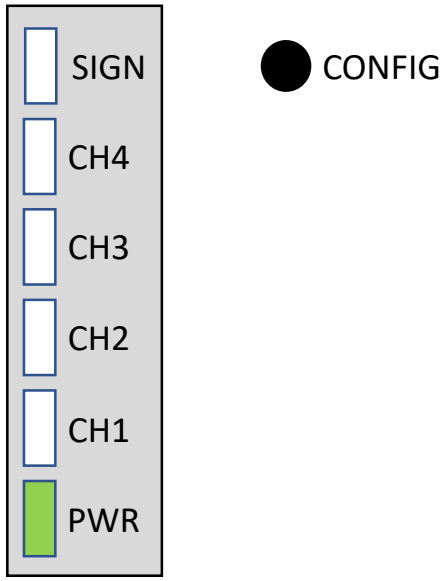




Mounting and supply

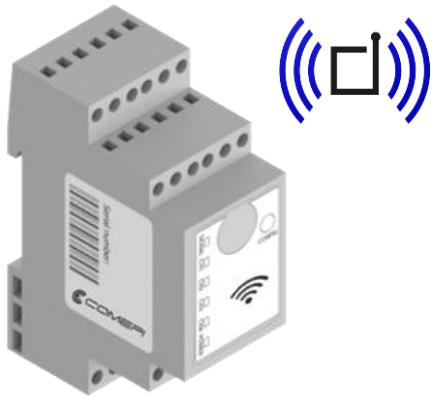
The receiver has a DIN-RAIL mount enclosure

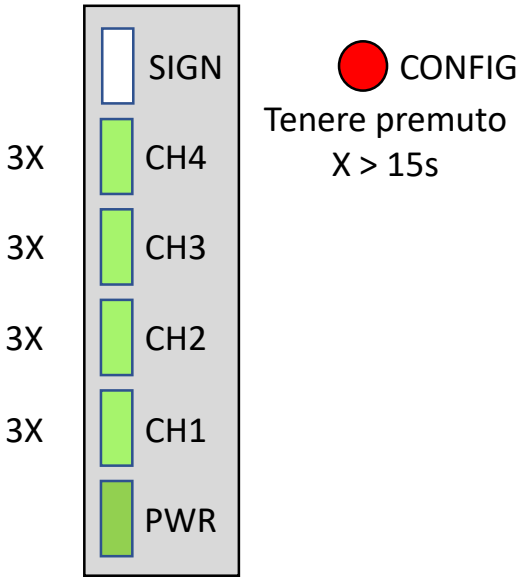
2 DIN MODULES width



The device must be supplied with 24Vdc

The LED PWR goes on when the supply voltage is correctly given





First use and device reset procedure

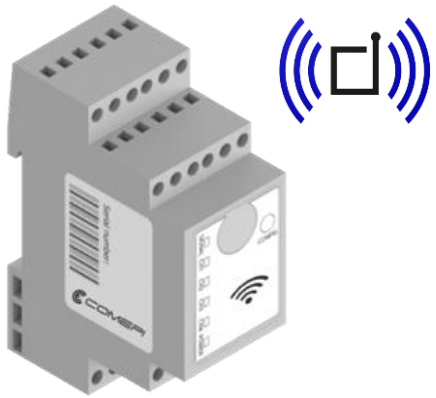
Before the first use push the CONFIG button for 15s

LEDs CH1 CH2 – CH3 – CH4 will flash three times simultaneously

The reset procedure is now complete and the device is ready to be used

Use again this procedure in case a reset is necessary on the receiver

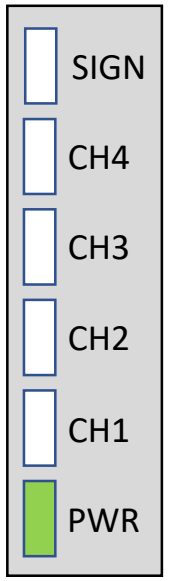
IMPORTANT: Switch off and on again after reset procedure to put the receiver in operating mode



Receiver relays outputs

Four independent electromechanical relay outputs

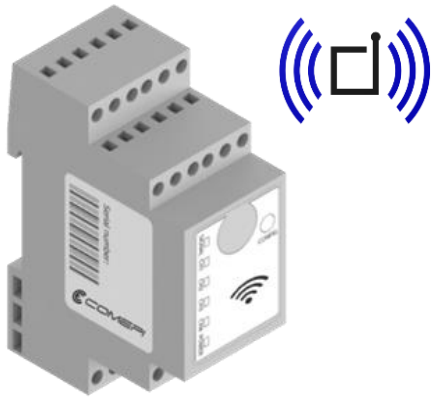
Ue-Ie = 250Vac – 3A



CONFIG

To every relay can be paired up to 28 transmitters

Every relay can have a different mode us use

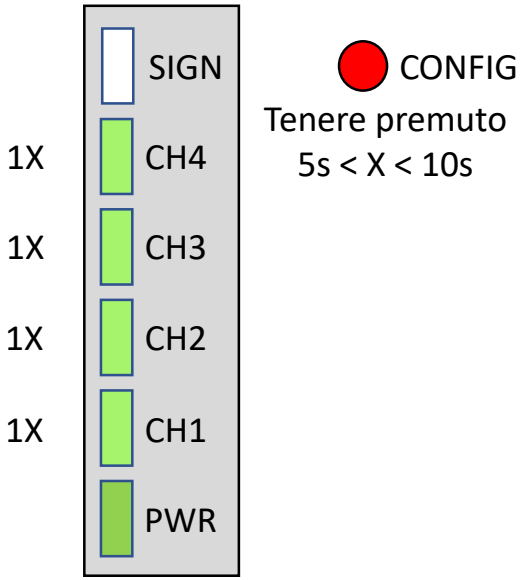


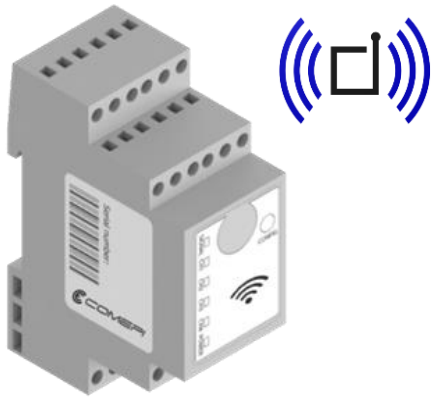
How to pair a transmitter to a relay output

Push the CONFIG button for a time between 5 and 10 seconds

Stop pressing the CONFIG button

LEDs CH1 – CH2 – CH3 – CH4 will flash one time simultaneously to signal the entrance inside the transmitters pairing menu



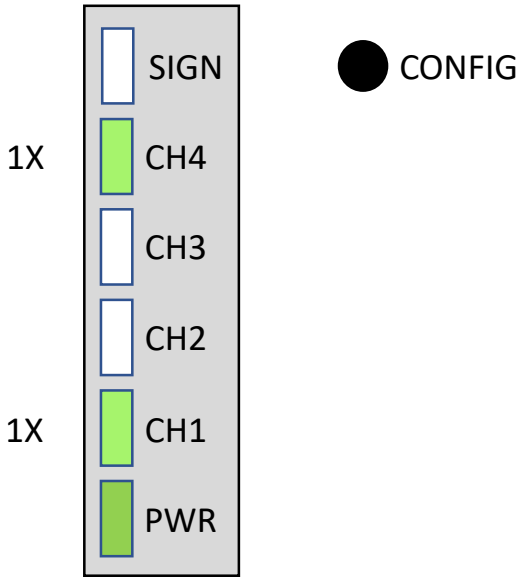


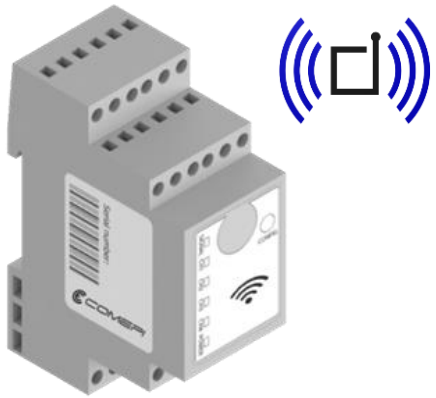
How to pair a transmitter to a relay output

Press the transmitter to be paired



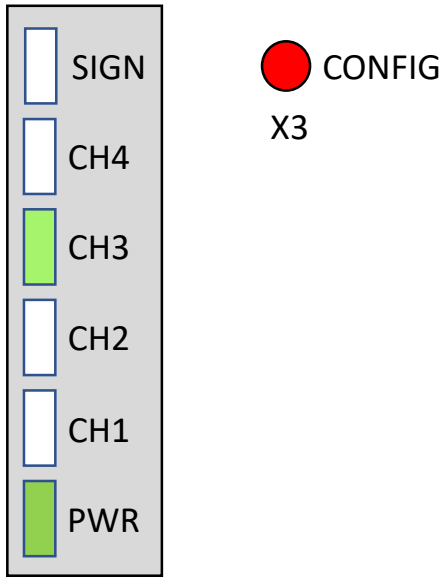
When the device is correctly identified the CH1 and CH4 LEDs will flash one time simultaneously





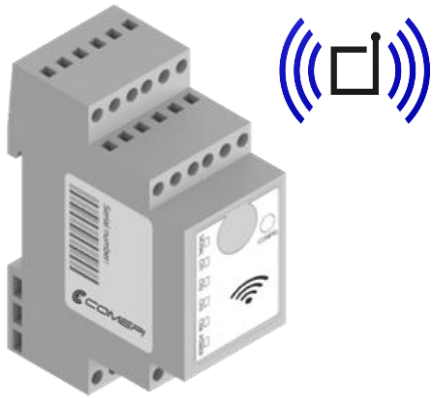
How to pair a transmitter to a relay output

Press the CONFIG button for a number of times corresponding to the number of the relay you want to select



For example, press the CONFIG button three times to pair the transmitter to relay output number three

After two seconds without actions the LED CH3 flash to signal that the transmitter is properly paired



How to pair a transmitter to a relay output

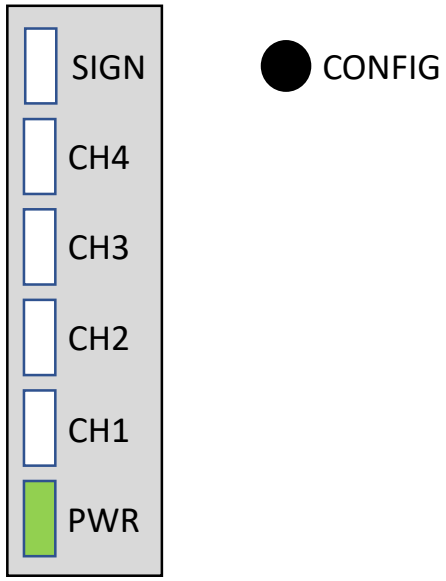
Repeat this procedure for every transmitter you want to pair



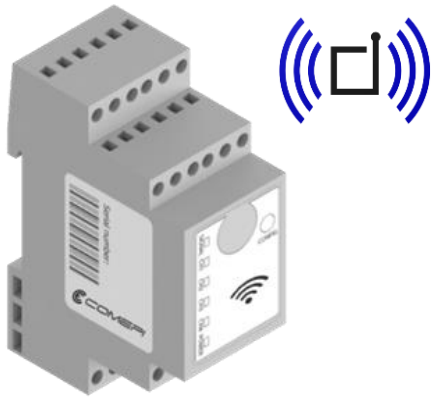








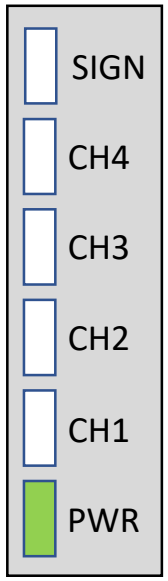
IMPORTANT: Switch off and on again after pairing procedure to put the receiver in operating mode



Operating modes

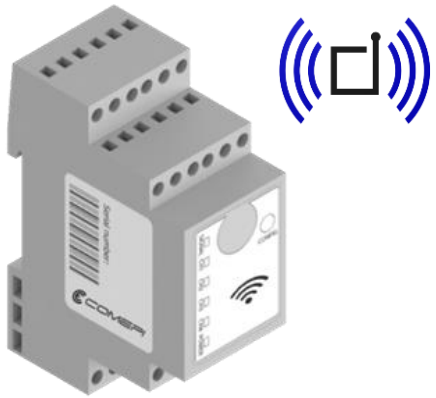
Each relay can be set with a different operating mode

The receiver is programmed to work in five different operating modes:



CONFIG

1. Impulsive mode
2. Maintained mode
3. Reverse impulsive mode
4. Reverse maintained mode
5. Two-stage mode

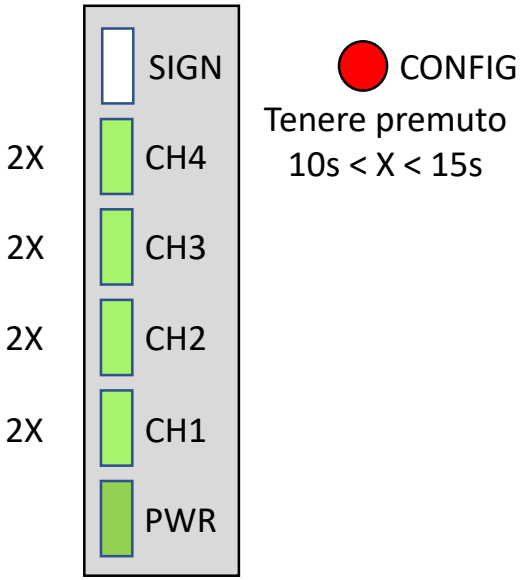


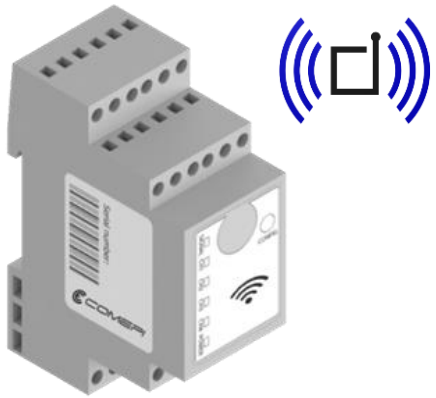
Operating mode selection

Press the CONFIG button for a time between 10 and 15 seconds

Release the SET button

CH1 – CH2 – CH3 – CH4 LEDs will flash two times to signal the entrance inside the operating modes selection menu

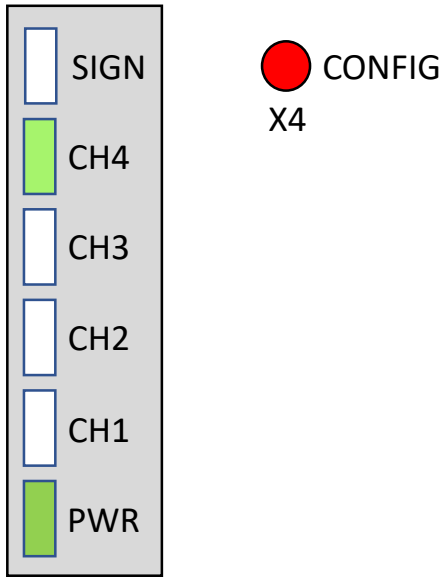


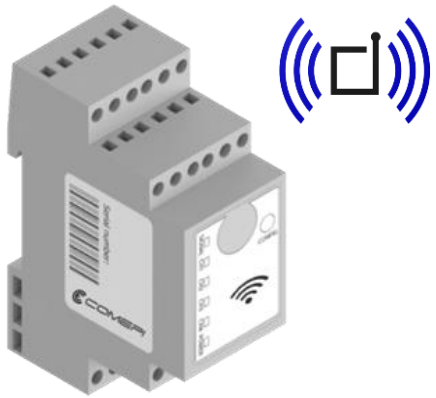


Operating mode selection

Press the CONFIG button for a number of times corresponding to the number of the relay you want to program

For example press four times the CONFIG button to configure the operating mode for relay number four

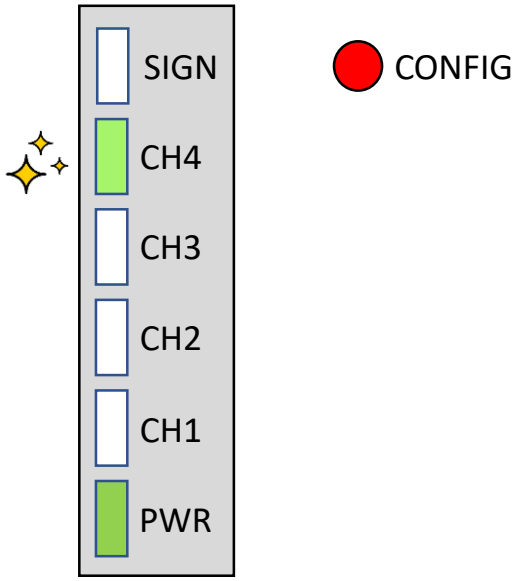




Operating mode selection

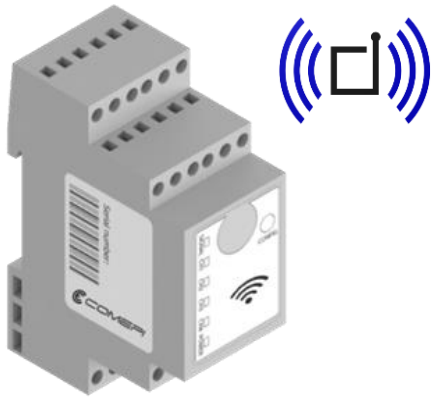
After two seconds without actions the CH4 LED start to flash quickly waiting for the selection of the needed operating mode

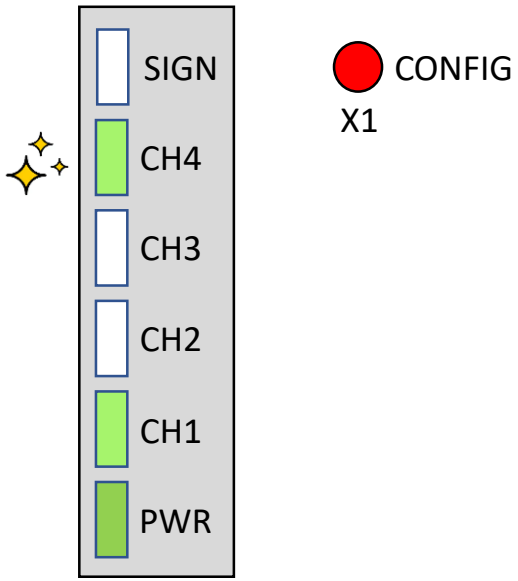
Press the CONFIG button for a number of times corresponding to the chosen operating mode:



1. Impulsive mode
2. Maintained mode
3. Reverse impulsive mode
4. Reverse maintained mode
5. Two-stage mode

IMPORTANT: Switch off and on again after reset procedure to put the receiver in operating mode



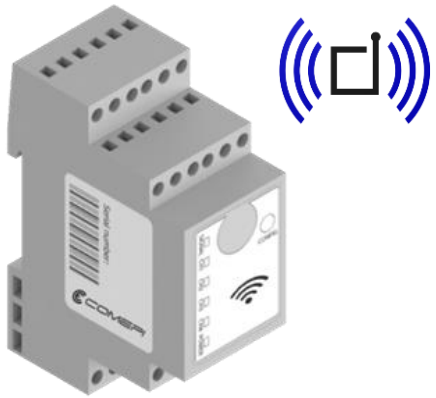


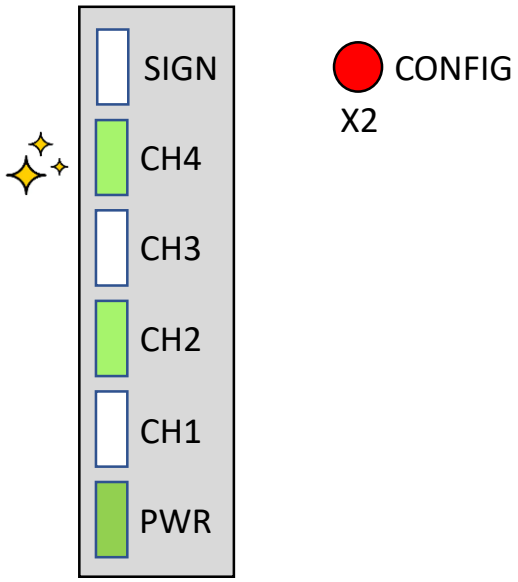
Operating mode selection

Press one time the CONFIG button to select the IMPULSIVE MODE



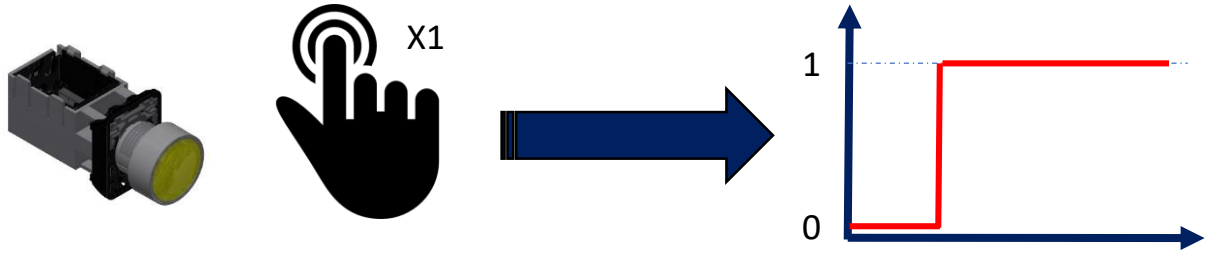
The chosen relay closes when a signal is received from one of the paired transmitters and remains close for 1s



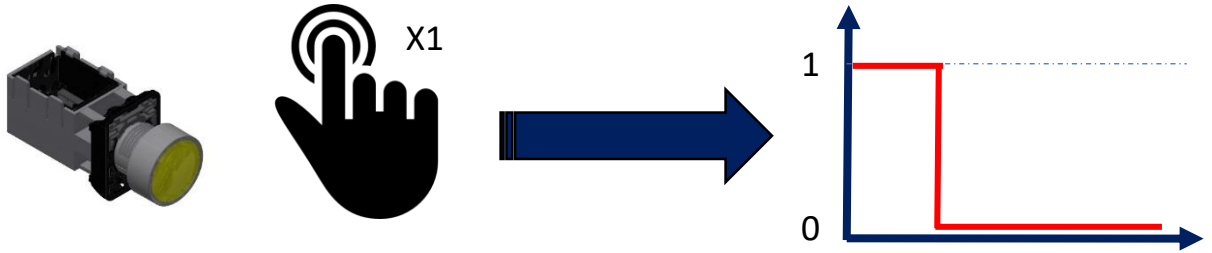


Operating mode selection

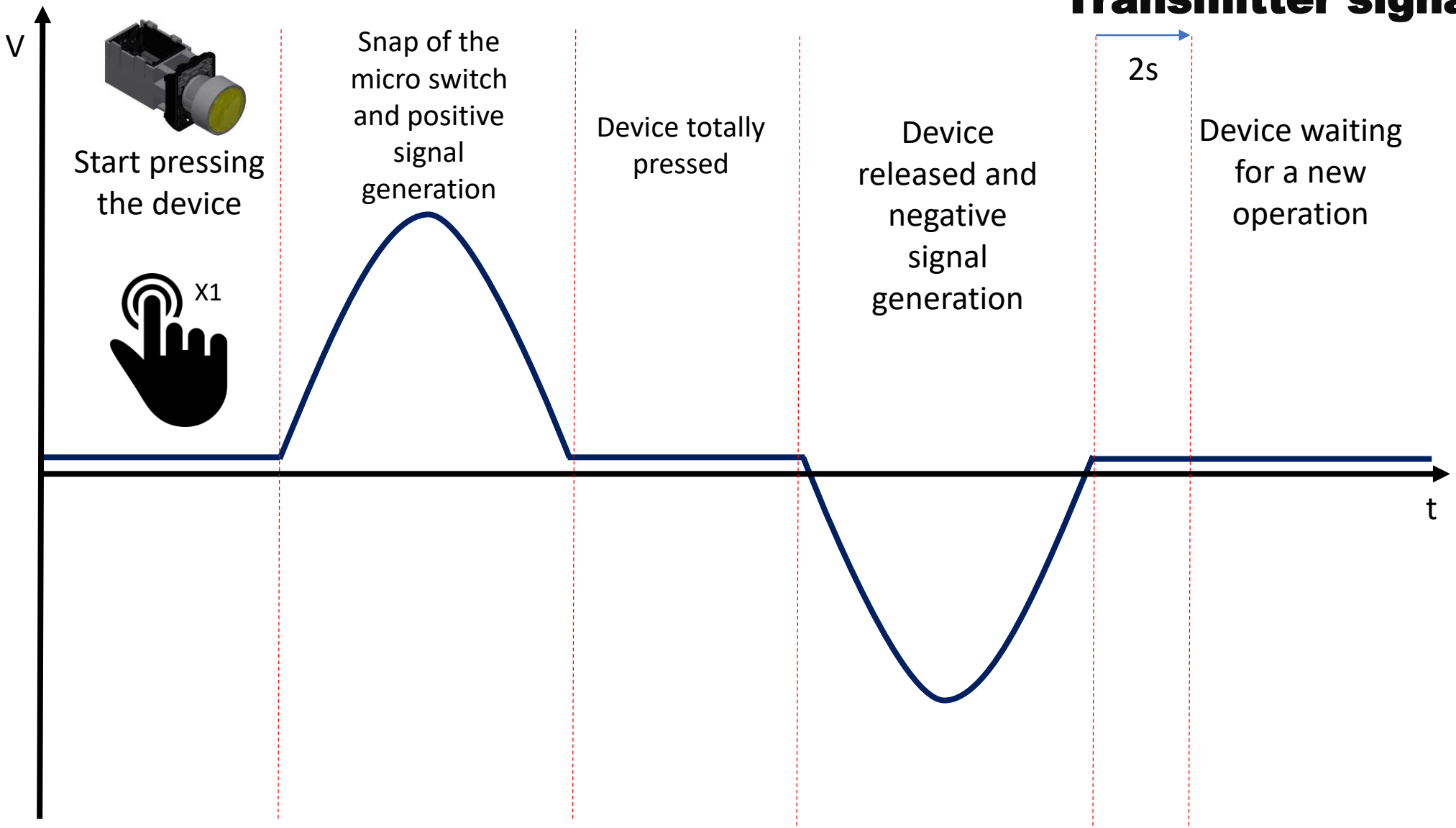
Press two times the CONFIG button to select the MAINTAINED MODE

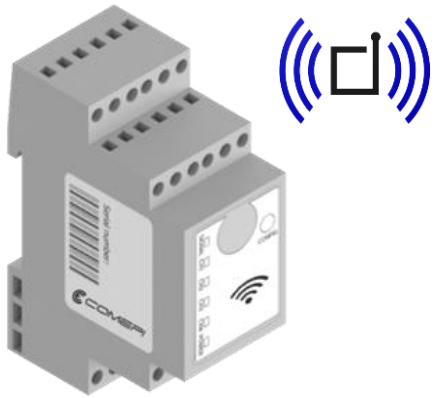


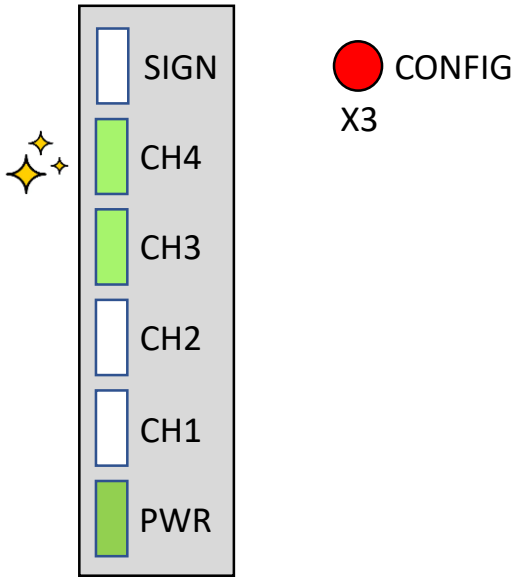
The selected relay closes after receiving a signal from one of the paired transmitters and still remains close till a new signal received



Transmitter signal generation

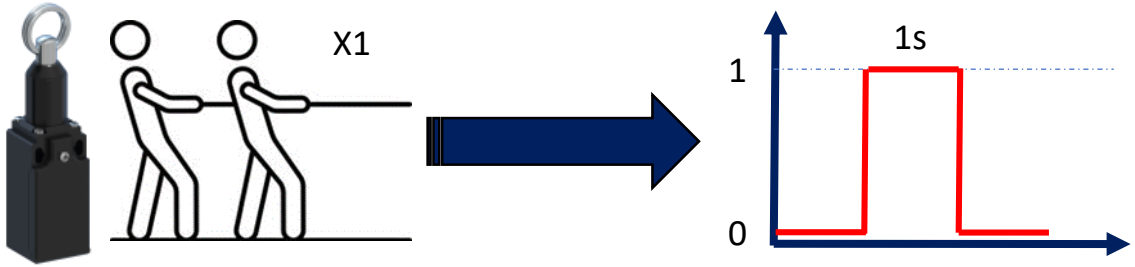






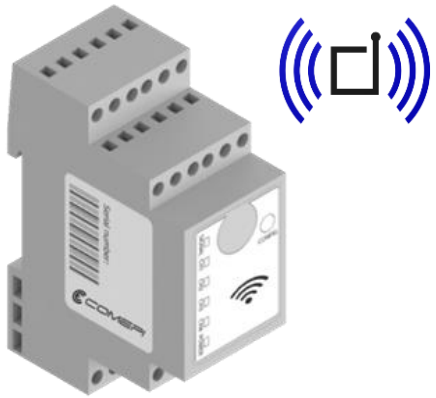
Operating mode selection

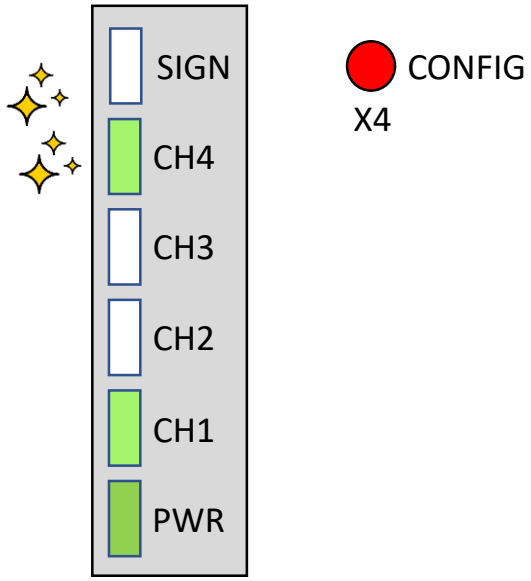
Press three times the CONFIG button to select the REVERSE IMPULSIVE MODE



The selected relay closes when a signal is received from one of the paired transmitters and remains closed for 1s

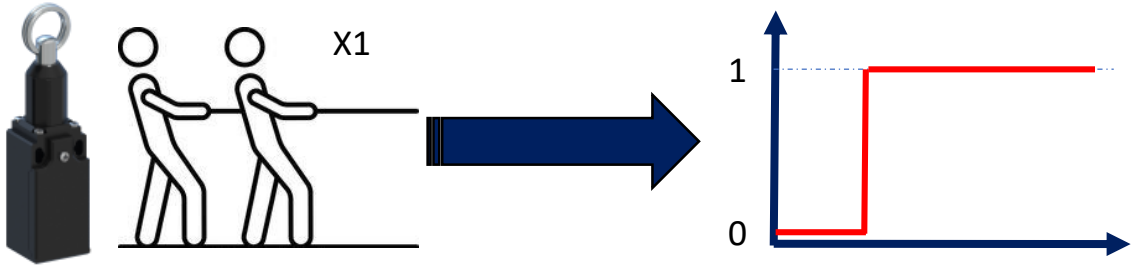
This reverse operating mode is designed specially for rope switches



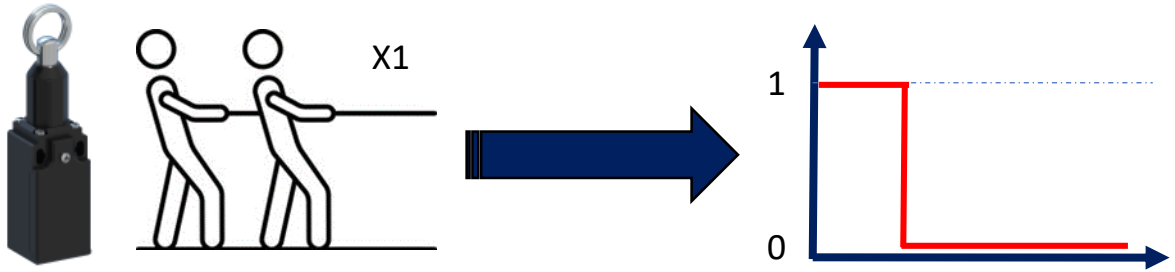


Operating mode selection

Press the CONFIG button four times to select the REVERSE MAINTAINED MODE



The selected relay closes when a signal from one of the paired transmitters is received and still remain closed till a new signal

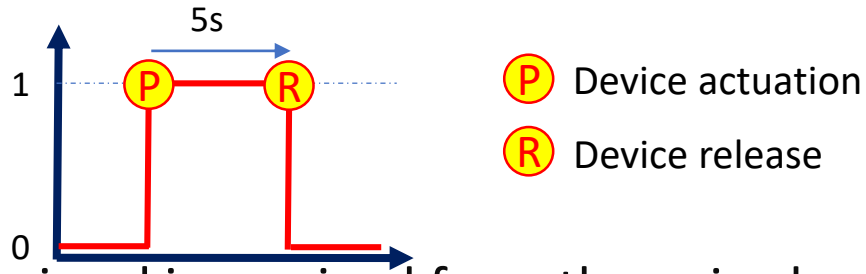


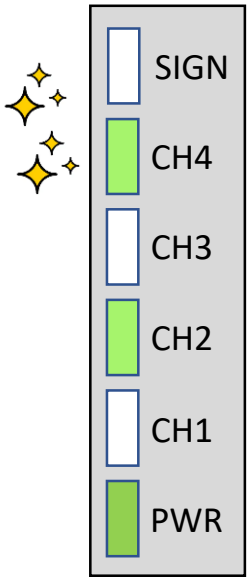


Operating mode selection

Press the CONFIG button five times to select the TWO-STAGE MODE







CONFIG
X5

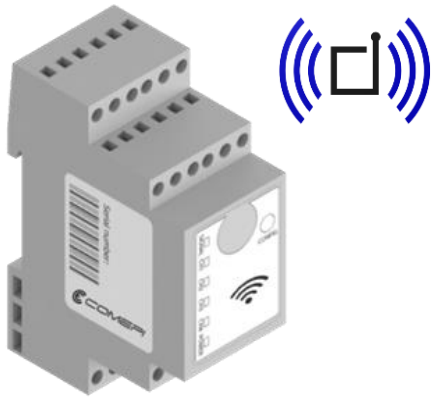
The selected relay closes when the positive signal is received from the paired transmitter, opens when receive a negative signal

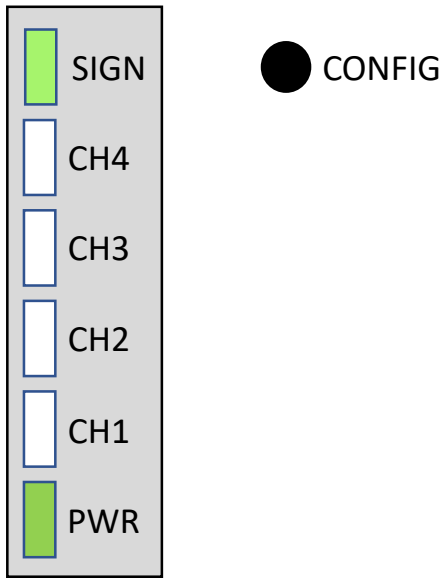
PAY ATTENTION

The two-stage mode reply exactly the actuator position

In case one of the negative signal goes loss is necessary to receive another negative signal to close the loop

The use of only one transmitter each relay is strictly recommended and a time of 5s between two consecutive signal is suggested

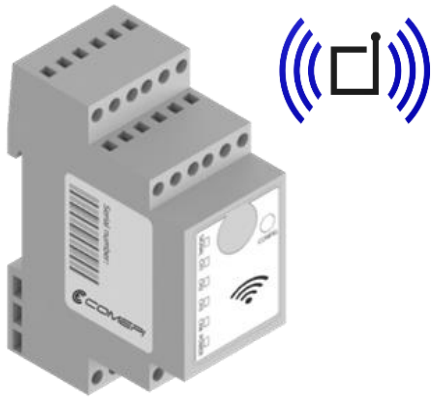


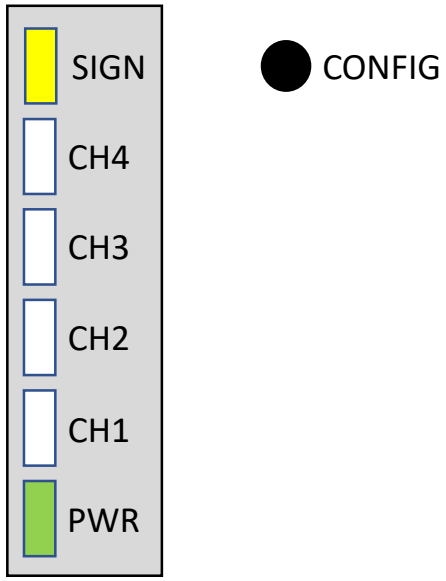


Diagnostic LED to verify the signal intensity

The SIGN LED goes on for 1s after receiving an incoming signal

The SIGN LED is a good diagnostic item, to be used during the installation: it lights up green when the signal has an intensity over the 50% of the rated dB value.





Diagnostic LED to verify the signal intensity

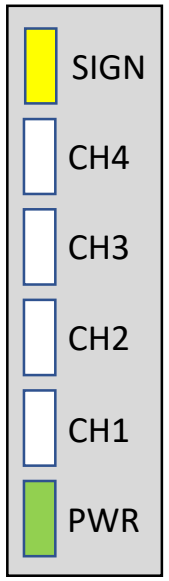
SIGN LED lights up yellow when the signal intensity is less than 50% of the rated dB value

When the SIGN LED lights up yellow the signal is anyway received and processed, but is suggested to verify if it is possible to give better installation conditions to the device in order to maximize the reliability of the system

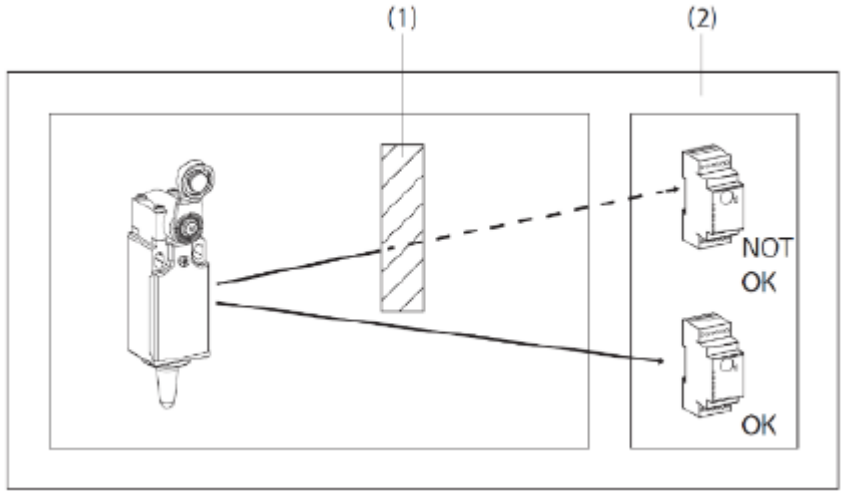


Installation tips

The wireless signal works at its best when the space is free between the receiver and the transmitter.
Eliminate as far as possible obstacles, mostly if they are metallic!

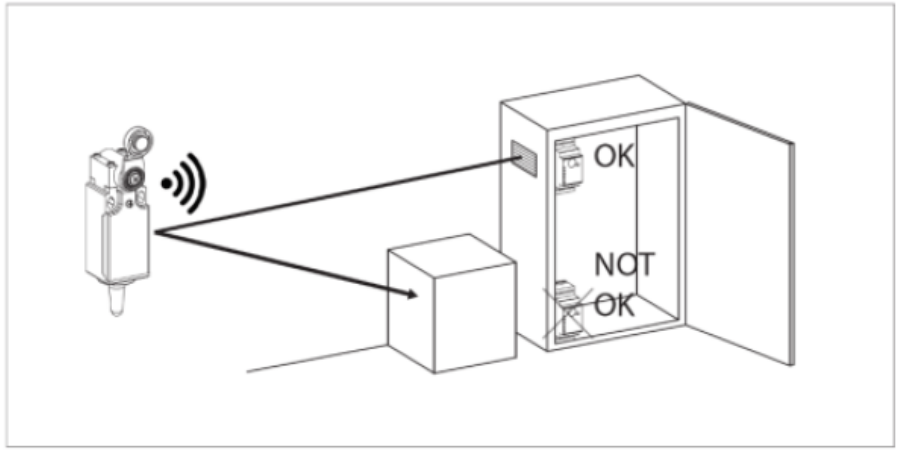


● CONFIG



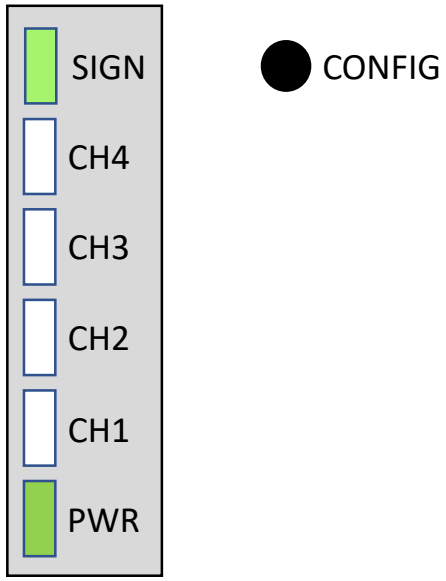
Material	Attenuation of signal through the material
Metal parts	Between 50 and 100%
Concrete walls	Between 70 and 80%
Brick walls	Between 50 and 70%
Drywall	Between 30 and 45%
Glass window or wood panel	Between 10 and 20%

NOTE: The values inside this table are purely indicatives. Real values can change according to thickness and specific composition of the material to be penetrated by the signal.







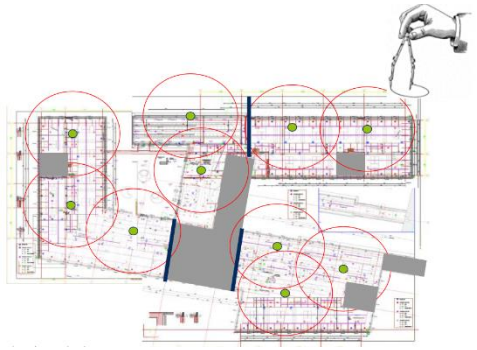


Operating distance

The wireless transmitters from COMEPI are tested in industrial environment up to 30m indoor

Free field transmission range goes up to 70-80 meters

Follow the installation tips and design as better as possible the working area in order to have the best wireless experience!

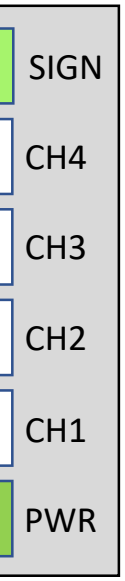






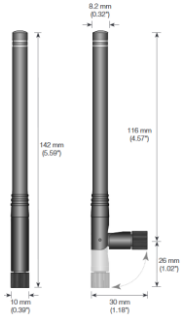
Receiver antennas

COMEPI make available two types of suggested antennas to maximize the devices performances:

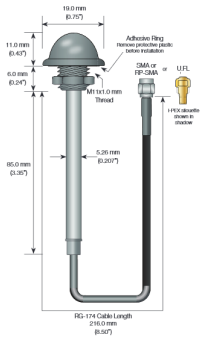


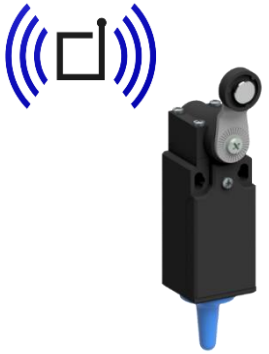
CONFIG

Adjustable antennas
ANT86801
ANT90101



Panel fixing antennas
ANT86802
ANT90202



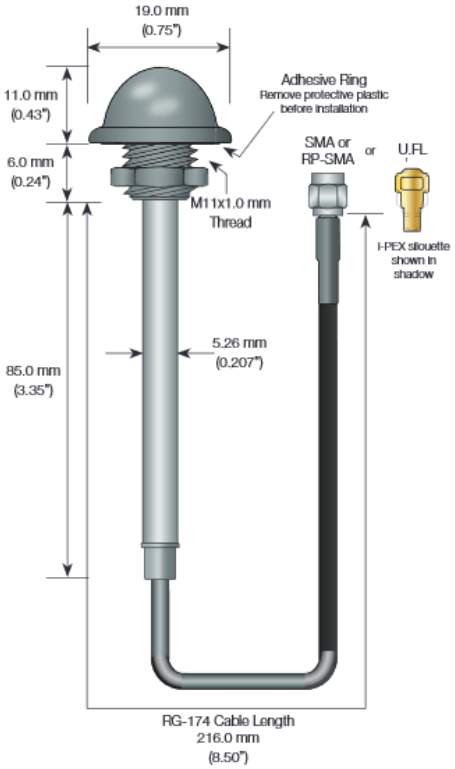


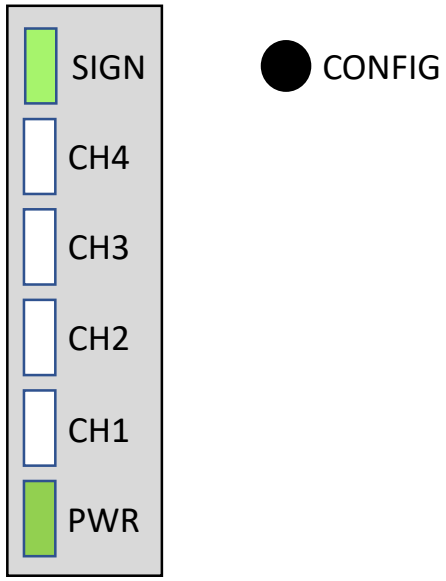


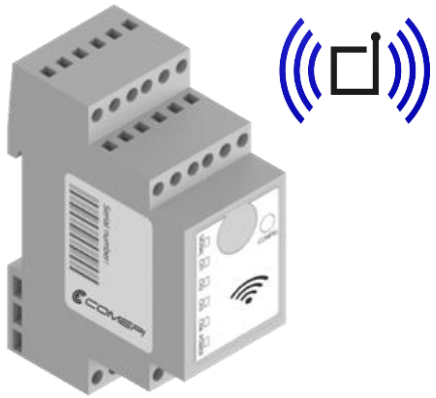
Receiver antennas

The antennas are easily connectable to the receiver using a standard SMA connector
(Female SMA on the receiver – Male SMA on the antenna)

The antennas are supplied as accessories, but their use is essential to guarantee the best device performances

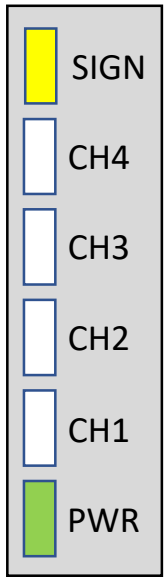


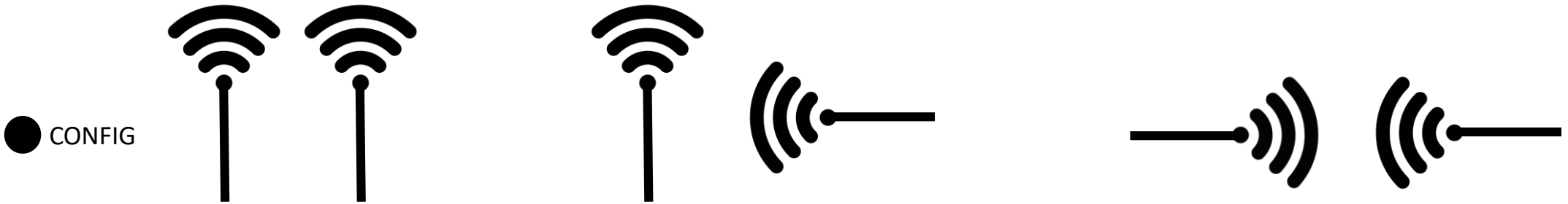




Installation tips

Orientation of receiver and transmitters antennas





Best conditions

Acceptable conditions

Not the best conditions!

PAY ATTENTION! Take a minimum distance from the transmitter to the receiver in order to avoid annoying signal saturations


switch off your limits!!
GO WIRELESS AND
BATTERYLESS