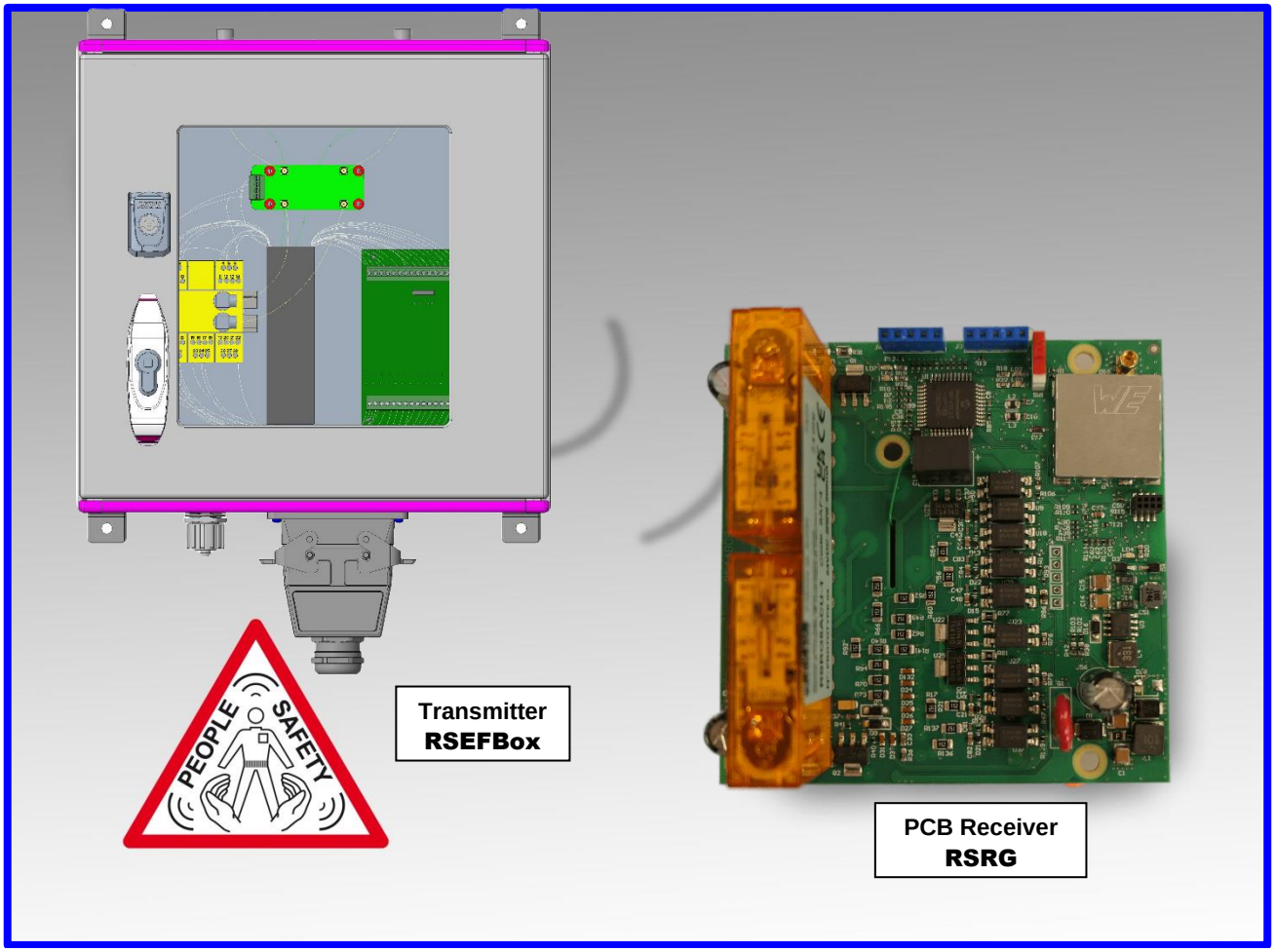
# RADIOSAFE (RS) series

## Wireless safety logic signal transmission system

## Transmitter **RSEFBox**
## Receiver **RSRG** (PCB VERSION ONLY)




# Installation and user manual

**- Original version -**

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# 1 Safety rules and general precautions

The **RS** system is considered as a control and a safety component ensuring an emergency stopping function under the terms of the European Machinery Directive. The following safety rules apply to installation and use of the RS system.

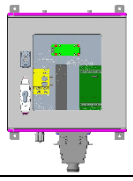
- For maximum safety when using the system, the instructions given in this manual must be strictly observed.
- RS system operators must be appropriately trained and authorised to use the product.
- RS system operators must have uninterrupted visibility at all times when performing manoeuvres.
- Where several systems are implemented on a single site, different radio frequencies must be used. These should be spaced by at least 2 channels (for example, channels 5, 7, 9, …) or by 5 channels when several systems are operating within a radius of 10 meters.
  Please contact us for the case of dense installations.
- It is not advisable to install the safety transmitter **RSEF** and safety receiver **RSRG** in the same cabinet to prevent disruption of the receiver. If you need to install these two elements in the vicinity, please contact us.
- In the event of a malfunction, the installation should be immediately shut down by pressing any emergency stop pushbutton and particulary that connected to the safety transmitter **RSEF**.
- If an **enabling handle** is used for the application, this device must comply with the requirements of IEC 60947-5-8:2020 and IEC 60204-1:2016 standards.
- All **emergencies stop buttons** used for the application, must comply with the requirements of ISO 13850:2015, IEC 60947-5-5:1997+AMD1:2005+AMD:2016 and IEC 60204-1:2016 standards.
    - **if the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired**

The product described in this manual is designed to satisfy the requirements of Machinery Directive 2006/42/EC based on application of the following standards:

- EN ISO 13849-1:2015 for performance level PLe (Category 4)
- EN IEC 62061:2021 for SIL 3

## 1.1 Components identification

The RS “mobile equipment fleet safety stop” solution can be ordered in separate components:

| References | Elements | Visuals | Notes |
|---|---|---|---|
| RSRG5xxx-1 (2.4GHz) | **RSRG receiver**<br>Frequency 2.4GHz |  | |
| RSW39 | Serial 232 to USB cable |  | *One piece can be sufficient for all RSRGevice manual maintenance operations* |
| RSD5Bxxxxxxxxx-1 | **RSEFBox transmitter**<br>Frequency 2.4GHz |  | *Includes:*<br>- *1x RSEF*<br>- *1x Protection Card*<br>- *1x RF switch*<br>- *2 DC block*<br>- *2 surge protectors* |

Any RS “mobile equipment fleet safety stop” solution can be ordered with grouped references specific to any application so as to simplify orders and to reduce the number of references to be ordered. Please refer to section 6 for specific antenna choices.

## 1.2 Product operating principle

The **RS** system is used to transmit a safety signal and logic signals from one point of an installation to another.

The **RSEF** transmitter is designed to trigger the following events onto an unlimited number of **RSRG** receivers:

- An emergency stop in the event of a problem occurring in the installation
- Up to 2 commands

The **RSRG** receiver is integrated in the control component of a machine. It enables (or forbids) operation of the machine and transmits the possible commands assigned to the buttons connected to the **RSEF** transmitter.

The **RSRG** receiver stops operation of the machine when any of the following conditions are present :

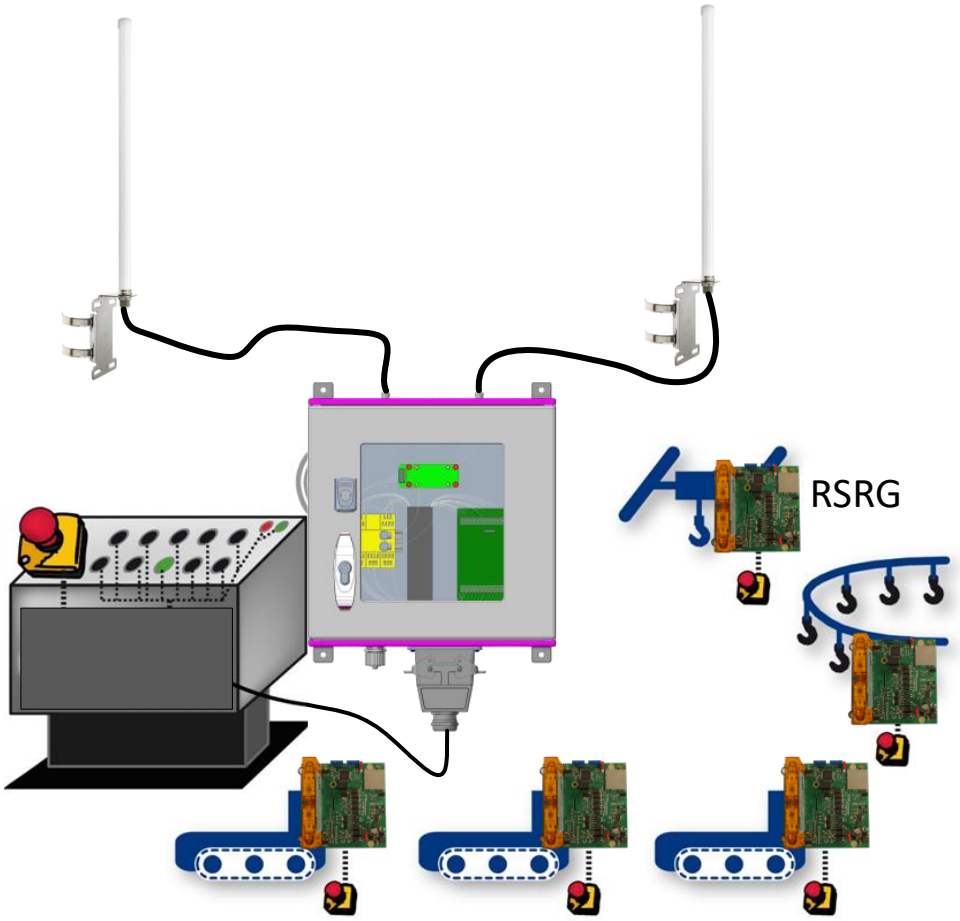
**Case 1 : Deactivation of a safety input (for example : contact on a gate or an emergency stop) connected to the RSEF transmitter**
→ Safety interlock subsequent to stop request.

**Case 2 : Action on emergency stop device wired to the RSRG receiver.**
→ Safety interlock subsequent to stop request.

**Case 3 : Interruption of radio link during use**
When the system is in use, the **RSEF** transmitter has a continuous radio link with the **RSRG** receiver. Should this link be interrupted for more than the passive stop time, the receiver automatically triggers stopping of the installation.
→ Safety interlock prior to loss of control of stopping function.

**Case 4 : Detection of a malfunction (see section 7 for troubleshooting)**

**Schematic diagram :**




**Block diagram showing a fixed control panel equipped with RSEF and a Radio Frequency Switch and several mobile machines each equipped with RSRG**

Antennas for RSRG are to be chosen in accordance with the mechanical design of each piece of equipment.
Emergency stop pushbuttons must comply with the requirements of EN 60947-5-5:2016 and EN 60204-1:2016

# 2 Preliminary steps before installation

This section details the first steps to take so as to become accustomed to the equipment

First, acknowledge the factory settings
Then proceed to the identification of components terminals
Eventually, perform the proposed test wiring and proceed to the standard testing procedure

## 2.1 Factory default settings

### Transmitter RSEFBox

**Radio power level** ..... : Fixed, according to RSEF model number
**Radio channel number** ..... : **64** (DIP switches 1 to 6: up)
**Self check of inputs upon auxiliary supply activation**..... : **NO** (DIP switch 7: down)
**Transmitter restart mode** ..... : **Manual** (DIP switch 8: up)

### Receiver RSRG

**Safety delay**..... : 3s (configurable from 0 to 10s)
**Passive stop time** ..... : 1s (configurable from 0,3 to 2s)

⇨ To modify DIP switches and configurable settings, please refer to Section 3

**IMPORTANT:** According to Machinery Directive section 4.1.1(EN ISO 13850:2015), all time delays must be determined by the risk assessment of the machine. Please also refer to IEC 60204-1 :2005, 9.2.5.4.2.

### SIM card inserted inside RSEF

**Identity Code** ..... : Fixed, unique hexadecimal code issued by JAY
**SIM serial number**..... : Fixed, unique number issued by JAY
**Applicable radio band** ..... : Fixed, 2.4 GHz
**DIP switches status** ..... : updated according to last status validation

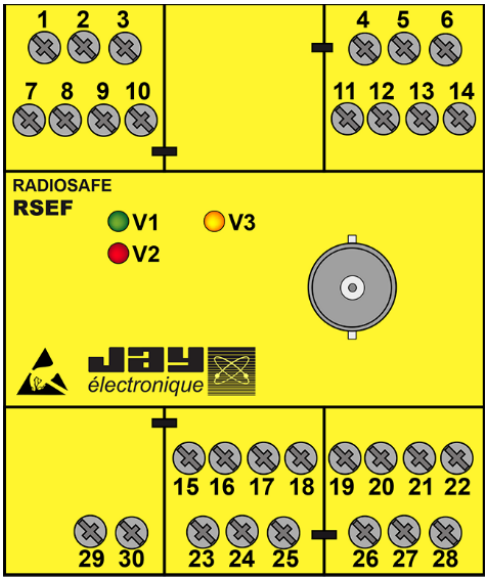
⇨ In the event of a transmitter failure, the SIM card can be used in a backup transmitter: a fault status will be triggered if the backup transmitter DIP switches are not compliant with the status registered in the SIM card, until a new validation.

***** The dedicated programming software is available on JAY Electronique website. The use of the programming software is protected by a password, this password is only delivered to a skilled person “level 2” (a person who was trained by JAY Electronique, and who is authorized to modify RSRG receiver parameters).

## 2.2 **RSEF** safety transmitter: terminal blocks

Check the SIM card is inserted inside the **RSEF** transmitter: as shown with the red circle, there is a dedicated slot located behind the transmitter front cover.

Before any installation, it is highly advised to perform a quick test as described in the following section.

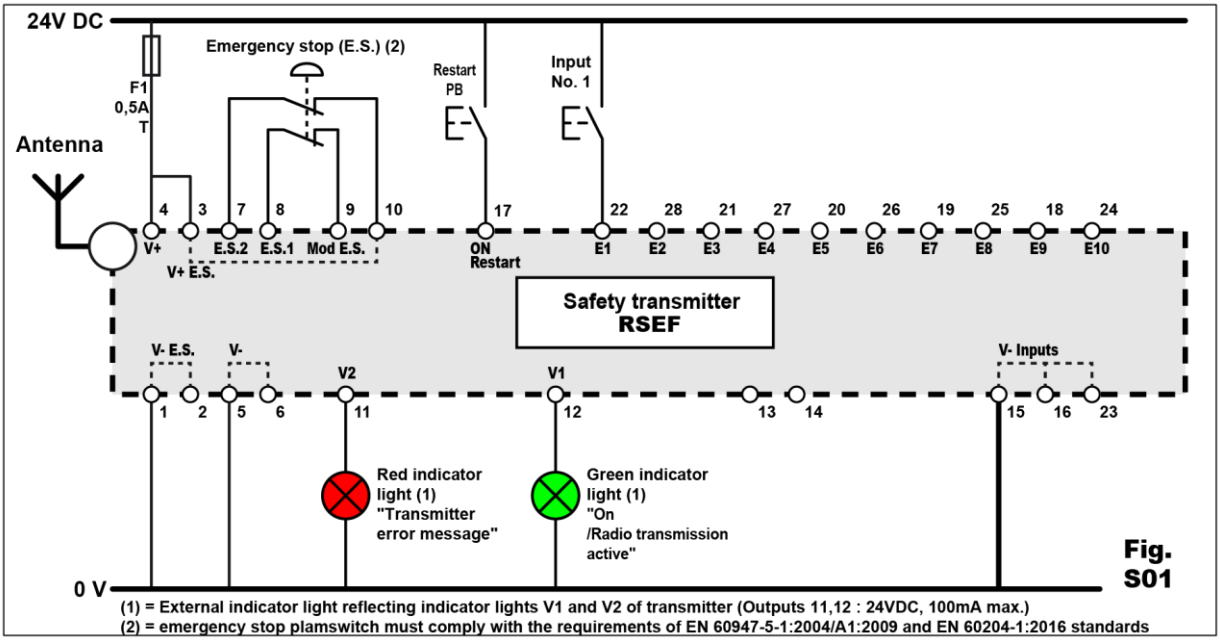




| Terminal | Function |
|---|---|
| 1 | **V-** E.S. |
| 2 | **V-** E.S. |
| 3 | **V+** E.S. |
| 4 | **V+** RSEF |
| 5 | **V-** RSEF |
| 6 | **V-** RSEF |
| 7 | E.S. contact 1 |
| 8 | E.S. contact 2 |
| 9 | E.S. mode |
| 10 | **V+** E.S. |
| 11 | Ind. light **V2** output |
| 12 | Ind. light **V1** output |
| 13 | Not used |
| 14 | Not used |
| 15 | **V-** Inputs |
| 16 | **V-** Inputs |

| Terminal | Function |
|---|---|
| 17 | On / Restart button input |
| 18 | Input No.9 |
| 19 | Input No.7 |
| 20 | Input No.5 |
| 21 | Input No.3 |
| 22 | Input No.1 |
| 23 | **V-** Input |
| 24 | Input No.10 |
| 25 | Input No.8 |
| 26 | Input No.6 |
| 27 | Input No.4 |
| 28 | Input No.2 |
| 29 | 0 V of module VUB090 |
| 30 | +5 VDC of module VUB090 |

| Ind. light | Function |
|---|---|
| V1 | (GREEN) "On", "Radio transmission", "Diagnostic" |
| V2 | (RED) "Diagnostic" |
| V3 | (ORANGE) "Power supply" |

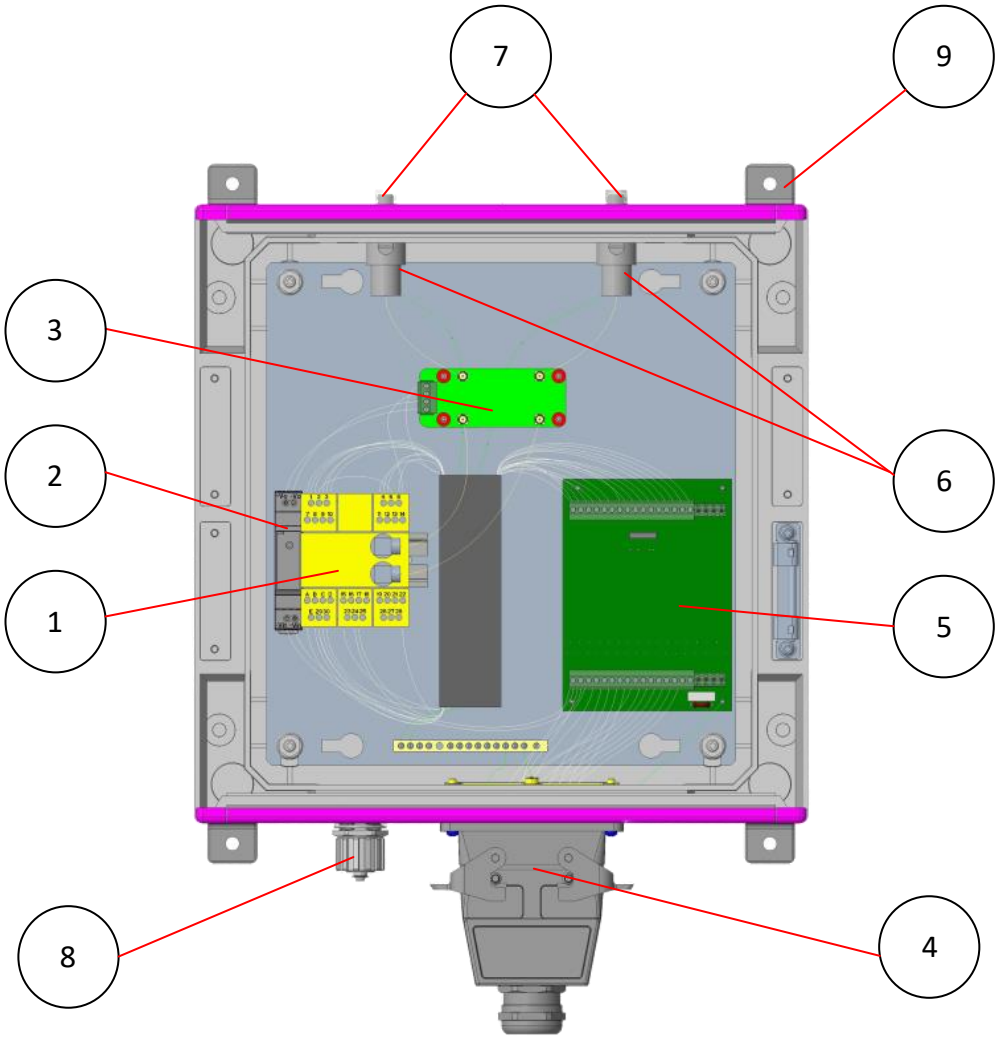
## 2.3 Transmitter test wiring (independent from any application)




this wiring is intended to test : - a command input
- and the « emergency stop » safety input :

- **Step 1** Prepare a stabilized power supply, 24VDC (+/- 20 %) 500 mA minimum
- **Step 2** Wire the transmitter as follows :
  - Connect the +24VDC of the stabilized power supply to terminals **3** and **4**
  - Connect the ground of the power supply to the 3 terminals **1** and **5** and **15** (ground ref. of inputs)
  - Connect an NC double contact emergency stop button to terminals **7**, **8**, **9** and **10**.
  - Connect an NO button “Restart” across the +24VDC and terminal No. **17**.
  - Connect an NO button simulating an input across the +24VDC and terminal No. **22** (E1).
  - Possibly, indicator lights giving the same indication as indicator lights **V1** and **V2** of the transmitter may be connected to terminals **11** (V2) and **12** (V1) and 0V.
- **Step 3** Switch on the auxiliary supply of the transmitter.
- **Step 4** Activate the safety input (unlock Emergency stop).
- **Step 5** Press on the Restart pushbutton in case of manual restart mode.
  Indicator light **V3** of the transmitter should come on steady, indicator light **V1** should flash regularly (radio transmission) and indicator light **V2** should be off; if this indicator light flashes, there is an error: refer to the error message table.
- **Step 6** Switch off the supply to the transmitter.
  Proceed as instructed in the following pages to wire the safety receiver **RSRG**.

## 2.4 **RSEFBox** safety transmitter: Harting connector

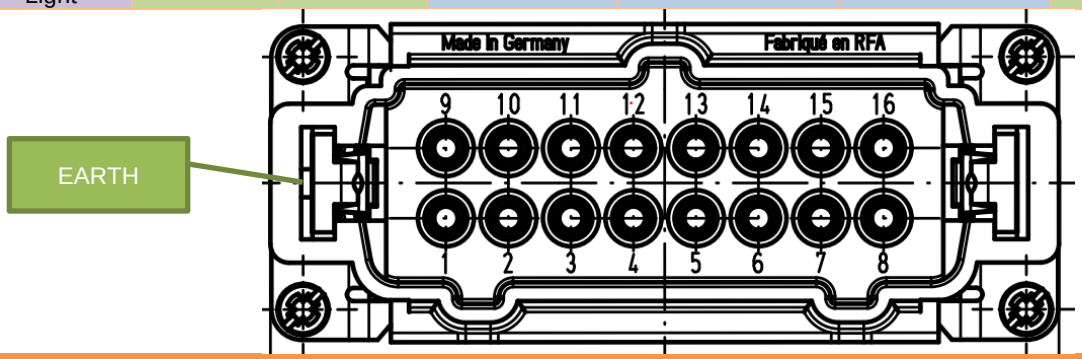



| | |
|---|---|
| **1** | RSEF |
| **2** | DC-DC convertor |
| **3** | RF amplifier board |
| **4** | Industrial Connectors |

| | |
|---|---|
| **5** | Electrical Protection Board |
| **6** | Surge protector |
| **7** | Antenna connector N type |
| **8** | RJ45 option |
| **9** | Wall mounting bracket |

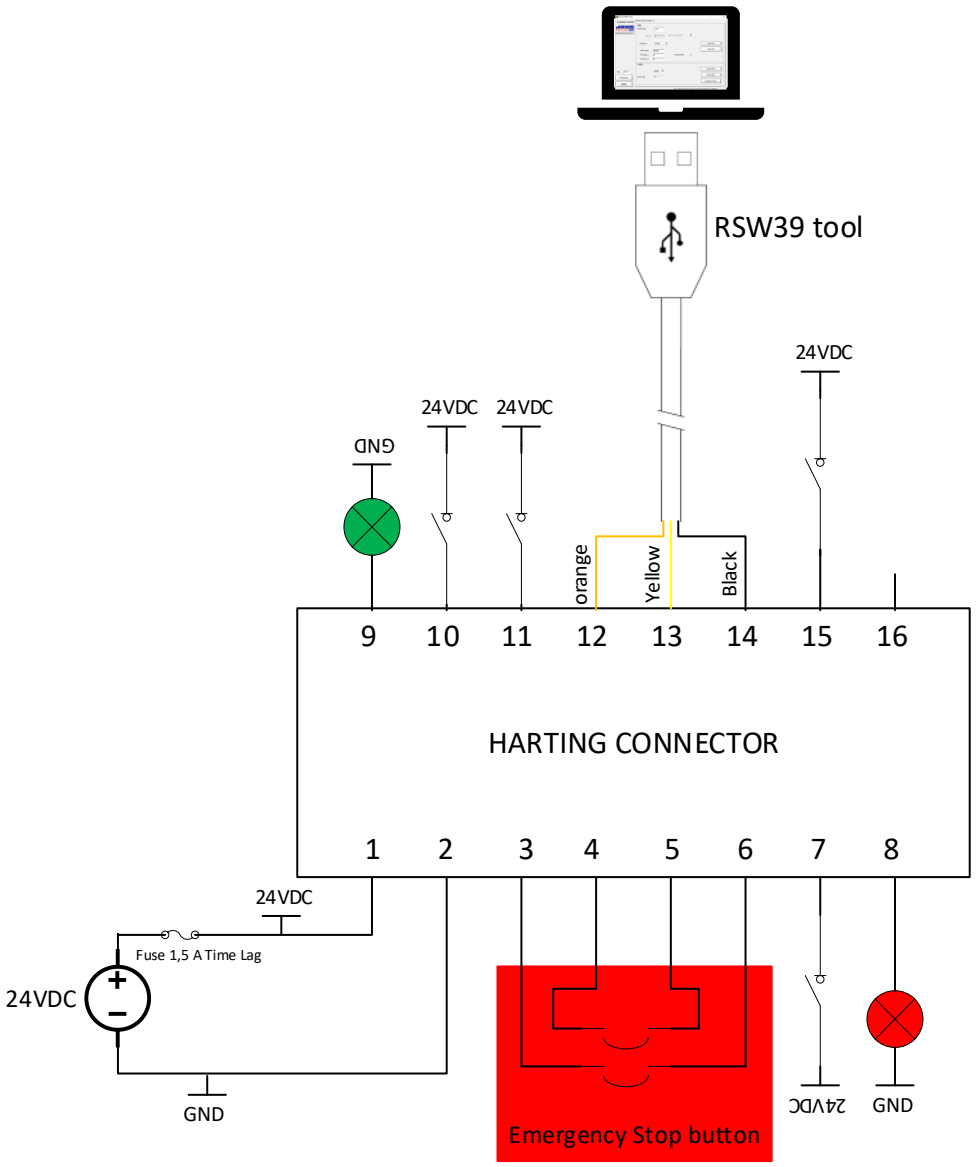
## 2.5 Industrial Connector

| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|
| Green Indicator Light | Wake up signal Input | Clear Alarm Input | RS232 TxPc_RxRSEF | RS232 RxPc_TxRSEF. | RS232 OV (GND) | Configuration Mode | Not Used |

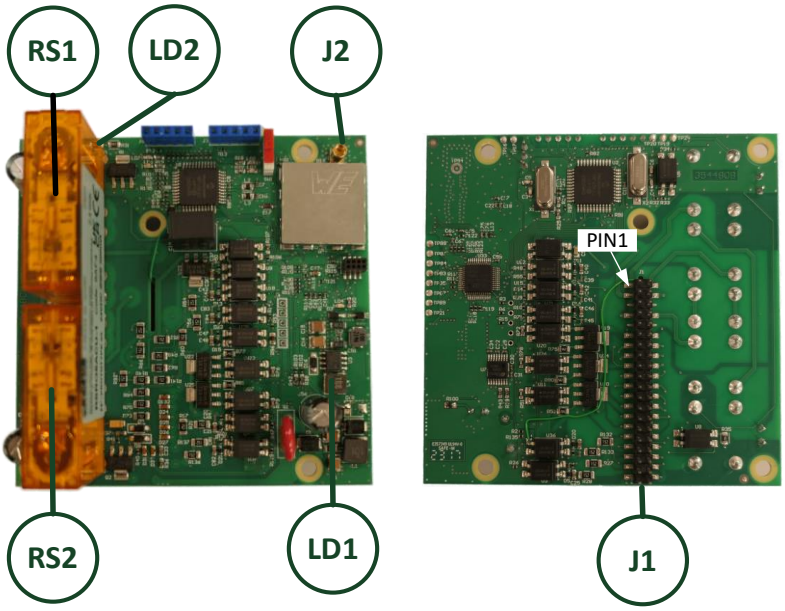



| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 24VDC supply | OVDC supply | ES1 | ES2 | Mod E.S. | V+ E.S. | Restart BP | Red Indicator Light |

## 2.6 RSEFBox Typical wiring

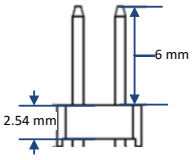


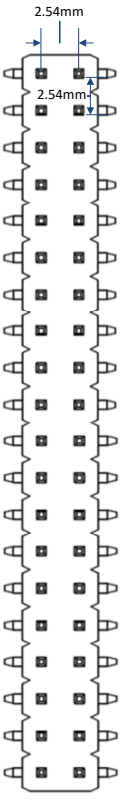
## 2.7 **RSRG** Safety receiver: terminal blocks




| | |
|---|---|
| **RS1&RS2** | Safety relays |
| **J1** | Board-to-board connector 40pins pitch .100" (2,54mm) Surface Mount, .025" (.64mm) Square Double Row, Vertical |
| **J2** | MMCX Jack RF connector (Fem) |
| | |
| **LD1** | Orange indicator light: receiver power supply OK |
| **LD2** | Red indicator light: status of safety relays **RS1** and **RS2** |
| | |

## 2.8 Breakout Pads of board-to-board connector J1

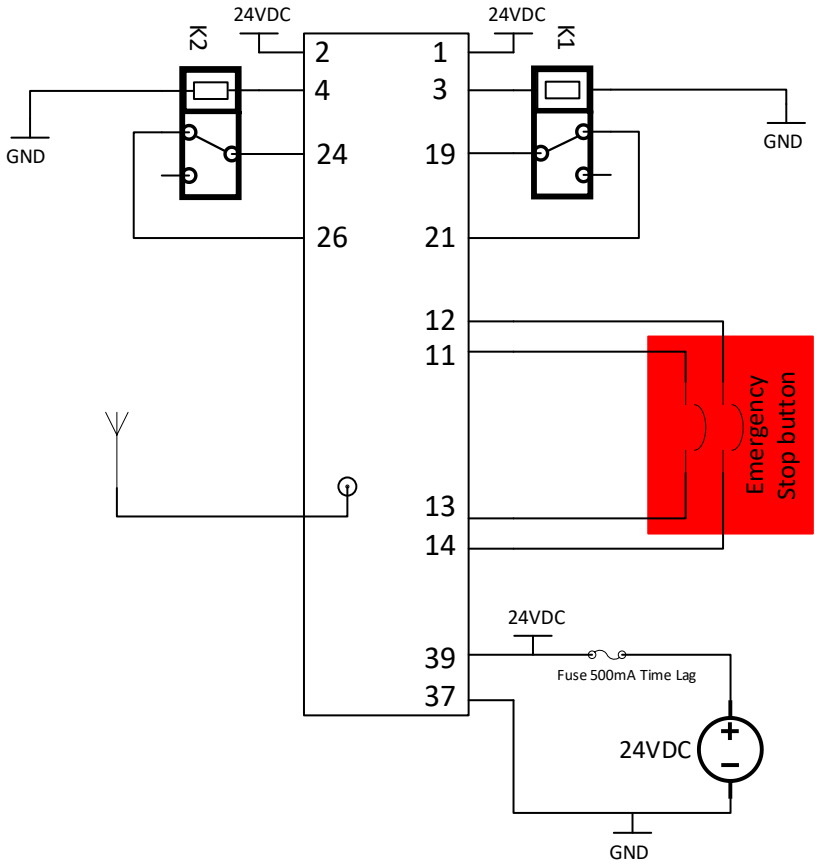



| | | | | |
|---|---|---|---|---|
| Safety Relays Contact | Safety O2.1 | 1 | 2 | Safety O1.1 |
| | Safety O2.2 | | | Safety O1.2 |
| | N.C. | | | N.C. |
| | Safety O3.2 | | | Safety O3.1 |
| | N.C. | 9 | 10 | N.C. |
| Local E-Stop1 | Local E-Stop1.1 | | | Local E-Stop2.1 |
| | Local E-Stop1.2 | | | Local E-Stop2.2 |
| Manual Enable Handle1 | Enable Handle2.1 | | | Enable Handle2.1 |
| | Enable Handle2.2 | | | Enable Handle2.2 |
| MC1 | Main Contactor2.1 | 19 | 20 | Handle detect1 |
| | Main Contactor2.2 | | | Handle detect2 |
| No Safe Output | Output 1(L-STOP) | | | Main Contactor1.1 |
| | Output 2(I-STOP) | | | Main Contactor1.2 |
| | Output 3(Wake Up) | | | Configuration Mode+ |
| | Output 4(D-STOP) | 29 | 30 | Configuration Mode- |
| | Output 5 | | | RXD |
| No Safe Input | NoSafeInput3 | | | TXD |
| | NC | | | GND |
| Power Supply | GND | | | CapaEnableInput |
| | 24VDC | 39 | 40 | NoSafeInput2 |

| | |
|---|---|
| Safety Relays Contact | |
| Local E-Stop2 | |
| Manual Enable Handle2 | |
| Enable Handle Detect | |
| MC1 | |
| Config Mode | |
| RS232 | |
| No Safe Input | |

## 2.9 Receiver test wiring (independent from any application)




This wiring is aimed at testing the radio link and an « emergency stop » safety input :

- **Step 1** Prepare a stabilized power supply, 24VDC (+/- 5 %) 500 mA minimum

- **Step 2** Wire the receiver as shown in the diagram above.
- **Step 3** Supply the receiver.
  Orange indicator light **LD1** on the receiver comes on steady.

- **Step 4** Switch off the receiver.
  Perform the system test as detailed in the next section.

## 2.10 Global system test before installation

- **Step A** Switch on the **RSEF or RSEFBox** transmitter and the **RSRG** receiver

  The **RSRG** receiver should be ready to receive the **RSEF** transmitter frame: (same ID code and same channel)

  ⇨ the indicator light **LD1** on the RSRG receiver comes on steady.
  ⇨ the indicator light **V3** on the transmitter **RSEF** comes on steady.

- **Step B** Activate the safety input (unlock Emergency stop) on both devices

  The **RSEF** transmitter should be ready to transmit:

  ⇨ the indicator light **V1** should go off steadily.

- **Step C** On **RSEF** transmitter:
  Press on the restart pushbutton (If the transmitter is in « manual » restart mode).

  ⇨ the indicator light **V2** should blink.

  On **RSRG** receiver:
  The safety relays (**RS1** and **RS2**) should engage.

  ⇨ the two indicator lights **LD2** and **LD3** should go off steadily.

- **Step D** Press the emergency stop pushbutton connected to the **RSEF** transmitter.

  The safety relays on the RSRG receiver must be deactivated within the time defined by the safety delay parameter.

Technical assistance:

Manufacturer: JAY électronique

ZAC la Bâtie, rue Champrond

F38334 SAINT ISMIER cedex

Tel : +33 (0)4 76 41 44 00

www.jay-electronique.com

email : support.technique.jay@conductix.com

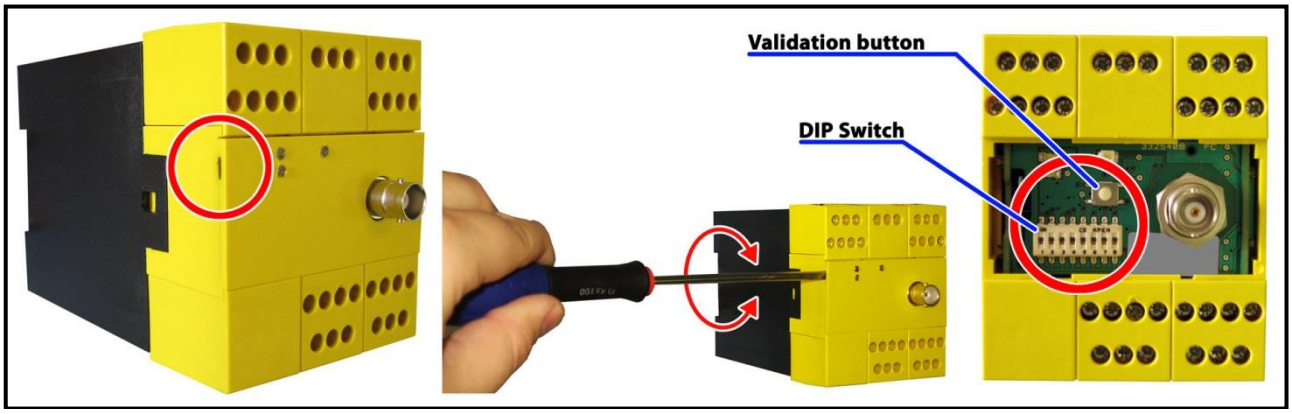
# 3 Modifying the product configuration

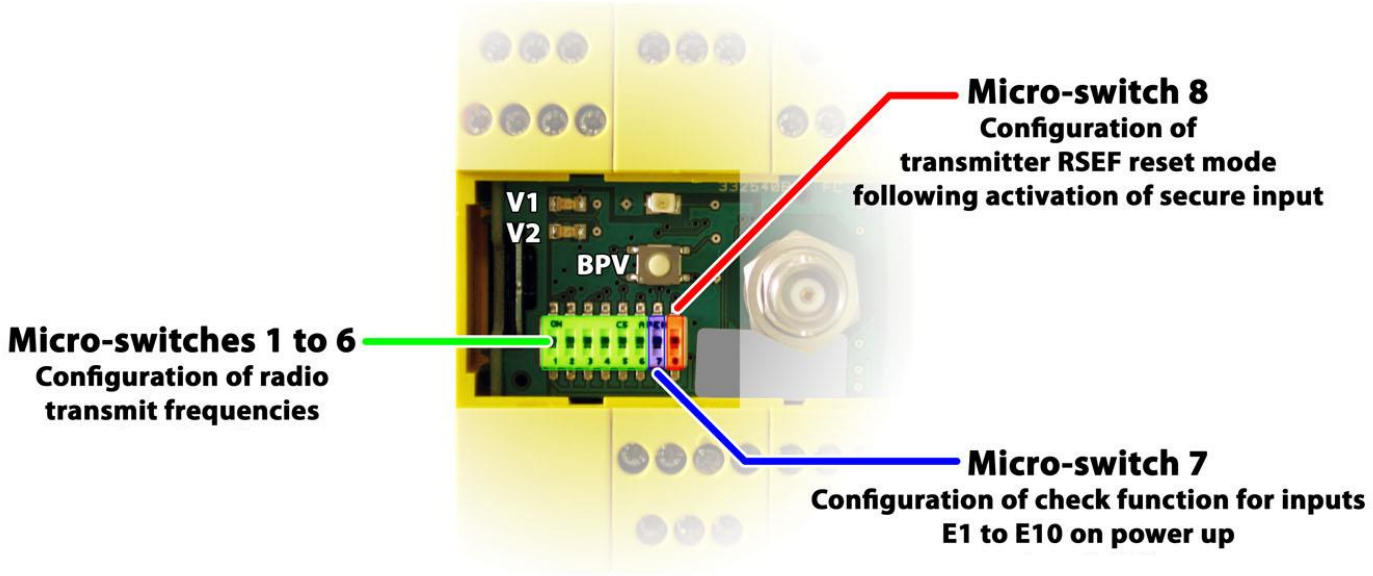
## 3.1 RSEF transmitter configuration

### 3.1.1 General process

The various settings on the transmitter **RSEF** are made using a **DIP switch** and a **validation button** located inside the transmitter.

Remove the front panel to access these components:



### 3.1.2 Configuring the radio transmit frequency

To limit accidental cut-outs due to radio interference, it is important to choose an available radio channel (frequency). This choice is governed by the following principles:

- The receiver point of installation must be considered as the centre of the radio link,
- Estimate the maximum distance « **D max** » which there may be between the transmitter and the receiver,
- Identify the frequencies used for all the radio transmitters located within a radius of 2x**D max**.
- Chose a frequency which is as far as possible from those used by the nearest transmitters and which is not used by the transmitters identified.

The procedure described below is used to modify the radio channel of the transmitter RSEF and receiver RSRG. The receiver must be supplied throughout the channel modification procedure in order to receive the radio channel change command from the transmitter RSEF.

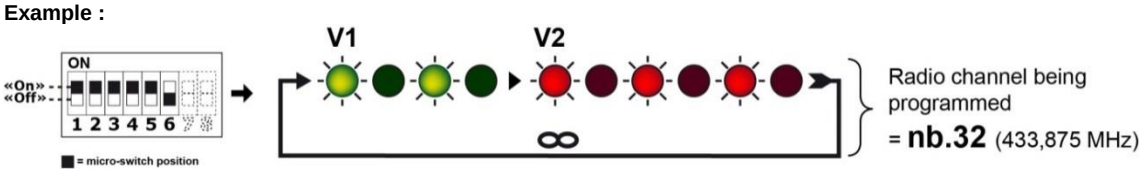
**1-** Deactivate the safety input of the transmitter RSEF (1)

**2-** Select the new radio channel using **micro-switches 1 to 6** (see correspondence table below)

**3-** Activate the safety input of the transmitter RSEF (2)

**4-** The 2 indicator lights **V1**-**V2** flash to indicate the new radio channel being programmed :
Indicator light **V1** (GREEN) indicates the units (0 = off steady, 1 = 1 flash, 2 = 2 flashes, etc…)
Indicator light **V2** (RED) indicates the tens (0 = off, 10 = 1 flash, 20 = 2 flashes, etc…)

**Example :**




**5-** Once you have chosen the radio channel, press the **validation button BPV**

**6-** The two indicator lights, **V1** and **V2**, flash simultaneously and the transmitter sends the receiver RSRG the radio channel change command (this action takes around 20 s., then indicator lights **V1** and **V2** go off).

**Note :** If the **validation** button **BPV** has not been pressed, you can cancel the frequency change by repositioning the micro-switches 1 to 6 to the initial radio channel code.

**7-** To exit the radio frequency setting modes, activate, then deactivate the safety input (1)(2).

**8-** If the transmitter is in « manual » restart mode, press the restart button wired to input **17**

(1) If an emergency stop palmswitch is wired on this input, the component must be locked.
(2) If an emergency stop palmswitch is wired on this input, the component must be unlocked.

**Notes :**

If other settings are to be modified during this procedure (such as “inputs check” or “restart mode”), they need to be modified and validated one by one.

(1) If an emergency stop pushbutton is wired on this input, the component must be locked.

(2) If an emergency stop pushbutton is wired on this input, the component must be unlocked.

### 3.1.3 Radio channel programming table for 2.4Ghz.

| Chan. | Freq. (MHz) | DIP switch position | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| **01** | 2402.00 | OFF | OFF | OFF | OFF | OFF | OFF |
| **02** | 2403.25 | ON | OFF | OFF | OFF | OFF | OFF |
| **03** | 2404.50 | OFF | ON | OFF | OFF | OFF | OFF |
| **04** | 2405.75 | ON | ON | OFF | OFF | OFF | OFF |
| **05** | 2407.00 | OFF | OFF | ON | OFF | OFF | OFF |
| **06** | 2408.25 | ON | OFF | ON | OFF | OFF | OFF |
| **07** | 2409.50 | OFF | ON | ON | OFF | OFF | OFF |
| **08** | 2410.75 | ON | ON | ON | OFF | OFF | OFF |
| **09** | 2412.00 | OFF | OFF | OFF | ON | OFF | OFF |
| **10** | 2413.25 | ON | OFF | OFF | ON | OFF | OFF |
| **11** | 2414.50 | OFF | ON | OFF | ON | OFF | OFF |
| **12** | 2415.75 | ON | ON | OFF | ON | OFF | OFF |
| **13** | 2417.00 | OFF | OFF | ON | ON | OFF | OFF |
| **14** | 2418.25 | ON | OFF | ON | ON | OFF | OFF |
| **15** | 2419.50 | OFF | ON | ON | ON | OFF | OFF |
| **16** | 2420.75 | ON | ON | ON | ON | OFF | OFF |
| **17** | 2422.00 | OFF | OFF | OFF | OFF | ON | OFF |
| **18** | 2423.25 | ON | OFF | OFF | OFF | ON | OFF |
| **19** | 2424.50 | OFF | ON | OFF | OFF | ON | OFF |
| **20** | 2425.75 | ON | ON | OFF | OFF | ON | OFF |
| **21** | 2427.00 | OFF | OFF | ON | OFF | ON | OFF |
| **22** | 2428.25 | ON | OFF | ON | OFF | ON | OFF |
| **23** | 2429.50 | OFF | ON | ON | OFF | ON | OFF |
| **24** | 2430.75 | ON | ON | ON | OFF | ON | OFF |
| **25** | 2432.00 | OFF | OFF | OFF | ON | ON | OFF |
| **26** | 2433.25 | ON | OFF | OFF | ON | ON | OFF |
| **27** | 2434.50 | OFF | ON | OFF | ON | ON | OFF |
| **28** | 2435.75 | ON | ON | OFF | ON | ON | OFF |
| **29** | 2437.00 | OFF | OFF | ON | ON | ON | OFF |
| **30** | 2438.25 | ON | OFF | ON | ON | ON | OFF |
| **31** | 2439.50 | OFF | ON | ON | ON | ON | OFF |
| **32** | 2440.75 | ON | ON | ON | ON | ON | OFF |

| Chan. | Freq. (MHz) | DIP switch position | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| **33** | 2442.00 | OFF | OFF | OFF | OFF | OFF | ON |
| **34** | 2443.25 | ON | OFF | OFF | OFF | OFF | ON |
| **35** | 2444.50 | OFF | ON | OFF | OFF | OFF | ON |
| **36** | 2445.75 | ON | ON | OFF | OFF | OFF | ON |
| **37** | 2447.00 | OFF | OFF | ON | OFF | OFF | ON |
| **38** | 2448.25 | ON | OFF | ON | OFF | OFF | ON |
| **39** | 2449.50 | OFF | ON | ON | OFF | OFF | ON |
| **40** | 2450.75 | ON | ON | ON | OFF | OFF | ON |
| **41** | 2452.00 | OFF | OFF | OFF | ON | OFF | ON |
| **42** | 2453.25 | ON | OFF | OFF | ON | OFF | ON |
| **43** | 2454.50 | OFF | ON | OFF | ON | OFF | ON |
| **44** | 2455.75 | ON | ON | OFF | ON | OFF | ON |
| **45** | 2457.00 | OFF | OFF | ON | ON | OFF | ON |
| **46** | 2458.25 | ON | OFF | ON | ON | OFF | ON |
| **47** | 2459.50 | OFF | ON | ON | ON | OFF | ON |
| **48** | 2460.75 | ON | ON | ON | ON | OFF | ON |
| **49** | 2462.00 | OFF | OFF | OFF | OFF | ON | ON |
| **50** | 2463.25 | ON | OFF | OFF | OFF | ON | ON |
| **51** | 2464.50 | OFF | ON | OFF | OFF | ON | ON |
| **52** | 2465.75 | ON | ON | OFF | OFF | ON | ON |
| **53** | 2467.00 | OFF | OFF | ON | OFF | ON | ON |
| **54** | 2468.25 | ON | OFF | ON | OFF | ON | ON |
| **55** | 2469.50 | OFF | ON | ON | OFF | ON | ON |
| **56** | 2470.75 | ON | ON | ON | OFF | ON | ON |
| **57** | 2472.00 | OFF | OFF | OFF | ON | ON | ON |
| **58** | 2473.25 | ON | OFF | OFF | ON | ON | ON |
| **59** | 2474.50 | OFF | ON | OFF | ON | ON | ON |
| **60** | 2475.75 | ON | ON | OFF | ON | ON | ON |
| **61** | 2477.00 | OFF | OFF | ON | ON | ON | ON |
| **62** | 2478.25 | ON | OFF | ON | ON | ON | ON |
| **63** | 2479.50 | OFF | ON | ON | ON | ON | ON |
| **64** | 2480.75 | ON | ON | ON | ON | ON | ON |

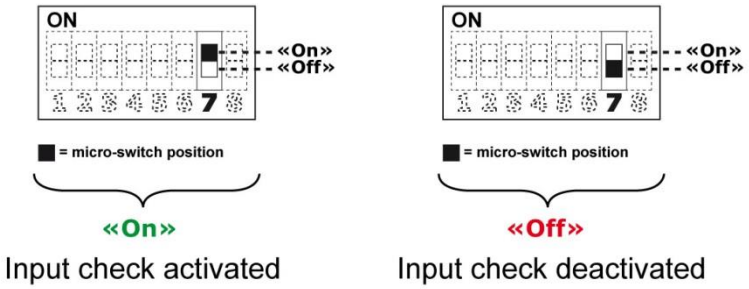
### 3.1.4 Configuring the check function for inputs E1 to E10 on power up

This function is used to check the status of the contacts of the inputs on power up of the transmitter **RSEF**. If a contact is « closed» on power up, the transmitter will indicate an error by indicator lights **V1** and **V2** (4 flashes).

This function can be activated using **micro-switch No. 7.**

**1-** Deactivate the safety input of the transmitter **RSEF** (1)

**2-** Activate or deactivate the input check function using **micro-switch No. 7** :




**3-** Activate the safety input of the transmitter **RSEF** (2) ; the two indicator lights, **V1** and **V2**, flash alternately to indicate the system is on standby for validation.

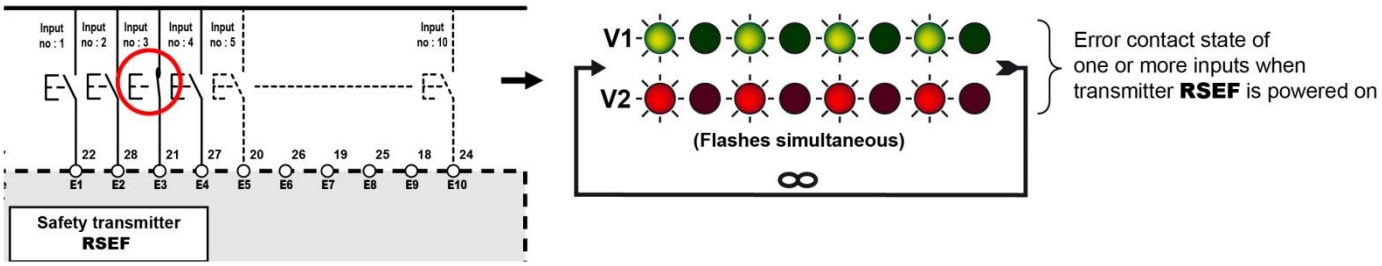
**4-** Press the **validation button BPV** ; indicator lights **V1** and **V2** go off.

**5-** To exit this configuration mode, deactivate, then activate the safety input (1)(2).

**6-** If the transmitter is in « manual » restart mode, press the restart button wired to input **17**

(1) If an emergency stop palmswitch is wired on this input, the component must be locked.
(2) If an emergency stop palmswitch is wired on this input, the component must be unlocked.

**Example of fault on input No. 3** (NO contact faulty) :




**Note :**
If the other setting has also been modified during this procedure (as “Radio channel number” or “restart mode”), each modified setting have to be performed one by one.

### 3.1.5 Configuring the restart mode of transmitter **RSEF**

This function defines the restart mode of safety transmitter (activation of the radio transmission) after a stop caused by deactivation of its safety input (i.e.: emergency stop button pressed) or cut of its power supply. By default (“ex-factory"), the transmitter restart mode is « **Manual** ».

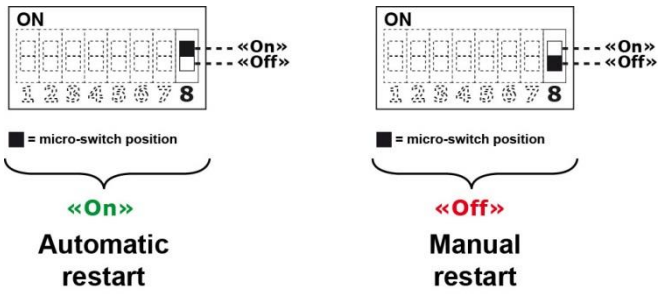
- « **Manual** » restart mode :
  The safety transmitter is manually restarted (radio transmission activated) by pressing on a « Restart » pushbutton following deactivation and activation of its safety input.

- « **Automatic** » restart mode :
  The safety transmitter is automatically restarted (radio transmission activated) following deactivation and activation of its safety input.
  **IMPORTANT :** Do not connect a restart button in this mode (input nb.17 not connected).

This function is configured using **micro-switch No. 8**

**1-** Deactivate the safety input of the transmitter **RSEF** (1)

**2-** Using **micro-switch No. 8**, select the transmitter restart mode : « Automatic » or « Manual » :




**3-** Activate the safety input of the transmitter **RSEF** (2) ; the two indicator lights, **V1** and **V2**, flash alternately to indicate the system is on standby for validation.

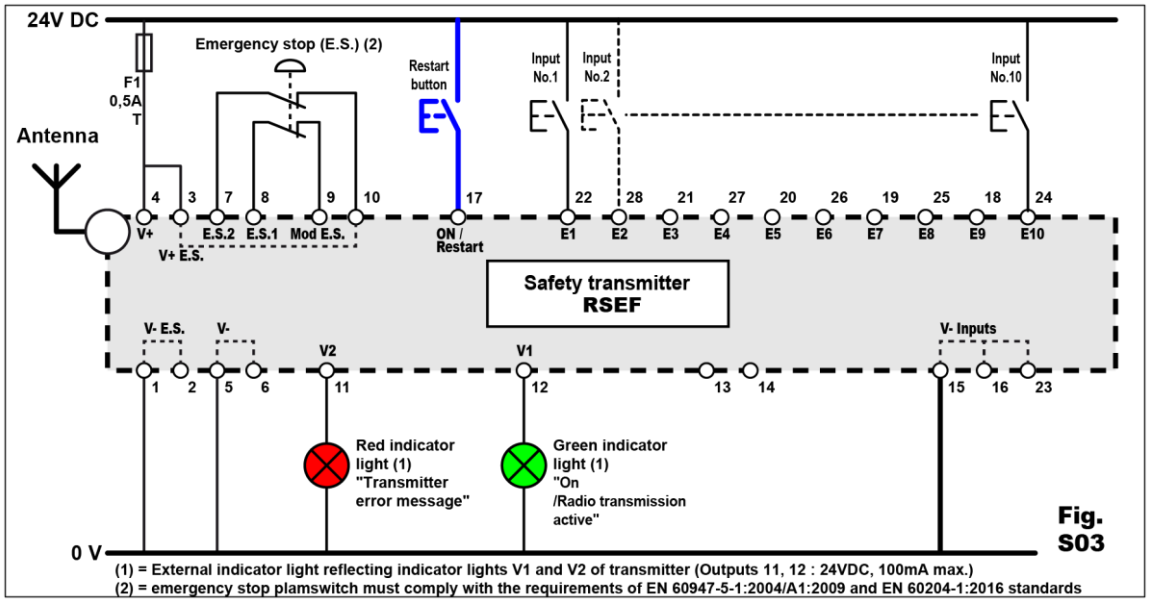
**4-** Press the validation button (**BPV**) ; indicator lights **V1** and **V2** go off.

**5-** To exit this configuration mode, deactivate, then activate the safety input (1)(2).

(1) If an emergency stop palmswitch is wired on this input, the component must be locked.
(2) If an emergency stop palmswitch is wired on this input, the component must be unlocked.

**Wiring diagram with restart button (« manual » restart mode) :**

In the event of deactivation followed by activation of the safety input (emergency stop, for example), the transmitter will only be able to transmit provided the « restart » pushbutton has been pressed.




**Note :**

If the other setting has also been modified during this procedure (as “Radio channel number” or “restart mode”), each modified setting have to be performed one by one.

## 3.2 **RSRG** receiver configuration

### 3.2.1 General principle

The **RSRG** receiver can be set onto one of two following operating modes:

- **Programming mode** or **Configuration mode** this mode triggers the opening of the safety relays.
- **Receiving mode** or **Diagnosis mode** this mode is used for normal operations.

To change the operating modes active the **Configuration Mode input: J1.28-J1.30**

When the **RSRG** receiver is set to **Programming mode**, the serial link RS232 J1.32-J1.34-J1.36 connector allows you to configure the RSRG receiver :

- **with the help of DialogACORN software** use dedicated RSW39 cable to a laptop/PC

Additional support and documentations are available:

- **RS232 protocol instructions** please refer to JAY Electronique
- **DialogACORN software guidelines** please refer to JAY Electronique

The dedicated programming software DialogACORN, is available on JAY Electronique website. The use of such software is protected by a password. Passwords, or RS232 protocol instructions, are only delivered to “level 2” skilled person (a person who was trained by JAY Electronique, and who was authorized to modify RSRG receiver parameters).

### 3.2.2 Safety delay

The “Safety delay” allows you to generate a delay before the deactivation of the safety relays **RS1** and **RS2**.

The purpose of this timer is:

- to indicate a system stop to the equipment so as to manage an action before the complete shutdown
- to keep an immediate start of the safety stop process (to be executed by at the end of the delay)

This timer is activated after an emergency stop signal from the **RSEF** transmitter and also, after a passive stop (radio loss).

**Total Tripping time** = Active stop time or Passive stop time + Safety delay

This timer is not taken into account in the following cases :

- during a local emergency stop (stop pushbutton wired to receiver RSRG **on J1 connector.**
- when using a wired enabling handle (connected to receiver RSRG **on J1 connector.**
- when the power supply voltage disappears
- On a specific error linked to the control of the safety relays

This timer can be set to a value from 0 to 10s (steps of 1s) in Programming mode (see previous section)

**IMPORTANT:** According to Machinery Directive section 4.1.1(EN ISO 13850:2015), all time delays must be determined by the risk assessment of the machine. Please also refer to IEC 60204-1 :2005, 9.2.5.4.2.

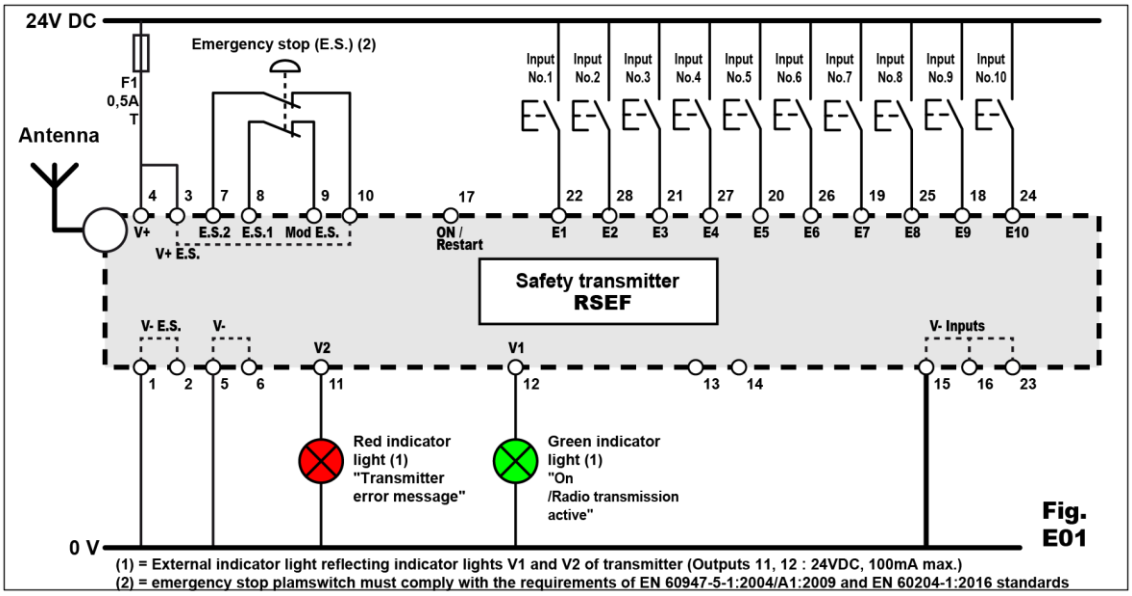
# 4 Wiring the components

## 4.1 Wiring the transmitter **RSEF**

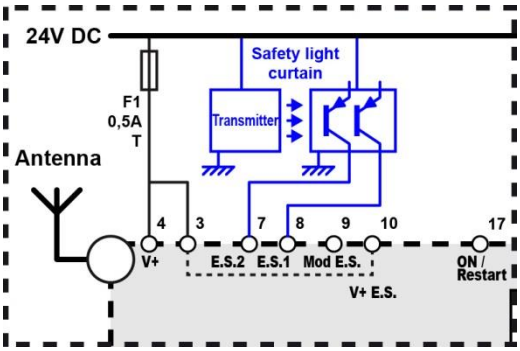
**NOTE 1:** See description of connection terminals in section **4.2.1**.
**NOTE 2:** See correspondence between inputs of transmitter **RSEF** and outputs of receiver **RSRG** in section **2.4.1**.

### 4.1.1 Typical wiring diagram

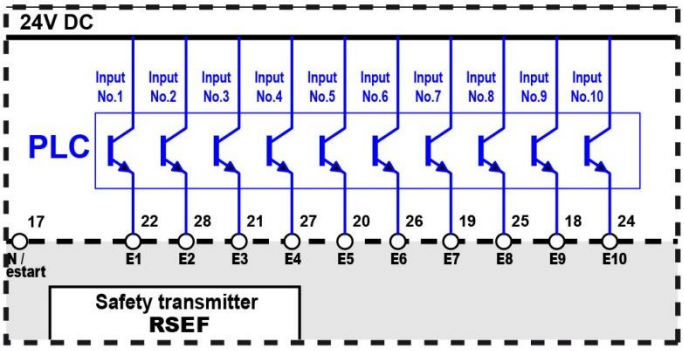
with emergency stop palmswitch connected to safety input and 10 dry-contact inputs (No pushbuttons).




### 4.1.2 Example connection of a safety light curtain on transmitter safety input




### 4.1.3 Example with static inputs (PLC for example)



### 4.1.4 Operation of safety relays RS1-RS2 of receiver **RSRG**

Interruption of the safety stop chain is ensured by safety relays **RS1** and **RS2** (internal to receiver **RSRG**) which control the contacts accessible by board-to-board connector.

The state of relays **RS1** and **RS2** depends on :

- the safety input of the transmitter **RSEF** ,
- the safety input of the receiver **RSRG**(a),
- possible faults detected,
- Possible loss of radio link.
- Possible loss of power supply of safety transmitter or safety receiver.
- Possible enabling handle status (b)

(a)= An external safety stop device can be connected, such as an emergency stop palmswitch, or a gate control device wired to the inputs provided for this purpose on the receiver. The state of these inputs will act directly on relays **RS1** and **RS2**.

(b)= An enabling handle can be wired to the inputs provided for this purpose on the receiver. The state of these inputs will act directly on relays **RS1** and **RS2** and change the receiver operating mode, see chapter Enabling handle : Wiring and operating mode.

### 4.1.5 Monitoring of main contactors

The input connected to terminals **J1.19-21 and J1.24-26** is used to monitor the state of the contactor(s) connected to the **RS1-RS2** safety outputs.

The state of the contactor(s) contact(s) wired on this input must be closed in order to start the receiver **RSRG**.

**IMPORTANT : This monitoring depends on the safety performance level required by the machine.**

### 4.1.6 Enabling handle : Wiring and operating mode

**IMPORTANT : The enabling handle must comply with the requirements of EN 60947-5-1:2004/A1:2009, EN ISO12100 and EN 60204-1:2016 standards.**

The receiver RSRG is provided with six inputs dedicated to the wiring of an enabling handle.

In the case of enabling handle use, four of these inputs will be used for the connection of the double channel enabling device. The two other inputs will be used for detection of the enabling switch.

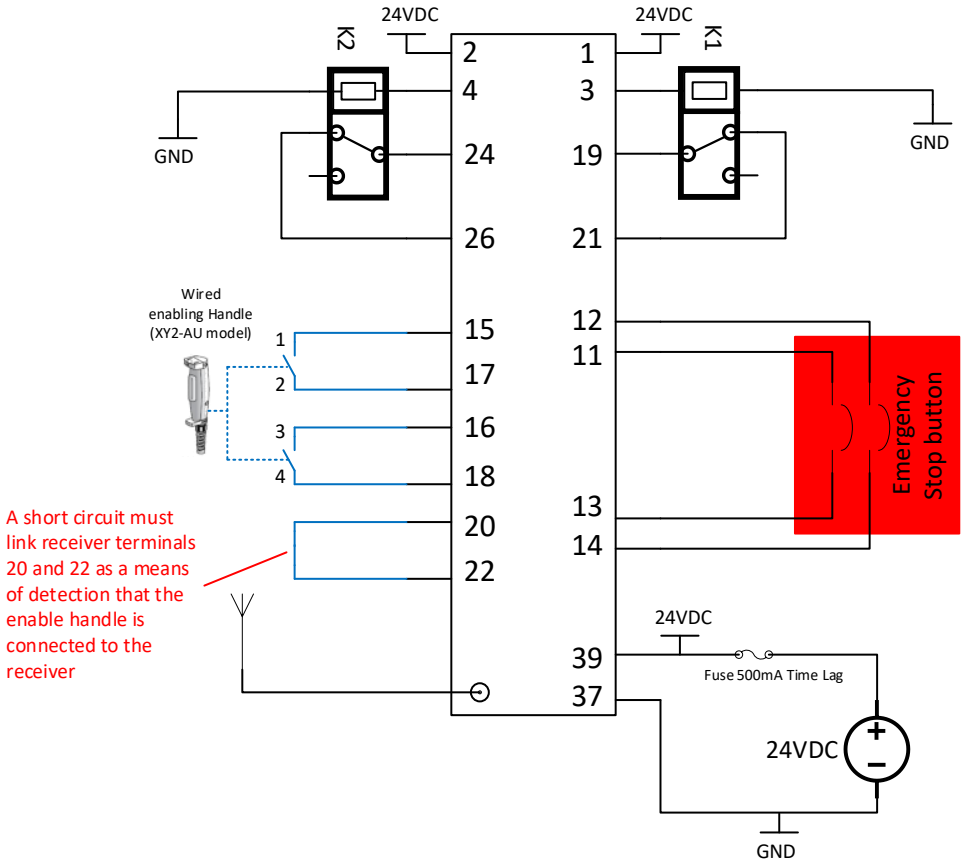
The wireless safety stop function is overwritten by using a dual channel enabling switch.

When the enabling handle is detected, the receiver will reset and the Radio is disabled (The enabling handle has higher priority than the radio mode)

The enabling handle has lower priority than the local emergency stop.

In the event of a faulty enabling device, the safety output relays shall be immediately deactivated.

### 4.1.7 Typical wiring diagram for receiver **RSRG**

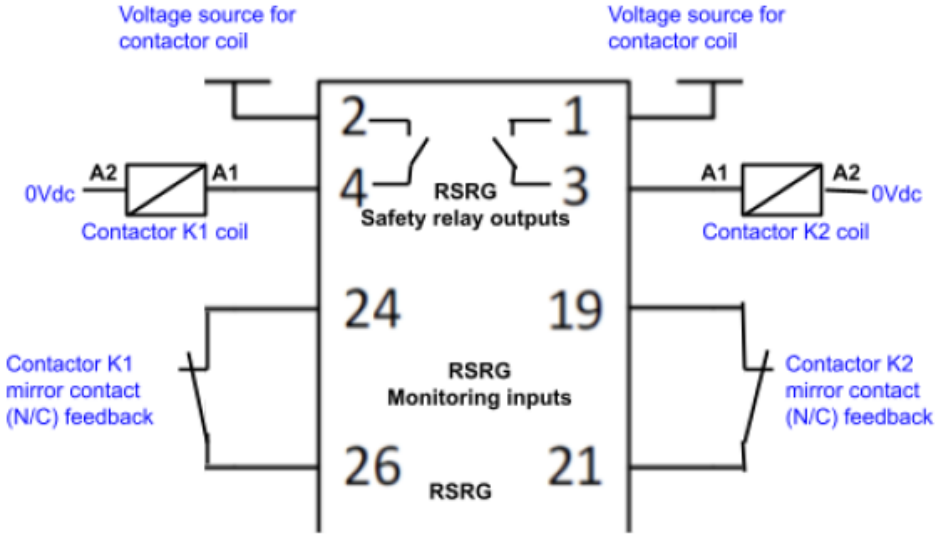



**IMPORTANT : The emergency stop device must comply with the requirements of ISO 13850:2015, IEC 60947-5-5:1997+AMD1:2005+AMD:2016 and IEC 60204-1:2016**

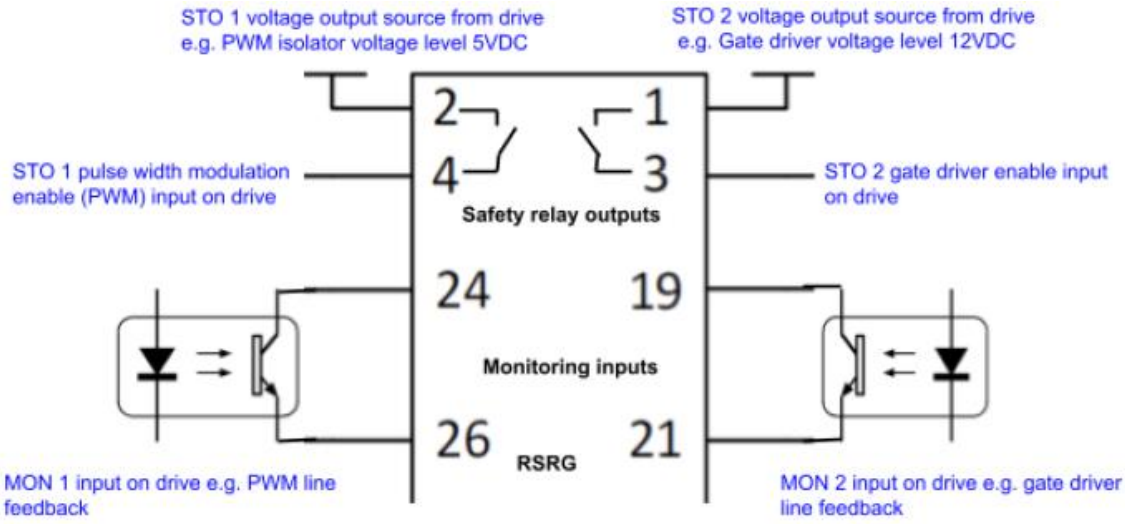
**IMPORTANT : The enabling handle device must feature a three position switching mechanism which complies with the requirements of IEC 60947-5-8:2020 and IEC 60204-1:2016**

### 4.1.8 Example for contactors and STO drives connections

**CONTACTOR CONNECTION:**




**STO DRIVE CONNECTION FOR A DRIVE:**




Terminals 24-26 and 19-21 are classed as safety inputs on the RSRG. The RSRG monitors these inputs temporally and continuously in 1oo2 configuration to provide advanced Diagnostic Coverage on the device subsystem under control (e.g. a pair of contactors, or STO monitoring lines on a STO drive). This enables the device subsystem under control of the RSRG to achieve up to SIL 3 (of IEC 62061) or PL e (of ISO 13849-1).
The fault reaction is to either:

- Prevent energisation of the RSRG safety relays (1-3 & 2-4 will remain open) or
- De-energise the RSRG safety relays after a safety delay time (1-3 & 2-4 will open) if the enabling handle is not connected to the RSRG, or
- De-energise the RSRG safety relays instantaneously (1-3 & 2-4 will open) if the enabling handle is connected to the RSRG.

| Current RS1 and RS2 relay states on the RSRG/Acorn | 19-21 feedback state | 24-26 feedback state | Ability to energise both RS1 and RS2 relays | Ability to maintain energisation of both RS1 and RS2 relays |
|---|---|---|---|---|
| Both de-energised (1-3 & 2-4 open) | **Closed / High**<br>Closed / High<br>Open / Low<br>Open / Low | **Closed / High**<br>Open / Low<br>Closed / High<br>Open / Low | **Yes**<br>No*<br>No*<br>No* | |
| Energised for up to 1 second (1-3 & 2-4 closed) | Closed / High<br>Closed / High<br>Open / Low<br>Open / Low | Closed / High<br>Open / Low<br>Closed / High<br>Open / Low | | Yes<br>Yes<br>Yes<br>Yes |
| Energised beyond 1 second (1-3 & 2-4 closed) | Closed / High<br>Closed / High<br>Open / Low<br>**Open / Low** | Closed / High<br>Open / Low<br>Closed / High<br>**Open / Low** | | No**<br>No**<br>No**<br>**Yes** |
| Continuously energised (1-3 & 2-4 closed) | Closed / High<br>Closed / High<br>Open / Low<br>**Open / Low** | Closed / High<br>Open / Low<br>Closed / High<br>**Open / Low** | | No***<br>No***<br>No***<br>**Yes** |
| ***Feedback fault detection and fault reaction*** | | | | |

*NOTE:*

**If neither feedback signal is closed / high, it shall not be possible to energise either RS1 or RS2. The intention is to detect dangerous failures before start up.*

***If neither the feedback signals goes open / low within 1 second of energising the relays RS1 & RS2, then both RS1 & RS2 shall automatically de-energise following the SDT (safety delay time). In the case of an enabling handle initiating relay energisation, fault detection results in instantaneous, undelayed de-energisation of the relays RS1 and RS2. The intention is to detect dangerous failures just after start up.*

****If during continuous energisation of RS1 or RS2 either of the feedback signals goes momentarily or continuously closed / high, then both RS1 and RS2 shall automatically de-energise following the SDT (safety delay timer). In the case of an enabling handle initiating relay energisation, fault detection results in instantaneous, undelayed de-energisation of the relays RS1 and RS2. The intention is to detect dangerous failures continuously during operation.*

# 5 Instructions for safe installation and commissioning

## 5.1 General information

**Experience has shown that functional reliability basically depends on :**

- the quality of the electrical power supply and protection systems,
- the characteristics of the components connected to the transmitter and receiver,
- the position of the transmission and reception antennas,
- The configuration and wiring of the various components.

## 5.2 RSEF and RSEFBox Transmitter

The installer shall:

- Install the product near the control area.
- Provide, if necessary, a location for a transmitter restart button in order to start the transmitter following a malfunction or following an emergency stop condition.
- Connect a 0.5 amp delay-action fuse protection device in series on input Vin (24V DC) of the transmitter.
- Familiarise yourself with all the characteristics given in the « technical characteristics » appendix.

## 5.3 RSRG Receiver

The installer shall:

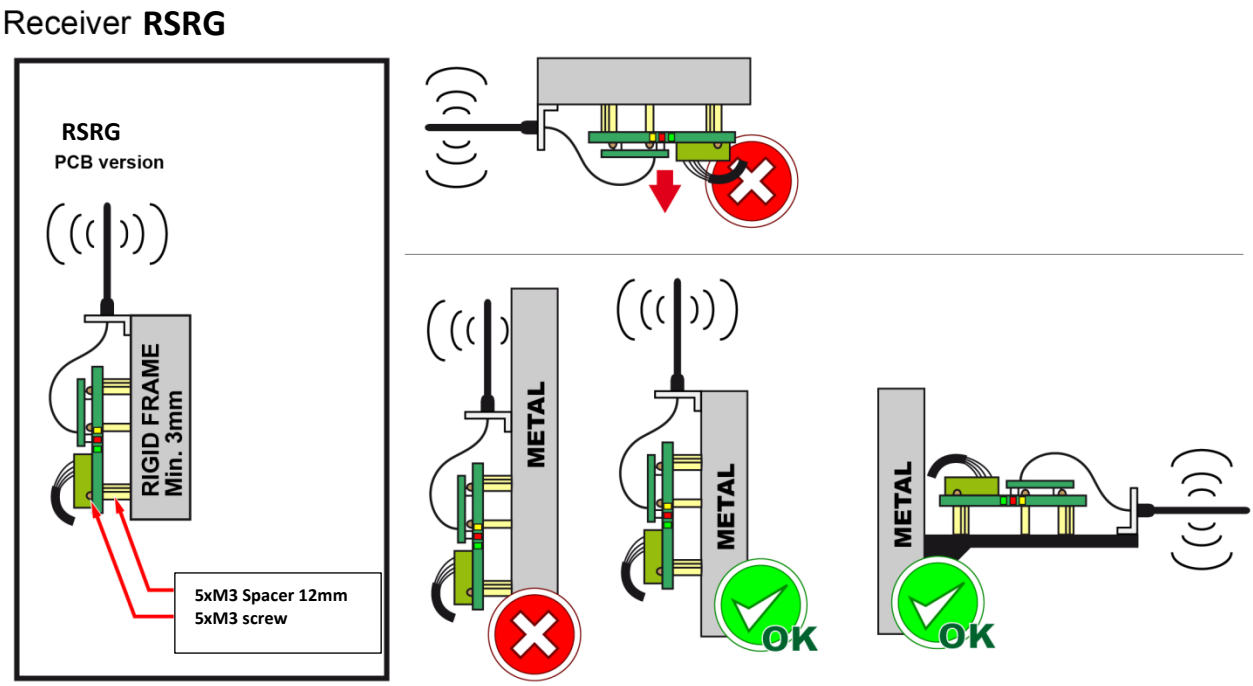
- Respect the sections and characteristics of the cables to be used, see the « technical characteristics » appendix
- Wire a cabled emergency stop device on the front panel of the unit.
- Connect a 50VDC/0.5 amp delay-action fuse protection device in series on input 24V DC of the receiver.
- Familiarise yourself with all the characteristics given in the « technical characteristics » appendix.

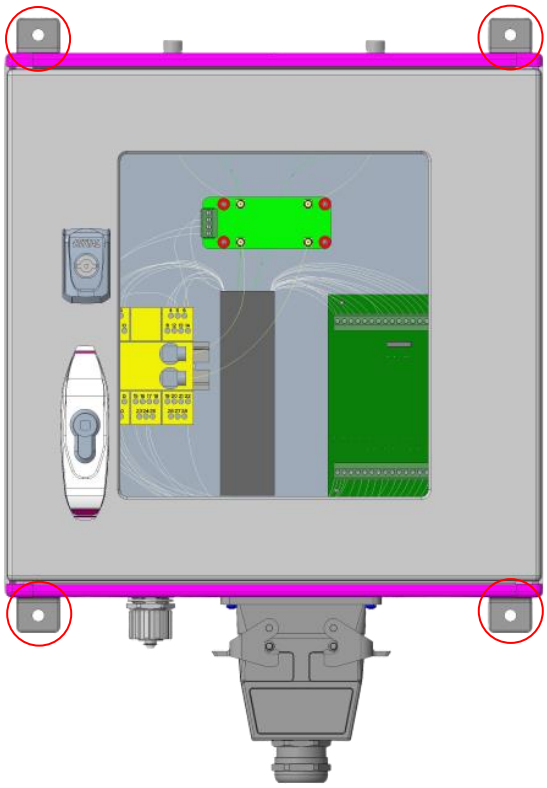
## 5.4 Positioning the components and antennas

Please follow recommendations of installation of the antenna to obtain the best radio signal.

- When installing multiple transmitters side by side, the respective radio transmission antennas should be spaced 70cm at least.
- If a metal electrical housing is used, the antenna should be remote-mounted on the top of the housing.
- If a plastic housing is used, the antenna can be connected directly on the product using the BNC elbow supplied.
- Under no circumstances, the receiver **RSRG** shall be positioned with its electronic components facing down.
- - According to IEC 13849-2, the RSRG (PCB version) must be mounted in an IP54 enclosure. Otherwise, a risk analysis must be carried out to exclude short-circuit faults.
- The receiver **RSRG** (***PCB version***) must be installed on a rigid frame (3 mm thick sheet metal). The PCB must be fastened by 7 brass spacers MF M3xH5.5xL10 screwed into the frame. The PCB must be fastened on these spacers by 7 round head screws M3x6 (diameter of head: 6mm).
- If poor radiowave propagation is observed, for example : closed area, the antenna should be remote-mounted.

**See installation instructions:**





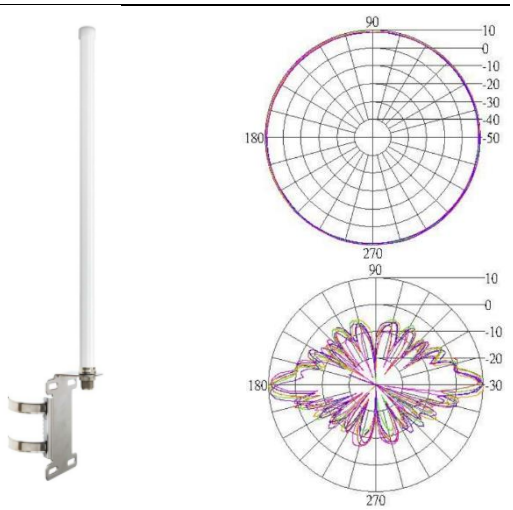
For wall mounting, only possible from outside the enclosure.
from outside the enclosure.
We recommend using 4 screws with a diameter of 8 mm to fix the enclosure to the wall. These screws must be adapted to the characteristics of the wall.

The RSEFBox is equipped of a radio frequency switch. Both antennas must be connected to work properly.
Do not forget to connect the earth to the industrial connector.

## 5.5 RSEFBox Antennas for 2.4 GHz band

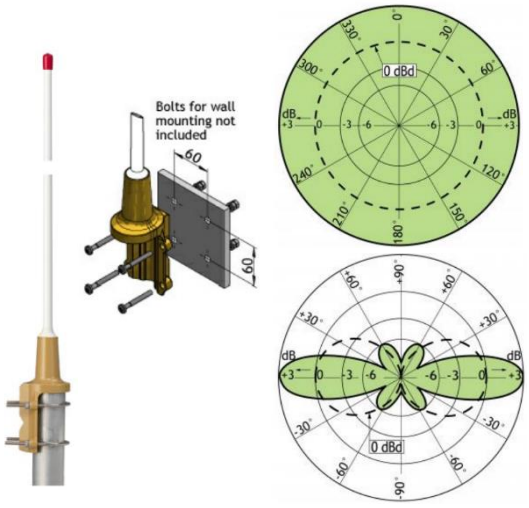
Antenna reference: **VUN101C (supplied by default)**

| Frequency range | 2400 ~ 2500 MHz |
|---|---|
| **Gain** | 9 dBi |
| **Length** | 570mm |
| **Weight** | 285g |
| **Mount Style** | Pole/Wall Mount |
| **Connector** | N Female |
| **Material** | Antenna: Fiberglass<br>Mount: Stainless Steel<br>waterproof |
| **Storage Temperature**<br>**Operating Temperature** | -40 to 80°C<br>-40 to 60°C |



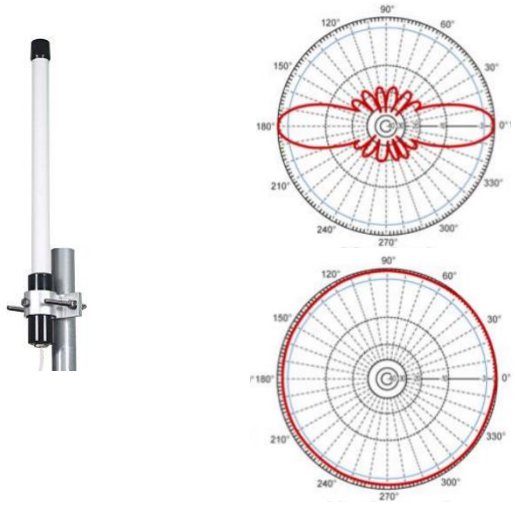

Other Antenna certified: (Only on request)

| Frequency range | 2400 ~ 2600 MHz |
|---|---|
| **Gain** | 5.2 dBi |
| **Length** | 620mm |
| **Weight** | 600g |
| **Mount Style** | Pole/Wall Mount |
| **Connector** | N Female |
| **Material** | Antenna: Fiberglass<br>Mounting bracket: Seawater resistant aluminium, epoxy-coated<br>Clamps: Stainless Steel |
| **Operating Temperature** | -30 to 70°C |




Other Antenna certified: (Only on request)

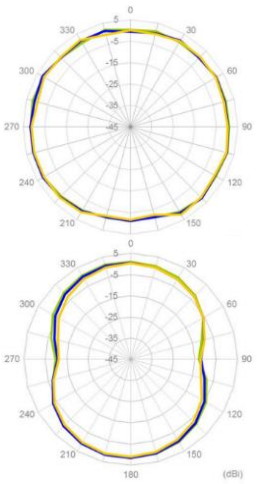
| Frequency range | 2400 ~ 2500 MHz |
|---|---|
| **Gain** | 8 dBi |
| **Length** | 430mm |
| **Weight** | 520g |
| **Mount Style** | Pole/Wall Mount |
| **Connector** | 30cm cable -RP - SMA plug |
| **Material** | Antenna: Fiberglass<br>Mount: Stainless Steel<br>waterproof |
| **Operating Temperature** | -40 to 85°C |



## 5.6 RSRG Antennas for 2.4 GHz band

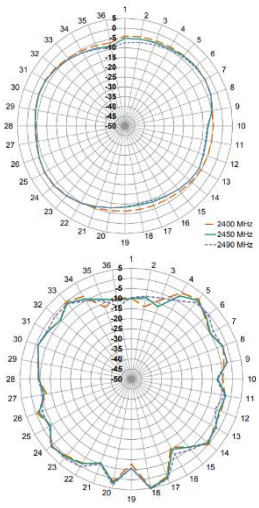
Antenna reference: **(Only on request)**

| Frequency range | 2400 ~ 2500 MHz |
|---|---|
| **Average Gain** | -0.88 dBi |
| **Connector** | RP-SMA(M) |
| **Length straight/90 Degree Hinged** | 84mm/64mm |
| **Weight** | 7g |
| **Mount Style/ Color** | Connector Mount Terminal /White |
| **Material** | Antenna Base: PC & PBT<br>Antenna Cover: TPE |
| **Operation Temperature Storage Temperature** | -40 to 85℃ |



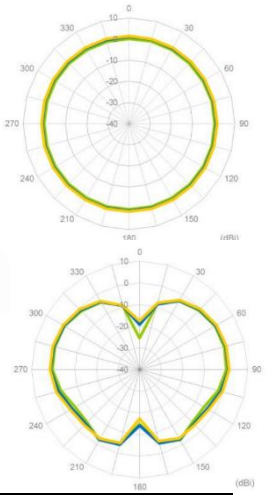
Antenna reference: **(Only on request)**

| Frequency range | 2400 ~ 2500 MHz |
|---|---|
| **Average Gain** | -2.4 dBi |
| **Connector** | RP-SMA(M) |
| **Length straight/90 Degree Hinged** | 85mm/65mm |
| **Weight** | 10g |
| **Mount Style/ Color** | Connector Mount Terminal /Black |
| **Material** | Antenna Base: PC & PBT<br>Antenna Cover: TPE |
| **Operation Temperature Storage Temperature** | -20 to 65℃ |



Antenna reference: **(Only on request)**

| Frequency range | 2400 ~ 2500 MHz |
|---|---|
| **Average Gain** | -2.4 dBi |
| **Connector** | RP-SMA(M) |
| **Length straight/90 Degree Hinged** | 89.5mm |
| **Weight** | 7g |
| **Mount Style/ Color** | Connector Mount Terminal /Black |
| **Material** | Antenna casing: TPE |
| **Operation Temperature Storage Temperature** | -40 to 85℃ |

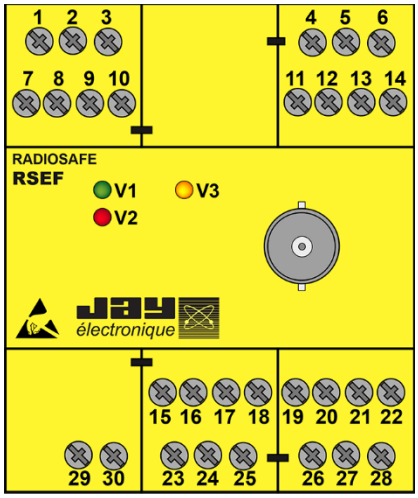


# 6 Troubleshooting, Maintenance, Warranty

## 6.1 Diagnosis - RSEF transmitter

**Messages given by indicator lights V1 and V2**

To determine possible faults, the transmitter has two indicator lights on the front panel, **V1** and **V2**.




### Normal operation :

| Transmitter status | V1 (green) | V2 (red) | Message indicated by indicator lights | Action |
|---|---|---|---|---|
| After transmitter power up | OFF | ON for 1 second, then OFF | Transmitter initialisation phase | / |
| On "manual" restart mode, after transmitter power up or after deactivation/activation of safety input | ON | OFF | On standby for action on restart button (restart mode programmed for « manual ») | - Press restart button to place transmitter in radio transmission mode |
| After transmitter power up or when restart button is pressed (restart function in « auto » mode) | Flash | OFF | RADIO transmission | / |
| In radio channel configuration mode | Flashes indicate number of **units** of new radio channel | Flashes indicate number of **tens** of new radio channel | Radio channel number indication | / |
| | 2 flashes | 2 flashes | Channel inaccessible with 10mW | Change radio channel (40 to 64) |

### Abnormal operation :

| Transmitter status | V1 (green) | V2 (red) | V3 (orange) | Message indicated by indicator lights | Solution |
|---|---|---|---|---|---|
| After transmitter power up | OFF | OFF | OFF | Power supply problem, transmitter not supplied | - Check power supply voltage<br>- Check condition of protection fuse |
| After transmitter power up<br>Or<br>after activation of safety input | OFF | OFF | ON | SIM card read error | - SIM card not present,<br>- SIM card incorrectly inserted or removed from its location<br>- SIM card faulty (must be replaced) |
| | | | | Incorrect wiring of safety input | Check the wiring of safety input between terminals Nb. 7 and Nb. 10. |
| | 4 flashes | 4 flashes | ON | « Input check » function has detected an error | Check the transmitter wiring : NO contacts of inputs (nb 1 to nb 10) and restart button must be in «idle» position when transmitter is powered up. |
| | 6 flashes | 6 flashes | ON | Power failure or faulty emergency stop button | - check the supply voltage<br>- check the security entrance |
| Operating | 5 flashes | 5 flashes | ON | Configuration DIP switches changed | see section 3.1 |
| Operating | 6 flashes | 6 flashes | ON | | |

## 6.2 Receiver **RSRG** : Error messages

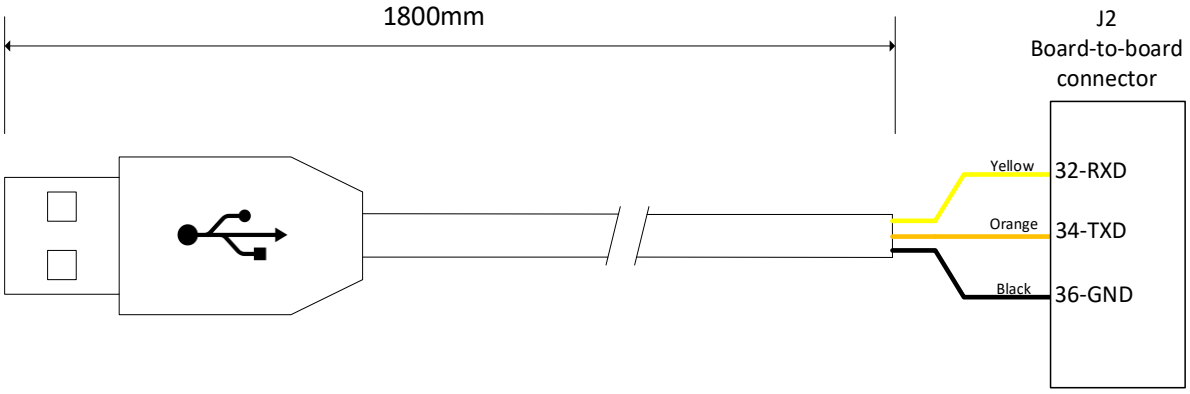
Error messages are given by the RS232 link. The dedicated programming software "**DialogAcorn**" is available on JAY Electronique website. The use of this programming software is protected by a password, this password is only delivered to a skilled person "level 2" (a person who was trained by JAY Electronique, and who is authorized to modify RSRG receiver parameters).

## 6.3 Connect the RSRG to a PC

The link between a PC and a RSRG is made via a serial COM port RS232. You can connect directly the COM port to RSRG or use a RSW39 tool.

The RSW39 tool is a USB to RS232 Serial Converter. This cable requires USB drivers (available free of charge from JAY Electronique or from http://www.ftdichip.com). The drivers are used to create a virtual COM port (VCP). This then allows the user to communicate with the USB interface via a standard PC serial emulation port.

The serial emulation port created can be configured in the dedicated software "**DialogRSRGevice**" (separate documentation)



## 6.4 Servicing

**IMPORTANT** : MAKE SURE TRANSMITTER AND RECEIVER POWER SUPPLIES ARE SWITCHED OFF BEFORE YOU PERFORM ANY SERVICING OPERATION

- The components can only be disassembled by a trained technician in a “controlled” environment; parts must only be replaced by genuine identical spare parts.
- Use only soap-based solutions when cleaning housings; do not use any aggressive cleaning products.

## 6.5 Replacement of **RSEF** transmitter

**Without unwiring the product, proceed as detailed below :**

**1-** Switch off the power supply

**2-** Remove the front panel from the product (Fig.1)

**3-** **Transmitter RSEF :** If the SIM card of the new transmitter does not contain the same information as the SIM card of the defective product, remove the SIM card and install it in the new product. (Fig.2)

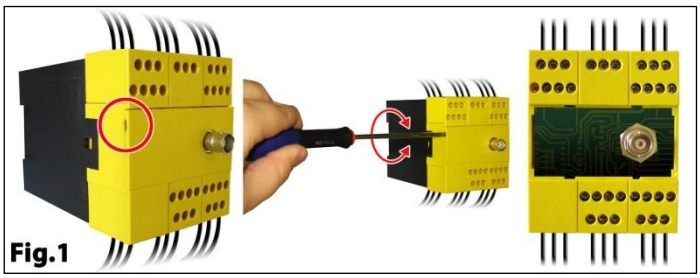
**4-** Disconnect the removable terminals by applying a turning action using a flat tip screwdriver (Fig.3)

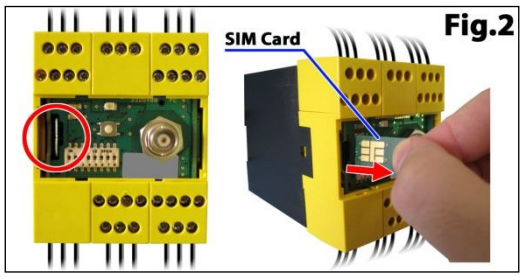
**5-** Re-program the new product identically to the old product (Fig.4)

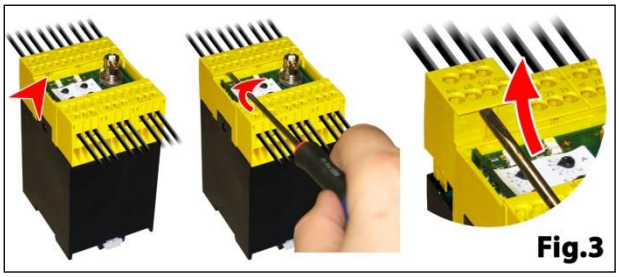
- DIP-switches set identically for transmitter

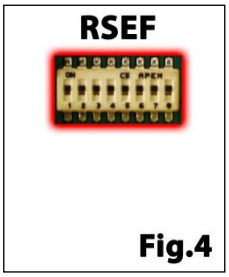
**6-** Connect the removable terminals on the new product (Fig.5).

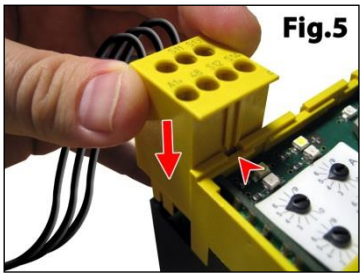
**7-** Connect and supply the new product and proceed with tests.



## 6.6 Inspection and servicing of the receiver RSRG

The receiver can be dismantled only by a trained staff, in a "controlled" environment.
Spare parts can be changed only by identical and original parts.

**Visual inspection should be done during the regular maintenance interval of the machine:**

- Check the antenna connection and check that it is clean and free of any oxidation.
- Check the wiring of the receiver to electrical unit on power supply, machine and wiring of function outputs.
- Check the correct operation of stop circuits, active and passive.
- Once by year, it is necessary to check the function of Emergency stop and safety relays.

## 6.7 Warranty

**All our products are guaranteed two years as of date of shipment**. Any repairs, changes or replacement of a product during the warranty period shall not result in extension of the warranty period.

Limit:

The warranty does not cover defects resulting from:

- transportation,
- false manoeuvres or failure to observe the wiring diagrams when installing and commissioning,
- insufficient monitoring or servicing, or any use not compliant with the specifications given in the technical manual and, as a general rule, any storage conditions, operating or environment conditions (atmospheric, chemical, electrical, mechanical or other) which are inappropriate or not covered by the order.

This warranty shall not apply where any modifications, disassembly or additions have been made by the customer without the written authorisation of JAY Electronique.

The responsibility of the JAY Electronique company during the warranty period is limited to material and construction defects; the warranty covers repair of the product in the JAY Electronique shops or free replacement of parts recognised to be faulty following expert investigation by the JAY Electronique “technical services”. The warranty does not give right to any compensation for damages.

For any dispute relative to a supply or settlement thereof, the TRADE TRIBUNAL OF GRENOBLE shall be solely competent, even where an Appeal may be requested or where a plurality of defendants may exist.

***if the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired***

# 7 Applicable standards and regulations

## 7.1 FCC Rules & Regulations (Federal Communications Commission)

OEM integrators are responsible for ensuring that the end-user has no manual instructions to remove or install module.

Any changes or modifications to this equipment not expressly approved by **JAY Electronique** may cause, harmful interference and void the FCC authorization to operate this equipment.

This equipment complies with FCC's radiation exposure limits set forth for an uncontrolled environment under the following conditions:

1. This equipment should be installed and operated such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and user's/nearby person's body at all times.
2. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

**Authorized antennas:**
See section Antennas.

**Antenna installation requirements:**
see section « Positioning the components and antennas».

**For class B Equipment:**
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help

**FCC ID:**

1. RSEFBox: OQMRSEFBOX
2. RSRG: OQMRSRG

**Warning:**
Those devices must be professionally installed.

## 7.2 IC Regulations (Industry Canada)

The OEM integrators are responsible for ensuring that the end-user has no manual instructions to remove or install module.

This equipment complies with RSS102's radiation exposure limits set forth for an uncontrolled environment under the following conditions:

1. This equipment should be installed and operated such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and user's/nearby person's body at all times.
2. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This radio transmitter (IC: 3393A-RSEFBOX) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

**Authorized antennas:**
See section Antennas.

**Antenna installation requirements:**
See section Positioning the components and antennas.

This device contains licence-exempt receiver that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.; and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

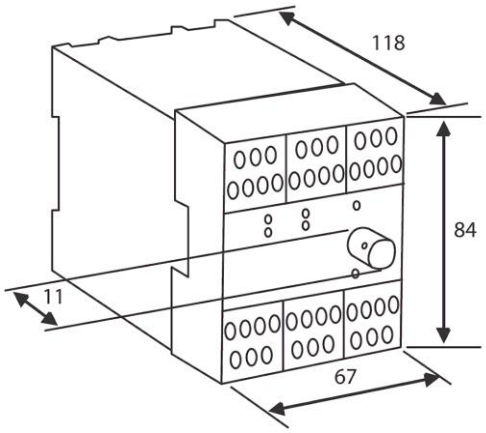
*L'émetteur/récepteur exempt de licence contenu dans le present appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:*

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

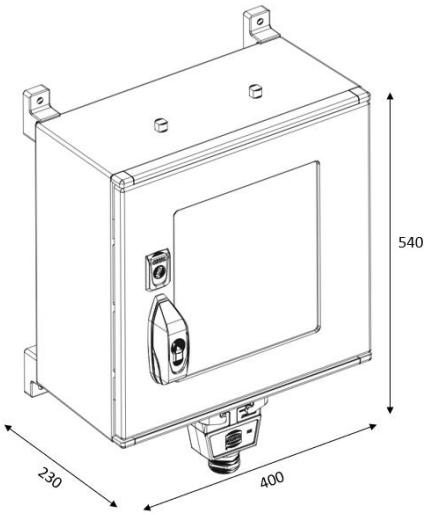
# 8 Appendices

## 8.1 Component dimensions (mm)

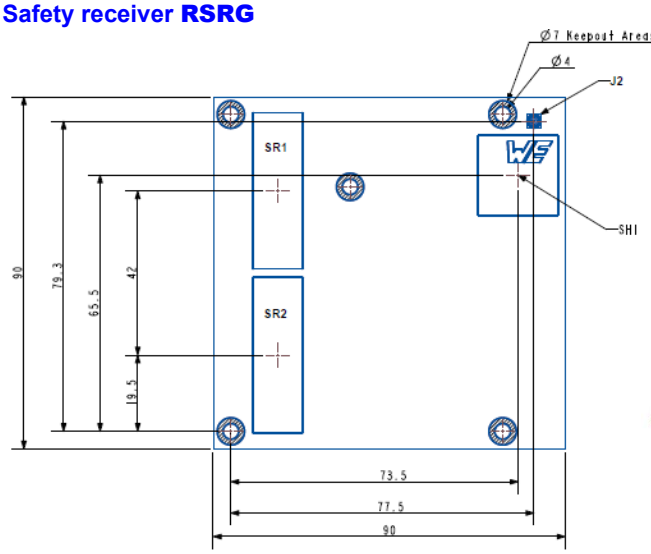
• Safety transmitter **RSEF**

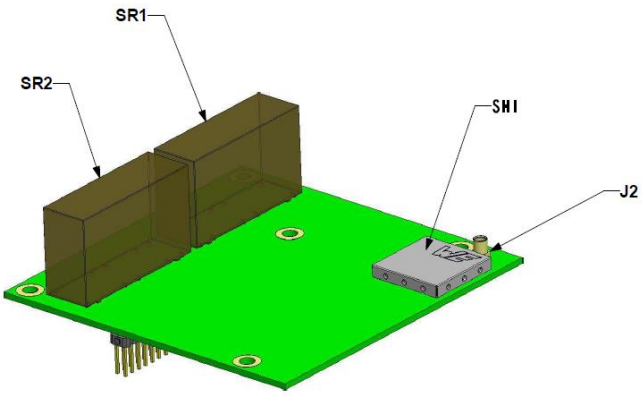


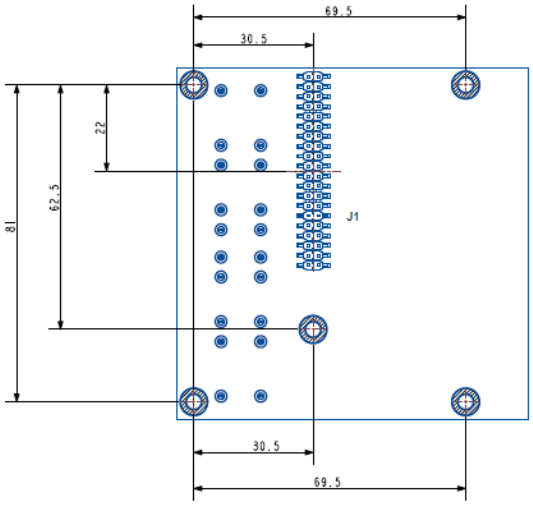

Safety transmitter **RSEFBox**

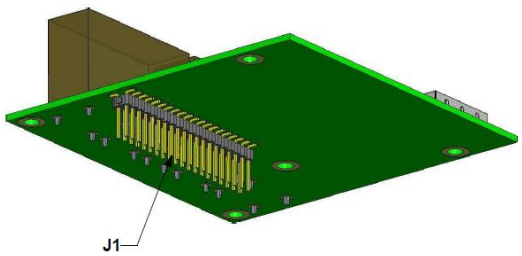



• Safety receiver **RSRG**



## 8.2 Technical characteristics

### 8.2.1 Transmitter RSEF

| **Mechanical and environment withstand characteristics** |
|---|
| **Housing material :** Plastic |
| **Protection index :** IP 40 (Indoor use) Pollution degree: 2<br>**IMPORTANT :** transmitter RSEF must be mounted in a housing with protection degree IP54 min. |
| **Weight :** 500 g |
| **Operating temperature range:** -20 °C to + 50 °C |
| **Storage temperature range:** - 30 °C to + 70 °C |
| **Connection :** Terminal strips (plug-in), screw-type for wires 0.08 mm² to 2.5 mm² |
| **Antenna :** Depending on frequency |
| **Radio characteristics** |
| **Radio transmission frequencies:**<br>64 frequencies, from 2402.00 to 2480.75 MHz |
| **Transmit power:** 10mW up to 500mW (depending on region) |
| **Average range in typical industrial environment (1) :** 1Km up to 4Km (depending on region) |
| **Electrical and functional characteristics** |
| **Power supply voltage :** 24 VDC SELV/PELV +/- 20%<br>In accordance to chapter 9.4 of IEC / UL 61010-1 3rd edition, the product must be powered by class 2 power supply or by limited energy |
| **Max. consumption:** 100 mA (non-loaded static outputs and without any activated input)<br>**Max. consumption protected by fuse :** 500 mA |
| **Number of inputs :** 13<br>- 2 safety inputs (for emergency stop, safety light curtain, etc.)<br>- 10 function inputs<br>- 1 « restart button » input |
| **Low level on input :** dc voltage < 2 V |
| **High level on input :** dc voltage > 3 V |
| **Maximum voltage on an input with no damage:** 30 V |
| **Consumption of an input active at high level:** < 20 mA |
| **Maximum frequency of a signal on an input:** 10 Hz max |
| **Static outputs (not suitable for application requiring a safety level):**<br>**Number and type of outputs:** 2 PNP outputs (Images of indicator lights V1 and V2)<br>**Output voltage :** 24 VDC, 100 mA max. |
| **Indication :** 3 indicator lights |

*(1)= Range varies according to environment conditions of transmitter and of receiver antenna (frameworks, metal partitions, etc.).*

### 8.2.2 Transmitter **RSEFBox**

| **Mechanical and environment withstand characteristics** |
|---|
| **Housing material:** Fibreglass-reinforced unsaturated polyester<br>**Viewing window**: Polycarbonate<br>**Fire protection** corresponding to UL 94-V0<br>**Door opening angle** 130°<br>**Number of locks:** 2 |
| **Protection index:** IP 56 (Outdoor use, wet location) Pollution degree: 4<br>*For cULus certification usage (North America) : Indoor use only.* |
| **Weight :** 10Kg |
| **Operating temperature range:** -20 °C to + 45 °C |
| **Storage temperature range:** - 30 °C to + 70 °C |
| **Connection :** Industrial Connector |
| **Antenna :** Female N type Connector |
| **Radio characteristics** |
| **Radio transmission frequencies:**<br>64 frequencies, from 2402.00 to 2480.75 MHz |
| **Transmit power:** 10mW up to 500mW (depending on region) |
| **Average range in typical industrial environment (1) :** 1Km up to 4Km (depending on region) |
| **Electrical and functional characteristics** |
| **Power supply voltage:** 24 VDC SELV/PELV +/- 20%<br>In accordance to chapter 9.4 of IEC / UL 61010-1 3rd edition, the product must be powered by class 2 power supply or by limited energy |
| **Max. consumption :** 100 mA (non-loaded static outputs and without any activated input)<br>**Max. consumption protected by fuse :** 1A |
| **Number of inputs :** 5<br>- 2 safety inputs (for emergency stop, safety light curtain, etc.)<br>- 2 function inputs<br>- 1 « restart button » input |
| **Low level on input :** dc voltage < 2 V |
| **High level on input :** dc voltage > 3 V |
| **Maximum voltage on an input with no damage :** 55 VDC |
| **Consumption of an input active at high level :** < 20 mA |
| **Maximum frequency of a signal on an input :** 10 Hz max |
| **Static outputs (not suitable for application requiring a safety level) :**<br>**Number and type of outputs :** 2 PNP outputs (Images of indicator lights V1 and V2)<br>**Output voltage :** 24 VDC, 100 mA max. |
| **Indication :** 3 indicator lights |

*(1)= Range varies according to environment conditions of transmitter and of receiver antenna (frameworks, metal partitions, etc.).*

### 8.2.3 Receiver RSRG

**Mechanical and environment withstand characteristics**

**PCB Weight:** 90 g - Pollution degree: 2

**Operating temperature range:** - 35 °C to + 60 °C.
**IMPORTANT :** When the temperature is below 0°C, make sure there is no condensation to avoid the risk of freezing the contacts of safety relays RS1 and RS2.

**Storage temperature range:** - 30 °C to + 70 °C

**Weight :** 88g

**Connection:**

- **J1: Board-to-board connector 40pins pitch .100" (2,54mm) Surface Mount, .025" (.64mm) Square Double Row, Vertical**
- **J2: MMCX Jack RF connector (Fem)**

**IMPORTANT :** without a risk analysis study, the RSRG PCB must be mounted in a housing with protection degree IP54 min.

**Electrical characteristics**

**Power supply voltage :** 24 VDC SELV/PELV +20% / -15%
In according to chapter 9.4 of IEC / UL 61010-1 3rd edition, the product must be powered by class 2 power supply or by limited energy

**Max. consumption:** 120 mA (non-loaded static outputs)
**Max. consumption protected by fuse :** 500 mA

**Safety relay outputs :**

**Contacts:** 3 NO forcibly guided contacts

**Tripping time (reaction):**

- Local emergency stop reaction time: 60 ms
- Active stop time following activation of transmitter RSEF safety input: 55ms + Safety Delay
- Enabling switch reaction time: 30 ms
- Passive stop time (1) :
  - 300 ms, for emergency stop according to EN 60204-1:2016
    to
  - 2 s, for a safety stop according EN 60204-32:2008 para 9.2.7, If the requirement of the risk analysis allows it
- Safety Delay (1) : - 0 to 10 sec set by step of 1 sec (default 0s)

**Max. switching capacity :**

| | | | | |
|---|---|---|---|---|
| *US/Canada specification according to UL 60947-4-1A* | 2 A 30VDC | Resistive load | SAT 85 °C | 70.000 cycles |
| | | | | |
| *VDE* | 2 A 30 VDC | | | 50.000 cycles |

**Static outputs (not secure) :** **Number and type of outputs :** 5 PNP outputs
**Output voltage :** 24 VDC, 100 mA max.

**Indication :** 5 LED

**Input characteristics:**

- **Isolated "Configuration" Input:**

Low level on input: dc voltage < 4.6 V Receiving mode
High level on input: dc voltage > 9.2 V Programming mode
Consumption: resistive load 3KΩ (depending of voltage -> $I_{IN}$ (mA) = $V_{IN}$ / 3 )

- **Other input: Dry Contact – potential free contact**

$R_{ONmax}$ (On resistance value) = 10Ω
Consumption: 10 mA per input active.

*(1) = The passive stop time and the safety delay can be set with dedicated software**
* The dedicated programming software is available on JAY Electronique website. The use of the programming software is protected by a password, this password is only delivered to a skilled person "level 2" (a person who was trained by JAY Electronique, and who is authorized to modify RSRG receiver parameters).

## 8.3 Environmental data

**Mechanical for RSEF and RSRG:** product fulfils following standards vibrations as requested standards EN 60068-2-6:2008 and EN 60068-2-27:2009.

- 60068.2.6:2008, test FC, 0.7mm peak to peak from 10 to 57Hz 5g from 57 to 150Hz.
- Mechanical shock: 60068.2.27:2009, test Ea. 30g/11ms
- Mechanical bump test: 60068.2.27:2009, test Ea, 10g/16ms

Maximum relative humidity 80 % for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 40 °C

Maximum heights above sea level: 2000m max

Receiver RSRG lifetime: 20 years

## 8.4 Safety related parameters

Tests according to the test principles were conducted. Detailed reports are held in the laboratories files.

Function tests, error simulation, a review of the source code and documents are performed.

List of standards: See the document « Declaration of conformity » of the products.

EN ISO 13849-1:2015 for performance level PLe (Category 4) and EN IEC 62061:2021 for SIL 3 emergency stop function.

### 8.4.1 Characteristic data according to IEC 61508-1 till -7 and EN IEC 62061:2021

The calculation of these values is based on the following assumptions:

- Number of operating days per year: dop = 365d
- Number of operating hours per day: hop = 24h
- Operating frequency: 1/h

| Product | Parameters | Results |
|---|---|---|
| **Transmitter RSEF**<br>**Transmitter RSEFBox**<br>  | Safety integrity level | SIL 3 |
| | PFH[1/h] | 1.6E-09 |
| | Proof Test Interval T1 | 20 years |

| Product | Parameters | Results |
|---|---|---|
| **Receiver RSRG**<br>  | Safety integrity level | SIL 3 |
| | PFH[1/h] | 1.07E-09 |
| | SFF | 98.68% |
| | Proof Test Interval T1 | 20 years |
| | Type | B |
| | Safe state | Open of at least one of both safety relays |

Other case.
The calculation of these values is based on the following assumptions:

- Number of operating days per year: dop = 365d
- Number of operating hours per day: hop = 24h
- Operating frequency: 4/h

| Product | Parameters | Results |
|---|---|---|
| **Receiver RSRG**  | Safety integrity level | SIL 3 |
| | PFH | 1.30E-09 |
| | SFF | 98.68% |
| | Proof Test Interval T1 | 20 years |
| | Type | B |
| | Safe state | Open of at least one of both safety relays |

### 8.4.2 Characteristic data according to EN ISO 13849-1:2015

The calculation of these values is based on the following assumptions:

- Number of operating days per year: dop = 365d
- Number of operating hours per day: hop = 24h
- Operating frequency: 1/h

| Product | Parameters | Results |
|---|---|---|
| **Transmitter RSEF**<br>**Transmitter RSEFBox**  | Performance level | PL e |
| | Category | 4 |
| | MTTFD | 186 years |
| | Diagnostic Coverage DC | 98% |

| Product | Parameters | Results |
|---|---|---|
| **Receiver RSRG**  | Performance level | PL e |
| | Category | 4 |
| | MTTFD | 147.86 years |
| | Diagnostic Coverage DC | 99% |
| | CCF | 80% |

Other case.
The calculation of these values is based on the following assumptions:

- Number of operating days per year: dop = 365d
- Number of operating hours per day: hop = 24h
- Operating frequency: 4/h

| Product | Parameters | Results |
|---|---|---|
| **Receiver RSRG**  | Performance level | PL e |
| | Category | 4 |
| | MTTFD | 50.24 years |
| | Diagnostic Coverage DC | 99% |
| | CCF | 80% |

## 8.5 RSEF Transmitter case thermal capability

Power supply, plus any input or output, 24VDC power supply, Pmaximum = 18watts.

## 8.6 Miscellaneous

### 8.6.1 Residual risks

The product being an element of the equipment, a risk analysis of the concerned application will allow to estimate these residual risks.

### 8.6.2 Forseeable misuse

**Polarity inversions of the safety transmitter or safety receiver power supply :** *no starting up of products.*

**Other misuse of the safety transmitter RSEF :** *see troubleshooting guidelines in Section 7.1.*

**Other misuse of the safety receiver RSRG** : *see troubleshooting guidelines in Section 7.2.*

### 8.6.3 Waste recycling and management

When the unit has reached the end of its service life, be sure to dispose of it appropriately. The unit can be disposed of in a specific waste collection centre as organised by the local authorities, or it can be turned over to a distributor who will handle proper disposal of the unit.

Electronic waste sorting will prevent possible negative impact on the environment resulting from inappropriate elimination of electronic waste and will allow proper processing and recycling of the materials forming the unit, representing significant savings in terms of energy and resources.

### 8.6.4 Products references

See the sales documentation of the product.

### 8.6.5 Warning, avoid any mutual disturbance

Be certain that the wireless System doesn't disturb other Systems and that it is not being disturbed itself by other Systems.

Use different codes and different frequencies.

### 8.6.6 Countries limitation of the use

See ERC/REC 70-03 for eventual limitation of the use of Annex 1 Band i (Non- Specific SRDs) 2400-2483.5 MHz.

### 8.6.7 Manufacturer information


**Manufacturer and plant:**
**JAY électronique**
ZAC la Bâtie, rue Champrond
F38334 SAINT ISMIER cedex

**Tel:** +33 (0)4 76 41 44 00

**www.jay-electronique.com**

# 9 Declaration of conformity

## DECLARATION UE DE CONFORMITE
## ORIGINAL

FR

Le fabricant :

*JAY Electronique*
*ZAC la Bâtie, rue Champrond*
*38334 ST ISMIER Cedex*
*FRANCE*

Déclare que pour l'émetteur suivant :

**Série RS**
**RSEFxx-x**
**& RSDxBxxxxxxxx-1**

Est en conformité aux exigences des directives suivantes et que cette conformité a été vérifiée selon les normes suivantes :

| Directives | Normes Harmonisées & Autres normes |
|---|---|
| **DIRECTIVE 2006/42/CE DU PARLEMENT EUROPÉEN ET DU CONSEIL**<br>du 17 mai 2006 relative aux machines et modifiant la directive 95/16/CE | *EN ISO 13849-1 :2015 Exigences pour le niveau de performance PL e (Catégorie 4)*<br>*EN 61508-1-7 :2010 Exigences pour le SIL 3*<br>*EN IEC 62061 :2021 Exigences pour le SIL 3*<br>*UL 1998 :2013*<br>*EN 60204-1 :2018*<br>*EN 60204-32 :2008* |
| Déclaration individuelle de conformité<br><br>Preuve de conformité | La fonction d'arrêt d'urgence sans fil (arrêt de catégorie 0 ou catégorie 1), la fonction d'arrêt d'urgence filaire (arrêt catégorie 0) et la poignée de validation (arrêt de catégorie 0) du RSRD ou RSRG peuvent être utilisées dans des applications jusqu'à la Catégorie 4 (PL e) selon EN ISO 13849-1 :2015 et SIL 3 selon l'EN IEC 62061 :2021 et l'EN 61508-1-7 :2010.<br><br>L'organisme notifié n°0123 :<br><br>***TÜV SÜD Product Service GmbH***<br>***Ridlerstaße 65***<br>***D-80339 München***<br>***Germany***<br><br>A délivré un examen CE de type n° **M6A 035304 0009 Rev02** sur la base de la conformité aux normes. |
| **DIRECTIVE 2014/35/UE DU PARLEMENT EUROPÉEN ET DU CONSEIL**<br>du 26 février 2014 relative à l'harmonisation des législations des États membres concernant la mise à disposition sur le marché du matériel électrique destiné à être employé dans certaines limites de tension | *EN 61010-1 :2010/A1:2019*<br>*EN 62479 :2010*<br>*EN 60204-1 :2018*<br>*EN 60204-32 :2008*<br>*NFPA 79 :2018* |
| **DIRECTIVE 2014/30/UE DU PARLEMENT EUROPÉEN ET DU CONSEIL**<br>du 26 février 2014 relative à l'harmonisation des législations des États membres concernant la compatibilité électromagnétique (refonte) | *EN IEC 62061 :2021*<br>*EN 301 489,3 V2.1.1*<br>*EN 301 489-1 V2.2.3*<br>*EN IEC 61000-6-2 :2019*<br>*EN 61000-6-7 :2015*<br>*EN 61326-3-1:2017*<br>*EN IEC 61326-1:2021* |
| **DIRECTIVE 2014/53/UE DU PARLEMENT EUROPÉEN ET DU CONSEIL**<br>du 16 avril 2014 relative à l'harmonisation des législations des États membres concernant la mise à disposition sur le marché d'équipements radioélectriques et abrogeant la directive 1999/5/CE | *EN 300 220-2 V3.1.1*<br>• *frequency Band 433.05-434.79 MHz*<br>*EN 300 440-2 V2.1.1*<br>• *frequency Band 2400-2483.5 MHz* |
| **DIRECTIVE 2011/65/UE DU PARLEMENT EUROPEEN ET DU CONSEIL**<br>du 8 juin 2011, relative à la limitation de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques (RoHS) | |
| **DIRECTIVE 2012/19/UE DU PARLEMENT EUROPEEN ET DU CONSEIL**<br>du 4 juillet 2012, relative aux déchets d'équipements électriques et électroniques (DEEE) | |

Il est important que le produit soit soumis à une installation, une maintenance et une utilisation correctes conformément à sa destination, aux réglementations et normes applicables, aux instructions du fournisseur, au manuel d'utilisation et aux règles de l'art reconnues.

Nom, Fonction et adresse de la personne autorisée à constituer le dossier technique (2006/42 annexe II §2),
Laurent Damon, Responsable R&D - JAY Electronique ZAC la Bâtie, rue Champrond 38334 St Ismier-France

Fait à : Saint Ismier, FRANCE, 13/05/2024.

Signature:

*354740C*

*Translated from French*

EN

# DECLARATION EU OF CONFORMITY

The manufacturer

***JAY Electronique***
***ZAC la Bâtie, rue Champrond***
***38334 ST ISMIER Cedex***
***FRANCE***

Declares that for the following transmitter set:

## RS Series
## RSEFxx-x
## & RSDxBxxxxxxxx-1

is in conformity with the requirements of the following directives and conformity was checked in accordance with the following standards:

| Directives | Harmonised Standards & Other standards |
|---|---|
| **DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**<br>of 17 May 2006 on machinery, and amending Directive 95/16/EC | *EN ISO 13849-1 :2015 Requirements for performance level PL e (Category 4)*<br>*EN 61508-1-7 :2010 Requirements for SIL 3*<br>*EN IEC 62061 :2021 Requirements for SIL 3*<br>*UL 1998 :2013*<br>*EN 60204-1 :2018*<br>*EN 60204-32 :2008* |
| Individual declaration of conformity | The wireless safety stop (stop category 0 or 1), the local emergency stop (stop category 0) and enabling switch function (stop category 0) of RSRD or RSRG equipments can be used in applications up to Category 4 (PLe) according to EN ISO 13849-1 :2015 and SIL 3 according to EN IEC 62061 :2021 and EN 61508-1-7 :2010. |
| Conformity evidence | The notified body No. 0123:<br><br>***TÜV SÜD Porduct Service GmbH***<br>***Ridmerstraße 65***<br>***D-80339 München***<br>***Germany***<br><br>Has issued an EC-Type examination n° **M6A 035304 0009 Rev02** reflecting compliance with the standards. |
| **DIRECTIVE 2014/35/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**<br>of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits | *EN 61010-1 :2010/A1 :2019*<br>*EN 62479 :2010*<br>*EN 60204-1 :2018*<br>*EN 60204-32 :2008*<br>*NFPA 79 :2018* |
| **DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**<br>of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast) | *EN IEC 62061 :2021*<br>*EN 301 489,3 V2.1.1*<br>*EN 301 489-1 V2.2.3*<br>*EN IEC 61000-6-2 :2019*<br>*EN 61000-6-7 :2015*<br>*EN 61326-3-1:2017*<br>*EN IEC 61326-1:2021* |
| **DIRECTIVE 2014/53/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**<br>of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC | *EN 300 220-2 V3.1.1*<br>• *frequency Band 433.05-434.79 MHz*<br>*EN 300 440-2 V2.1.1*<br>• *frequency Band 2400-2483.5 MHz* |
| **DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**<br>of 8 June 2011 related to the limitation of use of certain dangerous substances in electrical and electronic equipment (RoHS) | |
| **DIRECTIVE 2012/19/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**<br>of 4 July 2012 related to electrical and electronic equipment waste (WEEE) | |

It is important that the component is subject to correct installation, maintenance and use conforming to its intended purpose, to the applicable regulations and standards, to the supplier's instructions, user manual and to the accepted rules of the art.

Name, function and address of the person authorised to compile the technical file:
Laurent Damon, R&D Manager - JAY électronique ZAC la Bâtie, rue Champrond 38334 St Ismier-France

Issued at: Saint Ismier, FRANCE, 2024/05/13.

Signature: *signed on original*

*354740C*

# DECLARATION UE DE CONFORMITE
# ORIGINAL

FR

Le fabricant :

*JAY électronique*
*ZAC la Bâtie, rue Champrond*
*38334 ST ISMIER Cedex*
*FRANCE*

Déclare que pour le récepteur suivant :

## Série RS
## RSRGxxxx-x

Est en conformité aux exigences des directives suivantes et que cette conformité a été vérifiée selon les normes suivantes :

| Directives | Normes Harmonisées & Autres normes |
|---|---|
| **DIRECTIVE 2006/42/CE DU PARLEMENT EUROPÉEN ET DU CONSEIL**<br>du 17 mai 2006 relative aux machines et modifiant la directive 95/16/CE | *EN ISO 13849-1 :2015 Exigences pour le niveau de performance PL e (Catégorie 4)*<br>*EN 61508-1-7 :2010 Exigences pour le SIL 3*<br>*EN IEC 62061 :2021 Exigences pour le SIL 3*<br>*UL 1998 :2013*<br>*IEC 60204-1 :2016*<br>*EN 60204-32 :2008* |
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| **DIRECTIVE 2014/30/UE DU PARLEMENT EUROPÉEN ET DU CONSEIL**<br>du 26 février 2014 relative à l'harmonisation des législations des États membres concernant la compatibilité électromagnétique (refonte) | *EN IEC 62061 : 2021*<br>*EN 301 489,3 V2.1.1*<br>*EN 301 489-1 V2.2.3*<br>*EN IEC 61000-6-2 :2019*<br>*EN 61000-6-7 :2015*<br>*EN 61326-3-1:2017*<br>*EN IEC 61326-1:2021* |
| **DIRECTIVE 2014/53/UE DU PARLEMENT EUROPÉEN ET DU CONSEIL**<br>du 16 avril 2014 relative à l'harmonisation des législations des États membres concernant la mise à disposition sur le marché d'équipements radioélectriques et abrogeant la directive 1999/5/CE | *EN 300 440 V2.1.1*<br>• *frequency Band 2400-2483.5 MHz* |
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Laurent Damon, Responsable Technique - JAY électronique ZAC la Bâtie, rue Champrond 38334 St Ismier-France

Fait à : Saint Ismier, FRANCE, 13/05/2024.

Signature:

*355080A*

*Translated from French*

EN

# DECLARATION EU OF CONFORMITY

The manufacturer

***JAY Electronique***
***ZAC la Bâtie, rue Champrond***
***38334 ST ISMIER Cedex***
***FRANCE***

Declares that for the following receiver set:

## RS Series
## RSRGxxxx-x

is in conformity with the requirements of the following directives and conformity was checked in accordance with the following standards:

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| Individual declaration of conformity<br><br>Conformity evidence | The wireless safety stop (stop category 0 or 1), the local emergency stop (stop category 0) and enabling switch function (stop category 0) of RSRG equipment can be used in applications up to Category 4 (PLe) according to EN ISO 13849-1 :2015 and SIL 3 according to EN IEC 62061 :2021 and EN 61508-1-7 :2010.<br><br>The notified body No. 0123:<br><br>***TÜV SÜD Product Service GmbH***<br>***Ridlerstraße 65***<br>***D-80339 München***<br>***Germany***<br><br>Has issued an EC-Type examination n° **M6A 035304 0009 Rev02** reflecting compliance with the standards. |
| **DIRECTIVE 2014/35/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**<br>of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits | *EN 61010-1 :2010/A1 :2019*<br>*EN IEC 61010-2-201:2018*<br>*EN 62479 :2010*<br>*IEC 60204-1 :2016*<br>*EN 60204-32 :2008*<br>*NFPA 79 :2018* |
| **DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**<br>of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast) | *EN IEC 62061 : 2021*<br>*EN 301 489,3 V2.1.1*<br>*EN 301 489-1 V2.2.3*<br>*EN IEC 61000-6-2 :2019*<br>*EN 61000-6-7 :2015*<br>*EN 61326-3-1:2017*<br>*EN IEC 61326-1:2021* |
| **DIRECTIVE 2014/53/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**<br>of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC | *EN 300 440 V2.1.1*<br>• *frequency Band 2400-2483.5 MHz* |
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Issued at: Saint Ismier, FRANCE, 2024/05/13.

Signature: *signed on original*

*355080A*

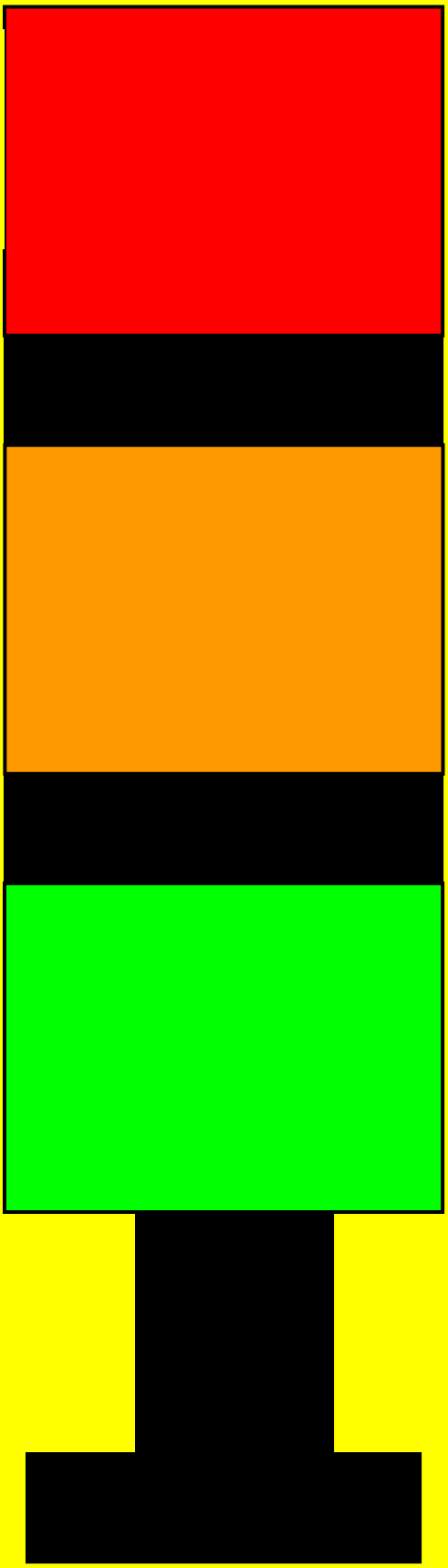
**JAY électronique**
**ZAC la Bâtie, rue Champrond**
**F38334 SAINT ISMIER cedex**

**Tel : +33 (0)4 76 41 44 00**
**www.jay-electronique.com**

support.technique.jay@conductix.com

# Stop

**Machine safety stop triggered**



## Active radio link between transmitter and receiver

**(Receiver indicator light feedback)**

# Ok

**Equipment operating**

**RADIOSAFE (RS)**

Appendix, installation manual 355010

CONDUCTIX wampfler