Installation and user technical manual

Enhanced-safety industrial radio remote control for use in explosible atmosphere

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Appendix :

General safety rules

A radio remote control is considered as a machine control device and as a safety component used to stop a machine as specified by the EEC Machinery Directive. All applicable rules must therefore be observed to ensure safe, correct operation of such devices.

- **For maximum safety** when using the radio remote control, we recommend that the operator carefully follow the instructions provided in this manual.

- **The operator must be appropriately trained and certified** to operate machines by radio remote control.

- **The operator must have uninterrupted visibility of the manoeuvre which he is performing.** When the operator's direct field of view is inadequate, the controlled equipment must be equipped with auxiliary devices to improve visibility.
  When several machines are being moved simultaneously, the equipment must be fitted out to limit to consequences of a possible collision.

- **The receiver unit must only be started up when closed with all its cover fastening screws in place.**

- **Following any intervention requiring opening of the receiver housing, be sure to apply a layer of silicon grease (supplied with** XDR **receiver) to the jointing plane of cover seal.**

- **Never leave the transmitter lying around anywhere,** in particular when it is powered up.

- **Never leave** the radio control transmitter on the ground or on a metal surface. If doing so becomes indispensable, press the stop palmswitch on the radio control.

- **If several radio controls are used at the same site**, different radio frequencies should be used, spaced by at least two channels (for example, channels 5, 7, 9, etc.). The more space there is between the chosen radio channels, the less the risks of disturbance are.

- **For safety reasons, remove the electronic key** when not in use. Store it in a safe and tracked down place.

- **Do not forget to recharge the battery pack** when discharged. **The blue battery pack XDB** must only be charged **outside the ATEX zone**.

- **In the event of a malfunction**, immediately shut down the installation by pressing the «stop palmswitch» on the transmitter and remove the electronic key.

- **Service your equipment** and perform all the periodic checks as may be required by the intensity with which your equipment is used. Follow necessarily the instructions of cleaning described in the chapter «Servicing».

1- Description of XD radio remote control

Thank you and congratulations for purchasing our XD button-type industrial radio remote control system intended for use in «explosible» atmospheres.

The XD radio remote control is designed for remote control applications on handling machines and for industrial equipment applications.
The radio remote control enables the operator to better focus on his work as it allows him to choose his observation position which is only limited by safety considerations (example: no one should be standing under a load).
The radio remote control completes and enhances the classic safety circuits (emergency stop circuits).

With the XD series, JAY Electronique satisfies the needs for use of a radio remote control in an explosible “gas” atmosphere, zones 1 and 2, and in an explosible «dust» explosive atmosphere, zones 21 and 22, consistent with the requirements of directive 94/09/CE.

By its modular design, Jay Electronique's XD system integrates a number of features in terms of :

- Number of function buttons
- Type of function buttons
- Position of function buttons
- Number of output relays
- Programming of relay / buttons assignments

Special attention has been given to ensure operator comfort through the following features :

- Ergonomic transmitters enabling one-hand control
- Control button accessibility
- Button touch sensitivity
- Identification of functions controlled
- Light-weight, compact transmitter
- Transmitter endurance, and fast changing battery pack
- Adaptability to all radio configurations of the environment by possibility for changing frequency by a trained operator
- Mechanical protection of function buttons to avoid any unintentional action
- Transmitter carrying strap which hooks onto belt when unit is idle, or removable shoulder strap (optional accessories)

To further enhance safety when using this equipment, technical solutions and innovative options are also proposed :

- Radio remote control shutdown category 3 per EN954-1 and Hamming distance superior or equal to 4 for each transmitted message
- Access is enabled by electronic key to an authorised operator only

Easy maintenance :

- Customization entirely stored in electronic key
- Diagnostic aid indicator lights

Finally, the UD radio remote controls fully satisfy the safety requirements of the current applicable and draft standards and comply with the following European directives:

- Manufacturer ATEX 94/9/CE LCIE certificate
- Machinery Directive, shutdown category 3 per EN954-1
- RTTE : microwave equipment and telecommunication terminals (low voltage, electromagnetic compatibility, radio-electric spectrum) ART conformity certificate

For any recommendations or questions concerning installation of the **XD** remote control system, contact us at our customer service department :

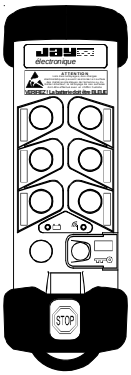
Tel : +33.(0)4.76.41.44.00
Fax: +33.(0)4.76.41.44.44
Email : support.technique.client@jay-electronique.fr

2- Installation

2.1- Composition of the XD Series and description of elements

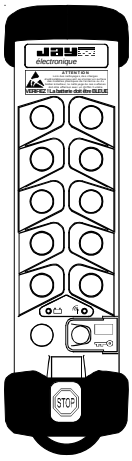
The XD Series comprises :

- A transmitter : «XDE» with radio communication, existing in two housing versions :



6+2 button version
(6 function buttons + 1 «On/Horn» button + 1 «stop palmswitch button»)

or



10+2 button version
(10 function buttons + 1 «On/Horn» button + 1 «stop palmswitch button»)

- A receiver «XDR» which decodes the information generated by the remote control and controls movements of the machines.
- A blue plug-in battery pack «XDB» (transmitter battery).
- A battery pack charger «UCCU».

  CAUTION : **The blue battery pack XDB must only be charged outside the ATEX zone.**

- Various accessories (function button label kits, wiring accessory etc.)

2.2- Unpacking the elements

IMPORTANT

When unpacking the products, be sure to :

- Write down the electronic key number on the cover page of this manual.
  This number will allow you to order a new, identical electronic key defined with your parameters.

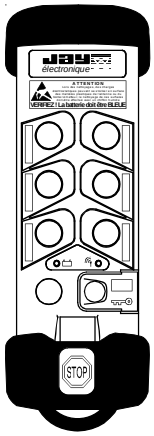
- The transmitter XDE must only be operated with the blue battery pack XDB.

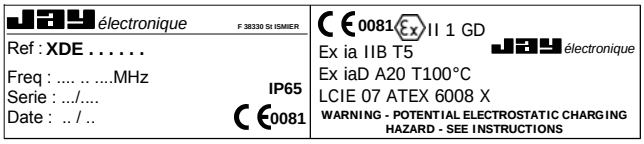
- Put the battery pack in load for 7 hours minimum before a first use. **The blue battery pack XDB must only be charged outside the ATEX zone.**

1st package

Descriptive label

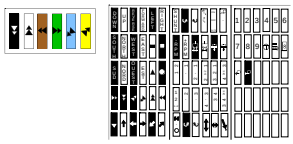
Transmitter XDE



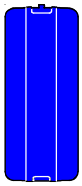


electronic key (1)

label kits



Battery pack[1)] XDB (blue)



2nd package

Charger
(for charging the XDB battery pack)

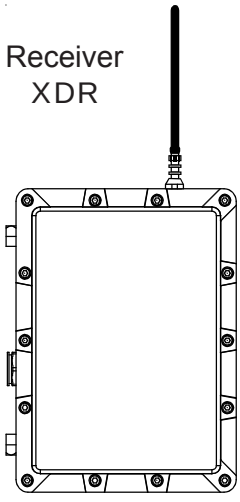
UCCU

100-240VAC/5VDC delivered with Euro and UK plugs

(1) = mounted on transmitter at delivery

3rd package

Receiver XDR

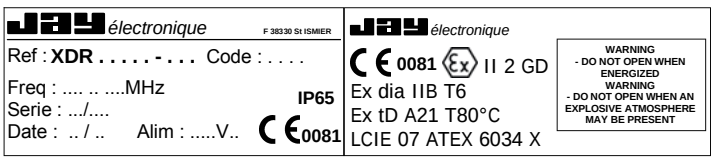


3 seals for cable gland

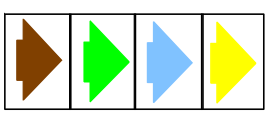
- 15 x 18
- 18 x 21
- 21 x 24

Grease tube (housing closing)

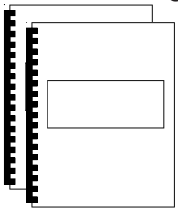
Descriptive label



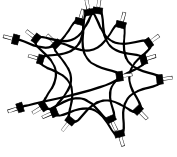
4 colored directional arrows



Technical user manual + safety notes for ATEX housing

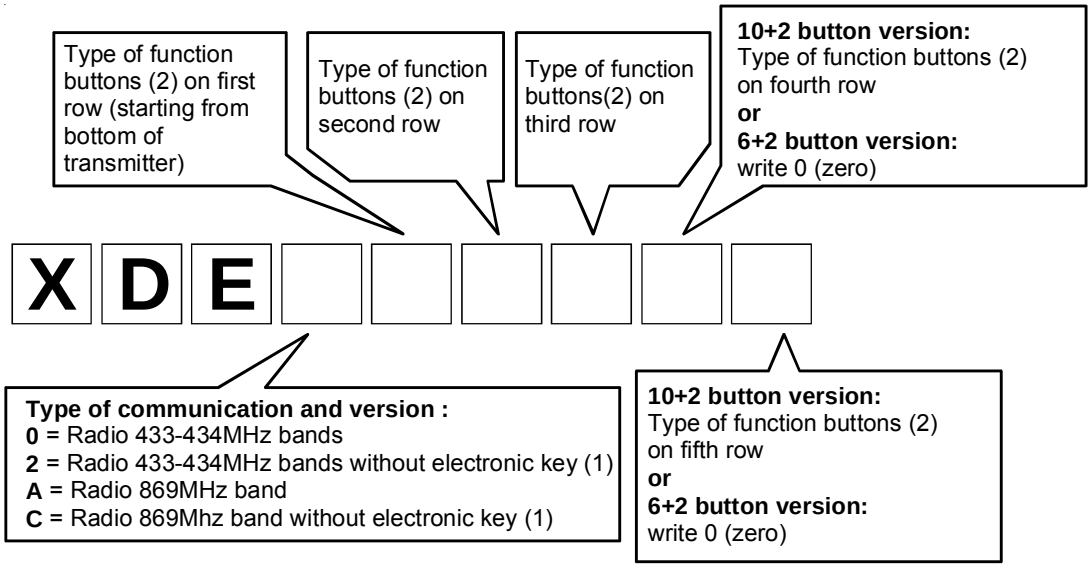


common wiring accessory



2.3- Product identification
(according to sales reference)

2.3.1- Transmitter XDE



(1) - Only for auxiliary transmitter.

(2)= Types of function buttons per row :

1 = BPSV, BPSV	***8*** = BPSV, COM3R
2 = BPDV, BPDV	***9*** = COM2, COM3R
3 = BPSV, COM2	***A*** = COM3, COM3R
4 = BPSV, COM3	***B*** = COM3R, COM3R
5 = COM2, COM2	***C*** = Cover, Cover
6 = COM2, COM3	***D*** = BPSV, BPTR
7 = COM3, COM3	***E*** = COM2, BPTR

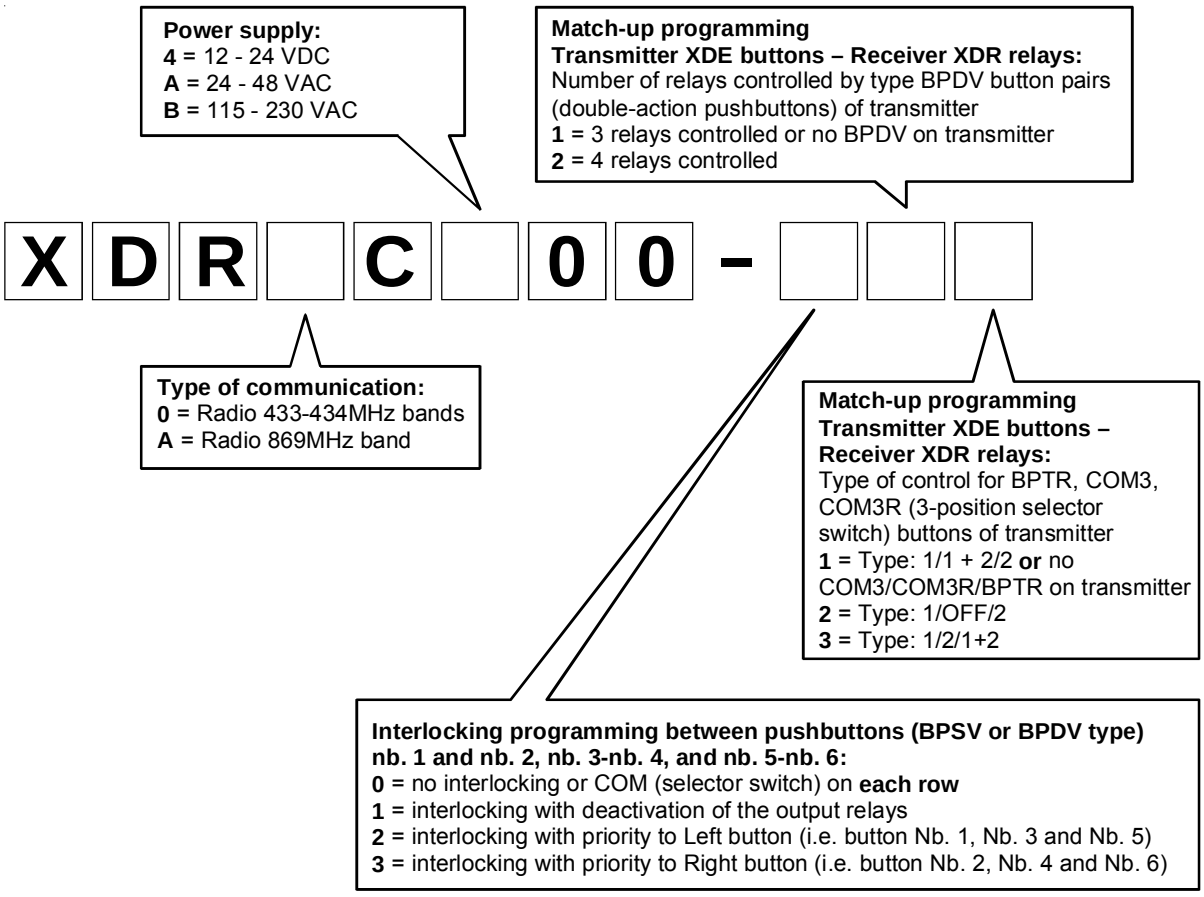
☞ See §5 «Technical data» for button description

☞ See §3.5 concerning programming restrictions due to the use of switches on row 1 and row 2.

Example : *XDE012600*

- **Radio transmitter XDE (433-434MHz bands)**, 6+2 button housing model, with electronic key, button configuration: 1st row BPSV-BPSV, 2nd row BPDV-BPDV, 3rd row COM2-COM3, supplied with label sheets ref.: **UWE202** and **UWE207**.
  The transmitter is delivered with pre-programmed radio channel nb.01 (433,100 MHz).

2.3.2- Receiver XDR



Example : *XDR0CB00-012*

- **Radio receiver XDR (433-434MHz bands)**, 18+3 relays (18 function relays + 2 safety relays + «Horn» relay), 115-230VAC power supply, without programmed interlocking, without BPDV on transmitter; BPTR, COM3 and COM3R buttons, if present, on transmitter are type 1-OFF-2. The receiver is delivered with pre-programmed radio channel nb.01 (433,100 MHz).

2.3.3- Accessories

IMPORTANT

All other accessories for transmitter/receiver not listed on this page (case, strap, etc. ...) must be removed before entering ATEX zone.

For XDE transmitter

Reference	Description
UCCU	Charger 100-240VAC/5VDC (with Euro and UK plugs) (for battery pack charging) (1)
XDB	Plug-in blue battery pack (1) (2)
UDC1	Wall bracket for stowing and battery pack charging when idle (1)
UDWE22 X	Programmed electronic key (parameters to be supplied) (1) (3)
UWE202	Kit with 6 colour “movement” labels for two-step pushbuttons (double speed) (2)
UWE205	Kit with 48 white blank labels + 48 transparent protecting labels for customised marking
UWE207	Kit with 90 black/white “movement, special functions and customisation” labels for selector switches and pushbuttons (2)

For XDR receiver

Reference	Description
VUB084	1/4 wave antenna straight, BNC (2)
VUB086	1/2 wave antenna straight, BNC
VUB060	90° BNC elbow for antenna VUB084 or antenna extension (4)
VUB105	2 m antenna extension BNC + non-insulated bracket (5)
VUB125	5 m antenna extension BNC + non-insulated bracket (5)
VUB131	10 m antenna extension BNC + non-insulated bracket (5)
UWE001	Adhesive 2-way directional arrows, colour coded, for travelling crane
UWE002	Adhesive 4-way directional arrows, colour coded, for travelling crane (2)
UDWR12	Common wiring accessory (2)

(1)= **CAUTION : The blue battery pack XDB must only be charged outside the ATEX zone.**

(2)= 1 accessory supplied with product

(3)= A programmed electronic key is delivered with the receiver, it is however possible to order an electronic key by supplying us the following parameters :
- The unique 6-digit number of the old key (written on the cover page of this manual when you unpacked your product).
or, if you do not have a key number :
- The associated receiver identity code (on receiver descriptive label) and transmitter button configuration.

(4)= Not suitable for direct connection to antenna Ref.: VUB086; in this case, use an intermediate antenna extension type VUB1••

(5)= When using an antenna extension, make sure that the structure on which the support bracket is mounted has the same equipotential as the structure on which the receiver unit is mounted.

2.4- Delivery configuration

- **Radio channel number :**
  - Radio channel nb 01 : 433,100 MHz (433-434MHz bands) or 869,9875 MHz (869MHz band)

- **Duration of the temporization for the "Dead Man" function (automatic shutdown of remote control in case of prolonged non-use) :**
  - Programmed for **4mn**

- **Button / relay configuration and button interlocking :**
  - According to product definition with order.

- **Locking of the access to programming of transmitter** XDE **:**
  The transmitter is supplied "unlocked", programmings (radio channel, "Dead man" function duration and Identity code copy (from electronic to transmitter memory)) can be directly modified by a trained operator (see programming procedures on chapter §3.5).

2.5- Installation recommendations

Experience shows that the functional efficiency of the system basically depends on the quality of the installation :

- **Implementation of elements,**
- **Marking of the controlled equipment,**
- **Wiring quality of** XDR **receiver,**
- **Interference suppression,**
- **Electrical power supply protection,**
- **Minimum and maximum current of relay outputs,**
- **Choice of operating frequency.**

2.5.1- Implementation of elements

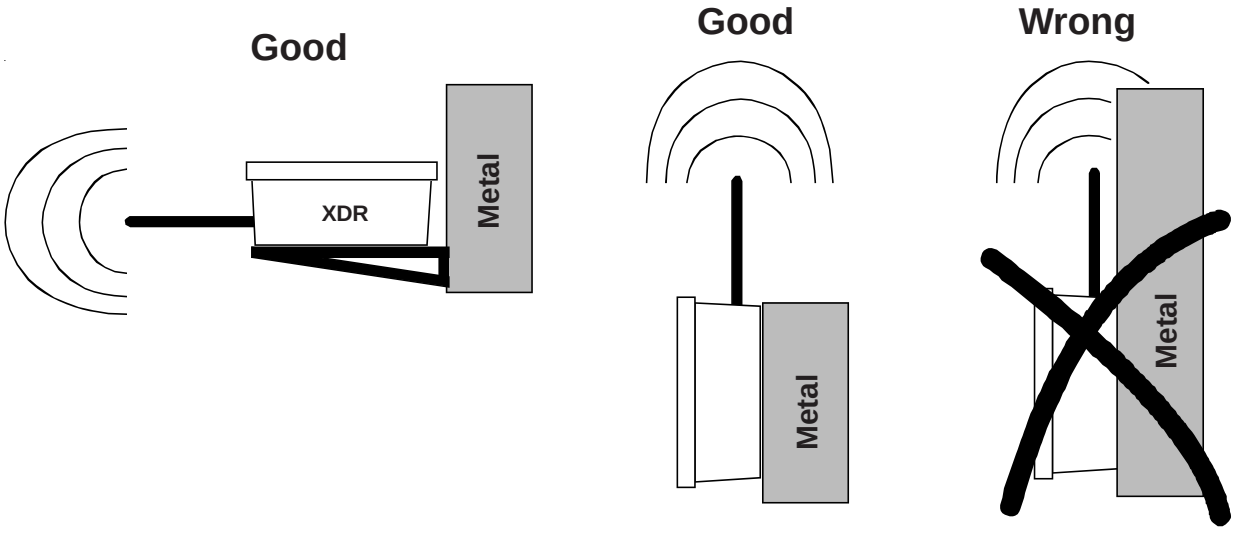
☞ Element dimensions are available for consultation in **Appendix** C

Receiver position

The remote control receiver XDR should be mounted as close as possible to the control cabinet, vertical with respect to the machine structure. The receiver should be sheltered from shocks and weather.

The antenna should be as far as possible from the class 3 cables and power components (power supply, motor, variable speed drive, etc.) while remaining within an area favorable to radio reception :

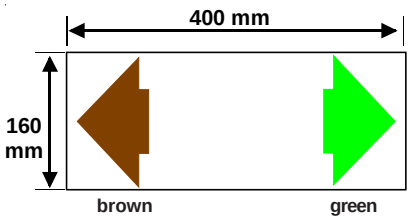
- The antenna should be located at a height, above the operator using the transmitter XDE. No metal object which could create a screen should be located between the operator and the antenna.
- Be steered downward if it is to place above the operator and upward in the other cases.
- The antenna orientation is indicated in the figure below :



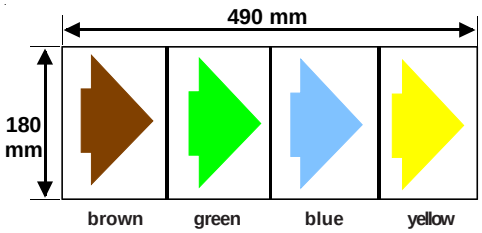
2.5.2- Marking of the controlled equipment

If there are several equipment fitted with similar radio remote control systems working in the same neighbourhood (e.g. in a plant), each transmitter shall carry a clear indication which tells the equipment driver which equipment is controlled by the transmitter in question.
In this respect, signalling arrows are available as an **accessory**.
Place the different arrows on the equipment to be controlled so that each arrow colour corresponds to that on the associated transmitter control button.
The direction of movement of control buttons shall whenever possible be consistent with equipment motion. Symbols shall be fixed in such positions that there is a clear and unambiguous relationship between the action on buttons in the control station and the corresponding direction of motion.
The arrows are available in the following versions:

Reference :
UWE001 **2-way self-adhesive arrows color**



Référence :
UWE002 **4-way self-adhesive arrows color (Independent symbols)**



2.5.3- Receiver wiring

WARNING

To avoid any risk of electrocution or explosion, never open the receiver unit when powered up.
All the receiver cover fastening screws (14 screws) must be in place before powering up the unit.

IMPORTANT

During any intervention requiring the opening of the receiver housing, you have to take the necessary precautions in order not to degrade the surface state of the 2 jointng planes of the cover seal.

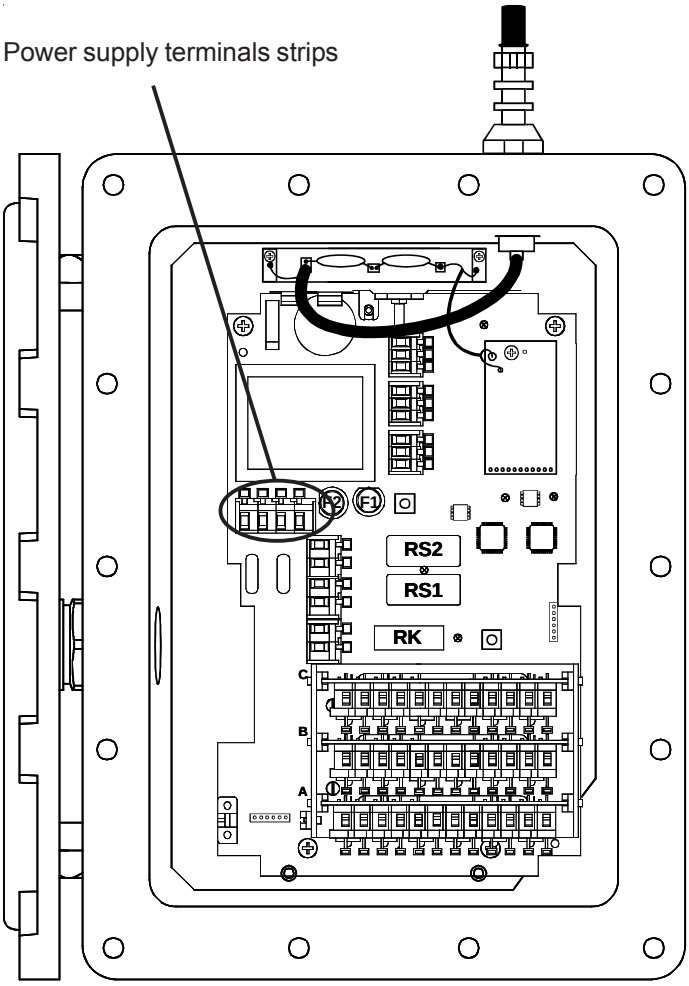
IMPORTANT

Following any intervention requiring opening of the receiver housing, be sure to apply a layer of silicon grease (supplied with XDR receiver) to the jointing plane of the cover seal.

IMPORTANT

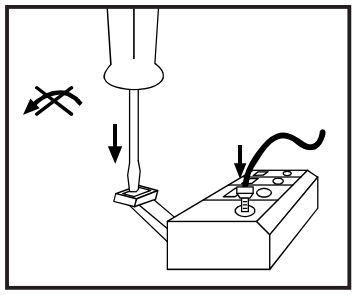
Respect the recommendations of the document :
«Safety Notes - ATEX Housing» reference : 332200

Caution: The electrical connections should be made such that when the main switch is off, the **XD** remote control receiver is also deactivated.

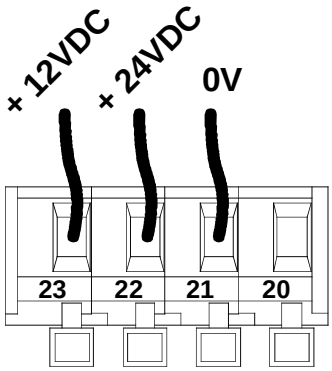


If flexible stranded wire is used, crimped terminations should be used to avoid false contacts and short circuits.

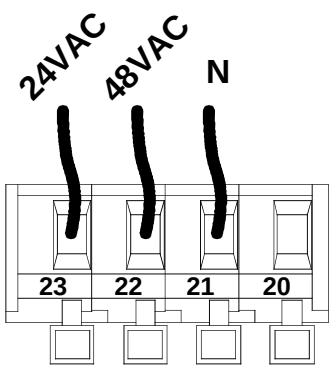
To open the connection terminal strips:
- Vertically push the screwdriver (flat tip screwdriver of 1.5 to 3 mm width) on the lever,
- Exercise a moderated pressure up to opening the terminal
- Insert the wire,
- Remove the screwdriver.



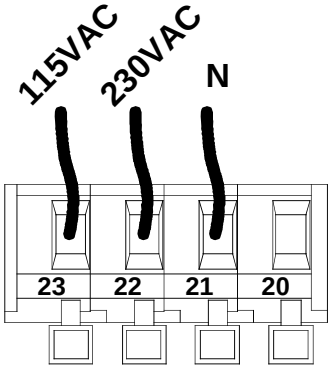
XDR receiver reference :



XDR*C400 - *
12 - 24 VDC



XDR*CA00 - *
24/48 VAC



XDR*CB00 - *
115/230 VAC

For the wiring and to determine the correspondence between the action on a function button or switch and the relay controlled, refer to the configuration table supplied with the receiver (label on housing cover) and **appendix A.**

See wiring example in **appendix D**

2.5.4- Interference suppression

In the event of inductive loads on the relay outputs (contactor coils, solenoid valves or electro-brakes), interference suppression devices such as capacitors, RC circuits, diodes, etc. **must be placed** directly at the terminals of the controlled components using the shortest possible connections.

Such devices must only be installed in full observance of the rules and requirements governing the utilization area.

2.5.5- Electrical power supply protection

Protection against overcurrents (EN60204-1 § 7.2) resulting from overvoltages.

A fuse or other protection device should be provided in the power supply circuit of the receiver (see wiring diagram for standard assemblies, item **F•** in **appendix D**). The assigned current is defined in the table at § «**XDR** receiver technical characteristics».

Such devices must only be installed in full observance of the rules and requirements governing the utilization area.

2.5.6- Minimum and maximum current of relay outputs

Be sure not to exceed the minimum and maximum characteristics specified in § «**XDR** receiver technical characteristics» by installing, if necessary, an additional load or intermediate relays (auxiliary contacts in electrical cabinet for power control, for example).

Such devices must only be installed in full observance of the rules and requirements governing the utilization area.

2.5.7- Auxiliary control

Measures should be taken to ensure, that when the radio control is not in service, another control system can be used to ensure the safety of the operator and the manipulated load.

2.5.8- Choice of operating radio frequency

The 64 radio channels in 433-434MHz or 12 channels in 869MHz of the **XD** provide a broad range of choices among the available frequencies. To ensure good operating quality, it is important that the radio channel used be free (as well as the preceding and the following one) throughout the area in which the machine will be controlled.

If several radio remote controls are operating on the same site, frequencies spaced by **at least two channels** (for example: 5, 7, 9 …) should be used and, if necessary, a frequency plan should be drawn up, specifying the various machines controlled and their working frequency.

2.5.9- Use of an antenna extension

When using an antenna extension, make sure that the structure on which the support bracket is mounted has the same equipotential as the structure on which the receiver unit is mounted.

2.6- XDE transmitter function button labels

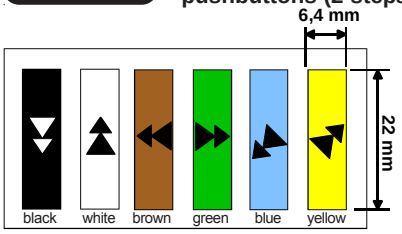
The various button functions are identified by means of adhesive labels placed in the recesses provided in the transmitter unit envelope at each button location.

The labels are supplied in the form of sheets with the various labels you will need for your application. Simply choose the labels corresponding to your configuration.

Reference :

UWE202

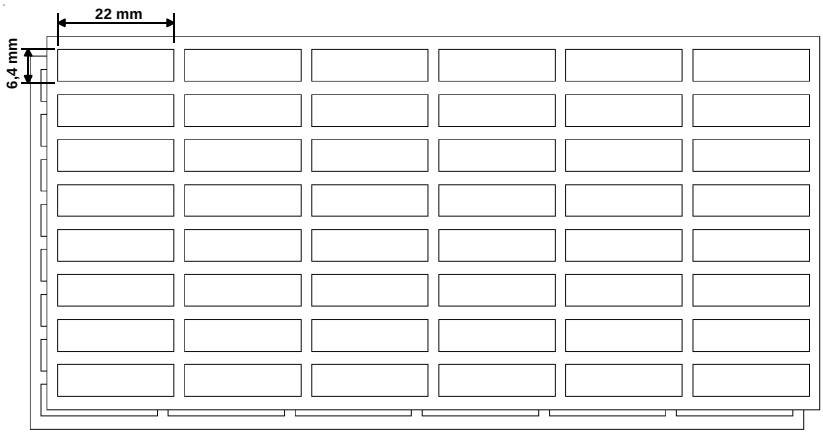
Kit of 6 colored labels, «movements», for double speed pushbuttons (2 steps)



Reference :

UWE205

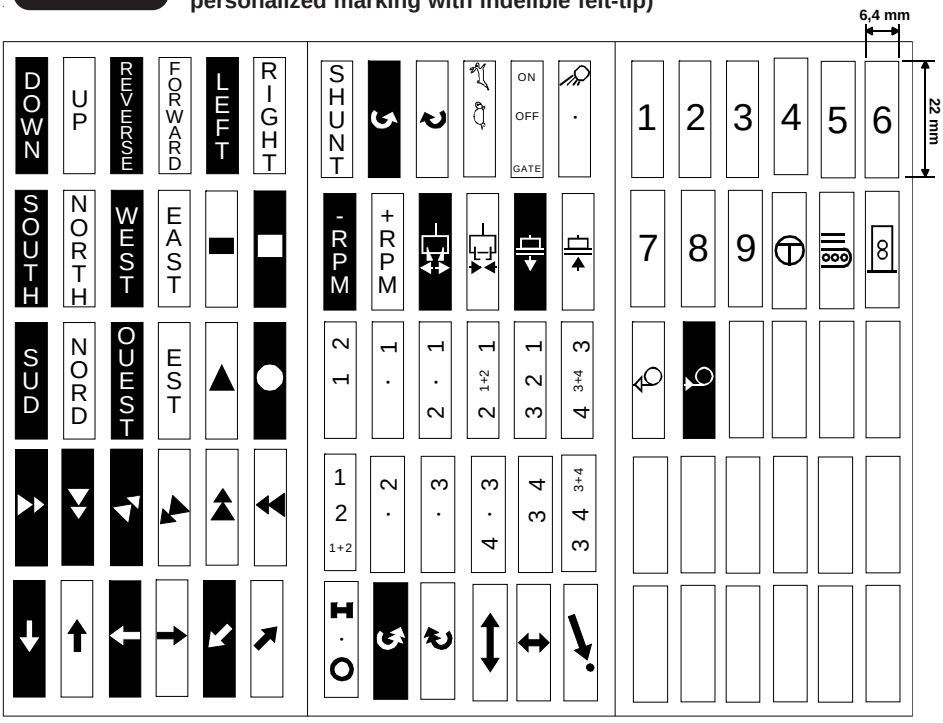
Kit of 48 white blank labels, «customization» + 48 transparent protecting labels.



Reference :

UWE207

Kit of 90 white/black labels, «movements, special functions and customization» for switches and pushbuttons (with 16 labels for personalized marking with indelible felt-tip)



Label kits **UWE202** and **UWE207** are systematically supplied with **XDE** transmitter.

3- Commissioning

3.1- Precautions when commissioning

- **The installer must :**

  - Ensure that the category of equipment used corresponds to the ATEX requirements for the application,
  - Ensure that the identity code of the electronic key is identical to that of the receiver,
  - Ensure that the transmitter radio frequency is identical to that of the receiver,
  - ensure that the radio channel chosen corresponds to the frequency plan set up for the site,
  - perform a final check to verify that the desired Button-Relay correspondence is in place.

- During the previous check, the installer must check that when the green "On/Horn" button is pressed on startup, only the function relays assigned to the rotary button selections are in the "ON" state.

- **Verify the priority general shutdown mode** (remote control in operation and radio link established):

  Active stop : When the stop palmswitch button on the transmitter is pressed, the receiver safety relays (RS1 and RS2) should instantaneously change state.

  Passive stop : When the electronic key is removed from the transmitter in operation, the receiver safety relays (RS1 and RS2) should change state within two seconds max.

- **"Dead man" function duration :**
  Check the effective duration of the "Dead man" function (automatic shutdown of transmitter) : Start up the remote control and leave it without activating any control. Record the time after which the receiver safety relays (RS1 and RS2) are deenergized and check that this duration corresponds to the standard duration supplied (4min.) **or** to the new duration defined by a trained and authorized operator in accordance with the procedure described in chapter «Dead man» function time programming.

- **Radio range limits :**
  Ensure you have good radio transmission coverage throughout the equipment control area. Test the range limit of the transmitter and receiver (by moving about up to the range limit).

- **Special function: masking of certain function buttons :**
  If button masks are included in the electronic key, check that they properly correspond to the application for which they have been provided.

3.2- Periodic checks and checks performed following maintenance operations

In addition to the commissioning checks which should be performed, also check :

- That the ergonomic features of the transmitter unit have been preserved, such as: pressure on function buttons, correct rotation of rotary switches, emergency stop button pushes in correctly, etc...
- Response time of commands between transmission of a command and resulting movement.

3.3- First radio remote control startup

1- Switch ON the **XDR** receiver.

2- Plug the blue **XDB** battery pack (charged) into **XDE** transmitter housing.

3- Install the electronic key on the transmitter.

4- Copy electronic key identity code to **XDE** transmitter memory, see procedure on § 3.5.4.

5- Unlock the transmitter stop palmswitch button.

6- Press the green «On/Horn» button until the receiver is started up. (safety relays are activated).

To stop the radio remote control : press the XDE transmitter stop palmswitch button..

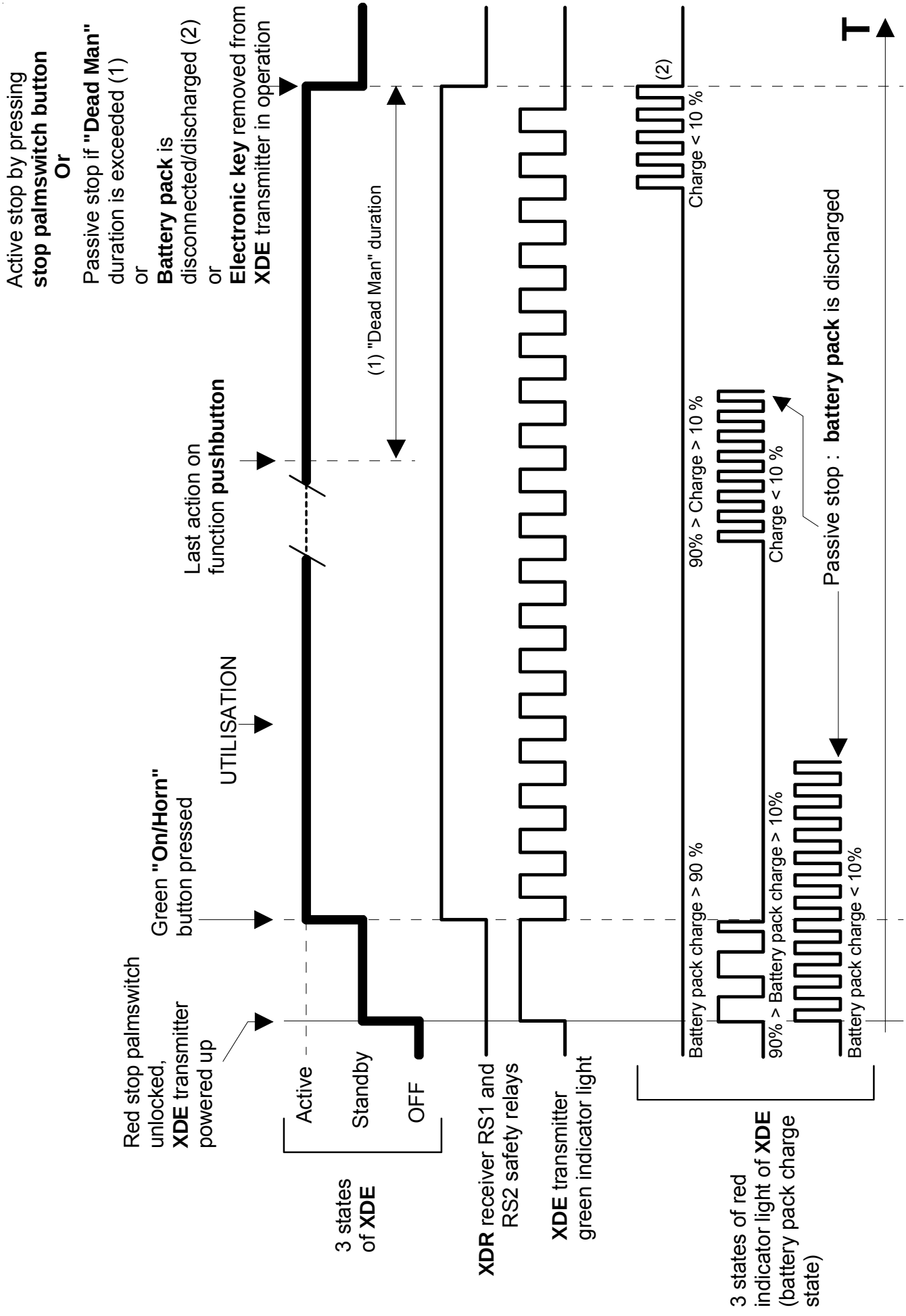
NB : if this procedure is not observed the transmitter indicates an error with the red and green indicator light :

- «**3 flashes error type**» (The green and red leds flash **3** times, mark a break, then flash **3** times etc.) : resume «identity code copy» procedure described in § 3.5.3.

- «**5 flashes error type**» (The green and red leds flash **5** times, mark a break, then flash **5** times etc.) : Stop or startup error (make sure that the pack battery is correctly inserted in the transmitter housing and resume the radio remote control startup procedure).

See startup block diagram on next page

3.4- Functioning block diagram



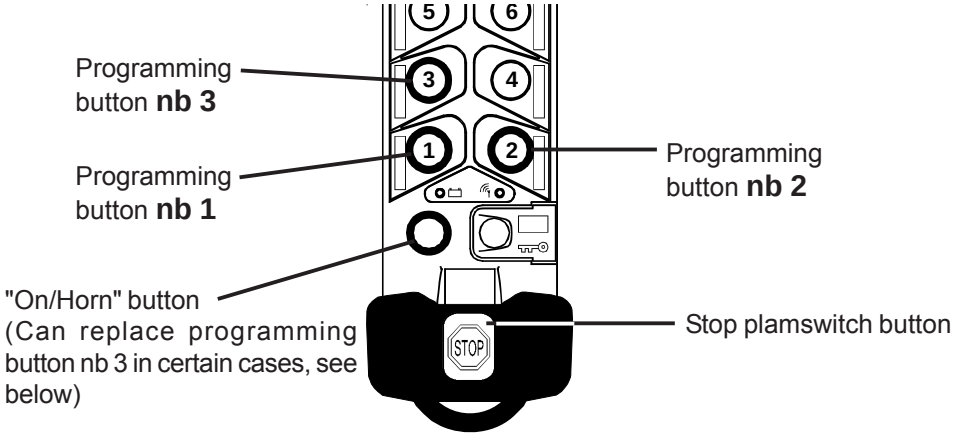
3.5- XD system configuration and parameter setting

The following parameters are configurable from the XDE transmitter unit :

- Transmit frequency (radio channel number selection).
- The "Dead man" function duration (01 to 98 minutes and infinite).
- Copy of electronic key identity code to transmitter memory.

These configuration operations use procedures implementing buttons nb 1, nb 2, nb 3, stop plamswitch and "On/Horn" without having to open the transmitter or the receiver.

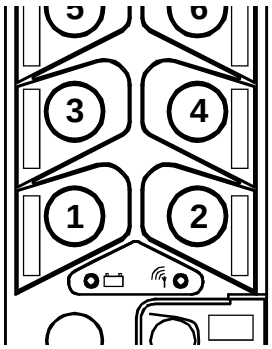
By a specific operating mode, the person in charge of the equipment can **lock** or **unlock** the access to the programming (see §3.5.1).



Programming limitations by the button type implanted at position «button nb 1», «button nb 2» and «button nb 3» on the XDE transmitter :

In order for the four programming functions to be programmable (locking-unlocking of programming, radio frequency, "Dead man" duration and identity code copy), **button nb 1 and button nb 2 must be single or double speed pushbuttons (BPSV or BPDV).**

If not, certain functions may not be accessible to the user. The table below shows the programming modes available in accordance with the buttons nb 1 and nb 2 used :



Button nb 1	Button nb 2	"Locking-unlocking" access to programming of transmitter	Working frequency programming	"Dead man" function time programming	Copying electronic key identity code in transmitter
BPSV or BPDV	BPSV or BPDV	YES	YES	YES	YES
BPSV or BPDV	Other *	NO	NO	YES	NO
Other button type *		NO	NO	NO	NO

* : COM2, COM3, COM3R, BPTR or Cover

If programing button nb 3 is not of BPSV or **BPDV** type, the "On/Horn" button takes then the role of programming button, and substitutes itself for button nb 3.

Configuration parameters which cannot be programmed by the user will be taken into account on the sales order and will not be re-configurable once the transmitter is manufactured.

However, it is always possible to order an electronic key containing the desired parameters (reference: **UDWE22X**)

3.5.1 Procedure: "Locking-unlocking" access to programming of transmitter XDE

1- **Switch off the** XDR **receiver**
2- Insert the electronic key in the XDE transmitter unit..
3- Holding buttons nb 1, nb 2 and nb 3* pressed, unlock the stop palmswitch button (fig.1).
4- Release the buttons.
Indicator lights statuses:
- XDE transmitter **locked** : red indicator light on, green indicator light off.
- XDE transmitter **unlocked** : red and green indicator lights on.

5- Select «**locked**» or «**unlocked**» by pressing button nb 2; the selected mode is shown by the indicator lights (fig.2&3).
6- Validate the selected mode by pressing the "On/Horn" button (fig.4).
7- The XDE transmitter saves the new mode in the electronic key and switches off the indicator lights.
8- Exit the «locking - unlocking» procedure by pressing the stop palmswitch button (fig.6).

Remark: If an operator attempts to program the radio frequency, the «dead man» function duration or an identity code copy with the transmitter locked, the XDE transmitter will indicate an error «**Transmitter locked**» by its indicator lights which will flash in alternation.

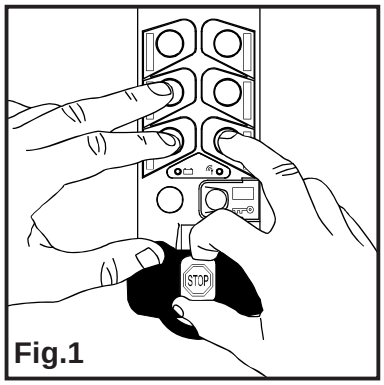


Fig.1

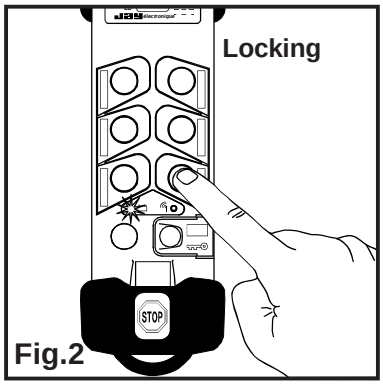


Fig.2

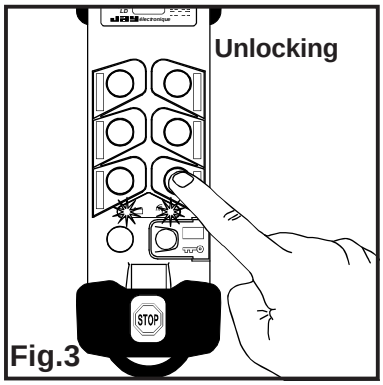


Fig.3

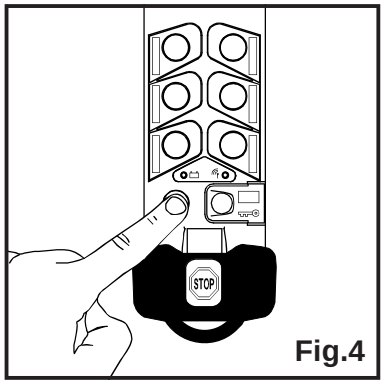


Fig.4

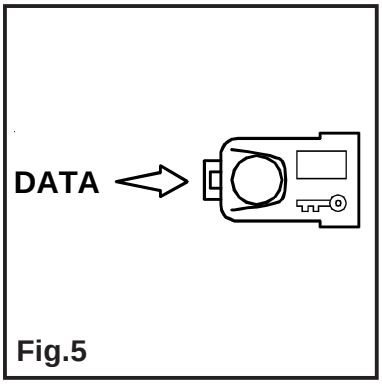


Fig.5

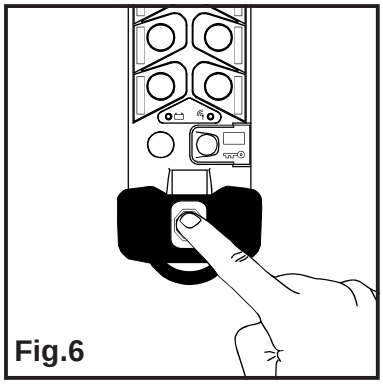


Fig.6

* = If the button nb 3 is not pushbutton (**BPSV** or **BPDV**) type, use then the green «On/Horn» button.

3.5.2 Procedure : working radio frequency channel programming

1- Switch on the XDR receiver.
2- Insert the electronic key in the XDE transmitter unit.
3- Holding buttons nb 1 and nb 2 pressed, unlock the stop palmswitch on the transmitter (fig.1).
The radio channel already selected is indicated by two flashing indicator lights on the transmitter which represent the tens (red indicator light) and units (green indicator light).

> **If transmitter red and green indictor lights flash in alternation :**
> The electronic key is locked. Press the stop palmswitch button and follow procedure described on chapter §3.5.1. Start again this procedure at point Nb.3.

4- Select the new channel using buttons nb 1 and nb 2 (fig.2&3).
Press button nb 1 to increment the tens and button nb 2 to increment the units.
During these operations, the newly selected channel is displayed by the 2 indicator lights on the transmitter which flash accordingly.
5- Once the desired channel is selected (between 01 and 64 for 433-434MHZ bands or 01 to 12 for 869MHz band), press the "On/Horn" button to validate your selection (fig.4).
Briefly pressing "On/Horn" button :
the transmitter sends the selected radio channel number to the receiver and saves its new working radio channel (fig. 5).
By pressing and holding the "On/Horn" button (3 seconds) :
the transmitter sends the selected channel number to the receiver (on each of the radio link channels) and saves its new working channel. Wait until the transmitter indicator lights no longer flash (around 30 seconds) (fig. 5)
(this longer procedure is preferable and should be performed when you are not familiar with the initial working channel of the receiver).
6- Exit the "frequency" programming mode by pressing the stop palmswitch button (fig.6).
7- Check that the XDR receiver has changed channel by performing the startup procedure.

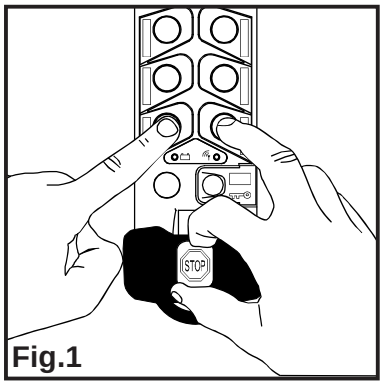


Fig.1

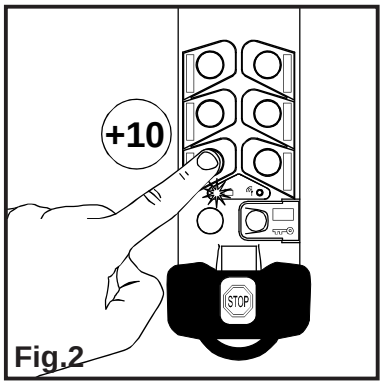


Fig.2

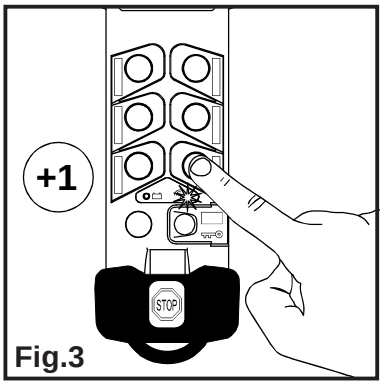


Fig.3

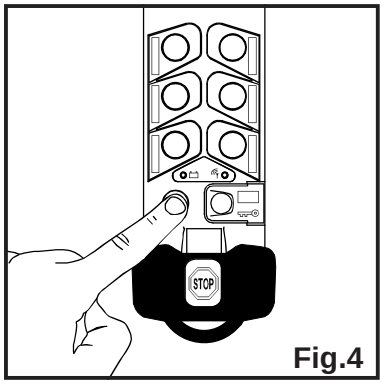


Fig.4

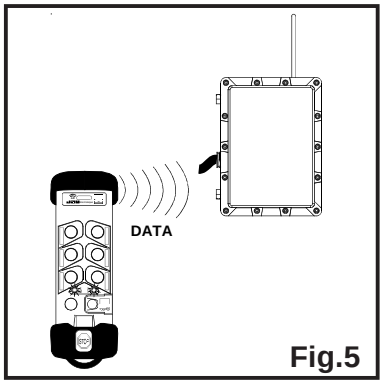


Fig.5

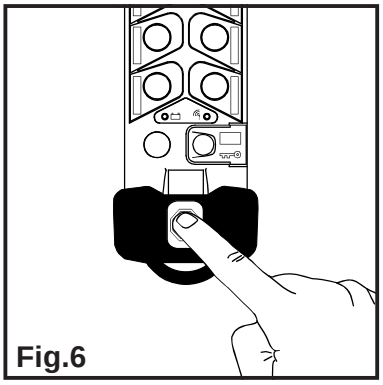


Fig.6

3.5.3 Procedure : "Dead man" function time programming
(Automatic shutdown of transmitter XDE)

1- Switch off the XDR **receiver.**
2- Insert the electronic key in the XDE transmitter unit.
3- Holding buttons nb 1 and nb 3* pressed, unlock the stop palmswitch button on the transmitter (fig.1).
The «Dead man» time is displayed by two flashing indicator lights on the transmitter representing the tens of minute with the red light (0,10 to 90) and the number of minutes with green light (0 to 9).

> **If transmitter red and green indictor lights flash in alternation :**
> The electronic key is locked. Press the stop palmswitch button and follow procedure described on chapter §3.5.1. Start again this procedure at point Nb.3.

4- Select the new time using buttons nb 1 and nb 2 (fig.2&3).
Press button nb 1 to increment the tens and button nb 2 to increment the units.
During these operations, the new time selected is displayed by the two indicator lights on the transmitter.
5- Once you have selected the desired «Dead man» time (between 01 and 99), press the «On/horn» button to validate your selection (fig.4).

Caution: No. 99 corresponds to an infinite «Dead man» time
> This function is then deactivated and forgetting that the transmitter is stopped (by pressing the stop palmswitch button) will result in complete discharge of the battery pack.

6- Exit the «Dead man» time programming mode by pressing the stop palmswitch button (fig.6).

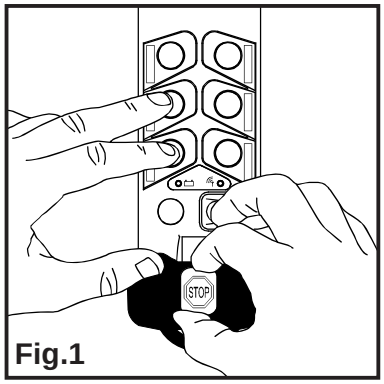


Fig.1

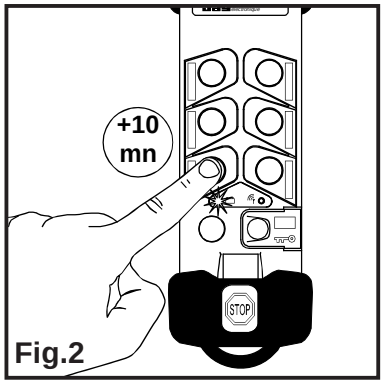


Fig.2

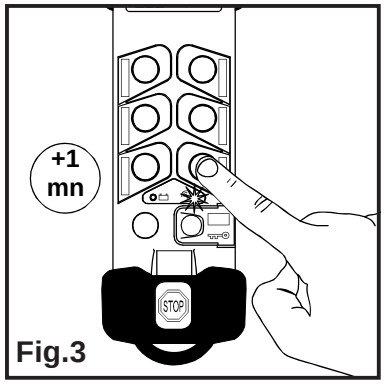


Fig.3

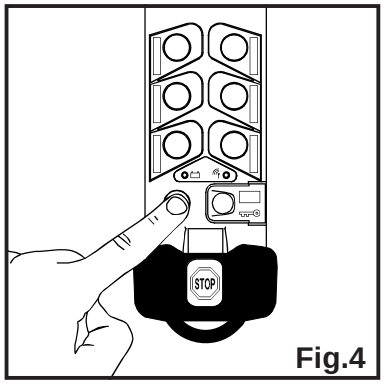


Fig.4

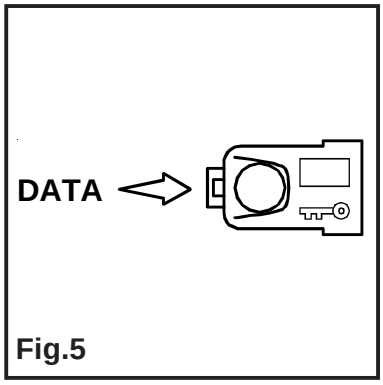


Fig.5

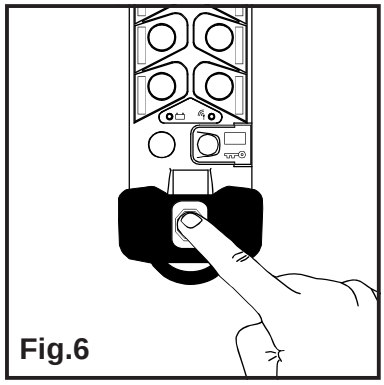


Fig.6

* = If the button nb 3 is not pushbutton (**BPSV** or **BPDV**) type, use then the green «On/Horn» button.

3.5.4 Procedure: «Copying electronic key identity code to XDE transmitter memory»

Apply this procedure when :

- starting the radio remote control for the first time
- using a maintenance transmitter
- changing the electronic key

Reminder :

To use the XD radio remote control system, the identity code contained in the transmitter memory **must match** the identity code in the electronic key which is itself identical to that of the receiver.

If a maintenance transmitter is used or if you change electronic key, the information contained in the electronic key must be copied in the XDE transmitter memory (see chapter «technical characteristics/ transmitter XDE)

Conditions for using this procedure :
The configuration of the maintenance transmitter buttons must be identical to that described in the electronic key (or the original transmitter).

1- **Switch off the XDR receiver**
2- Insert the electronic key in the XDE transmitter unit.
3- While holding buttons nb 2 and nb 3* pressed, unlock the transmitter emergency stop button (fig. 1): the 2 indicator lights on the transmitter will flash rapidly.
4- Press the «On/Horn» button to perform automatic programming of the identity code: the two indicator lights on the transmitter go off (fig. 2).
5- The «identity code» information is copied from the electronic key to the transmitter memory (fig. 3).
6- Exit the programming mode by pressing the stop palmswitch button (fig.4).

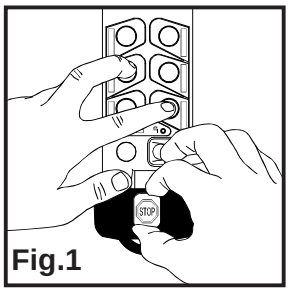


Fig.1

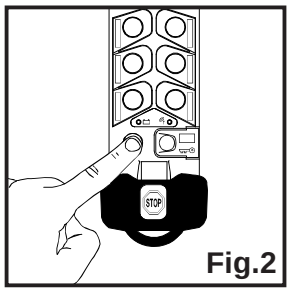


Fig.2

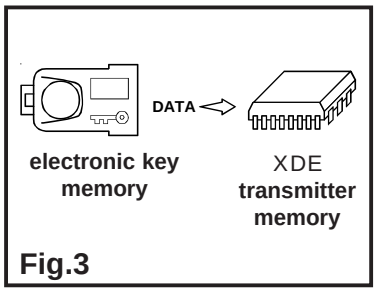


Fig.3

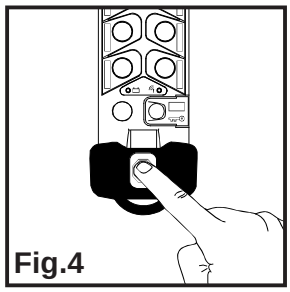


Fig.4

* = If the button nb 3 is not pushbutton (**BPSV** or **BPDV**) type, use then the green «On/Horn» button.

3.6- XDR receiver configuration

The following parameters can be configured on the receiver :

- **Transmitter button interlockings :**
  Factory configured, not programmable by the user.

- **Transmitter buttons / receiver function relays correspondence :**
  Factory configured, not programmable by the user.

- **Transmit radio frequency :**
  The radio reception frequency (channel Nb.) can be programmed by the transmitter XDE matched to the receiver XDR implementing the transmitter frequency programming procedure, see §3.5.2.

4- Use and operation

4.1- Reminder : General safety rules

A radio remote control is considered as a machine control device and as a safety component used to stop a machine as specified by the EEC Machinery Directive. All applicable rules must therefore be observed to ensure safe, correct operation of such devices.

- **For maximum safety** when using the radio remote control, we recommend that the operator carefully follow the instructions provided in this manual.

- **The operator must be appropriately trained and certified** to operate machines by radio remote control.

- **The operator must have uninterrupted visibility of the manoeuvre which he is performing.** When the operator's direct field of view is inadequate, the controlled equipment must be equipped with auxiliary devices to improve visibility.
  When several machines are being moved simultaneously, the equipment must be fitted out to limit to consequences of a possible collision.

- **The receiver unit must only be started up when closed with all its cover fastening screws in place.**

- **Following any intervention requiring opening of the receiver housing, be sure to apply a layer of silicon grease (supplied with** XDR **receiver) to the cover seal.**

- **Never leave the transmitter lying around anywhere,** in particular when it is powered up.

- **Never leave** the radio control transmitter on the ground or on a metal surface. If doing so becomes indispensable, press the stop palmswitch on the radio control.

- **If several radio controls are used at the same site**, different radio frequencies should be used, spaced by at least two channels (for example, channels 5, 7, 9, etc.). The more space there is between the chosen radio channels, the less the risks of disturbance are.

- **For safety reasons, remove the electronic key** when not in use. Store it in a safe and tracked down place.

- **Do not forget to recharge the battery pack** when discharged. **The blue battery pack** XDB must only be charged **outside the ATEX zone**.

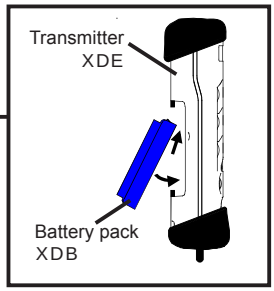
- **In the event of a malfunction**, immediately shut down the installation by pressing the «stop palmswitch» on the transmitter and remove the electronic key.

- **Service your equipment** and perform all the periodic checks as may be required by the intensity with which your equipment is used. Follow necessarily the instructions of cleaning described in the chapter «Servicing».

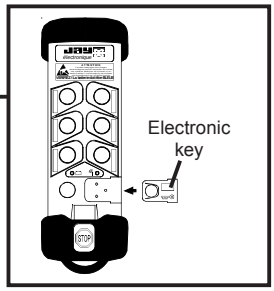
4.2- Radio remote control start up

1- Switch ON the XDR receiver.

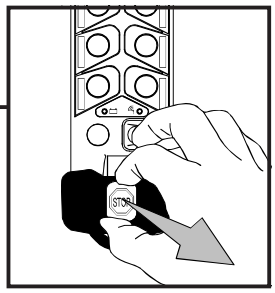
2- Take care that XDB battery pack is loaded and is well connected to XDE transmitter back.



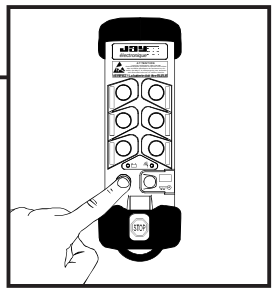
3- Install the electronic key on the transmitter or take care of its presence on XDE transmitter.



4- Unlock the transmitter stop palmswitch button.

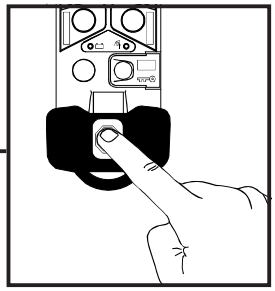


5- Press the «On/Horn» button until the receiver is started up.



6- Use the radio remote control to control the equipment.

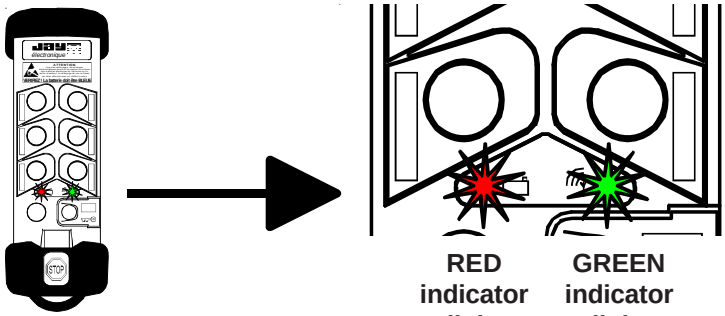
To stop the radio remote control :
press the XDE transmitter stop palmswitch button.



NB : If during this procedure, both XDE transmitter indicator light begin flashing, please contact the technical person in charge of the installation.

4.3- Product indicator lights function

4.3.1 XDE transmitter indicator lights



Error messages

Transmitter state (The transmitter stop palmswitch is unlocked)	Red indicator light / Green indicator light	Possible causes of failure	Possible remedies
Before or after "On/horn" button is pressed	**continuously OFF**	- Battery pack is discharged or disconnected - Internal electronic failure	- Check battery pack load or - Contact the technical person in charge of the installation
Before or after "On/horn" button is pressed	**continuously ON**	- Electronic is not connected to transmitter - Bad connection of the electronic key - Electronic key failure - Internal electronic failure	- Install electronic key on tranmitter before powering up the transmitter or - Contact the technical person in charge of the installation
Before or after "On/horn" button is pressed	**flash in a alternative way**	- Access to the transmitter programming is locked	- Press the stop palmswitch button and follow procedure described in §3,5,1 or - Contact the technical person in charge of the installation
Before "On/horn" button is pressed	**3 flashes**	- The transmitter identity code is different from that contained in the electronic key - Internal electronic failure	- Reprogramming is required, see procedure in §3.5.4. or - Contact the technical person in charge of the installation
Before or after "On/horn" button is pressed	**4 flashes**	- The button configuration is different from that contained in the electronic and the physical configuration on the transmitter - One or several function buttons are defective - Internal electronic failure	- Contact the technical person in charge of the installation
Before "On/horn" button is pressed	**5 flashes**	- Micro power cuts due to a bad battery pack connection - Internal electronic failure	- Check that battery pack is correctly inserted in transmitter housing or - Contact the technical person in charge of the installation
Before "On/horn" button is pressed	**6 flashes**	- Internal electronic failure	- Contact the technical person in charge of the installation
Before "On/horn" button is pressed	**7 flashes**	- Internal electronic failure	- Contact the technical person in charge of the installation
Before "On/horn" button is pressed	**8 flashes**	- Internal electronic failure	- Contact the technical person in charge of the installation

Battery pack charge level

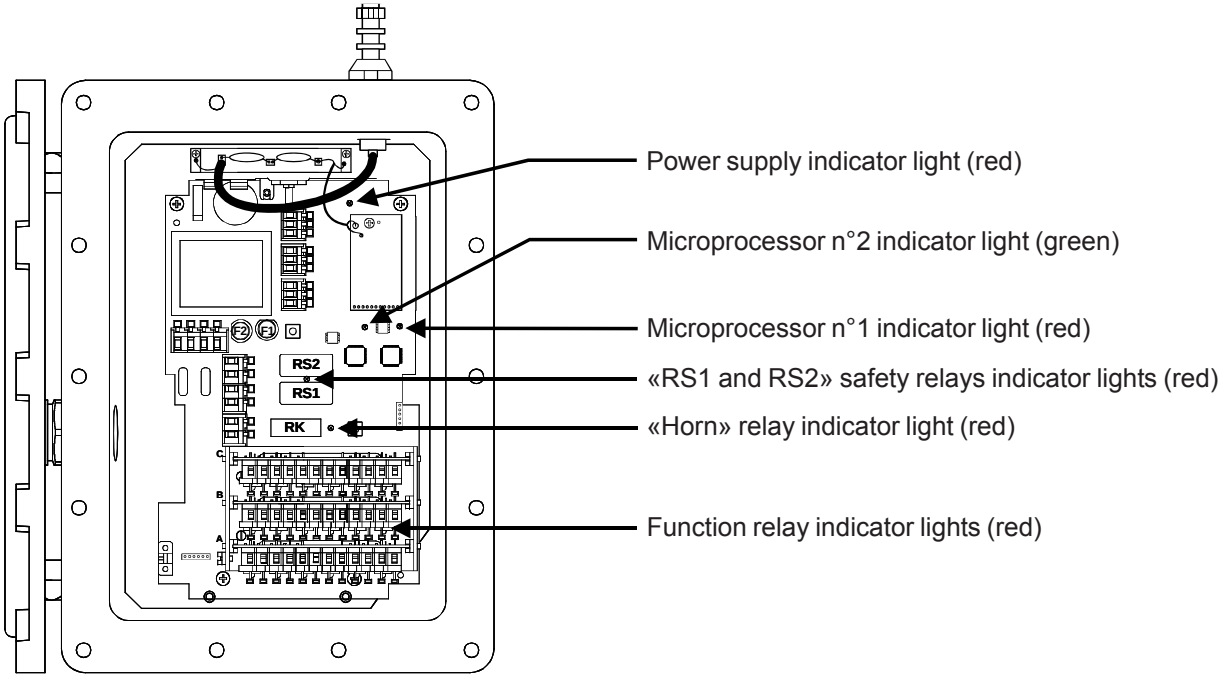
Transmitter state (stop palmswitch button unlocked)	Red indicator light	Green indicator light	Function or corresponding message
Before "On/horn" button is pressed	OFF	ON	Battery pack charge > 90%
Before "On/horn" button is pressed	Flashes SLOW	ON	90% > Battery pack charge > LOW BATT level
Before "On/horn" button is pressed	Flashes FAST	ON	Battery pack charge < or = LOW BATT level
After "On/horn" button is pressed	OFF	Flashes	**Radio transmission** Battery pack charge > LOW BATT level
After "On/horn" button is pressed	Flashes FAST	Flashes	**Radio transmission** Battery pack charge < or = LOW BATT level

«LOW BATT» level = low battery (battery pack charge level lower than 10%), **the battery pack must be reloaded**.

4.3.2 XDR **indicator lights**

IMPORTANT

To avoid any risks of explosion, any diagnostics requiring you to open the receiver housing with the receiver powered up (display of receiver board indicator lights) must mandatorily be performed in a workshop outside the ATEX area.



Name and color of indicator light	Mode	Indication	Message	Status
Microprocessor nb 1 indicator light (RED)	*Normal*	Indicates validity of identity code	No message reception	OFF
			Message reception with correct identity code	OFF
			Message reception with wrong identity code	Regular flashes
Microprocessor nb 2 indicator light (GREEN)	*Normal*	Indicates radio reception quality	No radio message reception	OFF
			Poor radio reception	Flashing
			Good radio reception	ON
"Horn" relay ind.light (RED)	All	Indicates "Horn" relay state	Not activated (OFF)	OFF
			activated (ON)	ON
Power supply ind.light (RED)	All	Indicates receiver power supply state	Receiver switched OFF	OFF
			Receiver switched ON	ON
Safety relays ind.light (RED)	All	Indicates safety relays state	Not activated (OFF)	OFF
			activated (ON)	ON
Function relays ind.light (RED)	All	Indicates each function relays state	Not activated (OFF)	OFF
			activated (ON)	ON

Error messages

Micro nb 1 indicator light **- RED -**	Micro nb 2 indicator light **- GREEN -**	Possible causes of failure	Possible remedies
OFF (Mainboard power supplied but power supply red indicator light remains OFF)		- Melted fuses - Wrong power supply wiring - Internal electronic failure	- Check fuse state and calibre - Check power supply wiring diagram according to receiver model or - Contact the technical person in charge of the installation
2, 3, 4, 5,6 or 7 flashes		- Internal electronic failure	- Contact the technical person in charge of the installation

5- Technical data

5.1- Definition of markings on ATEX products

Since July 1st, 2003, all Ex products must satisfy the requirements of the directive ATEX 94/9/CE.
The new markings on Ex products are defined as follows (example for XDE transmitter) :

 = Specific marking relative to protection against explosions

❶ II = Device group symbol

❷ 1 = Category of devices determining utilization area

❸ GD = Type of atmosphere, gas (**G**) and /or dust (**D**)

Ex = Marking satisfies standards CEN/CENELEC

❹ ia = Protection mode

❺ IIB = Surface industries (**II**) and gas subdivision (**B**)

❻ T5 = Temperature class

Ex iaD A20 T100°C = Maximum test temperature

LCIE 07 ATEX 6008 X = LCIE: Laboratory certifying approval in 2007, No. 6008

The tables below explain the ATEX marking:

❶ Device group

Device group	Application
Group I	Electrical devices intended for use in firedamp mines => Protection against firedamp
Group II	Electrical devices intended for all other explosible atmospheres => Protection against explosions

❷ ❸ ATEX classification

Explosive atmosphere	Permanent presence		Intermittent presence		Episodic presence	
Zones	0	20	1	21	2	22
Category of equipment	1		2		3	
Type of atmosphere	G	D	G	D	G	D

G = Gas ; **D** = Dust

4 Gas protection modes
(standards given for information, currently being modified)

(General requirements EN 50014 - CEI 60079-0)

Protection mode		Standard	Basic principle	Applicable in ZONE		
				0	1	2
Enhanced safety	"e"	EN 50019 CEI 60079-7	The components inside the enclosure must not produce arcs, sparks or dangerous temperatures under normal utilization conditions. The enclosure must be tight to IP 54 and withstand impacts.		●	●
Explosion proof	"d"	EN 50018 CEI 60079-1	The extremely heavy duty envelope contains the explosion inside the device. The explosion proof seals of the device prevent any propagation of the flame outside the enclosure. The seals are regularly serviced.		●	●
Association of above two modes	"d+e"		The envelope of the device is in explosion proof protection mode and the enclosure for the connectors is in enhanced safety mode. This allows for using type “e” cable glands alone.		●	●
Internal overpressure	"p"	EN 50016 CEI 60079-2	A pressurized gas is introduced in the enclosure to prevent the possibly-explosive surrounding atmosphere from entering the enclosure 29/06/2007.		●	●
Intrinsic safety	"i"	EN 60079-11 CEI 60079-11	The actual design of the circuit, where the energy is limited at the entry by a Zener barrier or a galvanic insulator makes it impossible for arcs or electrical sparks to form, subdivided into “ia” (resists 2 defects: suitable for zone 0), and “Ib” (resists 1 defect: suitable for zones 1 and 2).	●	●	●
Immersion in oil	"o"	EN 50015 CEI 60079-6	The material or the electrical circuit is immersed in oil. The explosive mixture is located above the liquid and cannot be ignited by the electrical circuit.		●	●
Powdery filler	"q"	EN 50017 CEI 60079-5	For this protection mode, all the electronics is encapsulated in an inert powdery material to prevent electrical arcs or electrical sparks.		●	●
Encapsulation	"m"	EN 50028 CEI 60079-18	For this protection mode, all the electronics is encapsulated in an insulating material to prevent electrical arcs or electrical sparks.		●	●
Zone 2	"n"	EN 50021 CEI 60079-15	This protection mode is only suitable for devices intended for zone 2 where the risk of explosion is low. It combines the enhanced safety mode “e” with lower protection requirements.		●	●
“i” system	SYST	EN 50039 CEI 60079-25	Design and use of a product implementing protection by intrinsic safety.		●	●

5 Gases and fumes sub-division (non-exhaustive list)

CLASSE IIA	**CLASSE** IIB	**CLASSE** IIC
Propane	**Ethylene**	**Acetylene**
Ethane	**Ethyl ether**	**Hydrogen**
Butane	**Cycloprodene**	**Carbon disulfide**
Benzene	**Butadiene 1-3**	
Pentane	**Propylene oxide**	
Heptane	**Ethyl oxide**	
Acetone		
Hexane		
Methanol		
Ethanol		
Paint thinners		
Natural gas		

6 Gas temperature classes

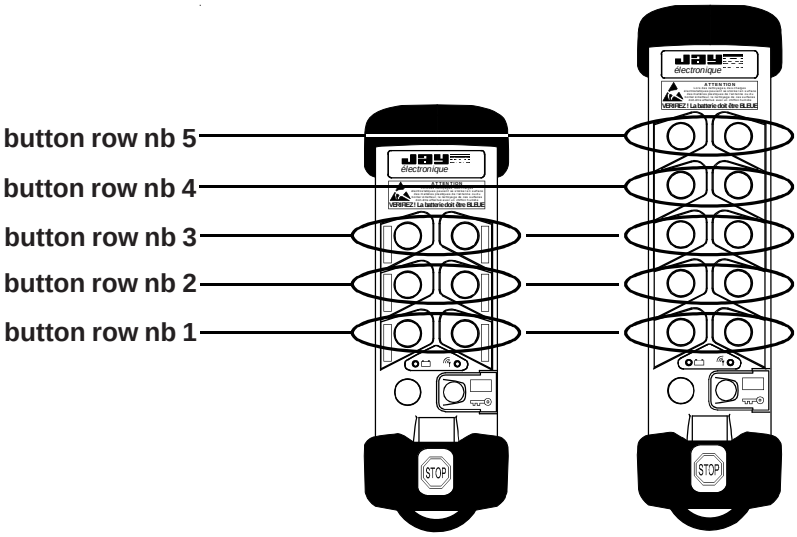
Temperature class	MAXIMUM **surface temperature of electrical equipment**	**Ignition temperatures of** FLAMMABLE **materials**
T1	**450°C**	**> 450°C**
T2	**300°C**	**> 300°C**
T3	**200°C**	**> 200°C**
T4	**135°C**	**> 135°C**
T5	**100°C**	**> 100°C**
T6	**85°C**	**> 85°C**

The maximum temperature of an equipment must always be less than the ignition temperature of the surrounding atmosphere.

5.2- XDE transmitter function button type

6 button types can be used on the XDE transmitter :

- One-step pushbuttons (single speed) «**BPSV**» :
- Two-step pushbuttons (double speed) «**BPDV**» :
- Rotary switches with 2 fixed positions «**COM2**» :
- Rotary switches with 3 fixed positions «**COM3**» :
- Rotary switches with 3 positions with automatic return «**COM3R**» :
- Electronic switches with 3 positions «**BPTR**» :



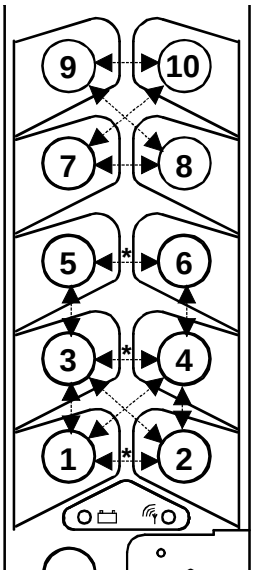
The following combinations of button pairs by rows are possible :

BPSV, BPSV		**BPSV, COM3R**	
BPDV, BPDV		**COM2, COM3R**	
BPSV, COM2		**COM3, COM3R**	
BPSV, COM3		**COM3R, COM3R**	
COM2, COM2		**Cover, cover**	
COM2, COM3		**BPSV, BPTR**	
COM3, COM3		**COM2, BPTR**	

ATTENTION :
Certain configuration operations will not be available if switches or covers are situated in button row 1 or 2 (see § 3.5).

5.3- Function button interlockings

The following function button interlocking configurations are possible:



(XDE transmitter front panel view)

1st button of interlocked pair	1nd button of interlocked pair	Acronym	
Button nb 1	Button nb 2	B1-B2	*
Button nb 1	Button nb 3	B1-B3	
Button nb 1	Button nb 4	B1-B4	
Button nb 2	Button nb 3	B2-B3	
Button nb 2	Button nb 4	B2-B4	
Button nb 3	Button nb 4	B3-B4	*
Button nb 3	Button nb 5	B3-B5	
Button nb 4	Button nb 6	B4-B6	
Button nb 5	Button nb 6	B5-B6	*
Button nb 7	Button nb 8	B7-B8	
Button nb 7	Button nb 10	B7-B10	
Button nb 8	Button nb 9	B8-B9	
Button nb 9	Button nb 10	B9-B10	

*= Standard interlocking configurations defined in sales reference for XDR receiver (see §2.3.2 «product identification»).

For each of the desired interlocking configurations, simultaneous action on the two buttons will result in three operating modes which depend on the programs defined :

- program «1» : By pressing the 2 button pair, the two commands are deactivated (corresponding relays set to OFF).

- program «2» : The first button of the interlocked pair has priority.
(ex.: button nb 1 and button nb 2 interlocked: when these two buttons are pressed simultaneously, only button nb 1 is acknowledged).

- program «3» : The 2nd button of the interlocked pair has priority.
(ex.: button nb 2 and button nb 4 interlocked: when these two buttons are pressed simultaneously, only button nb 4 is acknowledged).

5.4- Correspondence between «transmitter function buttons and receiver relays»

☞ In its standard configuration, the "buttons-relays" are assigned naturally by the increasing order of the button numbers and relay numbers :

- Each «**BPSV**» button type is assigned 1 relay.
- Each «**BPDV»** button type pair is assigned either 3 relays (2 movement relays and a third relay for high speed), or 4 relays. This information is contained in the XDR receiver product reference data (see § «product identification»).
- Each «**COM2**» button type is assigned 1 relay.
- Each «**COM3**», «**COM3R**», or «**BPTR**» button type is assigned 2 relays with the possibility of having the two relays either OFF or ON when the switch is in the center position. This information is contained in the XDR receiver product data (see § «product identification»)..

☞ For non-standard "button-relay" configurations, be sure to properly fill in the configuration sheet located in the XDR cover.

5.5- XDE transmitter technical characteristics

ATEX characteristics	
Utilization zones	Zones 0, 1, 2, 20, 21 and 22
Protection mode	intrinsic safety
Markings	CE 0081 Ex II 1 GD **Ex ia IIB T5** **Ex iaD A20 T100°C** **LCIE 07 ATEX 6008 X** **WARNING – POTENTIAL ELECTROSTATIC CHARGE HAZARD – SEE INSTRUCTIONS**
Mechanical, functional and environmental characteristics	
Housing	ABS Choc, yellow - IP65 - Mechanical button protection
Weight (with battery pack)	Housing model "6+2" buttons : 400 g Housing model "10+2" buttons : 490 g
Dimensions	Housing model "6+2" buttons : 232x82x64 mm Housing model "10+2" buttons : 288x82x64 mm
Operating temperature range	-20°C to + 50°C
Storage temperature range **without battery pack** **with battery pack**	 -30°C to +70°C -30°C to +35°C
Electrical and radio characteristics	
Power supply	Plug-in Li ion battery
Endurance transmit time/buttons typical average use (at +25°C)	Frequency 433-434MHz bands: 24 hours / 50% transmit time Frequency 869MHz band: 20 hours / 50% transmit time
Transmit frequency (see list in appendix)	64 user-programmable in 433-434MHz bands 12 user-programmable in 869MHz band
Transmit power	<10 mW (license not required) built-in antenna
Modulation	FM
Average range (XDR receiver with antenna VUB084)	100 m in typical industrial environment 300 m in unobstructed area
Functional characteristics	
Functions	6 different kinds of function buttons : - One-step pushbutton (single speed) **"BPSV"** - Two-step pushbuttons (double speed) **"BPDV"** - rotary switch with 2 fixed positions **"COM2"** - rotary switch with 3 fixed positions **"COM3"** - rotary switch with 3 positions with auto. return **"COM3R"** - electronic switch with 3 fixed positions **"BPTR"** - 1 pushbutton "On/Horn" - 1 active priority emergency stop palmswitch
"Dead man" function (automatic shutdown of transmitter)	Time is user-programmable
Indicator lights	1 red "battery level" and "diagnostic" indicator light 1 green "On" and "diagnostic" indicator light

(1) = Range will vary according to environment conditions of transmitter and reception antenna (metal frameworks, walls …).

5.5.1- Identity code

XDE transmitter and XDR receiver are linked by an **identity code**.

A receiver can only recognise and execute commands generated by the associated transmitter (with same identity code).

- This receiver identity code is contained in the electronic key.
  can be copied to a transmitter by a trained and authorized user (see procedure in § 3.5.4)
- The receiver identity code is a unique, fixed code (it can't be reprogrammed).

Identity codes have 65536 different combinations.

5.5.2- Electronic key

The electronic key used on the XD radio remote control system has a dual function :

- It enables start-up of the transmitter by limiting access to the remote control to trained and authorized persons only.

- It contains all the information required for operation of the product, including :
  - the system identity code
  - the last frequency programmed *
  - the "dead man" function duration *

  * = reprogrammable by a trained operator, see §3.5

When the key is removed, it prevents unauthorized use of the transmitter. For this reason, it should be removed (like the battery pack) when the remote control is put away.

Preferably, the electronic key should be removed after pressing the stop palmswitch button. Removal of the key before the stop palmswitch button button is pressed will result in a fault indication (2 flashes) and passive shutdown of the receiver.

The transmitter cannot be started up without its electronic key.

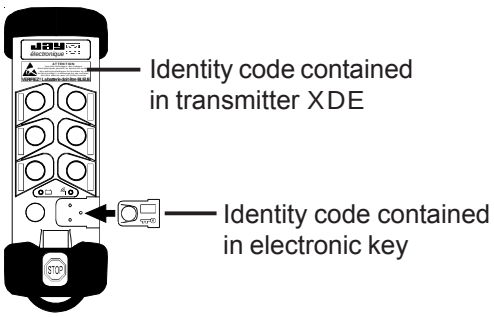
The transmitter XDE **also has an internal memory containing an identity code.**

- If identity code of the electronic key matches the identity code stored in the XDE, the transmitter can be started up.

- If the identity code of the electronic key and that of the XDE do not match, the transmitter indicates the problem by its two indicator lights (3 flashes). In this case, perform the programming procedure described in §3.5.4.

XDE **can be started up provided :**

Transmitter identity code
=
Electronic key identity code



In the event of a transmitter failure :

You can recover the electronic key and connect it on a maintenance transmitter (button configuration should be the same as that as the failed transmitter, in the other case, buttons that are different will be ineffective).

To perform this operation, you must reprogram the key identity code in the new transmitter XDE as described in the procedure in §3.5.4.

if your electronic key is lost :

You can order another electronic key (reference **UDWE22X**) making sure to specify the following information on the order :

- The unique 6-digit number of the old key (written on the cover page of this manual when you unpackaged your product).

or, if you do not have N° of key :

- the associated receiver identity code (on receiver descriptive lable) and transmitter button configuration

This information will allow you to receive an electronic key identical to the old one containing all the parameters indicated above for your radio remote control.

5.5.3- «Dead man» function

The "Dead man" safety function deactivates the **XDE** transmitter (radio transmission cut off) when the pushbuttons (**BPSV, BPDV** or **"On/Horn"**) have not been actuated for a duration of ***N*** minutes or seconds.

The ***N*** parameter is user-configurable and can take the values **01** to **98** minutes

On delivery, the duration is defined for 4 minutes.

- If the ***N*** value configured is **99** minutes, the transmitter considers that the dead man duration is infinite (until the battery pack is entirely discharged).

Restarting the transmitter after the "Dead man" function has been activated:

- Press the stop palmswitch button on the transmitter.
- Follow startup procedure in §4.2

Changing the dead man duration :

The dead man duration or unit ***N*** can be modified by a trained operator by performing the procedure described in § 3.5.3.

NB : Rotary switches **COM2**, **COM3**, **COM3R** and **BPTR** do not act on the "Dead man" function The manipulation of these types of buttons does not rearm the temporization).

If the operator has to use switches during a long period, the temporization must be lengthened or removed by programming, either the operator will have to rearm the temporization by pressing regularly on the "On/Horn" button or another pushbutton type.

5.6- XDR receiver technical characteristics

ATEX characteristics	
Utilization zones	Zones 1, 2, 21 and 22
Protection mode	Explosion proof + intrinsic safety
Markings	CE 0081 Ex II 2 GD **Ex dia IIB T6** **Ex tD A21 T80°C** **LCIE 07 ATEX 6034 X** **WARNING – DO NOT OPEN WHEN ENERGIZED** **WARNING – DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT**
Mechanical and environment withstand characteristics	
Housing	Aluminium alloy – grey RAL7005 - IP65
Weight	20 kg (approx.)
Dimensions	280x370x180 mm (not including antenna)
Operating temperature range	-20°C to +50°C
Storage temperature range	-30°C to +70°C
Cable lead-out	1 PE ¾" metal, with 3 seals 15-18, 18-21 and 21-24 mm
Connection	Spring-type terminal strips for 0.08² to 2.5² section wires
Radio characteristics	
Characteristics complying with ETS 300 220	
Reception frequency (see list in appendix)	64 programmable frequencies in 433-434 MHz bands 12 programmable frequencies in 869 MHz band
Sensitivity	< -100dBm
Electrical characteristics	
Power supply and consumption (1) (with 2 safety relays and 10 control relays pulled in)	**DC version** 12VDC, 0 to +25%, 675mA and 188mA when idle 24VDC, -15% to +20%, 675mA and 188mA when idle **AC version n°1** 24VAC, -15% to +10%, 850mA 48VAC, -15% to +10%, 400mA **AC version n°2** 115VAC, -15% to +10%, 180mA 230VAC, -15% to +10%, 85mA
Control	1 "Horn" relay + 18 function relays
Safety	2 relays with linked and guided contacts
Response time	On start-up : 0,5s max. On control : 55 ms max.
Active shutdown time	145 ms max.
Passive shutdown time	1,1 s max.
Power supply shutdown time	< 2 seconds
Indicator lights	1 red "power on" indicator light 1 red + 1 green indicator lights for diagnostic 1 red status indicator light per relay
Protections	Power supply: Against polarity inversions for DC versions Against overcurrents by fuse

(1) = The number of function relays controlled simultaneously is limited to 10 relays

A large label in the housing cover gives the following information to facilitate configuration and maintenance of the XD system :

- connection point numbers
- wiring indication
- fuse characteristics
- indicator light functions
- table showing the "Buttons/Relays/Functions" configurations for the application and the interlocking configuration.

5.6.1- Connection to relays

Connections are made on spring terminals with connection points identified by numbers.

The flexible wire section is between 0.08 mm square and 2.5 mm square.

No common line is provided on the printed circuits (all contacts are potential-free).

An accessory, referenced : **UDWR12** with 16 connection points provides for easy connection of the common lines desired (supplied as a standard feature with the receiver).

5.6.2- Relay characteristics

Summary table

Relay function	Number of relays	Number of connection points per relay
Safety relays	2	2 (1 T contact)
"On / Horn"	1	2 (1 T contact)
Control / Movement	18	2 (1 T contact)

Safety relays

The two safety relays are activated when XDE transmitter «On/Horn» button is pressed. .

These relays are auto-maintained until **passive stop** (electronic key removed when transmitter is in functioning, or battery pack discharged/disconnected from transmitter, or radio interferences) or **active stop** (when transmitter stop palmswitch is pressed).

- Contacts : AgNi10+Au5µm
- Maximum power at cosphi=1 : 2000 VA
- Maximum current switching : 8 A
- Maximum voltage switching : 250 VAC
- Minimum current / voltage advised switching : 50 mA / 12 VDC
- 100 000 switching cycles at 250 VAC, 8 A, cosphi=1
- 100 000 switching cycles at 24 VDC, 6 A
- Tests per EN 60947-5-1 :
  DC13 at 2 A / 24 VDC
  AC15 at 3 A / 250VAC

«Horn» and control relays

The **«Horn» relay** is activated when XDE transmitter «On/Horn» button is pressed.
This relay isn't auto-maintained.

«Control» relays are active when transmitter function buttons are pressed and once XD system started up.

- Contacts : AgNi 0,15
- Maximum power at cosphi=1 : 2000 VA
- Maximum current switching : 8 A
- Maximum voltage switching : 400 VAC
- Minimum current / voltage advised switching : 50 mA / 12 VDC
- 100 000 switching cycles at 250 VAC, 8 A, cosphi=1
- 50 000 switching cycles at 24 VDC, 8 A
- Tests per EN 60947-5-1 :
  DC13 at 0,5 A / 24 VDC
  AC15 at 3 A / 250VAC

Number of switching cycles on various contactors

Contactor type	Physical unit switched by relay	Number of switching cycles	
		Safety relays	"Horn" and "control" relay
CA2DN LC1D09 LC1D18 LC2D09	Switching under 230VAC (70VA,cosphi=0,75)	$4,5 \times 10^6$	2×10^6
	Switching under 110VAC, (70VA,cosphi=0,75)	$4,5 \times 10^6$	1×10^6
	Switching under 48VAC (70VA,cosphi=0,75)	$4,5 \times 10^6$	$0,5 \times 10^6$

5.6.3- Protection of receiver board and relays

Protection of power supplies

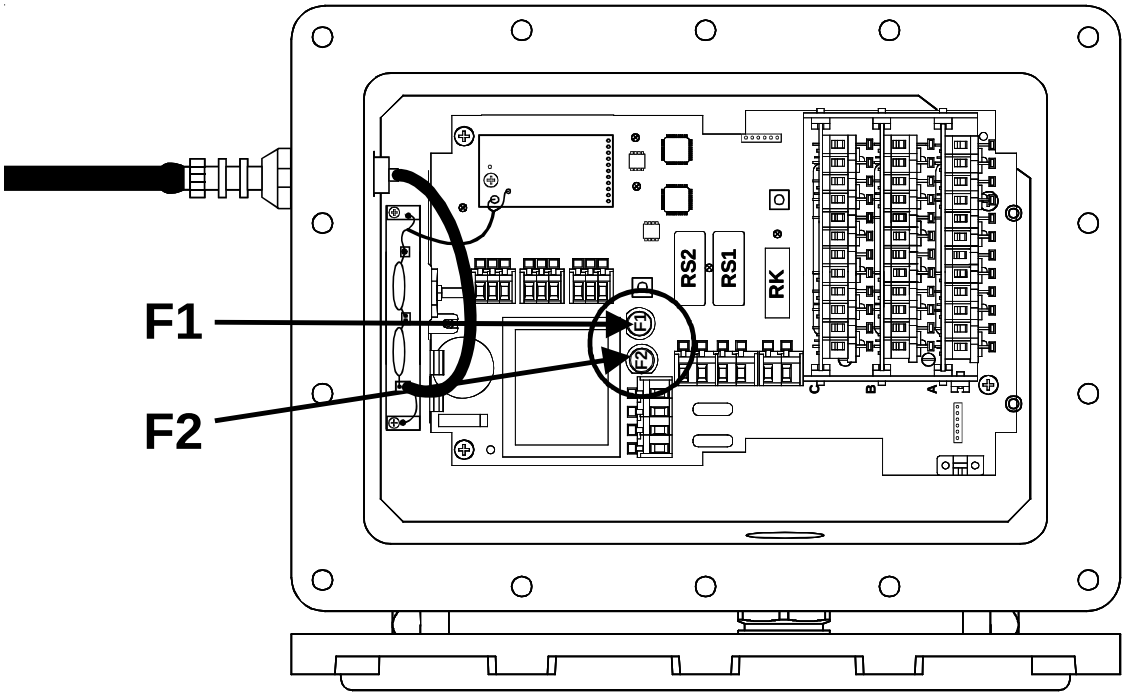
- AC versions :

- Against overcurrents : 1 fuse on phase.
- Non-reversible thermal protection of transformer (in the event of overloads at secondary).

- DC version :

- Against overcurrents : 1 fuse on +V.
- Against polarity inversions : 1 diode on +V.

Fuse characteristics



Element	Fuse characteristics (5x20)	Loaction of fuse to be used
Receiver supplied with 12 VDC*	1 A / 250 VAC / T	**F2**
Receiver supplied with 24 VDC*	1 A / 250 VAC / T	**F1**
Receiver supplied with 24 VAC*	1,6 A / 250 VAC / T	**F2**
Receiver supplied with 48 VAC*	800 mA / 250 VAC / T	**F1**
Receiver supplied with 115 VAC*	315 mA / 250 VAC / T	**F2**
Receiver supplied with 230 VAC*	160 mA / 250 VAC / T	**F1**
Safety relays	No protection	/
"Horn" relay	No protection	/
"Control" relays	No protection	/

* = Power supply according with XDR receiver model (see receiver reference)

5.7- Technical characteristics of XDB blue plug-in battery pack

WARNING

- The battery pack must only be charged **outside the ATEX area**.
- Only blue battery packs should be used.

Mechanical, functional and environmental characteristics	
Housing	ABS Choc
Housing color	Blue
Tightness	IP40
Technology	Li ion
Dimensions	40x96x23 mm
Storage temperature range	-30°C to +35°C
Slow charge temperature	0°C to +45°C
Fast charge temperature	0°C to +35°C
Complete charge time	7 hours
Resulting endurance in accordance with partial charges (at +20°C)	
	10 min. of charging provide around 1 hour of endurance (utilization at 100%)
	1 hour of charging provides around 8 hours of endurance (utilization at 100%)
	6 hours of charging provide around 12 hours of endurance (utilization at 100%)
Indicator lights	
	- 1 indicator light on battery pack (charging)
	Orange = fast charge
	Green = slow and holding charge
	- 1 red indicator light on transmitter (battery low)
Charge voltage	5 VDC (by charger UCCU)

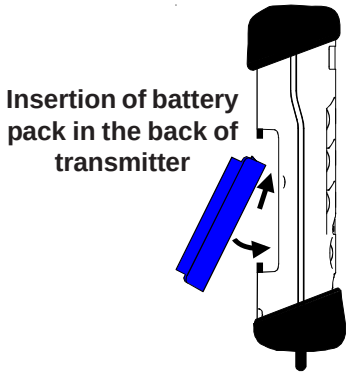
5.7.1- Battery pack storage precaution

XDB battery pack must be stored charged in a proper and dry area with specified temperature range on above table.

5.7.2- Precaution when inserting battery pack in transmitter unit

Whenever changing the battery pack XDB, check that it is properly secured in its housing in the back of the transmitter XDE.

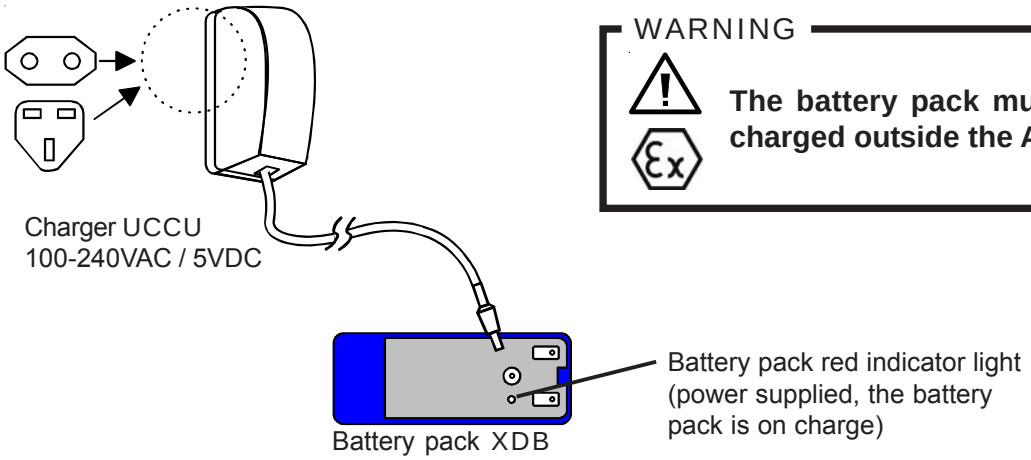
If not, a type 5 fault caused by power supply micro-cutouts can occur (following fault list generated by the transmitter)



Insertion of battery pack in the back of transmitter

5.7.3- Display of battery pack charge state

Charging the XDB battery pack



WARNING

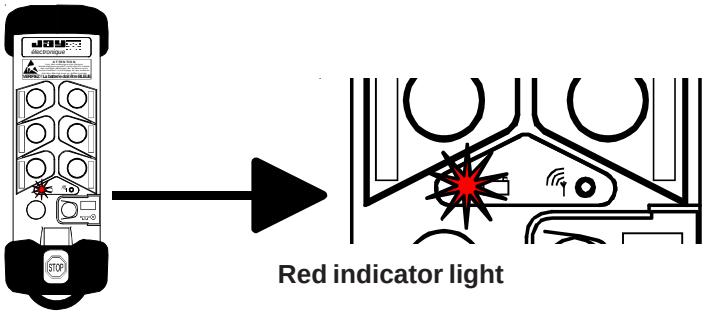
The battery pack must only be charged outside the ATEX area.

During the charging period, the battery pack indicator comes on steady and shows the charging status: :

Indicator light is **orange** : ..... fast charging
Indicator light is **green** : ..... slow charging and maintenance charging (charging level of battery pack XDB > or = 60%)

Only charger ref: UCCU from Jay Electronique are perfectly suited to charge the battery pack XDB.

XDE transmitter red indicator light



Two battery charge status display functions are provided on the transmitter :

- **When the remote control is powered up** (stop palmswitch button out), the red indicator light on the transmitter XDE shows the battery pack charge level :

  Red indicator light off : ..... Battery pack charge > à 90%

  Red indicator light flashes slowly : ... Battery pack charge is between 90% and 10 %

  Red indicator light flashes quickly : .. The battery pack must absolutely be charged (battery pack charge level < 10%)

- **During operation of the remote control** (radio transmission), a **LOW BATT** indication (battery low level, charge < 10%) is given by the red indicator light which flashes quickly. This indication is used to inform the operator that the remote control will soon be unavailable (within around 15 minutes).

6- Servicing

BEFORE STARTING ANY SERVICING OPERATION, SWITCH OFF THE MAIN POWER SUPPLY FOR THE SYSTEM CONTROLLED.

ELECTROSTATIC CHARGES

During cleaning operations (transmitter and receiver), electrostatic charges can accumulate on the surface of the plastic materials of the receiver antenna or of the transmitter housing; these surfaces must be cleaned using a moist rag.

Servicing the XDE transmitter :

⚠ - **Housing of the** XDE **transmitter must not be opened.** The transmitter can be dismanteld only be a trained staff, in a "controlled" environment, spare parts can be changed only by identical and original parts.

⚠ - **If one of the membranes of the function buttons or the seal of the transmitter is damaged, the** XDE **must not be any more used until replacement of these tightness spare parts.**
In opposite case, any liquid, any dust or any foreign body can damage the transmitter.

- The attention of the user is attracted to the risks of the use of the remote control in an environment containing solvents of polymers or glues which can degrade the good functioning of transmiiter mechanical organs.

- Verify regularly the good state of the transmitter, paying a special attention to the function button membranes, to the electronic key connector and to the battery pack connector.

- Clean the transmitter by eliminating any foreign matter.
Only use non aggressive cleaning product on base of soapy solution.

Servicing the XDR receiver :

IMPORTANT

During any intervention requiring the opening of the receiver housing, you have to take the necessary precautions in order not to degrade the surface state of the 2 jointng planes of the cover seal.

IMPORTANT

Following any intervention requiring opening of the receiver housing, be sure to apply a layer of silicon grease (supplied with XDR **receiver) to the jointing plane of the cover seal.**

IMPORTANT

Respect the recommendations of the document :
«Safety Notes - ATEX Housing» reference : 332200

Check the following points:

- Wiring of receiver to electrical unit on machine.
- Control relay contacts.
- Correct operation of stop circuits, active and passive.
- Condition of cover seal, tightening of screws and cable glands and tightness of antenna, check the antenna connection and check that it is clean and free of any oxidation.

- Clean the receiver by eliminating any foreign matter.
  Only use non aggressive cleaning product on base of soapy solution.

- **To check operation of the active stop function** (XD system started up) : simply press the XDE transmitter stop palmswitch button. Receiver safety relays should immediately de-energise.

- **To check operation of the passive stop function** (XD system started up) : simply remove the electronic key **or** battery pack from the transmitter **or** wait until «Dead man» function duration is exceeded ; receiver safety relays should de-energise within 2 seconds.

7- Warranty

All our devices are guarantied 2 years as of the date of manufacture indicated on the product, wear parts not included. No repair, modifi cation or replacement of a product during the warranty period can be understood as an extension of the warranty period

Limits of warranty :

The warranty does not cover defects resulting from :

- transport
- false manoeuver or non-observance of connection diagrams when setting the equipment into service
- insufficient supervision or servicing, utilization not complying with the specifications detailed in the technical manual and, as a general rule, storage, operation or environment conditions (atmospheric, chemical, electrical or other conditions).
- Conditions not specified on order of the equipment

The warranty shall not apply subsequent to any modifications or additions to the equipment performed by the customer without written approval by JAY Electronique.

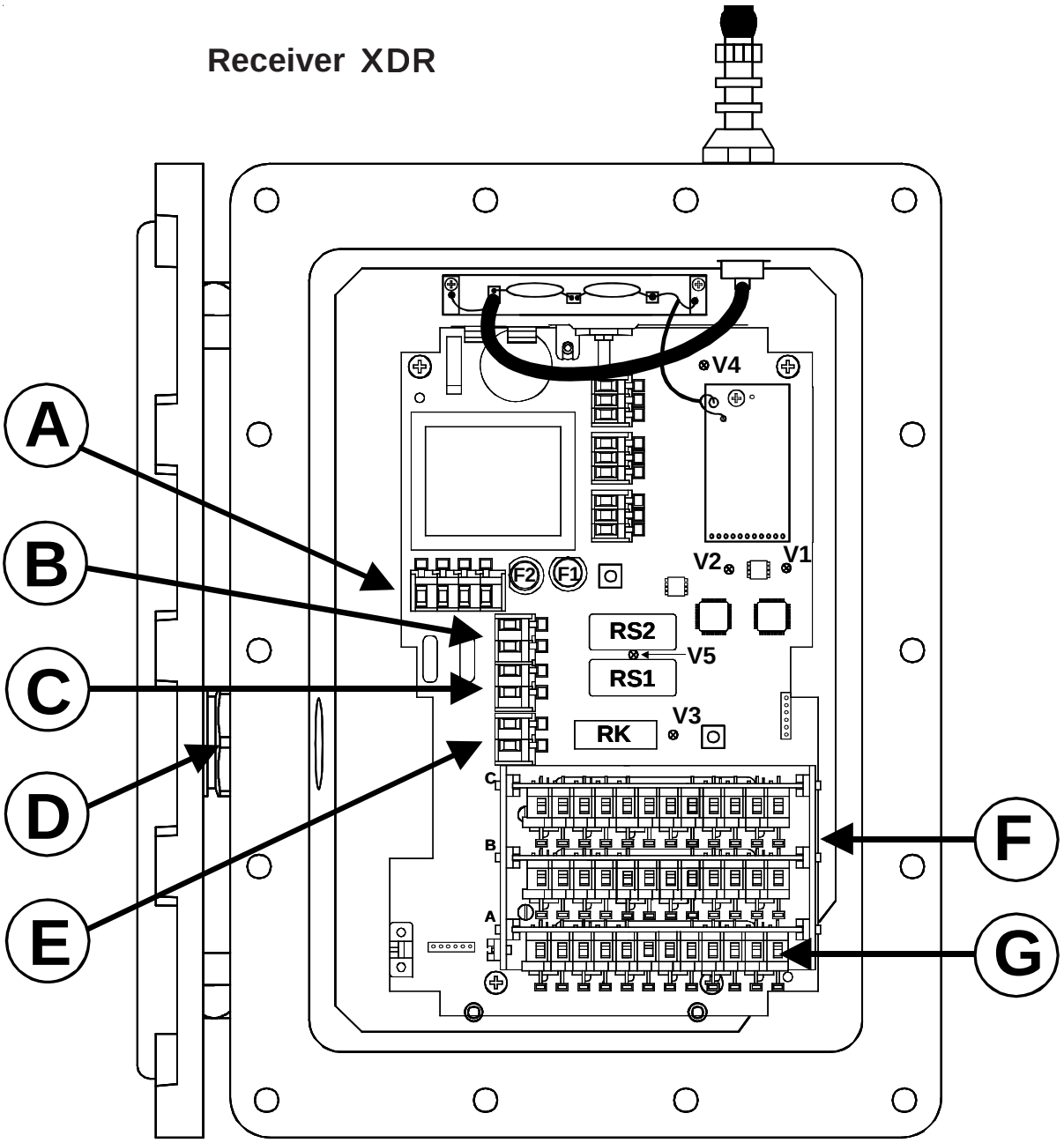
The JAY Electronique responsability during the warranty period is limited to material and construction defects. This warranty comprises repair in the JAY workshops or replacement, free of charge, of parts recognized to be defective following expert inspection by the Jay Technical Department.

The warranty shall not give rise to any compensation for damage claims.

Any disputes relative to a supply or settlement thereof shall be ruled by the COURT OF COMMERCE OF GRENOBLE, solely competent, even in the event of an Appeal or a plurality of defendants.

Appendix A

Receiver XDR



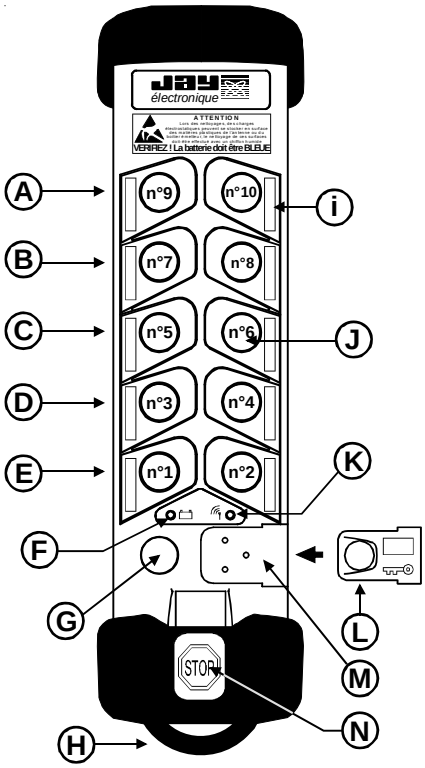
A- «Power supply» terminal strips
B- «Safety relay n°2» (RS2) terminals strips
C- «Safety relay n°1» (RS1) terminals strips
D- «Power supply and command» cable gland
E- «Horn» (RK) relay terminals strips
F- Summary table of the buttons-relays correspondence
G- Relay board(s) (up to 3 relay boards with 6 relays)
V1- red indicator light "wrong identity code + diagnostic"
V2- green indicator light "radio link established + diagnostic"
V3- «Horn» (RK) relay red indicator light
V4- «receiver power supply» red indicator light
V5- «Safety relays 1 and 2» (RS1 and RS2) red indic. light
F1-Fuse
F2-Fuse

XDR **receiver terminal strips**	
Terminal number	**Function**
3 x **1** to **12**	Function relay boards (A, B, C)
21	**Power Supply* :** Neutral / 0 v
22	**Power Supply*:** 230VAC or 48VAC or 24VDC
23	**Power Supply* :** 115VAC or 24VAC or 12VDC
24 - 25	Safety relay nb 1 (RS1)
26 - 27	Safety relay nb 2 (RS2)
28 - 29	"Horn" relay (RK)

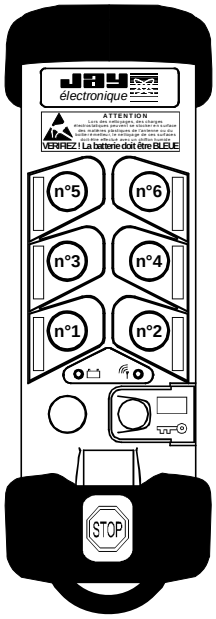
* = according to receiver model

Appendix B

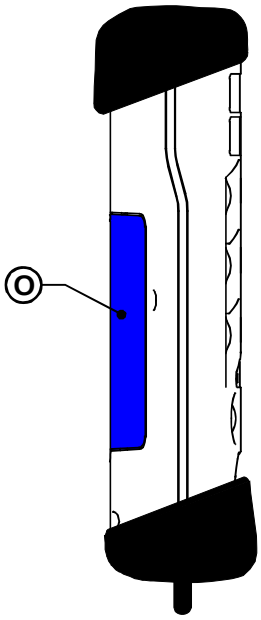
Transmitter XDE



«10+2» buttons housing model



«6+2» buttons housing model



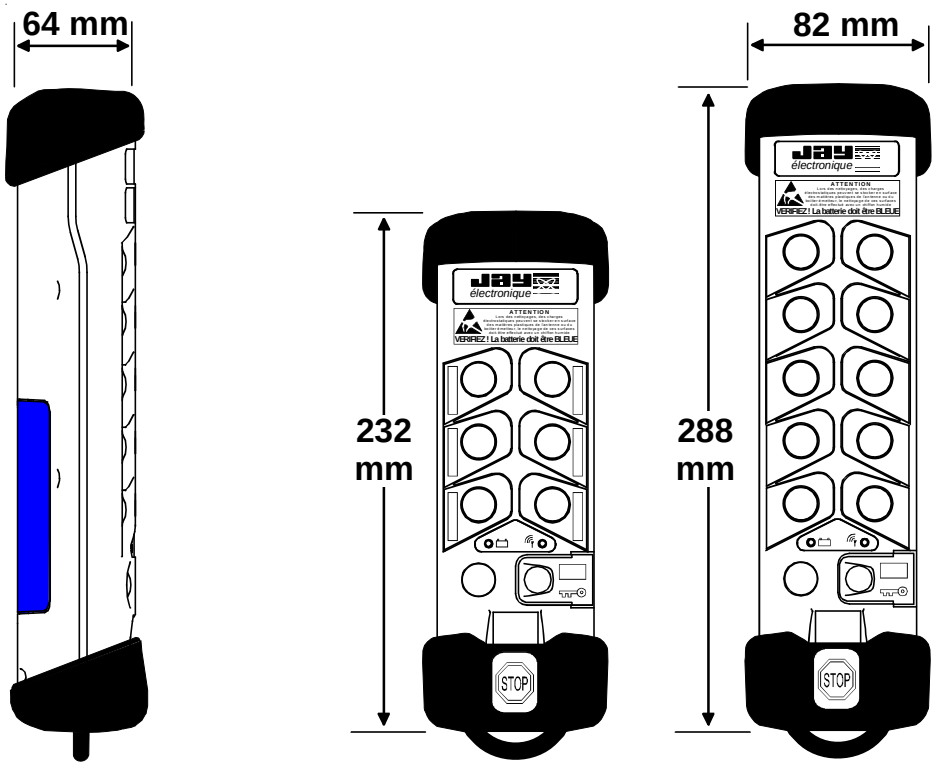
A- Button row nb 5
B- Button row nb 4
C- Button row nb 3
D- Button row nb 2
E- Button row nb 1
F- Red indicator light «battery charge level + diagnostic»
G- «On/Horn» green button
H- Ring for shoulder strap or carrying clip
i- Function label
J- Function button
K- Green indicator light «ON + diagnostic»
L- Electronic key
M- Electronic key location
N- Stop palmswitch button
O- XDB battery pack inserted in transmitter back

Appendix C

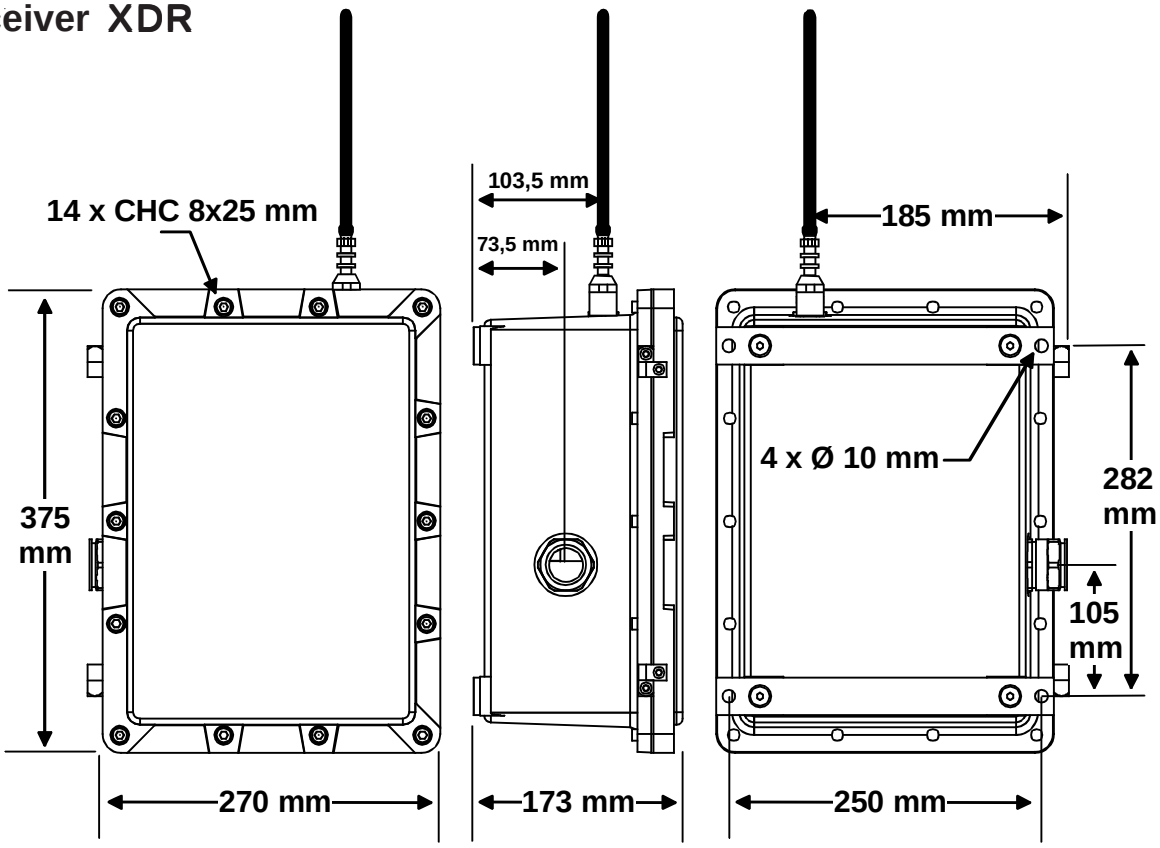
Dimensions

Transmitter XDE

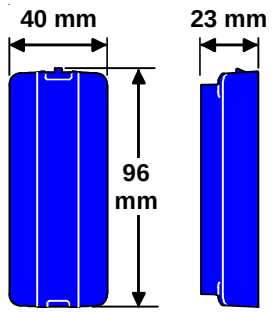
Housing models : 10+2 and 6+2 buttons



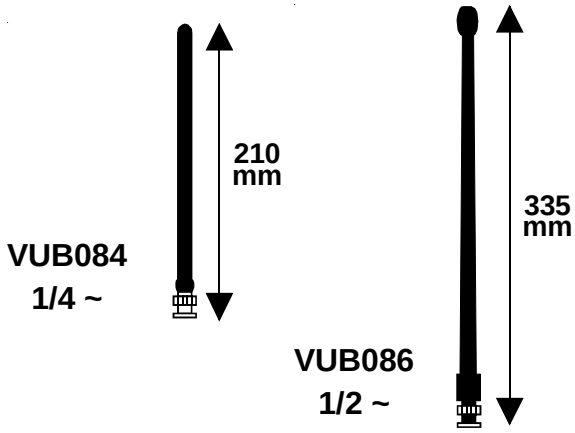
Receiver XDR



Battery pack XDB



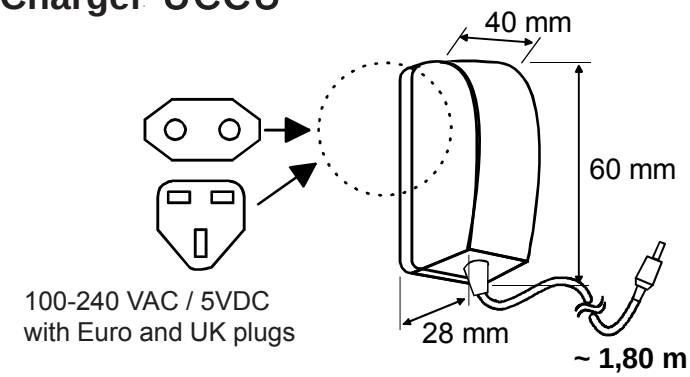
Antennas VUB•••



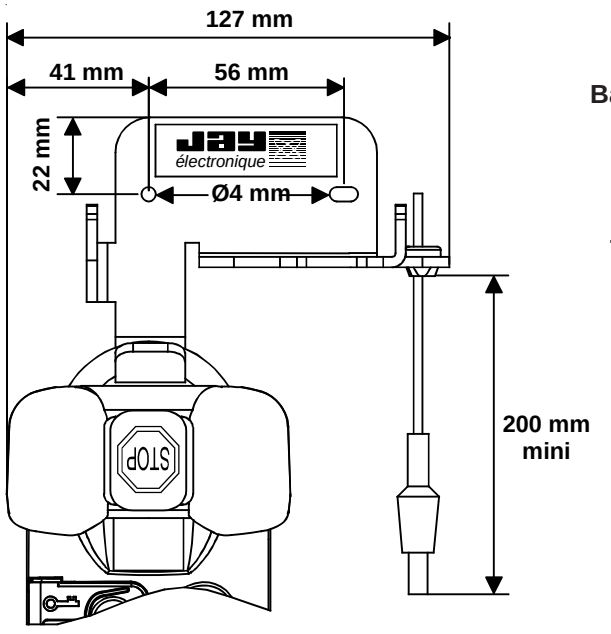
WARNING

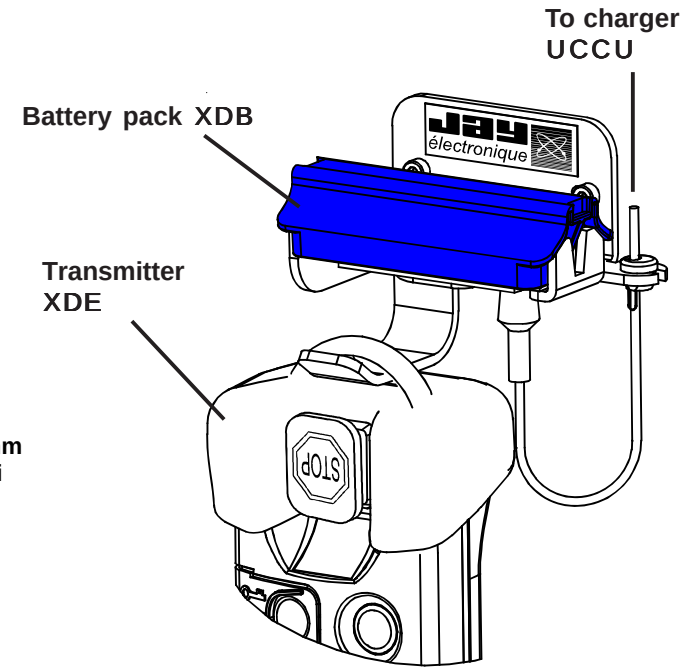
The blue battery pack XDB must only be charged outside the ATEX **zone.**

Charger UCCU



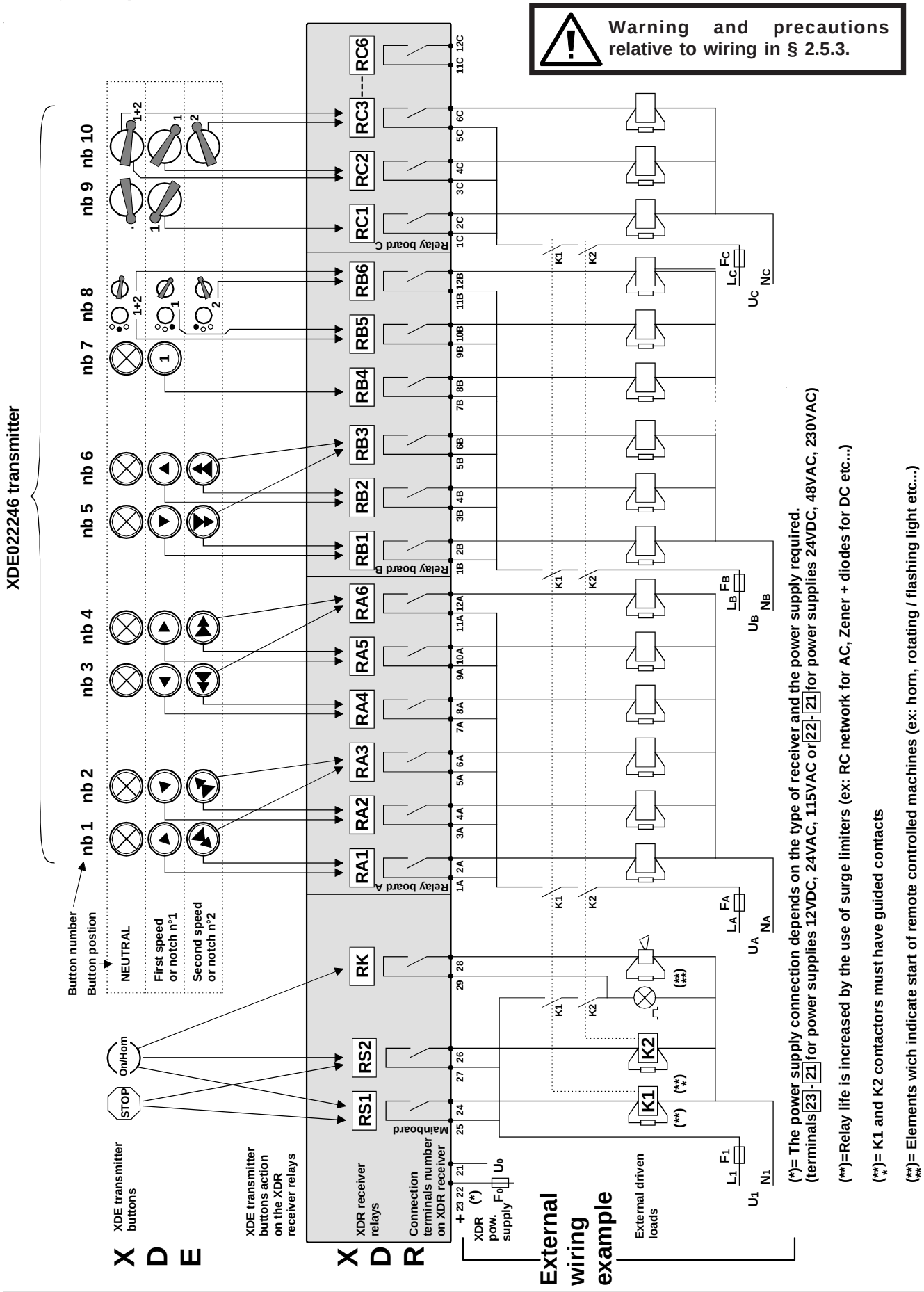
Wall support UDC1





Appendix D

Wiring example, transmitter XDR•C•00 - •11 with receiver XDE•22246



Appendix E

If several radio controls are used at the same site, different radio frequencies should be used, spaced by at least two channels (for example, channels 5, 7, 9, etc.).

List of programmable radio channels :
(Adjacent channel intervals of 0,025MHz)

433-434 MHz

Canal Channel Kanal	Fréquence Frequency Frequenz MHz	
01	433,100	
02	433,125	
03	433,150	
04	433,175	
05	433,200	
06	433,225	
07	433,250	
08	433,275	
09	433,300	
10	433,325	
11	433,350	
12	433,375	
13	433,400	
14	433,425	
15	433,450	
16	433,475	
17	433,500	
18	433,525	
19	433,550	
20	433,575	(1)
21	433,600	
22	433,625	(1)
23	433,650	
24	433,675	(1)
25	433,700	
26	433,725	(1)
27	433,750	
28	433,775	(1)
29	433,800	(2)
30	433,825	(1) (2)
31	433,850	(2)
32	433,875	(1) (2)
33	433,900	(2)
34	433,925	(1) (2)
35	433,950	(2)
36	433,975	(1) (2)
37	434,000	(2)
38	434,025	(1) (2)
39	434,050	(2)
40	434,075	(2)
41	434,100	(2)
42	434,125	(2)
43	434,150	(2)
44	434,175	(2)
45	434,200	(2)
46	434,225	(2)
47	434,250	(2)
48	434,275	(2)
49	434,300	(2)
50	434,325	(2)
51	434,350	(2)
52	434,375	(2)
53	434,400	(2)
54	434,425	(2)
55	434,450	(2)
56	434,475	(2)
57	434,500	(2)
58	434,525	(2)
59	434,550	(2)
60	434,575	(2)
61	434,600	(2)
62	434,625	(2)
63	434,650	(2)
64	434,675	(2)

869MHz

Canal Channel Kanal	Fréquence Frequency Frequenz MHz
01	869,9875
02	869,9625
03	869,9375
04	869,9125
05	869,8875
06	869,8625
07	869,8375
08	869,8125
09	869,7875
10	869,7625
11	869,7375
12	869,7125

(1) Frequencies available for Denmark

(2) Frequencies available for Singapore

Appendix F

CE Declaration of conformity

(Available also in downloadable version and in other languages on our web site : **www.jay-electronique.fr**)

CE DECLARATION OF CONFORMITY

The manufacturer	***JAY Electronique*** ***ZAC la Bâtie, rue Champrond*** ***F38334 Saint-Ismier cedex***
Declares	Declares that the radio remote control XD Series has the following marking :
Product description	Transmitter XDE : **CE 0081 Ex II 1 GD** **Ex ia IIB T5** **Ex iaD A20 T100°C** **LCIE 07 ATEX 6008 X** WARNING – POTENTIAL ELECTROSTATIC CHARGE HAZARD – SEE INSTRUCTIONS
Declaration of conformity to the applicable directives	Products designed and manufactured in accordance with the following applicable directives
First directive	Directive ATEX 94/9/EC
Individual declaration of conformity As a reference Conformity evidence Under the first one, as it is mentioned in the ATEX directive but not tested by the notified body	The conformity was granted with reference to the standards : EN 60079-0 (2006), EN 60079-1 (2004) EN 60079-11 (2007), NF EN 61241-0 (2007) For which a CE type examination certificate LCIE 07 ATEX 6008 X and a notification LCIE 07 ATEX Q 8006 were obtained. This product complies with the electrical safety requirements as mentioned in the low voltage directive 73/23/EEC (part of directive 99/05/CE) and was manufactured in accordance with the following standard: EN50178 (October 1999)
Second directive	With the requirements of the European Directive of the Council of Europe dated June 22nd 1998, concerning the harmonization of the legislation of the member states, relative to machines (98/37/CE of June 22nd 1998) with specific reference to appendix 1 of the directive 98/37/CE concerning the main requirements of health and safety relative to the design and construction of machines and safety components • with the standard EN 954-1 (1995) concerning the main requirements of health and safety relative to the design and construction of machines for the category 3 • with the standard EN 60204-32 (1999) concerning the safety of machinery - Electrical equipment of machines Part 32 : requirements for hoisting devices For its "safety priority stop" function
Third directive	With the requirements of the European Directive of the Council of Europe of March 9th 1999 concerning the harmonization of the legislations of the member states relative to radio equipment and telecommunication terminal equipment (99/5/CE of March 9th 1999), with specific reference to : - article 3-1a concerning the requirements regarding health and safety protection, with reference to the standard EN60947-5-1 (05/1999) - article 3-1b concerning the protection requirements with respect to electromagnetic compatibility, with reference to the standards ETS EN301 489-1/3 (2002-08), EN302 489-3 V1.4.1 and EN61000-6-2 - article 3.2 concerning the requirements for the efficiency use of the allocated radioelectric spectrum in order to avoid harmful interference, with reference to the standard EN300 220-1 and EN300 220-3 V.1.1.1
Fourth directive	With the requirements of the European Directive of the Council of Europe of January 27th 2003 concerning the Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (RoHs) (2002/95/CE)
Fifth directive	With the requirements of the European Directive of the Council of Europe of January 27th 2003 concerning the Waste Electronic and Electrical Equipment (DEEE)(2002/96/ce)
Notified bodies	The notified body in charge of the conformity to the ATEX directive is : ***L.C.I.E. B.P.8 F92266 Fontenay-aux-Roses.*** *Notified under n° 0081* The notified body in charge of the radioelectric conformity and the electromagnetic compatibility is : ***AEMC Lab 19, rue François Blumet*** ***ZI de l'Argentière 38330 SASSENAGE*** *Notified under n° 0573.*
Manufacturer warning	The above mentioned product should be exclusively installed and used for what it is meant for, in accordance with the standards it depends upon and as per the manufacturer's guidelines.
Final declaration	We, the undersigned, hereby declare that the above mentioned product complies with the directives and standard
Legally responsible signatory	B. GUESTIN Technical Manager

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331060B		Page : 2/2

CE DECLARATION OF CONFORMITY

The manufacturer	***JAY Electronique*** ***ZAC la Bâtie, rue Champrond*** ***F38334 Saint-Ismier cedex***
Declares	Declares that the radio remote control XD Series has the following marking :
Product description	Receiver XDR: **CE 0081 Ex II 2 GD** **Ex dia IIB T6** **Ex tD A21 T80°C** **LCIE 07 ATEX 6034 X** WARNING – DO NOT OPEN WHEN ENERGIZED WARNING – DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT
Declaration of conformity to the applicable directives	Products designed and manufactured in accordance with the following applicable directives
First directive	Directive ATEX 94/9/EC
Individual declaration of conformity As a reference Conformity evidence Under the first one, as it is mentioned in the ATEX directive but not tested by the notified body	The conformity was granted with reference to the standards : EN 60079-0 (2006), EN 60079-1 (2004) EN 60079-11 (2007), NF EN 61241-0 (2007) EN 61241-1 (2004) For which a CE type examination certificate LCIE 07 ATEX 6034 X and a notification LCIE 07 ATEX Q 8006 were obtained. This product complies with the electrical safety requirements as mentioned in the low voltage directive 73/23/EEC (part of directive 99/05/CE) and was manufactured in accordance with the following standard: EN50178 (October 1999)
Second directive	With the requirements of the European Directive of the Council of Europe dated June 22nd 1998, concerning the harmonization of the legislation of the member states, relative to machines (98/37/CE of June 22nd 1998) with specific reference to appendix 1 of the directive 98/37/CE concerning the main requirements of health and safety relative to the design and construction of machines and safety components • with the standard EN 954-1 (1995) concerning the main requirements of health and safety relative to the design and construction of machines for the category 3 • with the standard EN 60204-32 (1999) concerning the safety of machinery - Electrical equipment of machines Part 32 : requirements for hoisting devices For its "safety priority stop" function
Third directive	With the requirements of the European Directive of the Council of Europe of March 9th 1999 concerning the harmonization of the legislations of the member states relative to radio equipment and telecommunication terminal equipments (99/5/CE of March 9th 1999), with specific reference to : - article 3-1a concerning the requirements regarding health and safety protection, with reference to the standard EN60947-5-1 (05/1999) - article 3-1b concerning the protection requirements with respect to electromagnetic compatibility, with reference to the standards ETS EN301 489-1/3 (2002-08), EN302 489-3 V1.4.1 and EN61000-6-2 - article 3.2 concerning the requirements for the efficiency use of the allocated radioelectric spectrum in order to avoid harmful interference, with reference to the standard EN300 220-1 and EN300 220-3 V.1.1.1
Fourth directive	With the requirements of the European Directive of the Council of Europe of January 27th 2003 concerning the Restriction of the use of certain Hazardous Substances in electrical and electronic equipment, (RoHs) (2002/95/CE)
Fifth directive	With the requirements of the European Directive of the Council of Europe of January 27th 2003 concerning the Waste Electronic and Electrical Equipment (DEEE)(2002/96/ce)
Notified bodies	The notified body in charge of the conformity to the ATEX directive is : ***L.C.I.E. B.P.8 F92266 Fontenay-aux-Roses.*** *Notified under n° 0081* The notified body in charge of the radioelectric conformity and the electromagnetic compatibility is : ***AEMC Lab 19, rue François Blumet*** ***ZI de l'Argentière 38330 SASSENAGE*** *Notified under n° 0573.*
Manufacturer warning	The above mentioned product should be exclusively installed and used for what it is meant for, in accordance with the standards it depends upon and as per the manufacturer's guidelines.
Final declaration	We, the undersigned, hereby declare that the above mentioned product complies with the directives and standard
Legally responsible signatory	B. GUESTIN Technical Manager

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Améliorons ensemble ce manuel d'installation et d'utilisation !

We can improve this manual with your assistance !

Helfen Sie uns bei der Verbesserung des Installations- und Benutzerhandbuchs !

Informations personnelles / Personal information / Persönliche Angaben:

Nom **Name** **Name**	
Société **Company** **Gesellschaft**	
Adresse **Address** **Adresse**	
Ville **City** **Stadt**	
Code postale **Post code** **Postleitzahl**	
Tel	
Fax	
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•Please send us this form completed either by post or by fax at:
•Bitte schicken Sie uns diese Seite per Fax oder per Post an folgende Adresse:

JAY Electronique
Service documentation - *Eric DECHAME*
ZAC la Bâtie, rue Champrond
F38334 SAINT ISMIER cedex

Fax : +33.(0)4.76.41.44.44

«MERCI ! / THANKS ! / DANKE !»

Realisation JAY 330810E-revision02-FR-EN.PMD 07.10.2010 E.D.

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