COMHAND

THE INDUSTRIAL HANDS-FREE RADIO CONTROL

Installation and operating instructions

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Guideline

The European Machine Directive 2006/42/EC considers a remote control as a control element and as a safety component for stopping it. Its proper implementation must comply with the rules resulting from it.

- **Carefully read the user guide before the first use of your comHAND and keep it : use not in accordance with the user guide would release SIAtech from any liability**

- **This device is not intended for use by persons with reduced physical, sensory or mental abilities. The operator must have received adequate training and must be authorised to drive by radio remote control**.

- If your comHand is damaged, do not use it. Contact the after sales service to avoid any danger.

Regarding the use

The operator must at all times maintain the visibility of the manoeuvre he is performing. Where the driver's direct field of vision is insufficient, the equipment controlled must be equipped with auxiliary devices to improve visibility.
In the event of simultaneous movement of several pieces of equipment running on rails, these pieces of equipment must be equipped with means to reduce the consequences of a possible collision.

- **To avoid any risks of electrocution, do not open the receiver casing while it is powered up.**

- **Do not leave the transmitter in any place**, although it is equipped with an automatic shutdown system called the "dead man function".

- **Always remove the ring when not in use.**

- **In case of anomaly**, immediately stop the set up by pressing the « punch » button on the transmitter and remove the ring.

- **Do not forget** to regularly recharge the device.

Refer to the operating instructions for equipment maintenance

Regarding the maintenance

- Any intervention other than the usual cleaning and maintenance by the customer may be carried out by an approved centre.

- For your safety, use only accessories and spare parts suitable for your ComHand.

1. Presentation of the comHAND solution

Thank you for choosing the ComHAND industrial posture radio control system.

The ComHAND remote control is designed for the control of equipment, vehicles and industrial lifting equipment previously controlled by wired remote controls, desks or remote controls such as button boxes.

Its ergonomics allows the operator to control the machine by focusing only on the load without having to focus on the buttons. The remote control does not delete, but completes the traditional safety circuits (e. g. emergency stops).

With the ComHAND radio control series, SIAtech offers solutions adapted to the functional needs of safe industrial applications. Its modularity integrates many possibilities in terms of:

- Number of function buttons
- Types of ring
- Number of output relays
- Programming relay / button assignment
- Switch box (accessory)

In addition, particular attention was paid to the ease of piloting by the operator:

- Ergonomics of the transmitters allowing hands-free control
- Accessibility to buttons
- Touch sensitivity of the buttons
- Identification of controlled functions
- Portable, compact and lightweight transmitters
- Maximization of the application's operating time (long battery life)
- Mechanical protection of the control ring buttons preventing any unintentional action.

In order to increase the level of security, innovative technological solutions and options are also offered:

- Intuitive control allowing the user to keep an eye on the operation to be performed.
- Customizable security options:
- "Busy hands" to force the user to use both hands to generate a movement.
- "Only one movement at a time", to avoid the activation of several simultaneous movements on the machine.
- Safety stop of the **PLd remote control according to EN ISO 13849-1 (SIL2 equivalent according to IEC 62061)** and Hamming distance greater than or equal to 4 for each of the messages sent.

Maintenance is made easier:

- Diagnostic aid indicators
- Easy replacement of the ring and bracelet

Finally, these radio remote controls integrate the safety requirements of current standards, and comply with European directives:

- RED: radio equipment and telecommunications terminals (low voltage, electromagnetic compatibility, radio spectrum): Point not in the same place

For any problem related to the installation and understanding of the ComHAND remote control system, we invite you to contact our technical support department:

Phone : +33 (0)2 78 77 53 50

Email : contact@siatech.fr

2. Setting up

2.1. Composition of the ComHAND full set and elements description

WARNING: The operating instructions are part of the device. Please read them carefully before using your ComHand. Keep them for future reference.

The **ComHAND** series consists of:

- A transmitter «CHe» with radio communication :

4+2 buttons
(4 function buttons + «ON/horn» button + «punch stop» button)

- A receiver «CHr» which decodes the information sent by the transmitter and controls the equipment movements:

To 20+2 relays

(19 function relays + 2 security relays + 1 switch relay)

- A pack of "CHb2" control rings
- A "CHcu" charger.
- Various accessories (bracelets, cable accessories etc.)

2.2. Elements Presentation

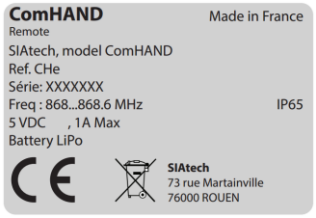
When putting into service the products, please:

Charge the ComHAND for one hour before first use.

Transmitter
CHe

Wristband

Étiquette signalétique



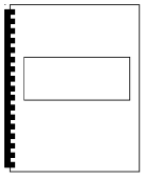
2 rings
CHb2

Charger
CHcu

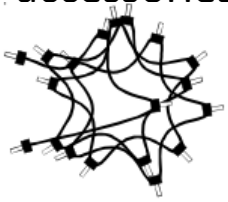
110-230 VAC
5 VDC

Receiver
CHr

Installation and operating instructions



Common wiring accessories



2.3. Elements Identification (according to commercial references)

2.3.1. Standard systems

Applications	Face avant émetteur	Configuration émetteur	Configuration récepteur	Références de l'ensemble
Stage Hoists **Special Applications**		4 function buttons 1 button « ON/Horn » 1 button « punch stop »	2 + 8 outputs relays	**CH0-①***** **CHs**
Brackets **Hoists** **Monorails**		2 boutons de fonctions 1 bouton « Marche/Klaxon » 1 bouton d'arrêt coup de poing	2 + 4 outputs relays	**CH2**
Crossbars **Bridge Cranes** **Brackets**		4 boutons de fonctions 1 bouton « Marche/Klaxon » 1 bouton d'arrêt coup de poing	3 + 19 sorties relais	**CH4** **CH4-①②③④⑤**

2.3.2. Accessories

For transmitter **CHe**

Reference	Designation
CHcu	Charger 110-230VAC/12VDC with EU plugs
CHb2	Control rings with 2 buttons
CHw	Wristband
CHt02	Label for transmitter

For receiver **CHr**

Reference	Designation
CHmg	Receiver fixing kit with magnetic studs
CHco	Wiring accessory for common areas
CHf2	Cable 1.5m + 24-pin male connector
CHf3	Cable 1.5m + 16-pin male connector
CHt01	Labels for control machines

2.4. Factory configuration on delivery

Radio channel number :

- In accordance with the definition of the material to be ordered (issuer commercial reference)

Time delay time for the "Dead man" function (automatic stop of the transmitter in case of prolonged non-use):

- Programmed by default at **5 mn** (unless specifically requested on order)

2.5. Recommendations for setting up

The reliability of operation depends essentially on the quality of the installation, particularly on the following points :

- Setting up the elements

- Identification of the equipment ordered

- Quality of CHr receiver wiring,

- Interference suppression

- Orientation of the receiver antenna

- Protection of the power supply

- Minimum and maximum current of the relay outputs

- Choice of frequency of use

2.5.1. Elements setting up

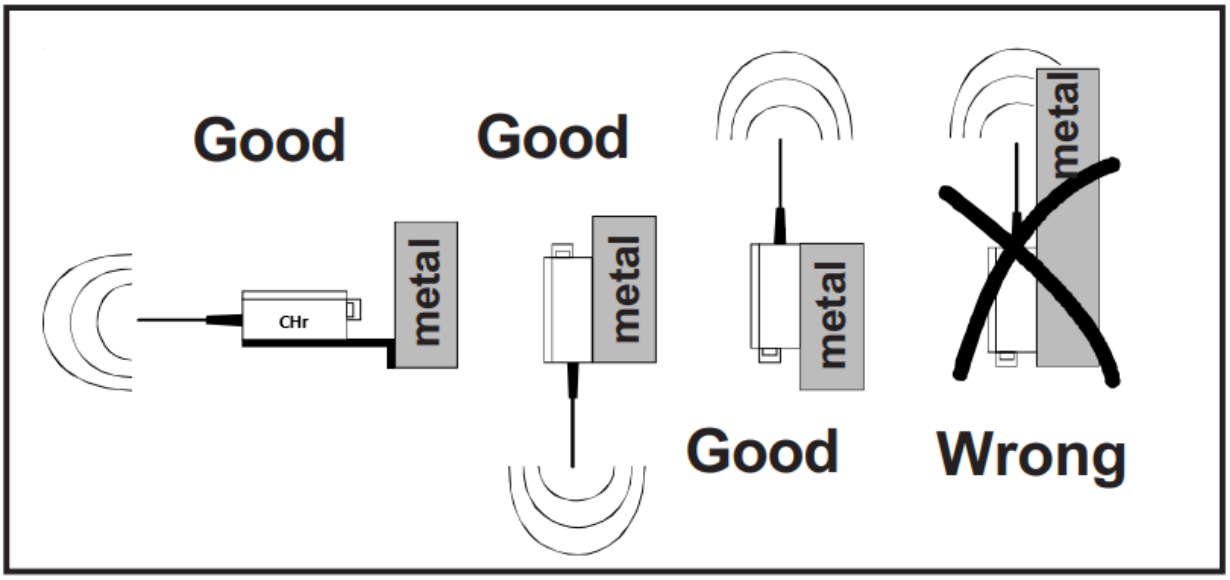
- The dimensions of the elements can be consulted in appendix C

Receiver position :

The CHr receiver must be mounted as close as possible to the electrical control cabinet.

It must be oriented so that the radio antenna is as far away from the metal structure as possible (see Diagram I).

Diagram I : Antenna orientation



The receiver must be protected from shocks and bad weather.

In addition, it should be as far away as possible from class 3 cables and power elements (power supply, motor, drives...).

2.5.2. Identification of the equipment controlled

If several devices are equipped with remote controls working in the same neighbourhood (e. g. in a factory), each transmitter must have a clear indication that indicates to the operator the equipment it is controlling.

2.5.3. Cabling

WARNINGS

To avoid any risk of electric shock, do not open the receiver box when the receiver is powered on.

Important :
Do not position cables of different classes side by side.

Respect a spacing of at least twenty centimetres between the different classes:

- Class 1: Radio, antenna cable (in case of antenna extension)
- Class 2: Power supply for the power supply of the various boxes
- Class 3: Power control of motors, drives...

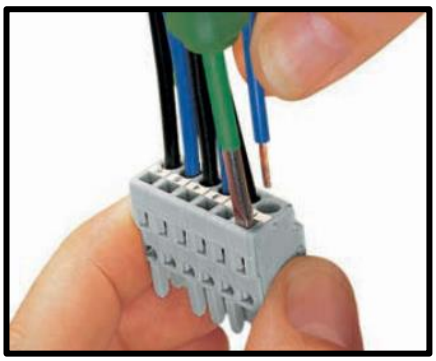
Each cable class must be housed in its own cable tray. If only one cable tray is available, spread cables of different classes as far apart as possible.

Wiring of the CHr receiver

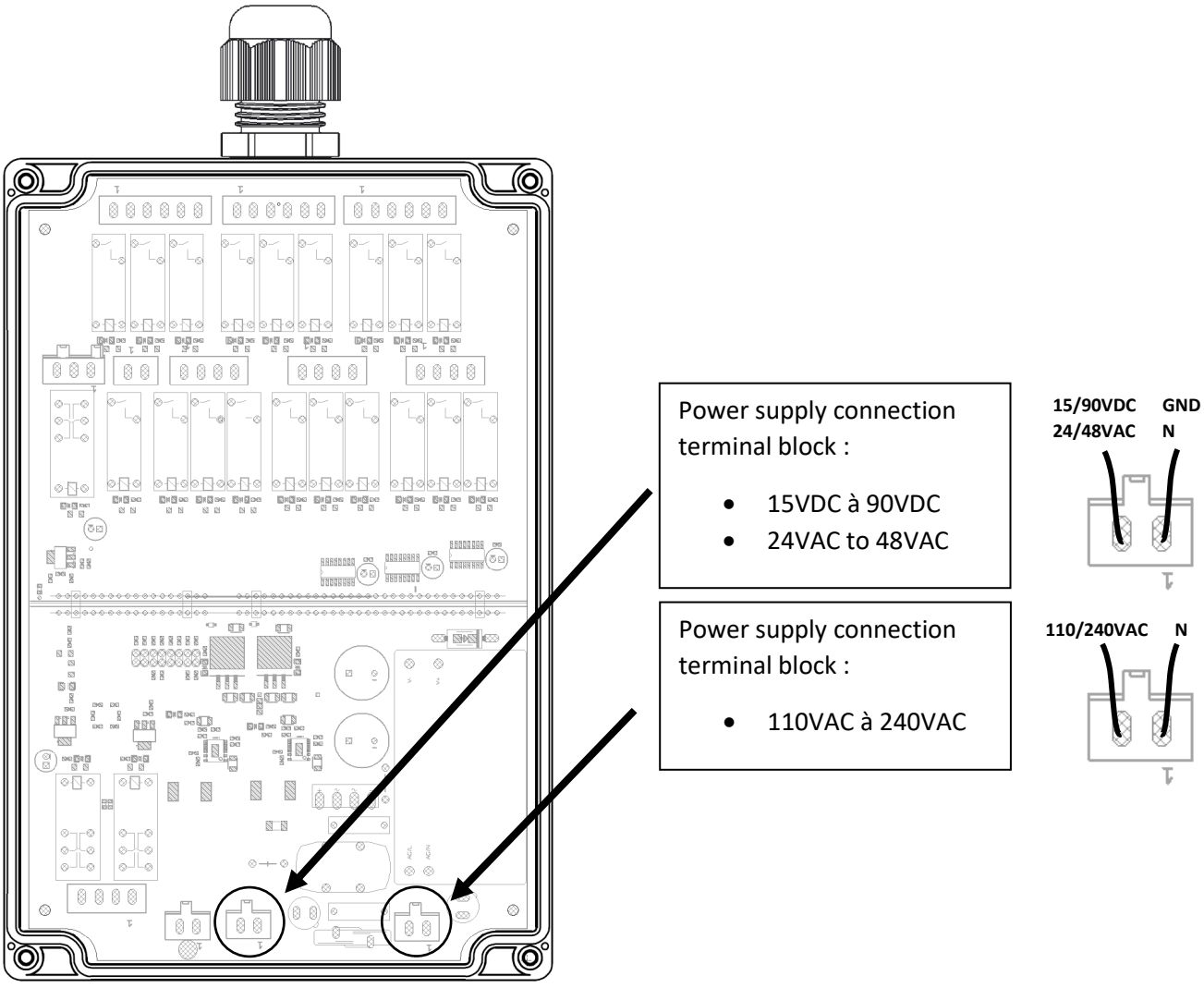
When using flexible stranded wires, use crimped ferrules to avoid false contacts and short circuits.

To open the connection terminals:

- Insert a screwdriver vertically (flat blade 1.5 to 3 mm width) in the slot on the lever
- Apply moderate pressure until the terminal is opened
- Insert the wire, then remove the screwdriver.



CAUTION:	The electrical connection of the receiver must be made after deactivation of the main switch.



For all information on wiring, the correspondence between the action of a button and the controlled relay, you refer to the correspondence table delivered with the receiver (label on the housing cover) and Appendix A.

- An example of wiring is given in Appendix D

2.5.4. Anti-interference

In the event of inductive loading of the relay outputs (contactor coils, solenoid valves or solenoid brakes), **it is essential** to place interference suppression elements (capacitors, RC circuits or diodes) directly across the controlled elements and connect them with very short connections.

2.5.5. Protection of power supply

According to EN60204-1 §7.2 on protection against overcurrent resulting from overvoltages, a fuse or protective device must be provided in the supply circuit of the receiver (see example of wiring diagram, item F- in Appendix D). The rated current is defined in the chapter "Technical data/technical characteristics/CHr receiver".

2.5.6. Maximum and minimum power of relay outputs

Be careful not to exceed the minimum and maximum characteristics specified in the chapter "Technical data/technical characteristics/CHr receiver". For example, by installing an additional load or intermediate relays (auxiliary contacts in the electrical cabinet for power control).

2.5.7. Back-up command

When the remote control is out of service, arrangements (other control system) must be made to ensure the safety of the operator and the load being handled.

2.5.8. Choice of the radio frequency for use

The 12 channels in the 868 MHz band and 69 channels in the 433 MHz band of the CH remote control allow the selection of an available frequency. The maximum transmission power is 14mW. It is important for a good quality of use to be sure that the radio channel used is free (as well as the previous and next one) throughout the area where the device will be operated.

If several remote controls are working on the same site, it is advisable to use frequencies spaced at least two channels apart (the more the chosen channels are spaced, the less likely there is to be mutual interference). A radio frequency plan is recommended to identify the various equipment ordered and their working radio frequency.

3. Putting into service

3.1. Before first use

- **The installer must imperatively:**

- ensure that the transmitter is located in relation to the ordered receiver,

- ensure that the radio channel chosen corresponds to the frequency plan established on site,

- proceed to a final check of the correct correspondence between the Relay Button and the desired Relay Movement.

- When the "On/Horn" button on the transmitter is pressed on start-up, only the safety relays are activated.

- **Check the general priority stop mode (transmitter and receiver on, and radio communication established):**

Active Stop: Pressing the transmitter's mushroom stop button instantly switches the receiver's safety relays (RS1 and RS2).

- **Timing of the "Dead Man" function:**

Check the effective duration of the delay of the "Dead Man" function (automatic transmitter shutdown).

After starting the remote control, leave it without activating any control, note the time after which the safety relays (RS1 and RS2) of the receiver fall down and check if this time corresponds to the one delivered in standard (5mn).

3.2. Regular checks following a maintenance operation

In addition to the commissioning checks that should be repeated, it will be appreciated:

- Maintaining the ergonomic features of the transmitter housing such as: pressing the function buttons, operating the control ring correctly, pressing the mushroom stop button correctly, etc.

- The response time of orders between the sending of an order and the resulting movement.

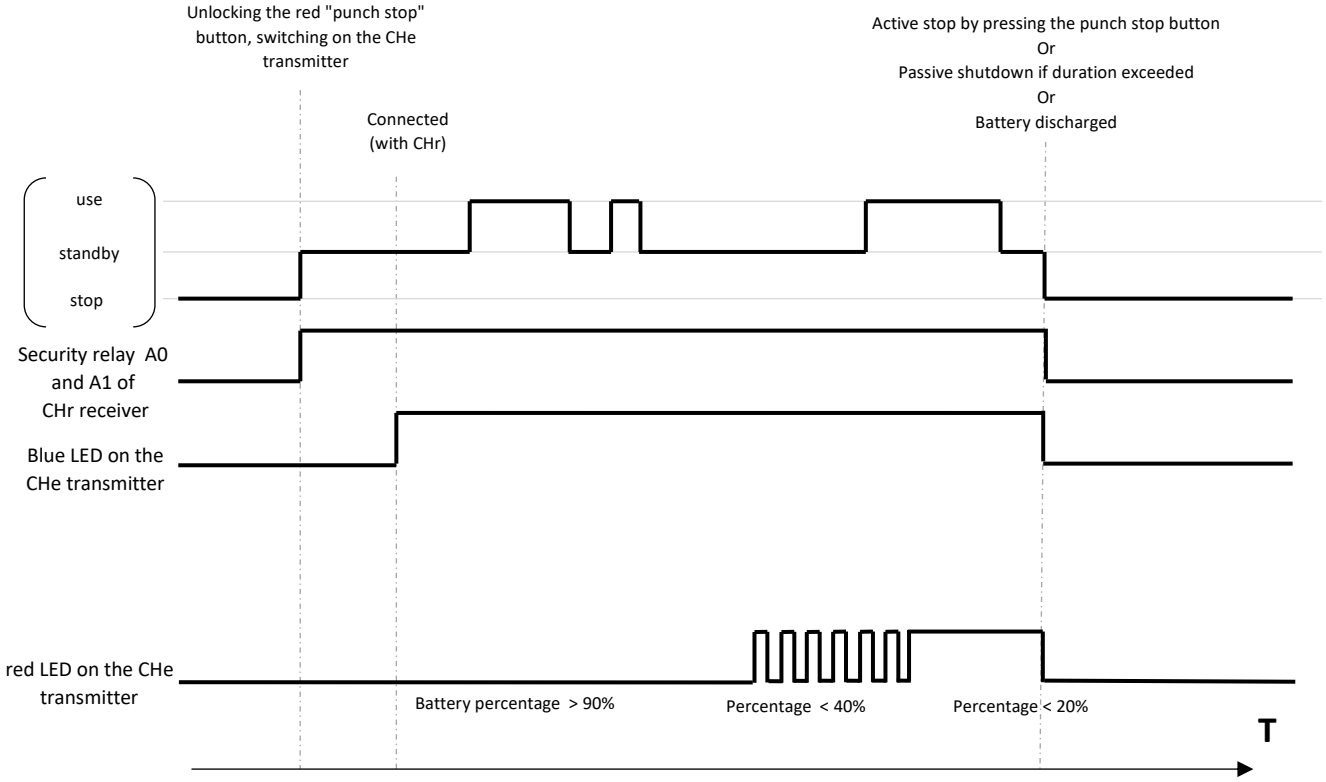
3.3. First starting-up of the remote control

a. Turn on the CHr receiver.
b. Connect the CHb2 control ring to the jack socket of the CHe transmitter.
c. Unlock the transmitter mushroom stop button.
d. Press the "On/Off" button and start again until the receiver is switched on (safety relays are switched on).

To stop the remote control : press the mushroom stop button on the CHe transmitter.

3.4. Synoptique de fonctionnement

The Safety Relays are only activated when the connection is established.



3.5. Configuration of the comHAND system

The ComHAND system is configured at the factory

The following specifications must be defined when ordering:

- Radio frequency programming
- Delay time for the "Dead Man" function (automatic transmitter shutdown)
- Programming the option buttons

4. Usage

4.1. Reminder of usage rules

A remote control is considered as a control element and as a safety component for its stopping by the European Machine Directive. Its proper implementation must comply with the rules resulting from it.

For maximum safety in handling the radio remote control, it is recommended to follow the instructions provided in this manual.

- **The operator must have received adequate training** and must be qualified to drive by radio remote control.

- **The operator must at all times maintain the visibility of the manoeuvre he is performing**. Where the driver's direct field of vision is insufficient, the equipment ordered must be equipped with auxiliary devices to improve visibility.

- **In the event of simultaneous movements** of several pieces of equipment running on rails, these pieces of equipment must be equipped with means to reduce the consequences of a possible collision.

- **To avoid any risk of electric shock**, do not open the receiver housing when the receiver is powered on.

- **Do not abandon the transmitter** in any place, let alone when it is in operation.

- **Do not leave the remote control transmitter on the ground**. If necessary, activate the stop (mushroom button) of the remote control.

- **If several radio controls are working on the same site**, different radio frequencies should be used with at least 2 channels between them. The more widely the channels chosen are spaced, the less likely the risk of mutual disruption will be present.

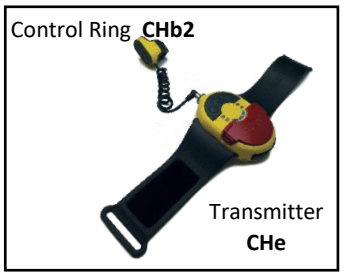
- **Do not forget** to recharge the ComHAND, especially when the low battery led is on.

- **In the event of an anomaly**, immediately stop the installation by pressing the "punch" stop button on the transmitter.

- **Maintain the equipment**, and carry out periodic inspections, depending on the intensity of use. Always follow the cleaning instructions described in the chapter "Maintenance".

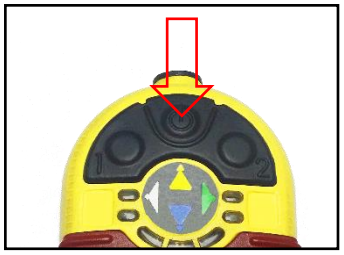
4.2. Use of the remote control

a. Turn on the CHr receiver.



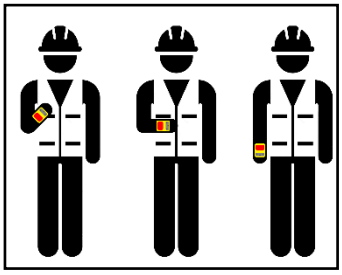
b. Make sure that the transmitter is charged and that the control ring is properly connected to the CHe transmitter.

c. Unlock the transmitter's mushroom stop button.
The battery level is indicated by the 4 LEDs.



d. Press the "On/horn" button on the transmitter.
Until the receiver is switched on (blue light on).

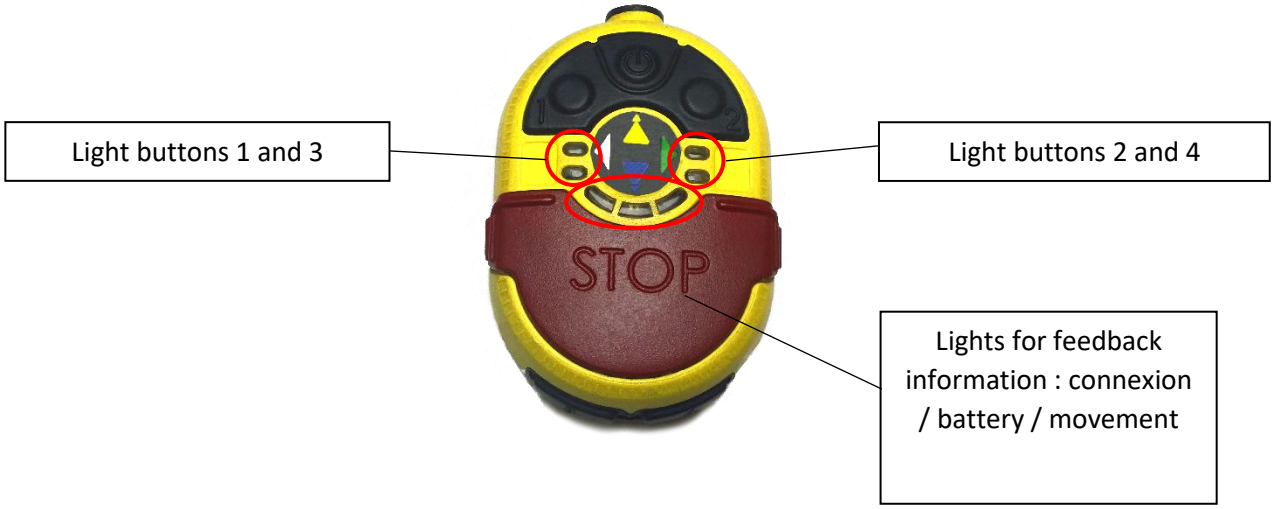
e. Use the remote control to control the equipment.
The postures allow to control the different directions of the machine.
Once the direction has been selected (by posture), press a button on the ring to generate a movement in one direction (and its opposite with the second button).
The speed of the machine's movement is controlled by pressing the double state button on the ring.



f. To stop the remote control, press the mushroom stop button on the Che transmitter.

4.3. Definition of CHe and CHr indicators

4.3.1. Indicators of the Che Transmitter



Error Message

Transmitter status (punch stop button is turned up)	Indicators	Possible causes of failure	Possible solutions
After « ON »	Blue light off	- Loss of connection / disconnection	- Check the battery charge level - Check the good positioning of the receiver or - Contact the technical manager
Before « ON »	No lights are switched on	- Battery unloaded - Internal problem	- Check the battery charge level or - Contact the technical manager

Status of the battery charge level

Transmitter status (punch stop button is turned up)	Indicators	Function or corresponding message
Just after activation (turned up of stop button)	White light switched on for 1sec.	- Battery level indication : cf §5.6
Before or After « ON »	Slow flashing of red light	- Battery charge < ou = à 40%
Before or After « ON »	Quick flashing of red light	- Battery charge < ou = à 20%

Recharge the battery when the battery level is under or equal to 20% (Red light)

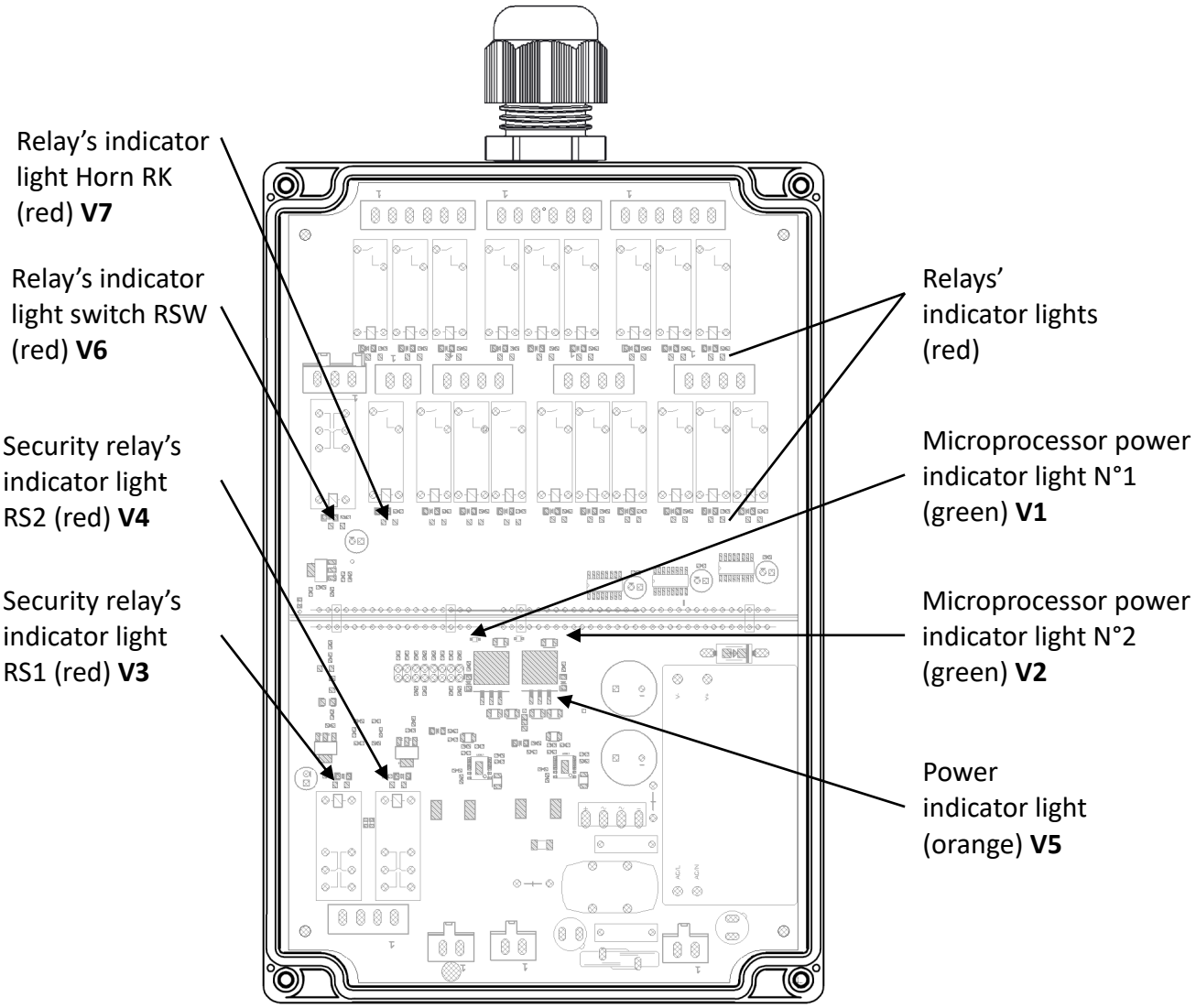
During loading, The blue light indicates the connection to the charger and the red light indicates that the battery is charging. Once the battery is fully charged, the red light switch off and the green light switch on. (the blue light remains switched on).

Etat de fonctions sélectionnées

Transmitter status (punch stop button is turned up)	Indicators	Function or corresponding message
After « ON »	blue light on continuously	Connection established with the CHr Receiver
After « ON »	Flashing of the blue light	« Dead man » delay, disconnection within 2min if no action is taken
After « ON »	Shut down ofg the green light	Device disconnected
After or before « ON »	Flashing of the green light	Control ring not / incorrectly connected
After « ON »	White light 1 switched on	Option on function button 1 selected
After « ON »	White light 2 switched on	Option on function button 2 selected
After « ON »	White light 3 switched on	Option on function button 3 selected
After « ON »	White light 4 switched on	Option on function button 4 selected

(*) Different flashes are possible depending on the selected option. The led scenario for the function is described in the associated function sheet (provided on request).

4.3.2. Indicators of the CHr Receiver



Indicator	Indication	Message	Status
V1	Microprocessor power supply n°1	Power off	OFF
		Powered up	ON
V2	Microprocessor power supply n°2	Power off	OFF
		Powered up	ON
V3	Status of the safety relay n°1	Not activated	OFF
		Activated	ON
V4	Status of the safety relay n°1	Not activated	OFF
		Activated	ON
V5	Power supply	Receiver powered off	OFF
		Receiver powered on	ON

Indicator	Indication	Message	Status
V6	Status of RSW relay, control by Che transmitter	Not activated	OFF
		Activated	ON
V7	Status of RK relay	Not activated	OFF
		Activated	ON
Relay function indicator light (red)	Status of each relay	Not activated	OFF
		Activated	ON

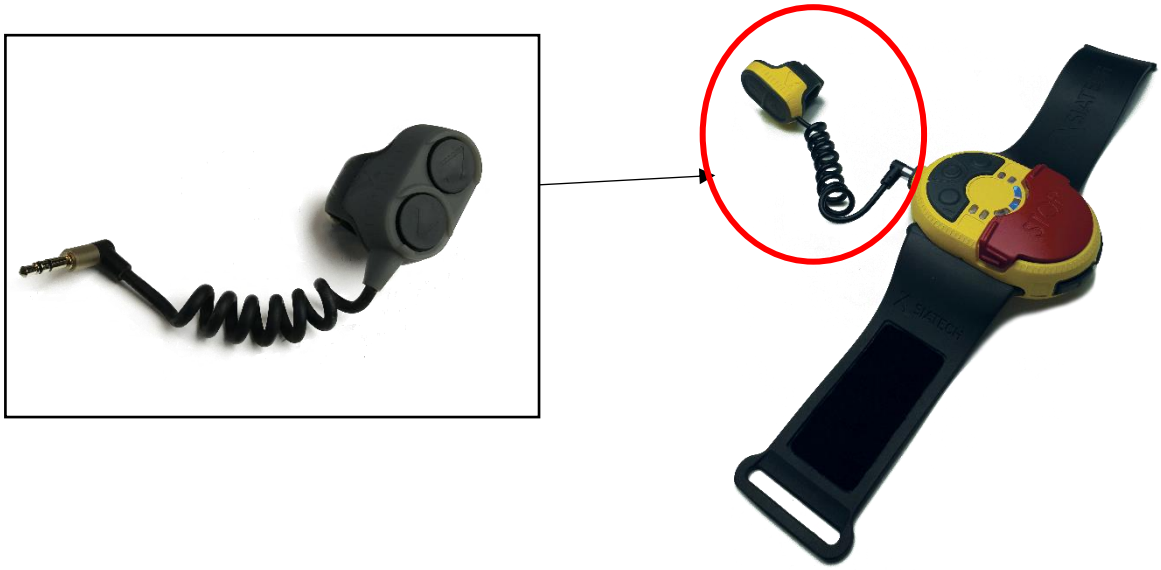
5. Technical Data

5.1. Types of function buttons of the Che Transmitter

On a CHe transmitter, there are two types of function buttons and a type of control ring:

- The transmitter function buttons are single and/or dual state buttons.

- The ring has been designed to have the best dual state feeling.



5.2. Connection « transmitter function buttons – receiver relays »

Each function button on the transmitter has a relay on the reception (customizable with the graphical interface)

The buttons on the ring correspond to all the relays dedicated to the direction and speed according to the operator's movement.

5.3. Technical characteristics of the Che Transmitter

Mechanical characteristics and environmental resistance	
Box	ABS yellow - IP65 - Mechanical button protection
Mass	150g
Dimensions	77 x 52 x 21 mm
Operating temperature	-20°C à + 50°C
Storage temperature	-30°C à +40°C
Electrical and radio electrical characteristics	
Power supply	Lithium-ion battery (3.7V)
Autonomy (at 25°C) for an average typical use	24h
Emission frequencies	12 UHF frequencies programmable in 868 MHz band 69 UHF frequencies programmable in 433MHz band
Transmitting power	< 15 mW in the 868 MHz and 433 MHz bands
Modulation	FM
Average range (1)	50 m in industrial space 80 m in open space
Functional characteristics	
Type of function buttons	4 push buttons for possible functions 1 push button "on/horn" button 1 priority general stop point hit button active
Type of ring	1 double button ring with 1 and 2 recesses
"Dead Man" function	Programmable time delay in the factory and/or with the graphical interface
Signalling	1 red "battery charge level" and diagnostic light 1 green "on" and diagnostic light 1 blue "connection" light 4 white LEDs for functions

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

5.3.1. Identity code

CHe transmitter and CHr receiver are linked by an identity code. A receiver can only recognize and execute orders from associated sender(s).

The receiver's identity code is unique and fixed (it cannot be reprogrammed).

5.3.2. « Dead man » Function

The safety function called "Dead man" allows the CHe transmitter to be automatically deactivated (radio transmission is switched off) when the push buttons (on the transmitter or ring) are not operated for a period of N minutes. The blue LED will flash from N-2 min to warn the user that Che will soon disconnect.

The N parameter is configurable at the factory and can take values from 01 to 98 minutes.

Upon delivery, this period is set at 5 minutes if no specific request has been made with the order.

If the N value is set to 99 minutes, the transmitter considers that the duration of the delay is infinite (until its battery is completely discharged).

Restart after activating the "Dead man" function:

- Press the mushroom stop button on the transmitter.

- follow the implementation procedure described in §4.2

5.4. Technincal characteristics of the CHr receiver

Mechanical characteristics and environmental resistance	
Box	ABS yellow - IP65 - Mechanical button protection
Mass	150g
Dimensions	77 x 52 x 21 mm
Operating temperature	-20°C à + 50°C
Storage temperature	-30°C à +40°C
Cable output Control output	1 M32 plastic cable gland (cables Ø 20 to 26 mm)
Connection	Spring-cage terminals for wires 0.08² to 2.5²
Radio electrical characteristics	
Characteristics in accordance with ETS 300 220	
Receiving frequency	12 UHF frequencies programmable in 868 MHz band
68 UHF frequencies programmable in 433MHz band	Sensitivity <-100dBm
Electrical characteristics	
Power supply and consumption (with 2 safety relays and 8 maximum function relays switched on)	24VAC, -15% à +10%, 850mA 48VAC, -15% à +10%, 400mA
Controlling	1 + 12 ou 1 +18 relays
Safety and security	2 safety relays with linked and guided contacts
Response time	On start-up: max. 0.5s To the comHand: 55 ms max.
	500 ms max
Active stopping time	1s max.
Passive stopping time	1 red "on" light 1 red light + 1 green diagnostic light 1 red status light per relay
Notes for the installer (under the cover of the box)	Power supply: Against polarities inversion for DC versions Against overcurrents by fuse

5.4.1. Junction to relay outputs

The connection is made on spring-loaded terminals.

The usable flexible wire cross-section is between 0.08 mm² and 2.5 mm².

Half of the common connections are not made on the printed circuit boards (potential-free contacts).

5.4.2. Characteristics and functioning of relays

Fonction du relais	Nombre de relais	Nombre de points de connexion par relais
Safety relays	2	2 (1 contact T)
On / horn	1	2 (1 contact T)
Control / movement	12 or 18 Depe	2 (1 contact T)

Safety relays

Both safety relays are activated when the "On/Klaxon" button on the CHe transmitter is pressed.

These two relays are self-holding until the ComHAND system stops passively (discharged battery or radio jamming) or actively (pressing the transmitter mushroom stop button).

- Contacts : AgNi+Au5µm
- Maximum power: 2000 VA
- Maximum switchable current: 8 A
- Maximum switchable voltage: 250 VAC
- Recommended minimum switchable voltage / current: 50 mA / 12 VDC
- 100,000 switches at 250 VAC, 8 A
- 1,000,000 switches at 24 VDC, 6 A
- Tests according to EN 60947-5-1 :

DC13 at 2 A / 24 VDC

AC15 to 3 A / 250VAC

Horn" relay and control relay

The "Horn" relay is active when the "On/Klaxon" button on the CHe transmitter is pressed.
This relay is not self-maintaining.

The control relays are active when the transmitter function buttons are pressed after the system is turned on.

- Contacts : AgSnO2
- Maximum power: 2000VA
- Maximum switchable current: 8 A
- Maximum switchable voltage: 400 VAC/300VDC
- Recommended minimum switchable voltage / current: 100 mA / 5 VDC
- 50,000 AC switches
- 50,000 DC switches

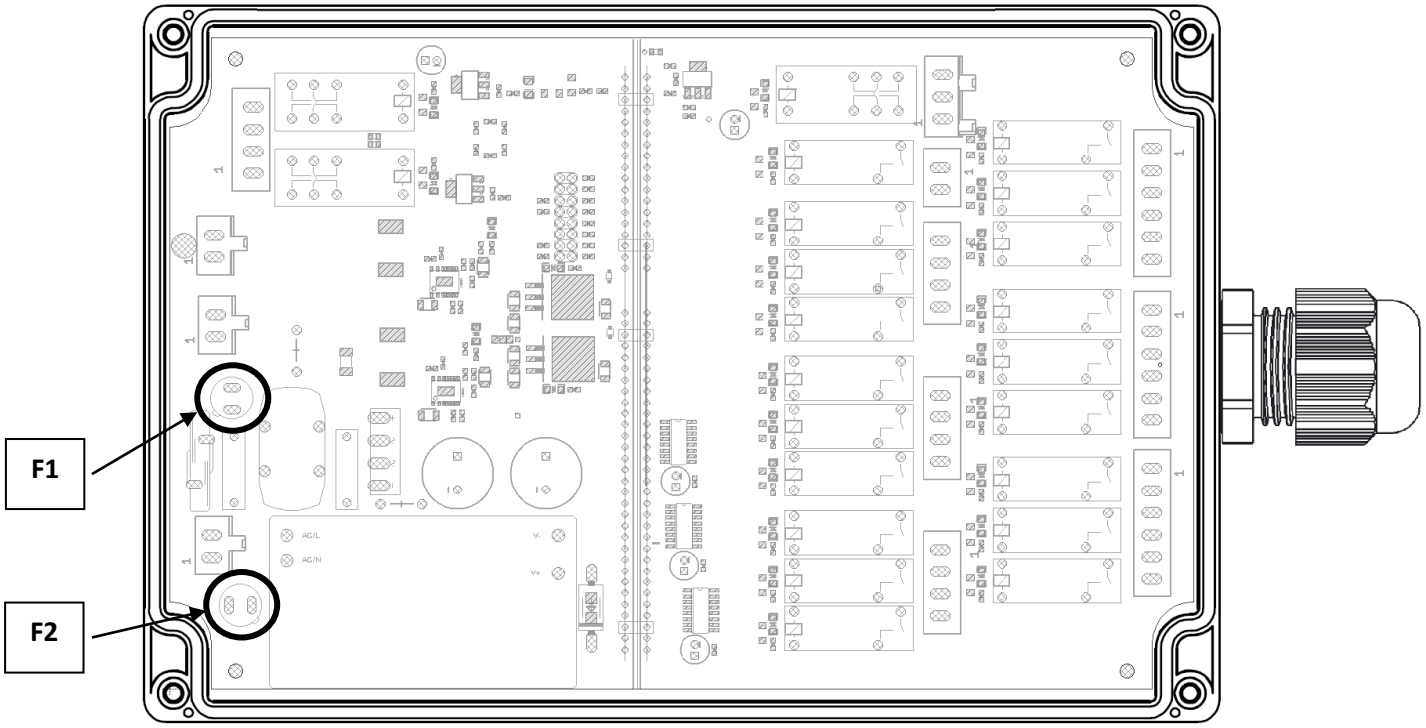
5.4.3. Protection of the receiver card and relays

Power supply protection

- AC versions :

- Against overcurrents: a fuse on the phase.
- Non-reversible thermal protection of the transformer (in case of secondary overload).

Fuse characteristics



Element	Fuse characteristic	Location of the fuse to be used
Receiver powered by 110/240 VAC*	3.15 A / 250 VAC / T	F2
Receiver powered by 48 VAC*	3.15 A / 250 VAC / T	F1
Safety relays	No protection	/
Horn" relay	No protection	/
Function relay	No protection	/

5.5. Technical characteristics of the Li-ion battery

Mechanical, functional and environmental resistance characteristics	
Dimensions	30*25*6mm
Storage temperature	-20~25°C
Operating temperature range	0~45°C
Full charging time	2,5 h
Signalling	602530
Charging voltage	4.2V

5.6. Visualization of the battery charge states

Red, green & blue LED of the CHe transmitter

The blue light on the transmitter indicates that it is connected to the charger.
The red light indicates that the transmitter is charging.
The green light indicates that the transmitter is fully charged.

Two functions for displaying the battery charge status are present on the transmitter:

- When the remote control is turned on (punch button raised), the white function indicators indicate the battery level for one second.

4 white lights on: charging is > 75%.

3 white lights on: the charge is between 75% and 50%.

2 white lights on: the charge is between 50% and 25%.

1 white light on: the charge is < 25%.

- When operating the remote control (radio transmission), a LOW BATT level (low charge level: charge < 20%) is indicated by a rapid flashing of the red LED.

Red light off: .....the charge is > 40%.

Red LED flashes slowly: ....the charge is between 40% and 20%.

Red LED flashes quickly: .. The transmitter must be recharged (charge < 20%)

6. Maintenance

BEFORE PERFORMING ANY MAINTENANCE WORK, DISCONNECT THE GENERAL POWER SUPPLY FROM THE CONTROLLED SYSTEM.

The frequency of maintenance depends on the operating environment.

Maintenance of the CHe transmitter:

- The transmitter box must not be opened. The transmitter can only be dismantled by authorised personnel in a "controlled" environment. Parts can only be replaced with original parts.

- If any of the diaphragms of the function buttons or the housing gasket are damaged, the CHe transmitter should no longer be used until these sealing parts are replaced.
Otherwise, any liquid, dust or foreign matter 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 adhesives that may degrade the proper functioning of the remote control's mechanical components.

- Check the transmitter regularly for damage, paying particular attention to the diaphragms of the function buttons, the jack connector of the control and recharge ring.

- The control rings allow a simple and quick replacement. They must be replaced at the first sign of wear.

-Clean the transmitter by removing any foreign matter adhering to it. **Use only non-aggressive cleaners based on soap solution.**

Maintenance of the CHr receiver :

Check the following points :

- Connecting from the receiver to the machine's electrical equipment.
- The control relay contacts.
- The correct functioning of the shutdown circuits, active and passive.
- The condition of the cover gasket, tightening of screws and cable glands.
- The presence and condition of the anti-fall cable.

- Clean the receiver by removing any foreign matter adhering to it. **Use only non-aggressive cleaners based on soap solution.**

- To check the operation of the active stop (ComHAND system on): simply press the punch stop button on the CHe transmitter. The receiver's safety relays must then immediately drop out.

- To check the operation of the passive shutdown (ComHAND system on): simply wait until the "Dead Man" function is activated (automatic transmitter shutdown). The receiver's safety relays must then drop out in less than two seconds.

7. Special functions (OPTIONS)

The adaptability of the ComHAND Series remote control allows all requests for non-standard features to be met.

Our customer technical support team will be able to edit a customization sheet for the remote control after consulting and validating the request.

The "non-standard" functions that can be the subject of a customization sheet are:

- Busy hands" option: Forces the user to use both hands to make a movement, thus increasing his safety by making it impossible to guide the load by hand during a movement (risk of crushing).

- Choice of trolley option: For bridges with several trolleys/halans, this option will allow you to choose either:

- Trolley 1: The LED for indicating the option button 1 is lit and the LED for indicating the option button 2 is off.

- Trolley 2: The LED for indicating the option button 2 is lit and the LED for indicating the option button 1 is off.

- Trolley 1+2: LEDs 1 and 2 are lit

This list is not exhaustive and will be open to the needs of the client.

If your remote control has been the subject of a personalization sheet, we strongly advise you to keep it. The latter can be consulted for commissioning and maintenance operations.

8. Guarantee

All our devices are guaranteed for 1 year from the date of purchase indicated on the product invoice, excluding wear parts. Repair, modification or replacement of an appliance during the warranty period shall not extend this period.

Limit :

The warranty does not cover any resulting defects:

• of transport,

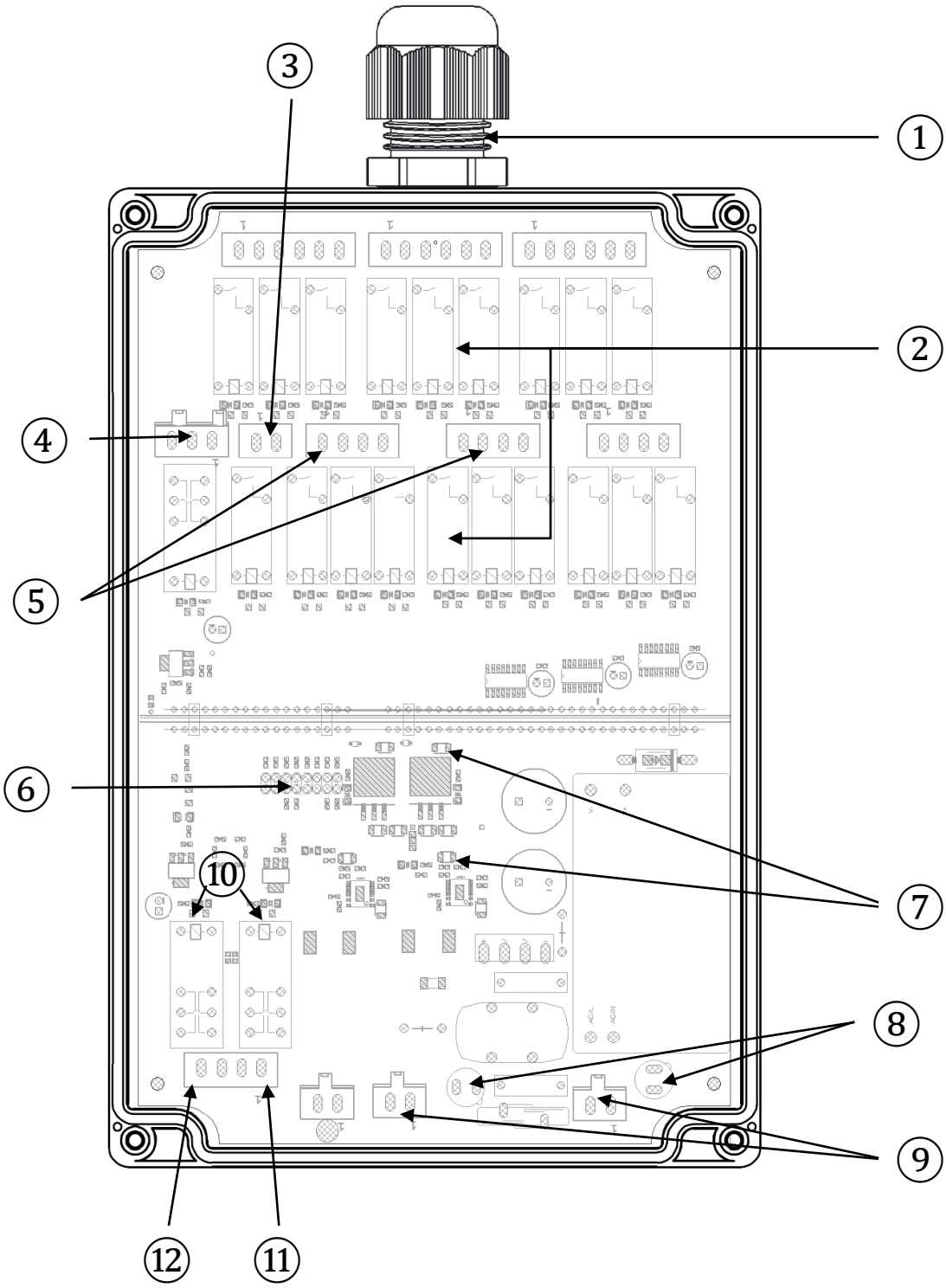
• incorrect operation or failure to comply with the connection diagrams during commissioning,

• a 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) not appropriate or not provided for when ordering.

The warranty cannot be exercised if modifications, dismantling or additions have been made by the customer without the written consent of our company. SIAtech's liability during the warranty period is limited to any defect in material or construction ; it includes repair in its workshops or free replacement of parts recognized as defective after expertise of its "technical services". It cannot give right to any compensation for damages.

Appendix :

A. Detailed internal view of the CHr receiver



Legend :

1- Cable gland, cable gland, power supply + control cables

2- Relay (up to 18 relays)

3- "Horn" relay terminal block (B1)

4- Terminate the "switch" relay (B0)

5- Control relay terminal block

6- RS232 Serial Card connector (accessory)

7- Receiver power indicator light

8- Fuses

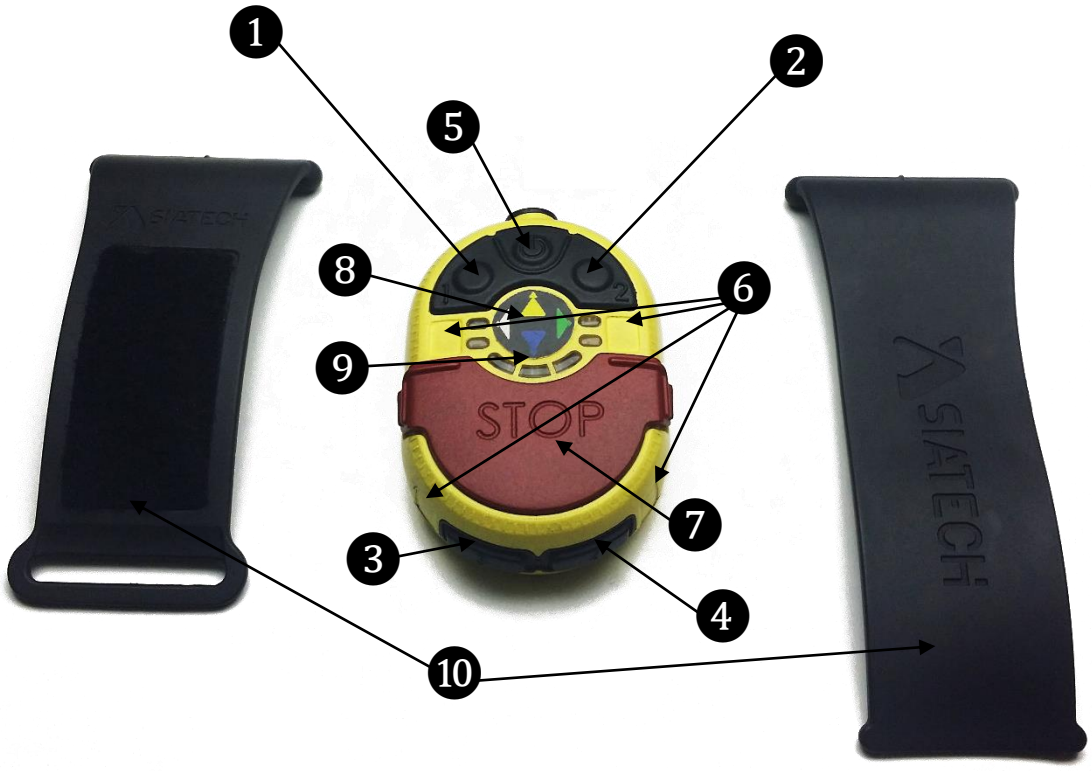
9- Receiver power supply terminal block

10- Red LEDs on the safety relays (A0 and A1)

11- Terminal block of safety relay n°2 (A1)

12- Terminal block of safety relay n°1 (A0)

B. Detailed view of the Che Transmitter

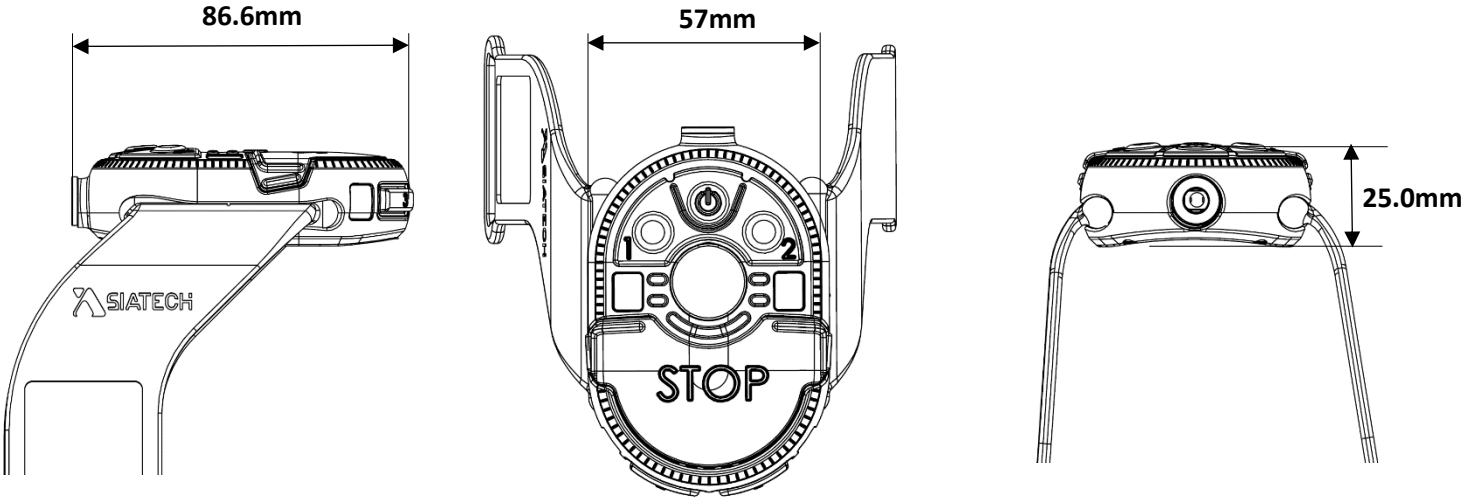


1. Function button n°1
2. Function button n°2
3. Function button n°3
4. Function button n°4
5. Bouton « Marche / Klaxon »
6. Location function labels
7. Punch stop button
8. Label « rosette »
9. Status indicator lights
10. Interchangeable wristband

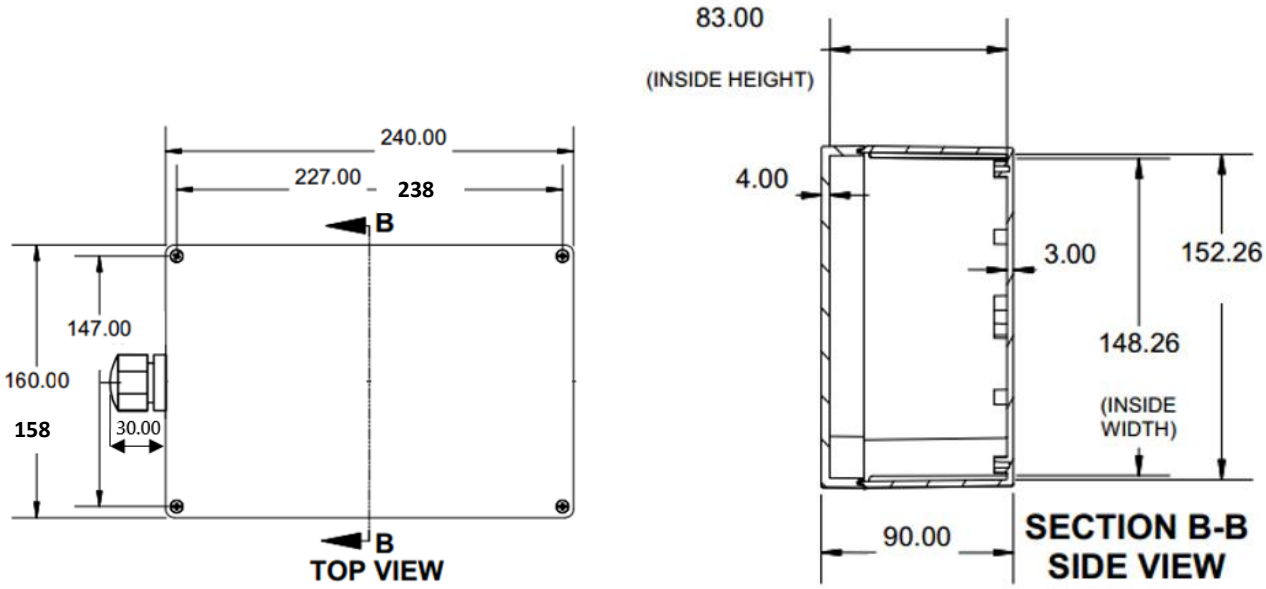
C. Dimensions of the elements

Dimensions in millimetre (mm)

Che Transmitter



CHr Receiver



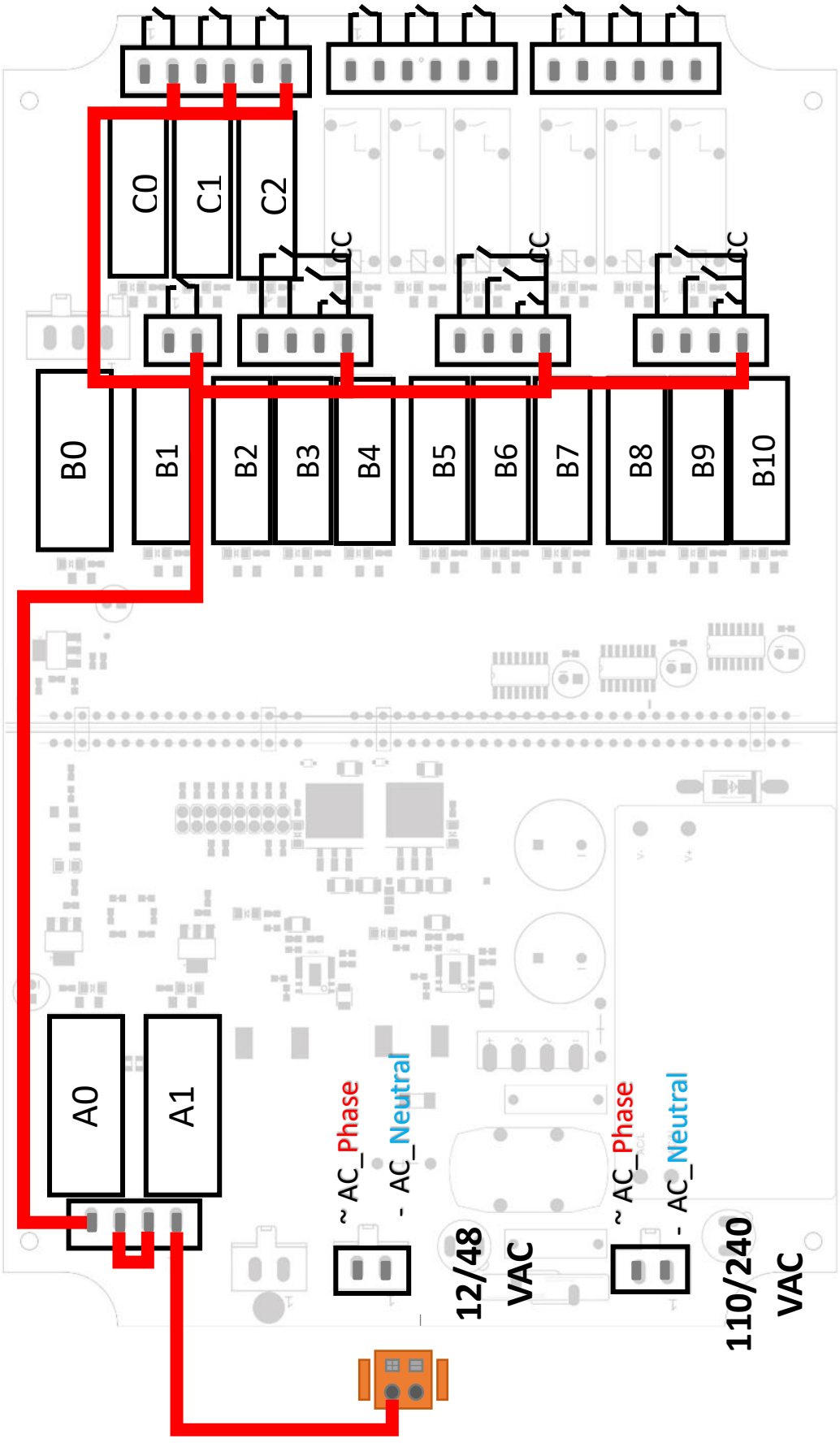
D. Chargers and accessories

Input: 100-240 VAC

Output: 5 VDC / 1 A

With plug EU, AUS, US, UK

E. Example of cabling blueprint



F. List of radio frequencies and channel numbers

If several radio controls are working on the same site, different radio frequencies should be used with at least 2 channels between them (e. g. channels 5, 7, 9)

868 Mhz

Canal Channel	Fréquence Frequency (MHz)
01	868,000
02	868,050
03	868,100
04	868,150
05	868,200
06	868,250
07	868,300
08	868,350
09	868,400
10	868,450
11	868,500
12	868,550

433 Mhz

Canal Channel	Fréquence Frequency (MHz)	Canal Channel	Fréquence Frequency (MHz)	Canal Channel	Fréquence Frequency (MHz)	Canal Channel	Fréquence Frequency (MHz)
00	433.075	18	433.525	36	433.975	54	434.425
01	433.100	19	433.550	37	434.000	55	434.450
02	433.125	20	433.575	38	434.025	56	434.475
03	433.150	21	433.600	39	434.050	57	434.500
04	433.175	22	433.625	40	434.075	58	434.525
05	433.200	23	433.650	41	434.100	59	434.550
06	433.225	24	433.675	42	434.125	60	434.575
07	433.250	25	433.700	43	434.150	61	434.600
08	433.375	26	433.725	44	434.175	62	434.625
09	433.300	27	433.750	45	434.200	63	434.650
10	433.325	28	433.775	46	434.225	64	434.675
11	433.350	29	433.800	47	434.250	65	434.700
12	433.375	30	433.825	48	434.275	66	434.725
13	433.400	31	433.850	49	434.300	67	434.750
14	433.425	32	433.875	50	434.325	68	434.775
15	433.450	33	433.900	51	434.350		
16	433.475	34	433.925	52	434.375		
17	433.500	35	433.950	53	434.400		

G. Declaration of conformity CE

DECLARATION DE CONFORMITE CE

Certificat N° : CE001

DECLARATION DE CONFORMITE CE

Décret européen n°2017-599 du 21/04/2017
Directive européenne RED 2014/53/UE du 16/04/2014

Nous, **Société SIATECH SAS**
We 73 Rue Martainville
F 76000 Rouen

déclarons que les radiocommande **CHe et CHr**
declare that radiocontrol

sont conformes aux normes harmonisées les concernant suivantes :
are in accordance with the following harmonised standards requirements relative to them :

EN 300220-1 V3.1.1
EN 300220-2 V3.1.1
EN 301489-1 V2.1.1
EN 301489-3 V2.1.0
EN 60950-1
EN 61000-6-2
EN 61000-6-4
EN 62479

L'organisme notifié **LCIE VERITAS, numéroté 0081**, a réalisé les tests radios et CEM des produits CHe et CHR et a établi l'attestation d'examen UE de type **n°RED_106 : Licence - Certificat Produits-151109-714466-0000203481-1.**
The notified body LCIE VERITAS, numbered 0081, has carried out the radio and EMC tests of CHe and CHr products and has drawn up the EU type examination certificate :

Année d'apposition du marquage «CE»: 2017
CE marking is issued on: (year)

Caractéristiques :
CHe : 5VDC, 1A, IP65
CHr : 24-240VAC, 535-250mA 50/60Hz, 24-240VDC, 328-44mA, IP65, 868...868.6MHz

Signé par et au nom de :
Fait à Rouen
Date : 30/12/2017

Frédéric HAMAIN, CEO

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