Product sheet **Gamme HAND**
Ref: **A0204B2**

INDUSTRIAL RADIO REMOTE CONTROLS

COMHAND

HANDS-FREE

BABHAND

WITH MAGNETIC FASTENING

Technical instructions for installation and use

Contents

Table of Contents

Contents

1. User information

Congratulations for your choice, you have just purchased the ComHand industrial radio remote control system.
Remote control systems from the 'HAND family have been developed to pilot equipment, vehicles and industrial lifting devices previously controlled by wires, consoles or button box type remote controls.

Please read the operating instructions carefully before installation and putting into service.
These instructions have been published by SPARKFLOW and are not subject to any guarantee. They may be withdrawn or revised at any time and without further notice.
HAND products are guaranteed for one year. All repairs must be carried out by a certified repairer.

1.1. Installer instructions

Installation must be carried out by authorized staff only.

- **Switch off** the receiver power supply before connecting the device.
- Check that the power supply is connected the **the right power connector**.
- To ensure the system safety, use the **stop relays** in the safety circuit of the element to be controlled
- **Do not use** damaged cables. No cables must hang freely.
- Avoid installing the equipment in areas with high vibrations.
- Place the receiver **away** from wind, moisture and mold.
- Cable glands and vents should **face downward** to prevent water ingress.

1.2. End user instructions

Use must be carried out by authorized staff only.

- Maintain visibility at all times on the process. When the user's direct field of vision is insufficient, the controlled machines must be fitted with auxiliary devices to improve visibility. In the case of simultaneous movements of several equipment on the same axis of movement, this equipment must be fitted with means to reduce the consequences of any collision.
- Do not open the receiver box when switched on to avoid any risk ofelectrocution
- Do not leave the remote alone.
- Remove the optional ring when not in use
- Regularly charge the device.
- In the event of any issue, immediately stop use by pressing the STOP transmitter button and remove the ring.
- Maintain the equipment and carry out periodic controls to suit the intensityof use. Always follow the cleaning instructions described in chapter «8. Maintenance».

For any problems related to the use of the ComHand remote control system, please contact our technical service:


+33 (0) 2 78 77 53 50


contact@comhand.fr

2. OPERATING SAFETY

With ComHand radio controls series, we offer modular solutions adapted to the diversity of industrial needs:

- Number of function buttons
- Ring type
- Number of output relays
- Programming of relay/button assignment

Particular attention was paid to the user ease of use:

- Hands-free piloting
- Compactness and lightness
- High resistance
- Easy accessibility and tactile button sensitivity
- Identification of controlled functions
- Long-term operating time

In order to further increase the degree of safety in the use of these tools, technological solutions are available and innovative options are also proposed:

- Intuitive control allowing the user to keep an eye on the operation to be carried out.
- Customizable safety options:
  - "One at a time movement", which prevents the activation of several simultaneous movements on the machine

PLd level safety shutdown of the radio control according to EN ISO 13849-1 (equivalent SIL2 according to IEC 62061) and Hamming distance >= 4 for each sent messages.

Maintenance is easy:

- Diagnostic help LEDs
- Simple replacement of the ring and wristband

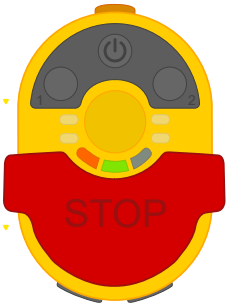
These remote controls fulfil the safety requirements of current standards and comply with European Directives:RED: radio equipment and telecommunication terminals (low voltage, electromagnetic compatibility, radio electric spectrum).
And FCC IC requirements (FCC ID : X8WBT840F | IC : 4100A-BT840F) detailled in FCC_Manual_SDoC_ICES_003_Compliance_Statement.

3. Product description

3.1. ComHand series composition and components description

ComHand series composition and components description

- A transmitter named « **E-CH-FUL** » or « **E-BH-FUL** » with radio communication:



E-CH-FUL:
4 + 2 buttons:
4 function buttons
+ on / horn button
+ STOP button

E-CH-FUL:
6+6 buttons:
6 direction buttons
4 function buttons
+ on / horn button
+ STOP button

- A receiver named « **R-BS-FUL** » or named « **R-BP-FUL** » which decodes the informationsent by the transmitter and controls the machine movements :

:

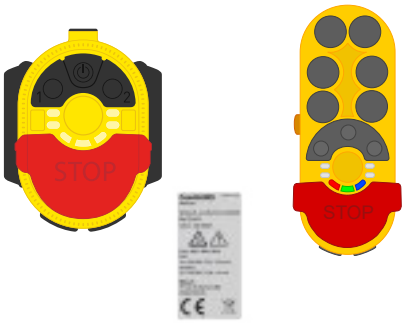
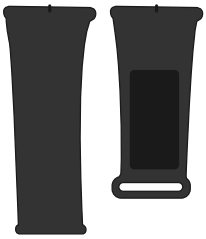
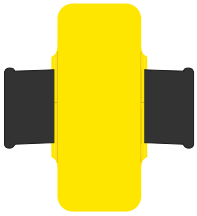
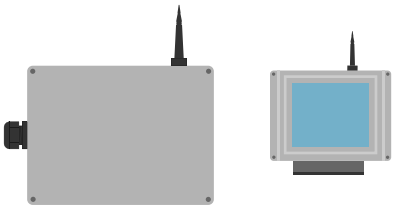
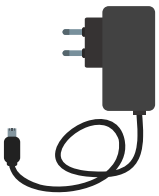
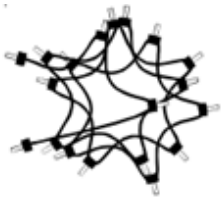
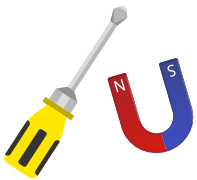
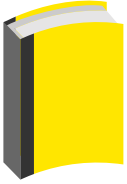
R-BS-FUL : Up to 22 relays
19 function relays
+ 2 security relays
+ 1 connect / on relay

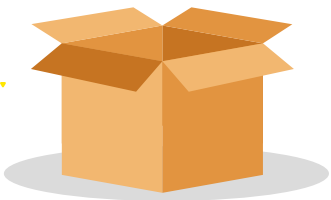
R-BP-FUL : Up to 15 relays
13 function relays
+ 2 security relays

- A control rings named « **E-RB-ADC** » (option)
- A magnetic wristband named « **E-BH-WRI** » (option, BabHAND only)
- A charger named « **E-XX-CHG** »
- An external battery named « **E-XX-BAT** »
- A magnetic fastening kit named « **R-XX-MAG** » (option)
- Various accessories (common wiring accessories, ...).

3.2. Components unpacking

When unpacking the products and before the first use it is necessary to fully charge the remote (about two hours).

E-CH-FUL or **E-BH-FUL** remote + label 	Wristband 	**E-BH-WRI** Magnetic wristband (option) 	Receiver **R-BS-FUL** or **R-BP-FUL** 
E-RB-ADC Ring (option) 	**E-XX-CHG** Charger 110-230 VAC / 5 VDC 	External battery **E-XX-BAT** 	
Common wiring accessory 	Magnetic fastening kit **R-XX-MAG** (option) 	Technical instructions for installation and use 	



3.3. Components identification (according to commercial ref.)

3.3.1 Accessories

- For **E-CH-FUL remote**

Reference	Designation
E-XX-CHG	110-230VAC/12DC charger with EU plug
E-RB-ADC	2-button control ring (option)
E-CH-WRI	Wristband
E-XX-BAT	External battery
E-XX-SPE	Remote labels

- For **E-BH-FUL remote**

Reference	Designation
E-XX-CHG	110-230VAC/12DC charger with EU plug
E-RB-ADC	2-button control ring (option)
E-BH-WRI	Magnetic wristband (option)
E-XX-BAT	External battery
E-XX-SPE	Remote labels

- For receivers **R-BS-FUL and R-BP-FUL**

Reference	Designation
R-XX-MAG	Magnetic fastening receiver kit (option)
R-XX-CABG	Common wiring accessory
R-XX-224	2m cable + 24-pin male connector
R-XX-216	2m cable + 16-pin male connector
R-XX-SPE	Receivers labels

3.3.2 Standard ComHAND sets

Model	Reference	Use cases	Remote configuration	Receiver configuration
	K-CH-1AX	**One-way motorization** (three control relays)	Direction control on the ring 1 button	3 function relays + 2 security relays
	K-CH-2AX	**Two-ways motorization** (6 control relays) **One-way motorization** (three control relays) with option choice	Direction choice by pressing the option buttons with complementary options Ex : 1 for elevation 2 for direction Direction control on the ring with complementary options	6 function relays + 2 security relays Or 3 function relays + 2 security relays
	K-CH-4AX	**3-ways motorization** (and/or option choice)	Direction choice by pressing option buttons with complementary option selection *Ex : 1 for elevation 2 for direction*	19 function relays + 2 security relays + 1 switch relay

3.3.3 Standard BabHAND sets

Model	Reference	Use cases	Remote configuration	Receiver configuration
	K-BH	Motorization on 3 axes for overhead cranes	6 dual-state buttons for controlling 3 directions	19 function relays + 2 security relays + 1 switch relay

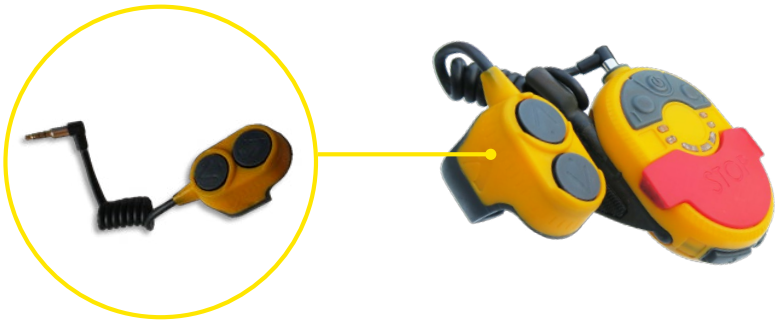
Depending on the operation, the user can associate the BabHAND to the magnetic band to prevent droping, loosing, breaking the remote.

For precision work, a control ring can be associated with the BabHAND in order to have hands free during handling.

3.4. Remote function buttons type

3.4.1 ComHAND remote

The function buttons on the remote are single-state buttons while the buttons on the ring are dual-state buttons.



3.4.2 BabHAND remote

The main BabHAND buttons are dual-state buttons while the function buttons on the remote are single-state buttons.

3.5. «Remote function buttons - receiver relay» correlation

Each function button on the transmitter matches a relay on the receiver (customizable with our graphical interface).

The control buttons on the ring correspond to all the relays dedicated to direction and speed.

4. TECHNICAL DATA

4.1. ComHAND remote

Mechanical features and environmental resistance	
Case	Yellow ABS - IP65 - Mechanical button protection
Weight	150 g
Dimensions	87*57*25 mm
Operating temperatures	-20 °C to +50 °C
Storage temperatures	-30 °C to +60 °C
Electrical and radio characteristics	
Power supply	Lithium-ion battery (3,7 V)
Autonomy (25 °C)	24h in continuous usage
Radio frequency	Automatic frequency selection on the 2.4 GHz band
Transmitting power	7 mW in 2.4GHz band
Modulation	FM
Average range$_{(1)}$	50 m in industrial settings 100 m in open range
Functional features	
Function buttons	4 function buttons 1 "on/horn" button 1 emergency STOP button
Ring type	2 dual-state buttons
«Dead man's» function (automatic shutdown of the transmitter)	Factory or GUI programmable duration
Informative LEDs	1 red indicator: battery charge level and diagnosis 1 green indicator: «Dead man's» function alert and diagnostic 1 blue indicator : connection 4 white indicators : functions

(1) = The radio range depends on the environmental conditions of the transmitter and the receiving antenna (structures, metal walls, etc.).

4.2. BabHAND remote

Mechanical features and environmental resistance	
Case	Yellow ABS - IP65 - Mechanical button protection
Weight	200 g
Dimensions	150*64*25 mm
Operating temperatures	-20 °C to +50 °C
Storage temperatures	-30 °C to +60 °C
Electrical and radio characteristics	
Power supply	Lithium-ion battery (3,7 V)
Autonomy (25 °C)	24h in continuous usage
Radio frequency	Automatic frequency selection on the 2.4 GHz band
Transmitting power	7 mW in 2.4GHz band
Modulation	FM
Average range$_{(1)}$	50 m in industrial settings 100 m in open range
Functional features	
Function buttons	6 dual-state buttons 4 function buttons 1 "on/horn" button 1 emergency STOP button
Ring type	2 dual-state buttons
«Dead man's» function (automatic shutdown of the transmitter)	Factory or GUI programmable duration
Informative LEDs	1 red indicator: battery charge level and diagnosis 1 green indicator: «Dead man's» function alert and diagnostic 1 blue indicator : connection 4 white indicators : functions

(1) = The radio range depends on the environmental conditions of the transmitter and the receiving antenna (structures, metal walls, etc.).

4.3. Li-ion battery characteristics

Mechanical features and environmental resistance	
Dimensions	44*33*11 mm
Storage temperature	-20 °C to 25 °C
Operating temperature	0 °C to 45°C
Charging time	2 h
Informative LEDs	E-XX-BAT
Charging voltage	4,2 V

4.4. Receiver R-BP/S-FUL

Mechanical features and environmental resistance		
	R-BS-FUL	R-BP-FUL
Case	ABS,IP65, grey	
Weight	Around 2kg	Around 1kg
Dimensions	150*240*90 mm	120*101*60 mm
Operating temperatures	-20 °C to +50 °C	
Storage temperatures	-30 °C to +70° C	
Cable outlet	1 M32 plastic cable gland (Ø 16 to 21 mm cables)	1 M16 plastic cable gland (Ø 7 to 13 mm cables)
Connection	Spring-cage terminal blocks for 0.08^2 à 2.5^2 wires	
Radio characteristics		
Characteristics according to ETS 300 220		
Receiving frequencies	Automatic frequency selection on the 2.4 GHz band	
Sensitivity	< -100 dBm	
Functional features		
Power supply and consumption (with 2 safety relays and up to 8 function relays switched on)	24 VAC / 48 VAC, 850 mA / 400 mA 15/100 VDC, 850 mA/400 mA 110-230 VAC	24 VAC / 48 VAC, 850 mA / 400 mA 15/100 VDC, 850 mA/400 mA 110-230 VAC or 380-420VAC
Ring type	1 + 12 or 1 + 18 relays	1 + 3, 6 or 9 relays (other on demand)
«Dead man's» function (automatic shutdown of the transmitter)	2 safety relays with linked and guided contacts	
Informative LEDs	On start : 0.5 s max On action command : 55 ms max	
Active downtime	250 ms max	
Passive downtime	1 s max	
LEDs signs for the installer (under the case lid)	1 external green indicator : switched on 1 external red indicator : connected 1 internal red indicator : switched on 1 internal red indicator for each relay	
Protections	Power supply : Against reverse polarity for DC versions Against overcurrent per fuse	

4.5. Relays

Relay functionality	Number of relays	Number of connection points for each relay
Safety relay	2	2 (1 T contact)
On/horn	1	2 (1 T contact)
Action / Movement	from 3 to 18 depending on the number of relay installed in the receiver	2 (1 T contact)

4.5.1 Safety relay

Both safety relays are activated when the remote "on/horn" button is pressed.

These two relays are self-holding until the ComHand system is switched off passively (discharged battery, radio jamming) or actively (STOP button activated).

- Contacts : AgNi+Au5Qm
- Maximum power: 2000 VA
- Maximum switchable current 8 A
- Maximum switchable voltage 250 VAC
- Recommended minimum switchable current/voltage 50 mA / 12 VDC
- 100 000 commutations at 250 VAC, 8 A
- 1 000 000 commutations at 24 VDC, 6 A
- Tests according to EN 60947-5-1 :
  - DC13 to 2 A / 24 VDC A / 250 VAC.

4.5.2 « Horn » relay and command relay

The horn relay is active when the remote "on/horn" button is pressed. This relay is not self-holding.

The control relays are activated when the remote function buttons are pressed after the system is switched on.

- Contacts : AgSnO2
- Maximum power: 5000 VAC (R-BS-FUL) / 500 VAC (R-BP-FUL)
- Maximum switchable current 10 A (R-BS-FUL) / 6 A (R-BP-FUL)
- Maximum switchable voltage 250 VAC / 300 VDC
- Recommended minimum switchable current/voltage 100 mA / 5 VDC
- AC: 50 000 commutations
- DC: 50 000 commutations

4.6. Receiver card and relay protection

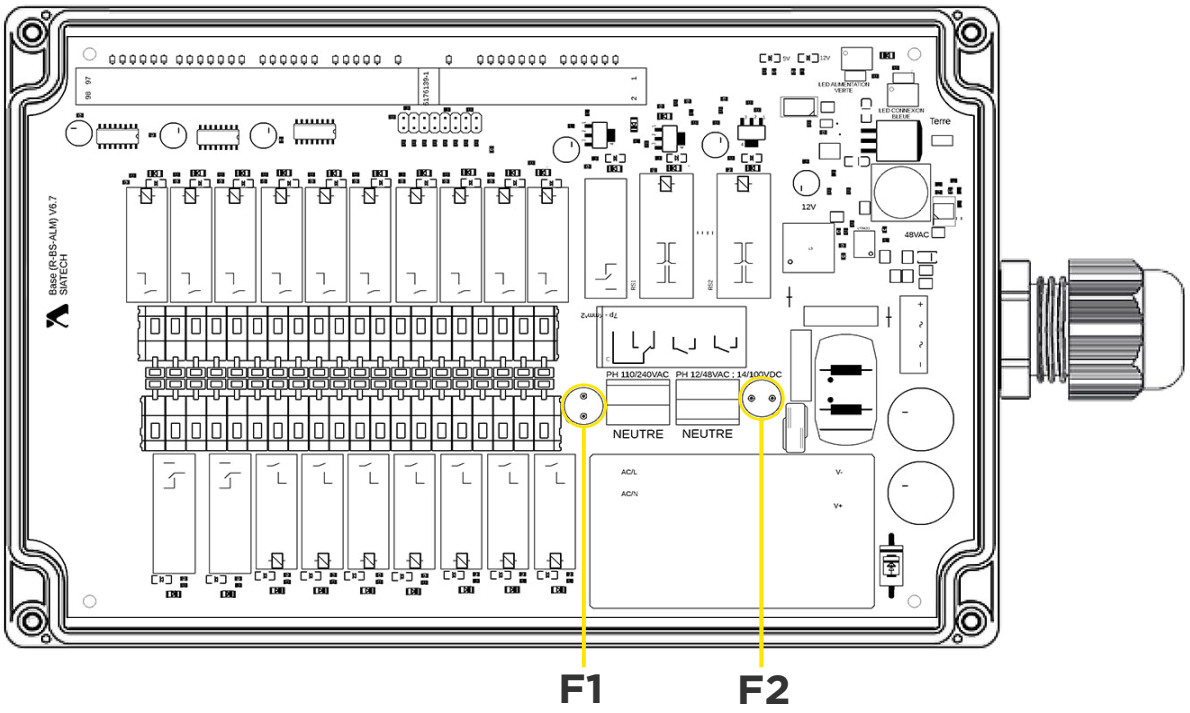
4.6.1 Power supply protection

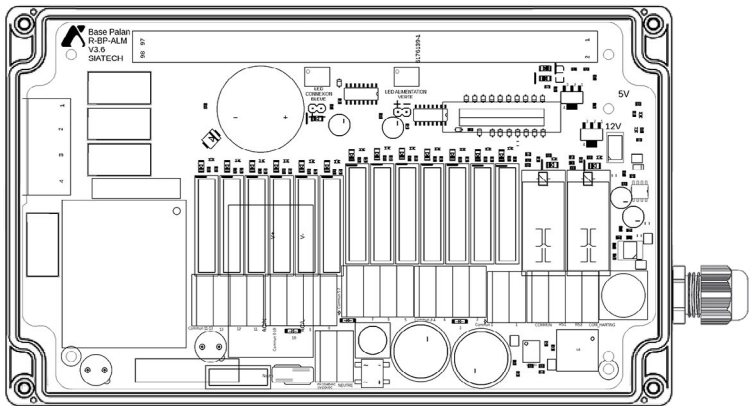
AC versions :

- Against over-voltage: 1 fuse on the phase.
- Non-reversible thermal protection of the transformer (in case of secondary overload).

4.6.2 Fuse characteristics

Element	Fuse characteristics	Fuse location to be used
110/240 VAC powered receiver	3.15 A / 250 VAC / T	F1
48 VAC powered receiver	250 mA / 250 VAC / T	F2
48VAC or 110/240VAC poweredreceiver	250 mA / 250 VAC / T	F3
Safety relay	No protection	/
Horn relay	No protection	/
Function relays	No protection	/





4.7. Pairing code

Remote and receiver are linked by a pairing code during the pairing process.

A receiver can only recognize and execute orders from the paired remote(s)

4.8. «Dead man's» function

The safety function called "dead man" allows the automatic shutdown of the remote (cutting off the radio transmission) when neither the buttons from the ring nor the remote are pressed for a period of N minutes.

The blue LED indicator will flash from T-15 seconds to warn the user that the transmitter will soon disconnect.

The N parameter can be set from the factory or via an administrator code and can take values from 01 to 98 minutes.

This duration is set to 10 minutes by default if no specific request has been made during the order.

If N is set to 99 minutes, the transmitter considers the duration to be infinite (until the battery is completely discharged).

Restart after activation of the "dead man's" function:

- Push the STOP button on the remote
- Follow the procedure described in chapter «6.1. First use of the remote control».

5. User manual

5.1. Factory settings

"Dead man's" function (automatic shutdown of the transmitter in case of prolonged non-use):

Default setting is **10 minutes** (unless otherwise stated).

5.2. Installation advice

Experience shows that operational reliability depends on the installation quality, particularly on the following points:

- Elements installation
- Controlled equipment location
- Quality of the receiver R-BS-FULL or R-BP-FULL wiring
- Anti-interference
- Power supply protection
- Minimum relay outputs and maximum current

5.3. Mounting instructions

Elements dimensions can be found in *Appendix C. Element Dimensions»*.

5.3.1 Receiver location

The receiver must be installed as close as possible to the fuse box in a vertical position related to the machine structure and protected from shocks and bad weather.

It must be as far as possible from class 3 cables and power elements (power supply, motor, drives, etc.) while remaining in an area which is suitable for radio reception.

5.3.2 Controlled equipment location

If several units are equipped with remote controls in close proximity, eachtransmitter must bear a clear indication reminding the operator of the equipmentit controls. For this purpose, identification arrows are available as accessories.

Arrange the various arrows on the equipment to be controlled so that each arrow's shape and color corresponds to a control direction of the associated transmitter.

Arrange the various arrows on the equipment to be controlled so that each arrow'sshape and color corresponds to a control direction of the associated transmitter.The symbols must be placed where there is a clear and unambiguous relationship between the user's gestures and the direction of movement.

5.3.3 Wiring

WARNING

Do not open the receiver box when switched on to avoid any risk ofelectrocution

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

Keep a minimum spacing of 20 cm between the different classes:

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

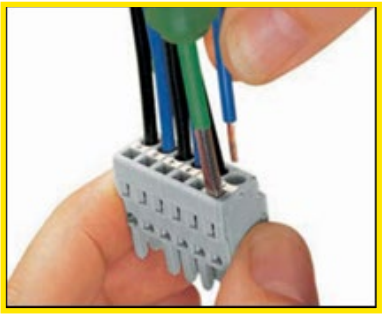
Ideally, each cable class is housed in its own cable tray.

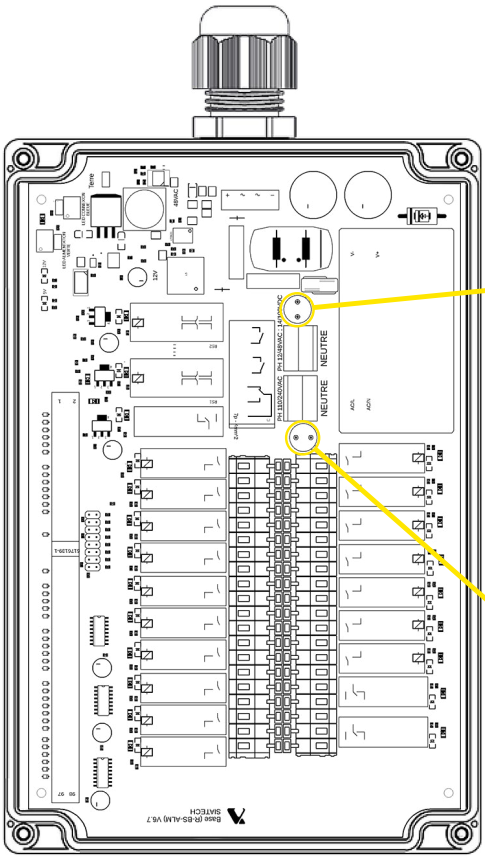
If only one cable tray is available, keep cables of different classes as far apart as possible.

Receiver R-BS-FUL wiring

When employing flexible stranded wire, use crimped ferrules to avoid faulty contacts and short circuits.

- To open the terminal blocks:
- Insert a screwdriver vertically (flat blade 1.5 to 3 mm wide) into the slot on the lever,
- Apply moderate pressure until opening,
- Insert the wire,
- Remove the screwdriver.

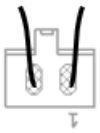




Power supply terminal block :

15VDC - 90VDC
24VAC - 48VAC

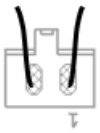
15/90VDC GND
24/48VAC N



Power supply terminal block :

110VAC - 240VAC

110/240VAC N



For wiring and for the correspondence between the action of a function button or switch and the controlled relay, see the correspondence table delivered with the receiver (label on the cover of the box) and refer to *Appendix «A.CHr receiver detailed view»*.

An example of wiring is given in *Appendix «F. Receiver wiring example»*.

Receiver R-BP-FUL wiring

The receiving part allows a direct integration of a harting plug on the box, therefore avoiding any other support.

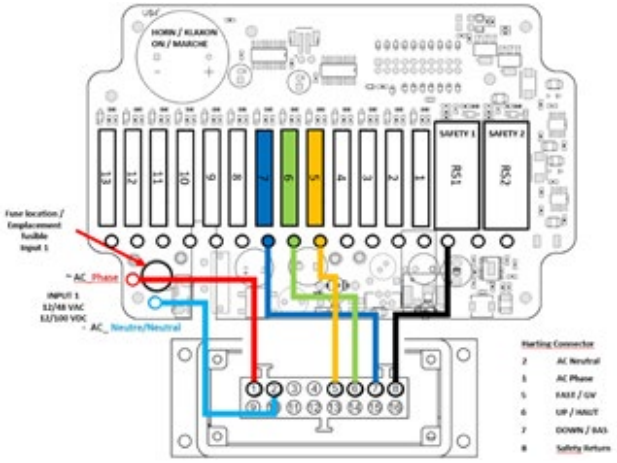


Figure 1 Exemple de cablâge

5.3.4 Anti-interference

In case of inductive loading of the relay outputs (contactor coils, solenoid valves or solenoid brakes), interference suppression elements such as capacitors, RC circuits or diodes, **must** be pre-emptively placed directly at the controlled elements terminals and be connected with cables as short as possible.

5.3.5 Power supply protection

Protection against overcurrents resulting from overvoltages must comply with EN60204-1.

A fuse or other protective device must be provided in the supply circuit of the receiver (item F• in *Appendix F*).

The rated current is defined in chapter «4.4. Receiver R-BP/S-FUL».

5.3.6 Minimum relay outputs and maximum current

Make sure not to exceed minimum and maximum characteristics specified in chapter 4.4 by installing an additional load or intermediate relays (e.g. auxiliary contacts in the electrical box for power control) if needed.

5.3.7 Emergency control

Ensure that, when the remote control is out of order, an alternative control system can be used for operator safety.

5.3.8 Radio frequency

Channels in the 2.4 GHz band autonomously manage frequency changes in the event of conflict or interference.

5.4. Remote function buttons labelling

The identification of the different buttons' functions is achieved by means of self-adhesive labels to be placed in the transmitter slots at each button. The labels are supplied in sheet form.
The installer or operator will choose the labels he will use for their application.

A white LED indicator placed on the transmitter confirms the status of the selected function.

5.5. Controls to be carried out after installation

Before the ComHand system is used for the first time, the installer **must**:

- Make sure that the remote and its receiver are correctly marked.
- Carry out a final check of the correct «function buttons - relay» and "movement-relay" correlation
- Make sure that only the safety relays are activated when pressing the "on/horn" button on the transmitter during start-up.

Check the priority general shutdown mode (when transmitter and receiver are switched on, and radio communication is established):

Active shutdown: pressing the transmitter STOP button instantly switches the safety relays (RS1 and RS2) on the receiver.

Timing of the **"dead man's" function**:
Check the actual duration of the "dead man's" function delay (automatic shutdown of the transmitter). After starting the remote control, leave it without activating any command, note the time after which the safety relays (RS1 and RS2) of the receiver fall back and check if this time corresponds to the one delivered by default (10mn).

6. First use

6.1. First use of the remote control

a. Turn on the receiver
b. If present, connect the E-RB-ADC control ring in the jack connector of the remote
c. Unlock the stop button on the transmitter
d. Press the "on/horn" button and repeat until the receiver is switched on (safety relay engaged).

To stop the remote control: press the STOP button on the remote.

01

Assemble the ComHand elements

Wristband buckle

02

Release the STOP button

03

Press the on/horn button to connect (blue LED switched on)

04 - ring

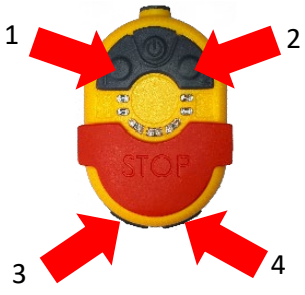
Press the dual-state buttons on the ring to make a movement in the programmed direction

04 - BabHAND

Press the dual-state buttons on the BabHAND to make a movement in the programmed direction

05

Use the 4 programmable function buttons



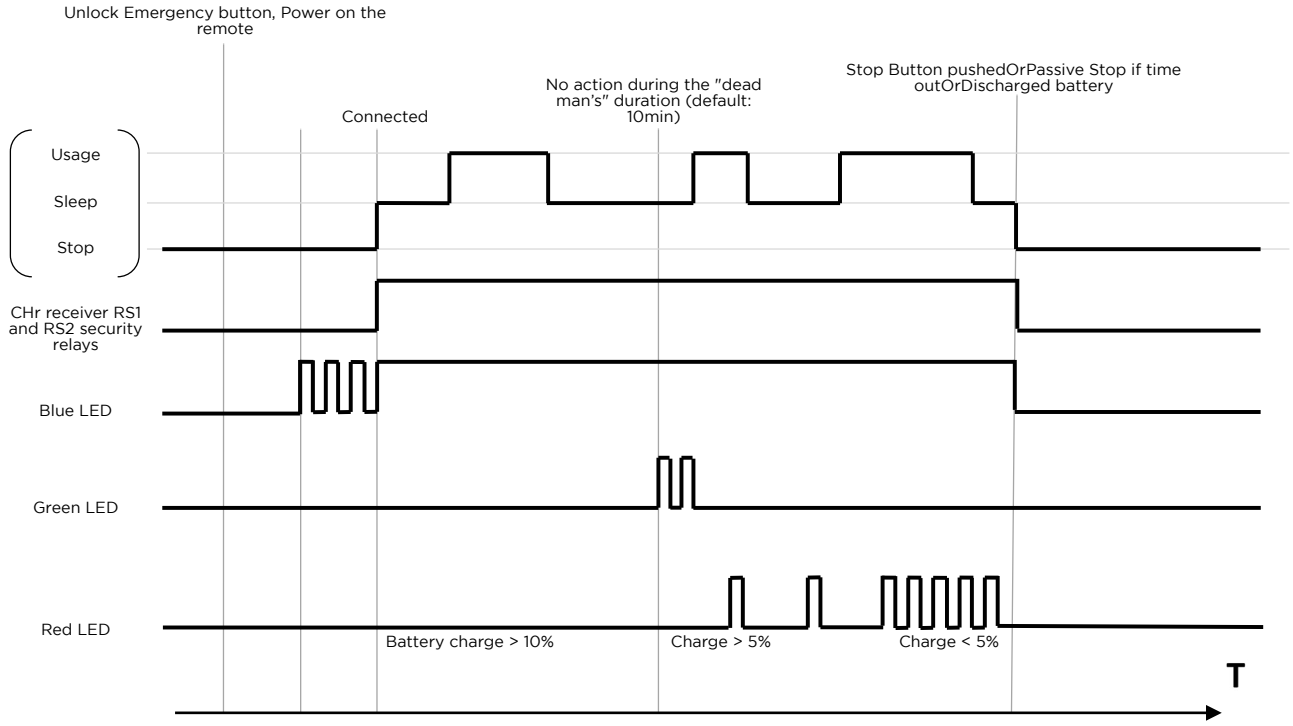
EMERGENCY STOP

To disconnect, or in case of emergency, press the red STOP button.

To start it again, use the tabs on the side of the button to pull it upwards.

6.1.1 Operating synoptic

Safety relays are only activated when the connection is established.



6.1.2 Remote system settings

The device configurations are made at the factory, some specifications can be defined when ordering:

- Delay time for the "dead man's" function (automatic switch-off of the transmitter)
- Programming of the option buttons.

6.2. LED status indication

6.2.1 Remote LEDs

- Error Messages

Remote maintenance (the STOP button is released)	Indicators	Possible reasons	Solutions
After switching on	Blue LED turning off	Connection loss / disconnection	Check the battery charge level Check that the receiver is correctly positioned Or Contact the technical manager
Before start	No LED on	Discharged battery Internal issue	Check the battery charge level Or Contact the technical manager

- Battery status

Remote maintenance (the STOP button is released)	Indicators	Function or related message
Function or related message (emergency STOP button pulled upwards)	White LED(s) indicator(s) on for 1s	Indications:Battery level status indicators : see chapter 6.2.3
Before or after switching on	Rapid flashing of the red LED	Battery nearly empty
	Slow Red LED blinking	Discharged battery Internal issue

Charge the battery when the level is < 20%.

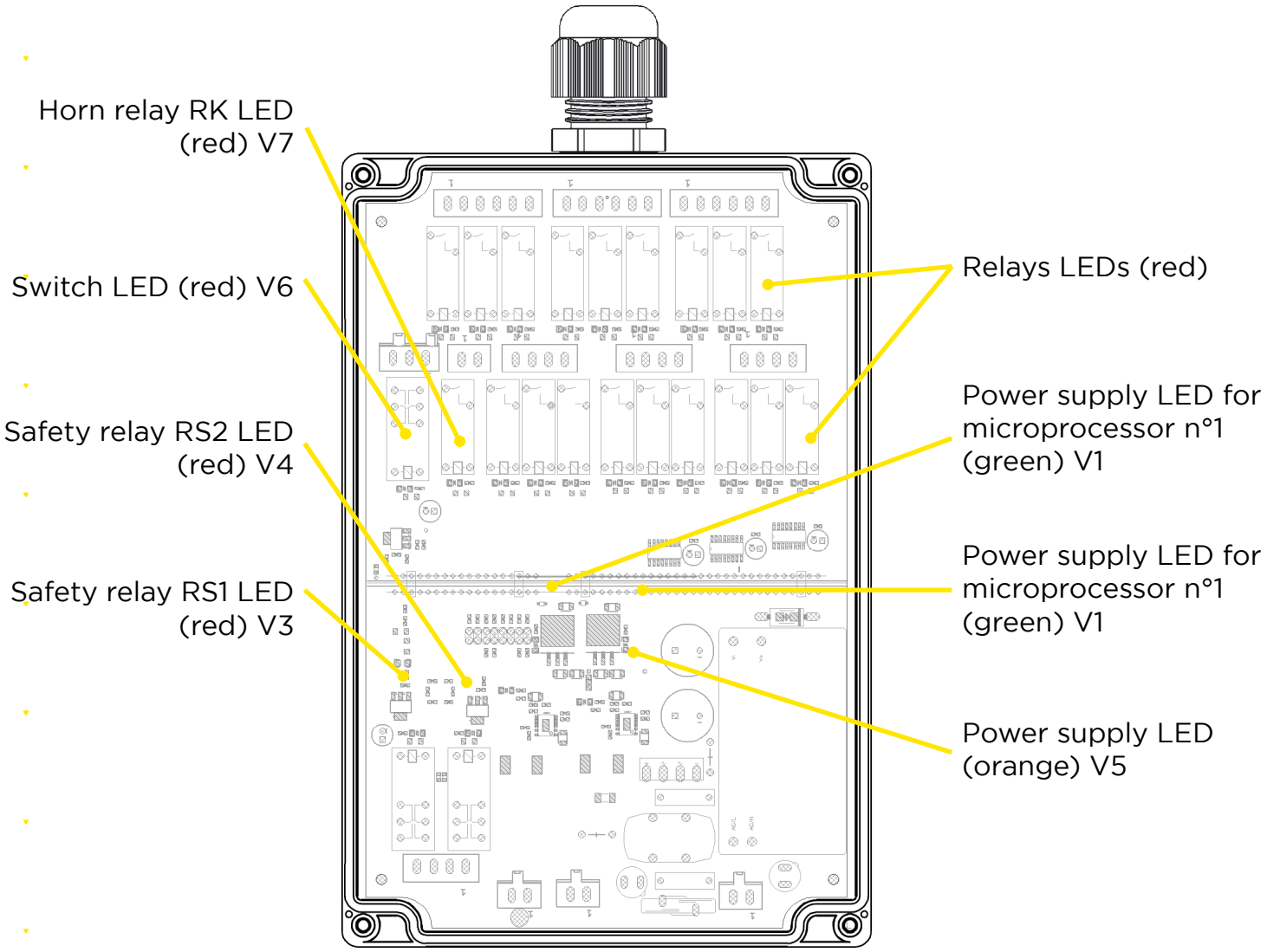
When charging, the red LED indicates that the battery is being charged. When charge is complete, the red LED turns off and the green LED switches on (the blue LED stays on).

- State of selected functions

Remote maintenance (the STOP button is released)	Indicators	Function or related message
Before or after switching on	Slow Red LED blinking	Discharged battery Internal issue
After switching on	Blue LED on	Connection established with the receiver
	Blue LED blinking	Connecting
	Blue LED turning off	Device disconnected
	Green LED blinking	Delay time for the "dead man's" function (automatic switch-off of the transmitter)
	White LED 1 on*	Function button 1 option selected
	White LED 2 on*	Function button 2 option selected
	White LED 3 on*	Function button 3 option selected
	White LED 4 on*	Function button 4 option selected

(*) Many flashing possible to suit the selected option, see an example of a LED scenario for the function described in the associated function sheet (supplied on request).

6.2.2 Receiver indicator LEDs



Indicators	Indication	Message	State/Color
V1	Power supply LED for microprocessor n°1 (green) V2	Switched off	OFF
		Switched on	ON / Green
V2	Power supply LED for microprocessor n°2 (green) V2	Switched off	OFF
		Switched on	ON / Green
V3	Safety relay n°1 state	Disabled	OFF
		Enabled	ON / Red
V4	Safety relay n°2 state	Disabled	OFF
		Enabled	ON / Red
V5	Power supply	Receiver powered off	OFF
		Receiver powered on	ON / Red
V6	RSW relay state, controlled by the remote	Disabled	OFF
		Enabled	ON / Red
V7	RK relay state	Disabled	OFF
		Enabled	ON / Red
Function relay indicators	Relay states	Disabled	OFF
		Enabled	ON / Red

6.2.3 Battery status

The transmitter has two battery charge status display functions:

- When the remote control is on (STOP button pulled upwards), the white function LEDs indicate the battery level for 1 second.
  - 4 white LEDs on: charge is > 75%
  - 3 white LEDs on: charge is between 75% and 50%
  - 2 white LEDs on: charge is between 50% and 25%
  - 1 white LED on: charge is < 25%.

- During remote control operation, a LOW BATT level (charge < 20%) is indicated by rapid flashing of the red LED.

7. SPECIAL FUNCTIONS (OPTIONNAL)

The adaptability of the ComHand remote control makes it possible to respond to all requests for non-standard functionalities.

Our technical service will be able to edit a personalization sheet of the remote control after consultation and validation of the request.

Some functions that can be subject of a personalization sheet are:

- **“Busy hands" option**: forces the user to employ both hands to perform amovement, thus increasing safety by making it impossible to guide the load byhand during a movement (risk of crushing).
- **“Carriage choice" option**: for cranes with several carriages/pallets, this option will allow the user to choose either:
  - **Carriage 1**: The option button 1 LED is on and the option button 2 LED is off.
  - **Carriage 2**: The option button 2 LED is on and the option button 1 LED is off.
  - **Carriage 1+2**: LEDs 1 and 2 are on.

This list is not exhaustive and will be open for discussion according to your needs (contact@comhand.fr).

If your remote control has been customized, we strongly advise you to keep it in order to consult it during commissioning and maintenance operations.

8. Maintenance

8.1. Remote maintenance

- **The remote case must not be opened.** The transmitter can only be taken apart by authorized personnel in a controlled environment. Parts must only be replaced with original ones.
- If one of the **function buttons membranes or the remote case sealing is damaged, the remote must not be used** until the replacement of these elements.
- Otherwise, any liquid, dust or foreign body 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 which may impair the proper functioning of the mechanical parts of the remote control.
- Regularly check the good condition of the transmitter, paying particular attention to the membranes of the function buttons, the jack connector of the control ring and charge.
- The control ring must be replaced at the first signs of wear.
- Clean the remote by removing any foreign body adhering to it. **Use only non-aggressive soap-based cleaners.**

8.2. Receiver maintenance

Check the following points :

- The connection of the receiver to the electrical equipment of the machine
- The control relay contacts
- Proper functioning of the stop, active and passive circuits
- The condition of the cover gasket, the tightness of the screws and cable glands
- The presence and condition of the anti-fall cable.

- Clean the receiver by removing any foreign body adhering to it. **Use only non-aggressive soap-based cleaners.**
- To check the active shutdown (ComHand system switched on), simply press the STOP button on the CHe transmitter. The safety relays of the receiver must then drop out immediately.
- To check the function of the passive shutdown (ComHand system switched on), wait until the "dead man's" function (automatic shutdown of the transmitter) activates.
- The safety relays of the receiver must then drop out within 2 seconds.

8.3. Periodic and post-maintenance controls

In addition to the checks carried out at commissioning which should be repeated, the following should be assessed:

- The preservation of the ergonomic characteristics of the transmitter's box such as: the pressure on the function buttons, the proper functioning of the control ring or the correct depression of the stop button.
- The response time between the sending of a command and the resulting movement.

9. GUARANTEE, SERVICE, REPAIRS

All our devices are guaranteed for one year from the date of manufacture indicated on the product, excluding wearing parts.
Repair, modification or replacement of adevice during the warranty period cannot extend this period.

Limitation :

The warranty does not cover the defects resulting from:

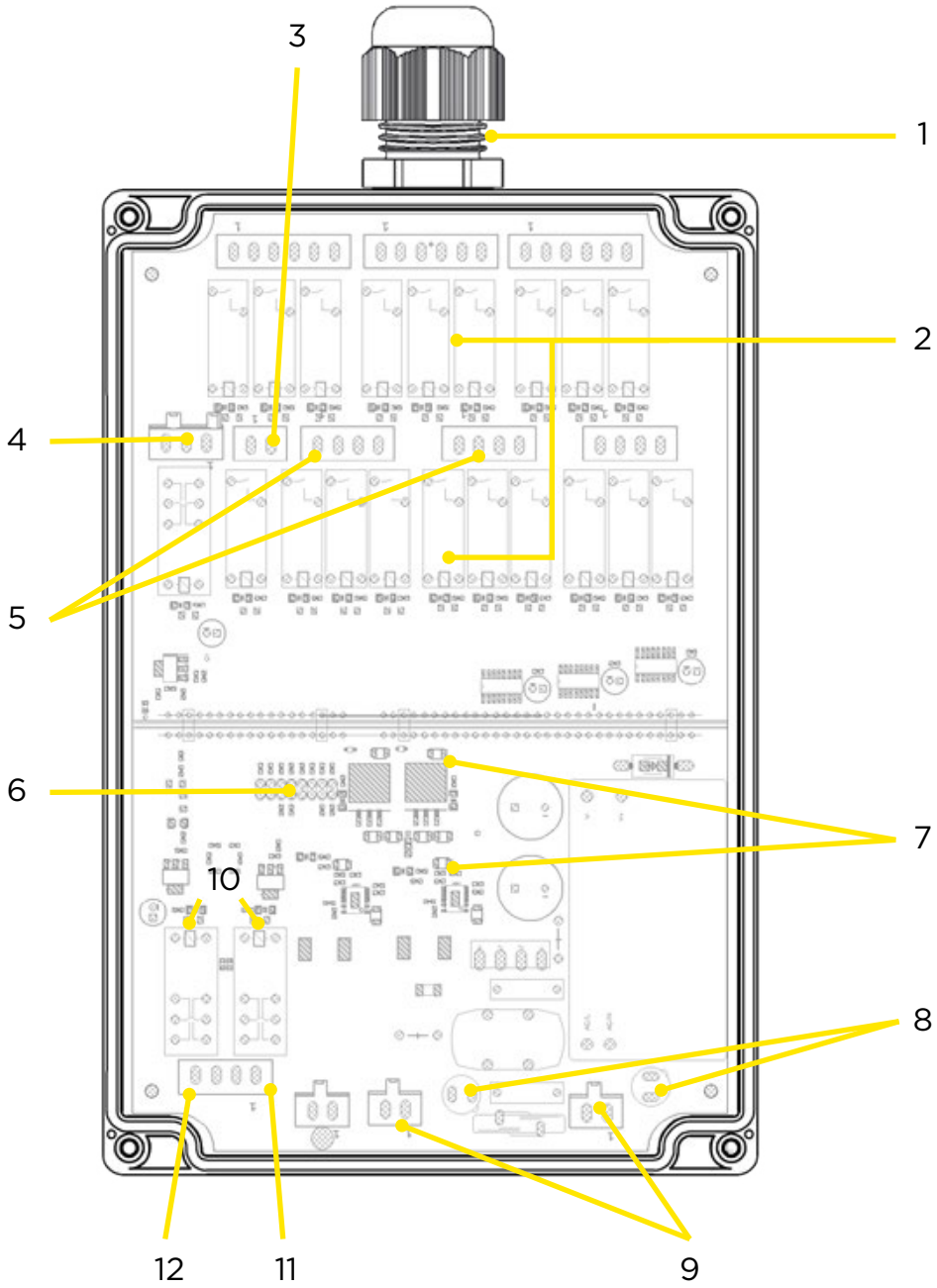
- transportation,
- incorrect operation or failure to observe the connection diagrams during commissioning,lack of supervision or maintenance; non-compliant use to the specifications in the technical manual; and, in general, storage, operating or environmental conditions (atmospheric, chemical, electrical, mechanical or other influences) not suitable or not foreseen when ordering.

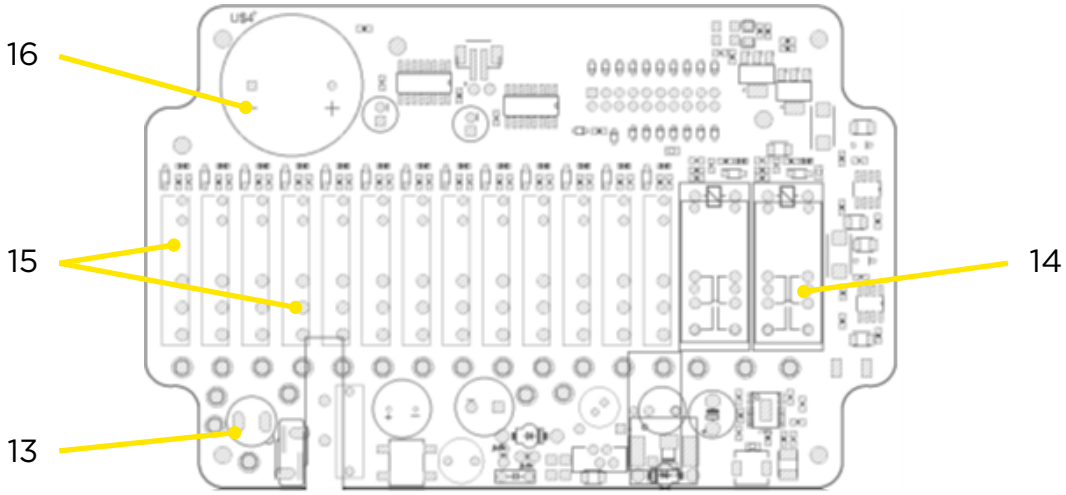
The guarantee cannot be exercised if modifications, dismantling or additions have been made by the customer without the written agreement of our company.Sparkflow liability during the warranty period is limited to any defect in material orconstruction; it includes the repair in its workshops or the free replacement of partsfound to be defective after its technical services' expert assessment.It shall not give rise to any entitlement to compensation for damages.

In the event of a dispute relating to a supply or its payment, the COMMERCIAL COURT OF PARIS shall have sole jurisdiction, even in the event of an appeal or multiple defendants.

APPENDICIES

A. CHr receiver detailed view





Legend:

R-BS-FUL

1. Cable gland, power supply + control cable passing
2. Relays (up to 18 relays)
3. "Horn" relay terminal block (RK)
4. "Switch" relay terminal block (RSW)
5. Control relay terminal block
6. RS232 Serial Card Connector (accessory)
7. Receiver power led indicator
8. Fuses
9. Receiver power supply terminal block
10. Safety relays red indicators leds (RS1 and RS2)
11. Safety relay terminal block n°2 (RS2)
12. Safety relay terminal block n°1 (RS1)

R-BP-FUL

13. Fuse
14. RS1 and RS2 security relays
15. Control relays
16. Internal horn

B. Detailed view of the ComHAND remote

Legend:

1. Function button n°1
2. Function button n°2
3. Function button n°3
4. Function button n°4
5. «on/horn» button
6. Functions identification
7. STOP button
8. Label
9. Informative LEDs
10. Interchangeable wristband

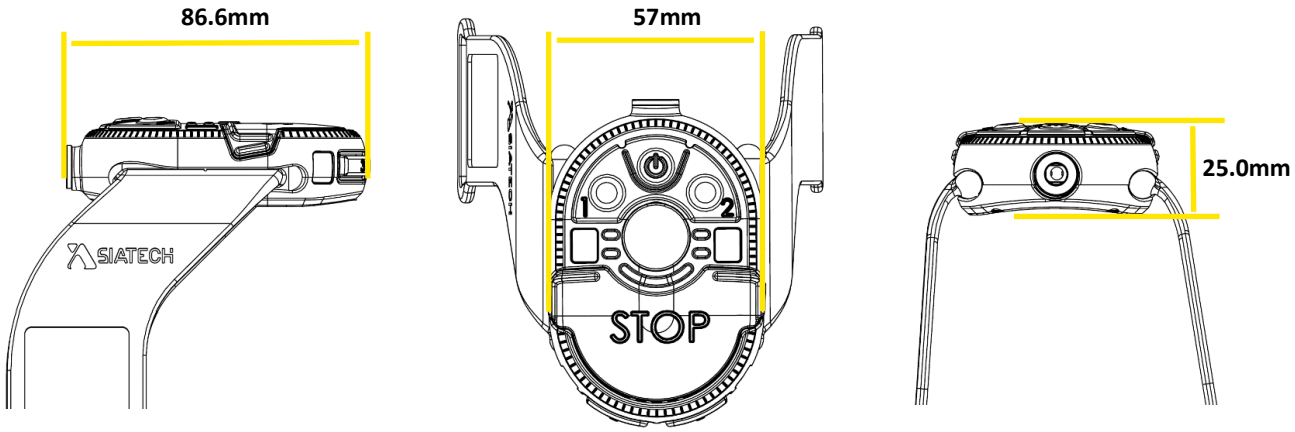
C. Detailed view of the BabHAND remote

Legend:

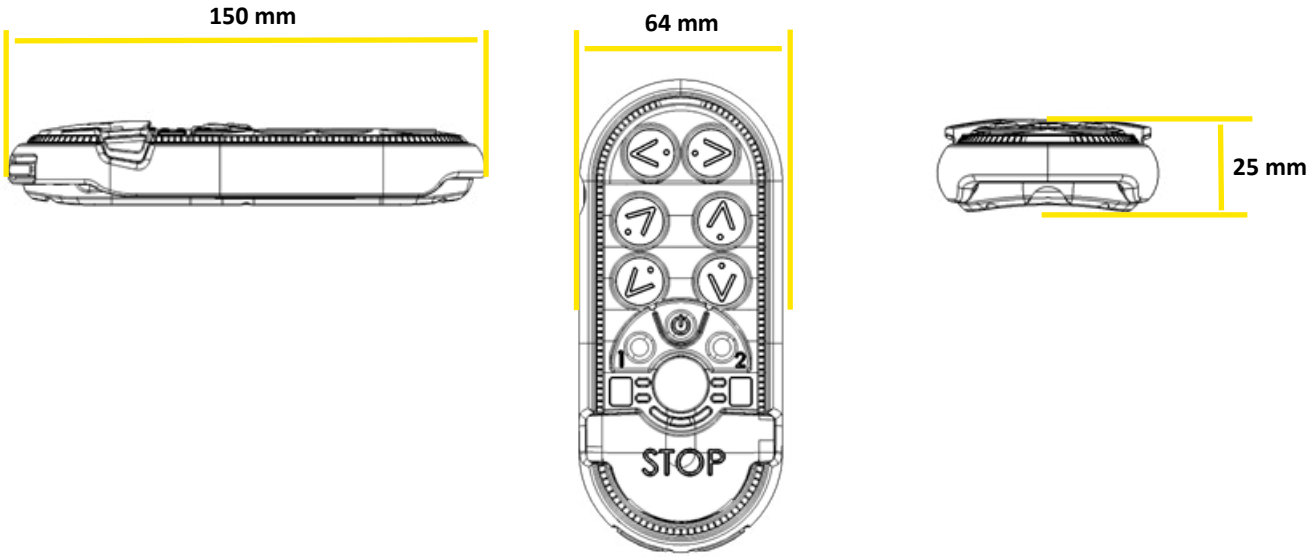
1. Function button n°1 and 2
2. Function button n°3 and 4
3. Double-state direction button
4. Magnetic support
5. «on/horn» button
6. Functions identification
7. STOP button
8. Label
9. Informative LEDs
10. Interchangeable wristband

D. Components dimensions

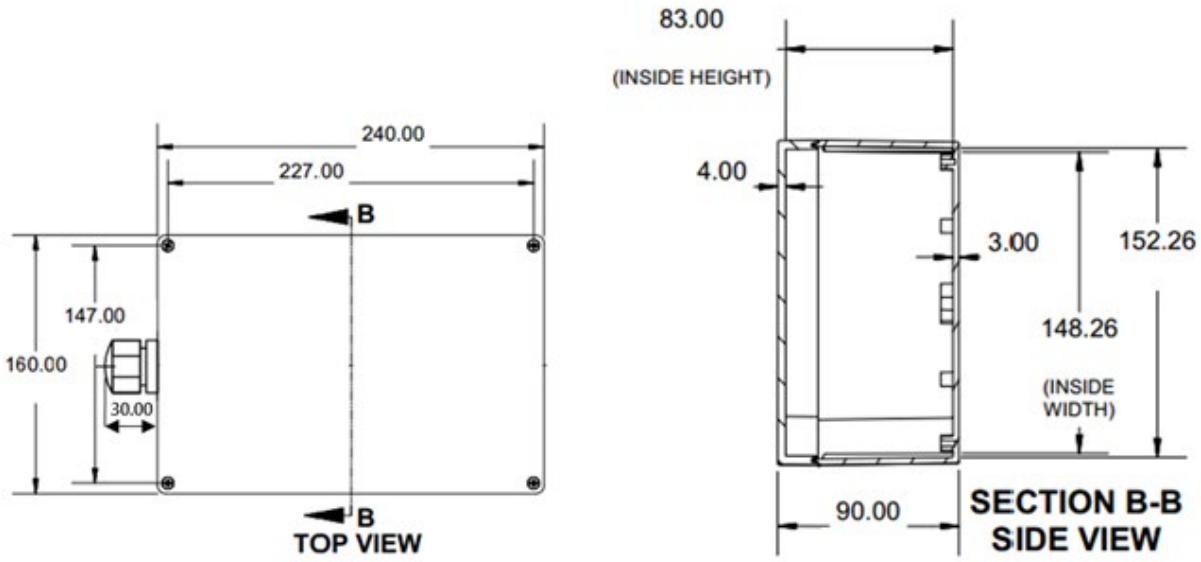
Remote E-CH-FUL (dimensions in millimeters)



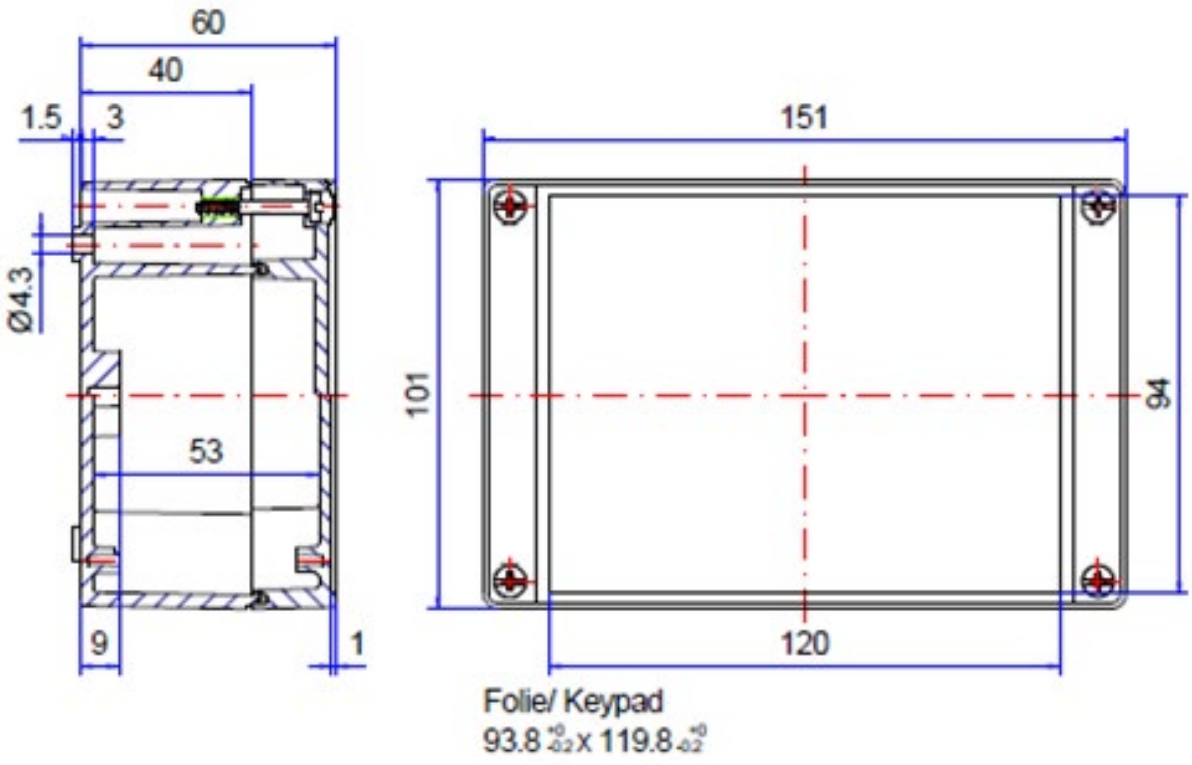
Remote E-BH-FUL (dimensions in millimeters)



Receiver R-BP-FUL (dimensions in millimeters)



Receiver R-BS-FUL (dimensions in millimeters)



E. Charger and accessories

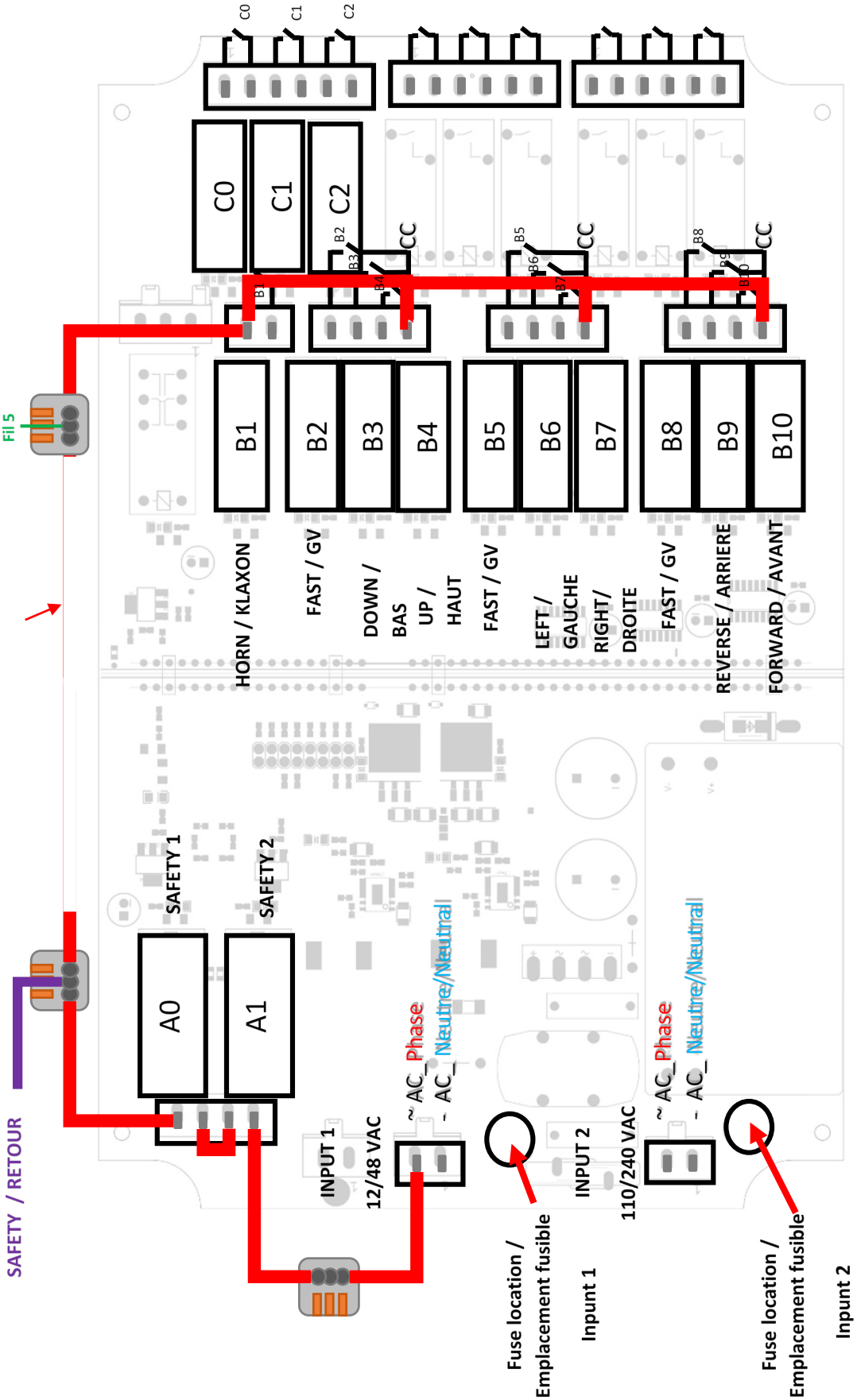
Input: 100-240 VAC

Output: 5 VDC / 1 A

With UE, AUS, US, UK cable

F. Wiring diagram example

Receiver R-BS-FUL



Receiver R-BP-FUL