RS series

Mobile equipment fleet safety stop and commands
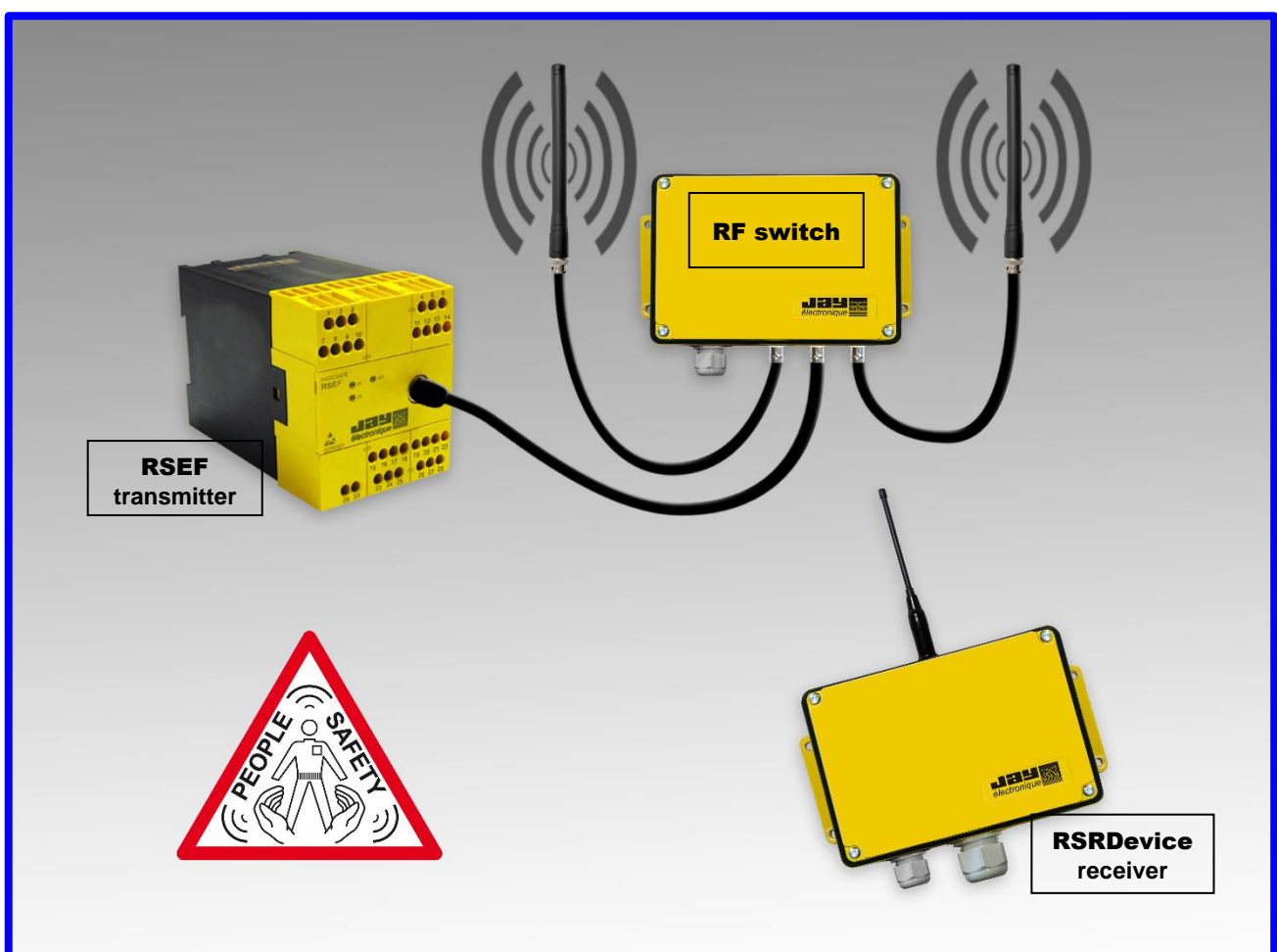
Installation and user manual

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1   Introduction

1.1   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 **RSRDevice** 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 EN 60947-5-5:2016, EN ISO12100 and EN 60204-1:2016 standards.

- All **emergency stop pushbuttons** used for the application, must comply with the requirements of EN 60947-5-5:2016 and EN 60204-1:2016 standards

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)

- IEC 62061:2005+AC:2010 + A1:2013+A2:2015 for SIL 3

1.2　Components identification

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

References	Elements	Visuals	Notes
RSEF41-1 (434 MHz) RSEF91-1 (915 MHz)[1] RSEF80-1 (869 MHz) RSEFJ0-1 (920 MHz)[2]	**RSEF transmitter**		Supplied with: - 1x SIM card (inserted inside) - 1x VUB060 (BNC elbow) - 1x VUA103AM antenna [3] - 1x USB keycard
RSRD4000-2 (434 MHz) RSRD9000-2 (915 MHz) RSRD8000-2 (869 MHz) RSRDJ000-2 (920 MHz)	**RSRDevice receiver**		Supplied with: - 1x VUA001A antenna[4] *By default, 2 cables glands are mounted (M16 and M25)*
RSW39	Serial 232 to USB cable		*One piece can be sufficient for all RSRDevice manual maintenance operations*
VUB090 (for RSEF) VUB095 (for Jump)	**RF switch**		Supplied with: - 1x 2-m synchro 3-wire cable welded internally
VUB202	2-meter coaxial cable		*Typically used for:* - *RSEF/RFswitch connection* - *Jump/RFswitch connection*
JUT0A110 (433 MHz) JUT9A110 (915 MHz) JUTJA110 (920 MHz)	**Jump repeater**		Supplied with: - 1x VUA001A antenna [4] *Also available with an internal battery instead of a 9-28VDC supply (replace letter A by B)*

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.

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[1] Certified according to the FCC IC standard
[2] Certified according to ARIB STD-T108 standard
[3] VUA103BM in 869, 915 MHz and 920 MHz
[4] VUA001B in 869, 915 MHz and 920 MHz

1.3 Products 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 **RSRDevice** receivers:
- An emergency stop in the event of a problem occurring in the installation
- Up to 10 commands (which can be combined)

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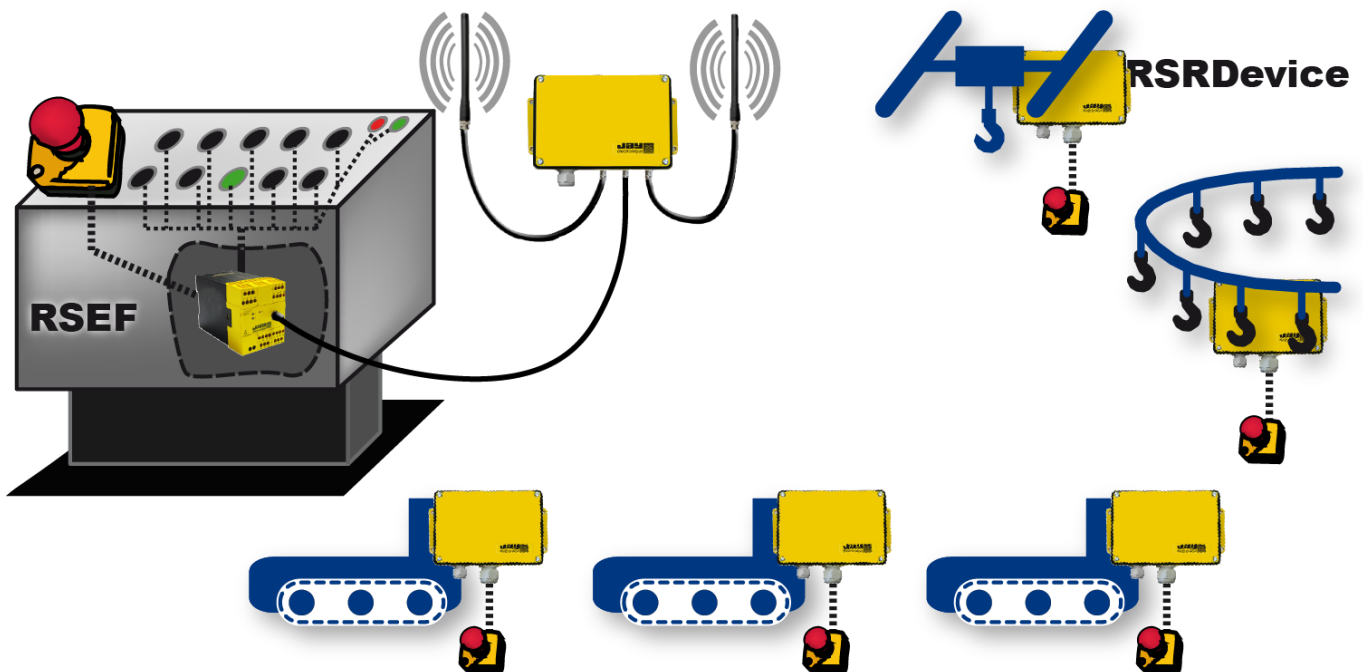
Block diagram showing a fixed control panel equipped with RSEF and a Radio Frequency Switch and several mobile machines each equipped with RSRDevice

Antennas for RSRDevices 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 RSEF

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 ....:	**Automatic**	(DIP switch 8: up)

Receiver RSRDevice

Safety delay...:	0s	(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, 434 MHz or 915MHz or 920 MHz or 869MHz
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.

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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.
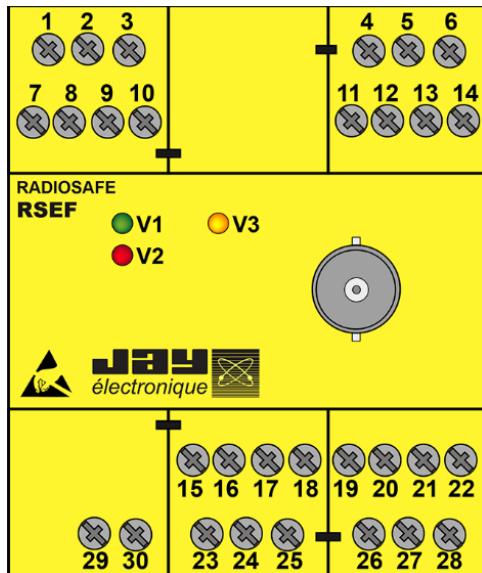
Terminal	Function		Terminal	Function
1	V- E.S.		17	On / Restart button input
2	V- E.S.		18	Input No.9
3	V+ E.S.			
4	V+ RSEF			
5	V- RSEF		19	Input No.7
6	V- RSEF		20	Input No.5
7	E.S. contact 1		21	Input No.3
8	E.S. contact 2		22	Input No.1
9	E.S. mode		23	V- Input
10	V+ E.S.		24	Input No.10
11	Ind. light **V2** output		25	Input No.8
12	Ind. light **V1** output		26	Input No.6
13	Not used		27	Input No.4
14	Not used		28	Input No.2
15	V- Inputs		29	0 V of module VUB090
16	V- Inputs		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)

24V DC

Antenna

F1
0,5A
T

Emergency stop (E.S.) (2)

Restart PB

Input No. 1

4	3	7	8	9	10	17	22	28	21	27	20	26	19	25	18	24
V+		E.S.2	E.S.1	Mod E.S.		ON Restart	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10

V+ E.S.

Safety transmitter RSEF

V- E.S.   V-   V2   V1   V- Inputs

1	2	5	6	11	12	13	14	15	16	23

Red indicator light (1) "Transmitter error message"

Green indicator light (1) "On /Radio transmission active"

Fig. S01

0 V

(1) = External indicator light reflecting indicator lights V1 and V2 of transmitter (Outputs 11,12 : 24VDC, 100mA max.)
(2) = emergency stop plamswitch must comply with the requirements of EN 60947-5-1:2004/A1:2009 and EN 60204-1:2016 standards

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 **RSRDevice**.

2.4 RSRDevice safety receiver: terminal blocks
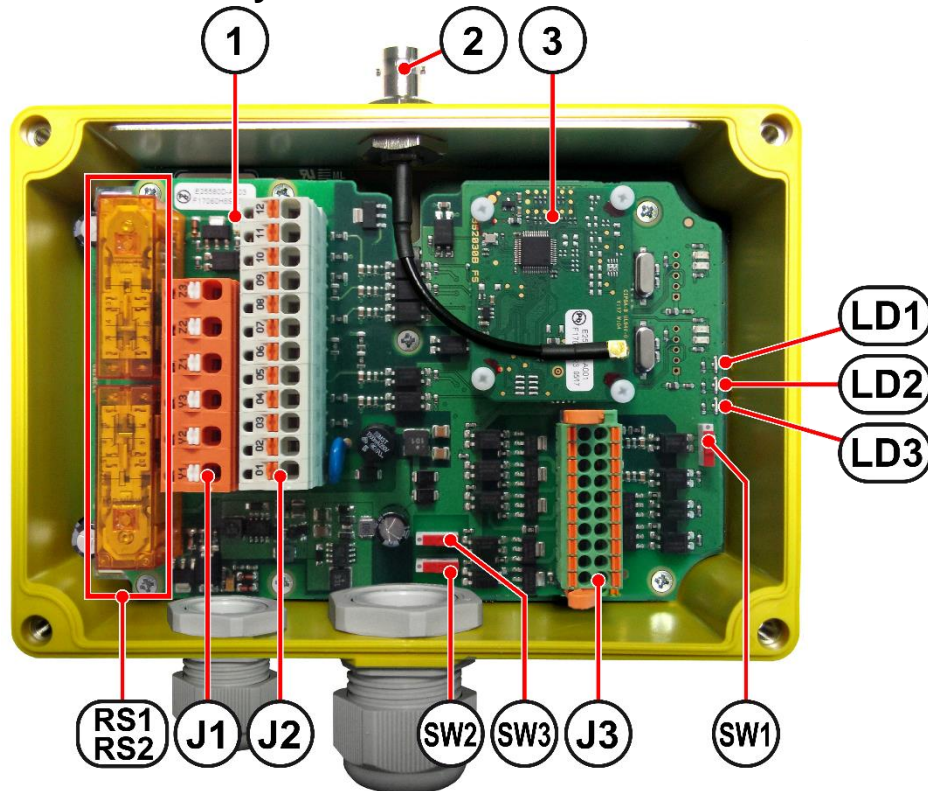
RS1&RS2	Safety relays
1	Red indicator light: status of safety relays **RS1** and **RS2**
2	Antenna BNC / antenna extension connector
3	Radio module
LD1	Yellow indicator light : Transceiver power supply OK
LD2	Red indicator light: status of safety relays **RS1** and **RS2**
LD3	Green indicator light : Radio reception + Diagnostics

J1 Terminal block : Safety outputs

Terminal	Function
Y1	1st safety output (NO contact)
Z3	
Y2	2nd safety output (NO contact)
Z2	
Y3	3rd safety output (NO contact)
Z1	

J2 Terminal block : Safety inputs and power supply

Terminal	Function
12	Input for Enabling Handle Detection
11	
10	Input 2 for Enabling Handle
09	
08	Input 1 for Enabling Handle
07	
06	Input 2 for emergency stop or safety light curtain
05	
04	Input 1 for emergency stop or safety light curtain
03	
02	**Power supply (-): 0 V**
01	**Power supply (+): 24 VDC**

SW3/SW2 : Voltage reference for static outputs

0 ← → 1	**Position "0":** based on RSRDevice power supply for 24VDC and 0V (terminals 01-02 on J2)
	Position "1": based on external voltage reference V+ and V- (terminals 15-16 on J3)

SW1 : Operating mode

1 ↑ ↓ 0	**Position "1":** Normal operation (Diagnosis mode)
	Position "0": Programming (Configuration mode)

J3 Terminal block : Communication, static sutputs and indicators

Function	Terminals			Function
RXD RS232	1		2	not used / not connected
TXD RS232	3		4	Configuration INPUT
GND	5		6	Configuration GND
Error message (**red** indicator light) **+**	7		8	**-** Error message (**red** indicator light)
Radio reception status (**orange** indicator light) **+**	9		10	**-** Radio reception status (**orange** indicator light)
Machine operating status (**green** indic. light) **+**	11		12	**-** Machine operating status (**green** indic. light)
Input for main contactor monitoring function	13		14	Input for main contactor monitoring function
Optional voltage reference for outputs (**V+**)	15		16	(**V-**) Optional voltage reference for outputs
Output **nb.1**	17		18	Output **nb.2**
Output **nb.3**	19		20	Output **nb.4**

2.4.1 Assignment of RSEF inputs to RSRDevice static outputs

		Assignment by default of RSRDevice static outputs (J3 terminals)			
		17	18	19	20
RSEF inputs	E1	X			
	E2		X		
	E3			X	
	E4				X

For any change in output assignements, please refer to section 3.2.1 related to RSRDevice software configuration (10 inputs and several events can be assigned and combined onto the 4 ouputs of the receiver).

2.4.2 Voltage reference of RSRDevice static outputs

There are two options for the output voltage of the static outputs: it is possible to isolate all the outputs from the RSRDevice auxiliary supply. In all cases, the maximum output current shall be 100 mA per output.

Isolated mode:
SW3 and **SW2** must be in position "**1**"
A continuous auxiliary supply voltage must be applied between points 15-16 of J3.
This supply voltage must be between 5-30VDC (input 15: V+ / input16: V- / Insulation voltage: > 4400 VRMS)

Non isolated mode :
SW3 and **SW2** must be in position "**0**".
Terminal points 15-16 of J3 must be unconnected.
The voltage reference of the ouputs is identical to the power supply voltage of the RSRDevice receiver.

2.5   Receiver test wiring (independent from any application)
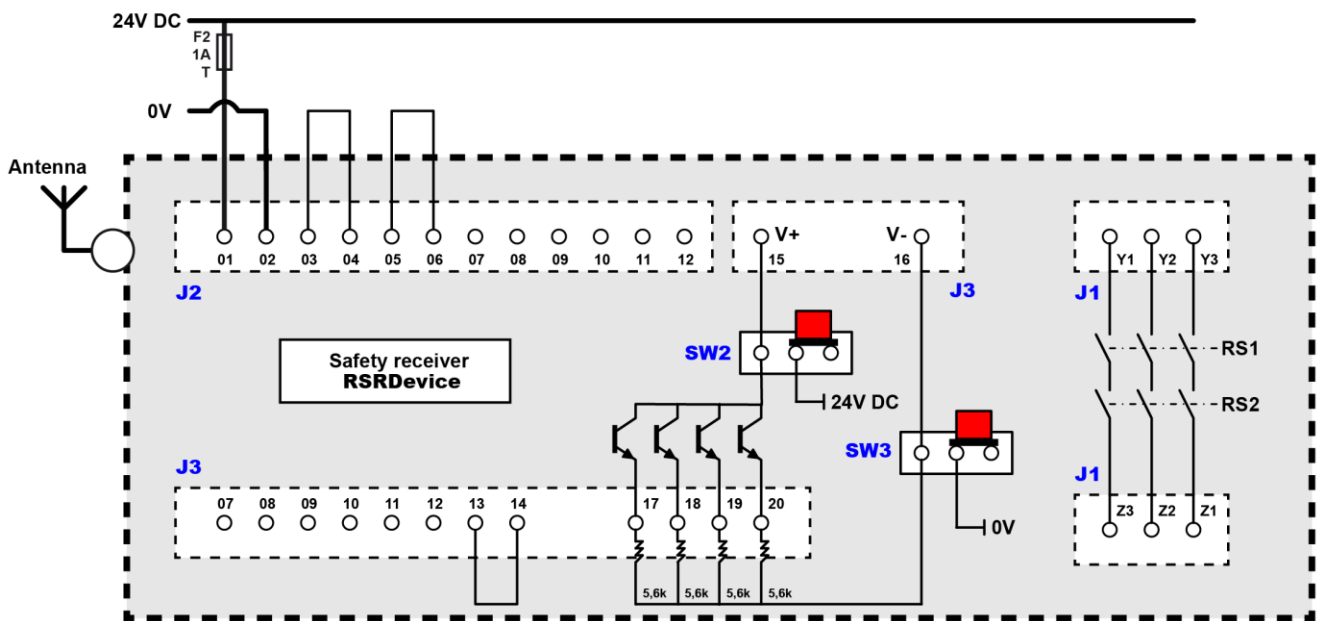
Fig. S05-test

This wiring aims at testing a command output and an « emergency stop » safety input :

- **Step 1**   Prepare a stabilized power supply, 24VDC (+/- 20 %) 500 mA minimum

- **Step 2**   Wire the receiver as follows :
    - Shunt the terminal pairs **J2**[03-04], **J2**[05-06] and **J3**[13-14]
    - Connect the +24VDC of the stabilized power supply to terminals **J2**[1]
    - Connect the ground of the power supply to the terminal **J2**[2]

- **Step 3**   Switch on the receiver power supply.
    Yellow 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.

2.6 Global system test before installation

- **Step A**   Switch on the **RSEF** transmitter and the **RSRDevice** receiver

  The **RSRDevice** receiver should be ready to receive the **RSEF** transmitter frame:
  - ⇨ the indicator light **LD1** 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 **RSRDevice** 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

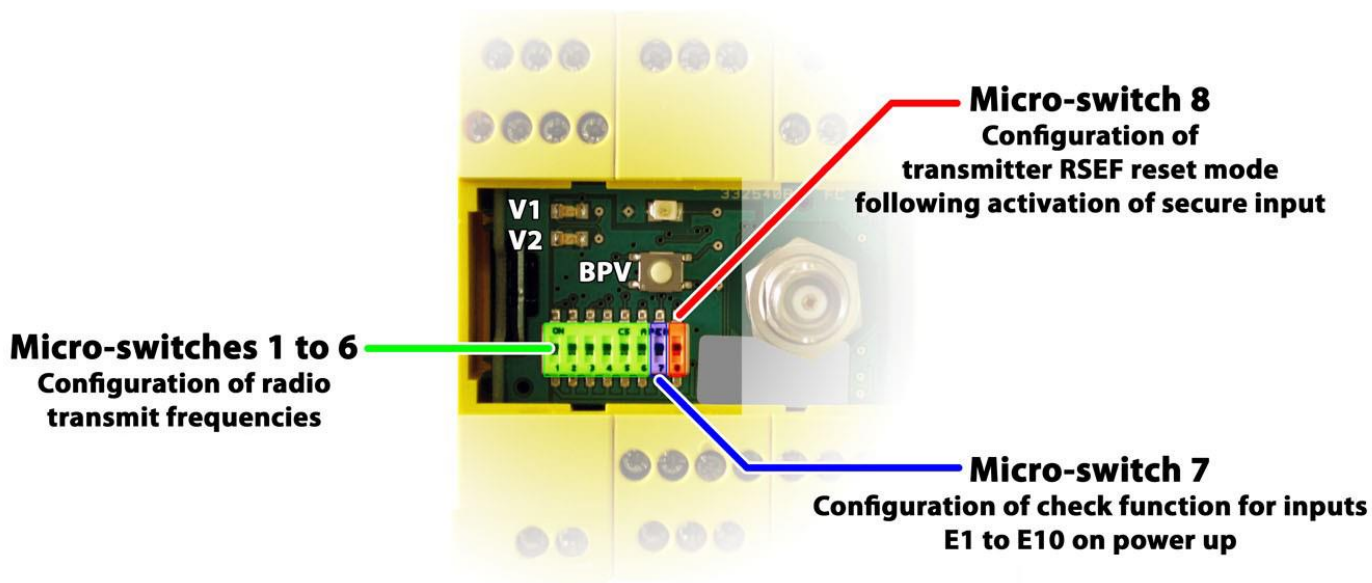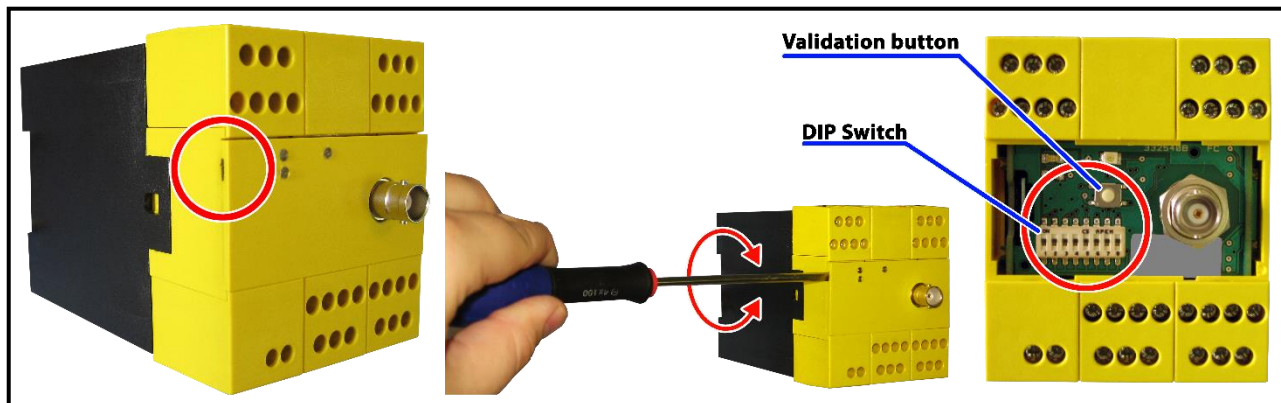 The **RSRDevice** receiver safety relays should immediately be deactivated.

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 transmission channel**

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 **RSRDevice**. 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 **DIP 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 :
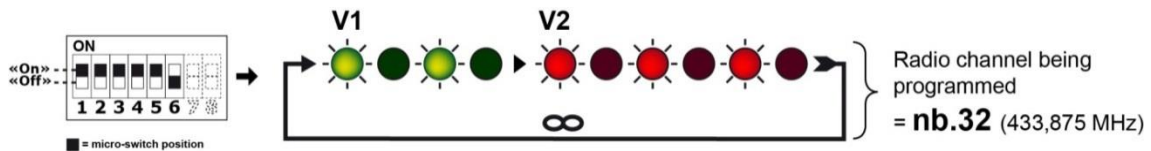
5- Once you have chosen the radio channel, press the **validation button BPV**
6- The two indicator lights, **V1** and **V2**, flash simultaneously and the transmitter sends the receiver **RSRDevice** the radio channel change command (this action takes around 20 s., then indicator lights **V1** and **V2** go off).

   Note : If the **validation** button **BPV** has not been pressed, you can cancel the frequency change by repositioning the DIP 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**

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 433-434 MHz range

Note : For the « extended range » version, only channels 41 to 64 are accessible.

Chan.	Freq. (MHz)	1	2	3	4	5	6		Chan.	Freq. (MHz)	1	2	3	4	5	6
01	433,100	OFF	OFF	OFF	OFF	OFF	OFF		33	433,900	OFF	OFF	OFF	OFF	OFF	ON
02	433,125	ON	OFF	OFF	OFF	OFF	OFF		34	433,925	ON	OFF	OFF	OFF	OFF	ON
03	433,150	OFF	ON	OFF	OFF	OFF	OFF		35	433,950	OFF	ON	OFF	OFF	OFF	ON
04	433,175	ON	ON	OFF	OFF	OFF	OFF		36	433,975	ON	ON	OFF	OFF	OFF	ON
05	433,200	OFF	OFF	ON	OFF	OFF	OFF		37	434,000	OFF	OFF	ON	OFF	OFF	ON
06	433,225	ON	OFF	ON	OFF	OFF	OFF		38	434,025	ON	OFF	ON	OFF	OFF	ON
07	433,250	OFF	ON	ON	OFF	OFF	OFF		39	434,050	OFF	ON	ON	OFF	OFF	ON
08	433,275	ON	ON	ON	OFF	OFF	OFF		40	434,075	ON	ON	ON	OFF	OFF	ON
09	433,300	OFF	OFF	OFF	ON	OFF	OFF		41	434,100	OFF	OFF	OFF	ON	OFF	ON
10	433,325	ON	OFF	OFF	ON	OFF	OFF		42	434,125	ON	OFF	OFF	ON	OFF	ON
11	433,350	OFF	ON	OFF	ON	OFF	OFF		43	434,150	OFF	ON	OFF	ON	OFF	ON
12	433,375	ON	ON	OFF	ON	OFF	OFF		44	434,175	ON	ON	OFF	ON	OFF	ON
13	433,400	OFF	OFF	ON	ON	OFF	OFF		45	434,200	OFF	OFF	ON	ON	OFF	ON
14	433,425	ON	OFF	ON	ON	OFF	OFF		46	434,225	ON	OFF	ON	ON	OFF	ON
15	433,450	OFF	ON	ON	ON	OFF	OFF		47	434,250	OFF	ON	ON	ON	OFF	ON
16	433,475	ON	ON	ON	ON	OFF	OFF		48	434,275	ON	ON	ON	ON	OFF	ON
17	433,500	OFF	OFF	OFF	OFF	ON	OFF		49	434,300	OFF	OFF	OFF	OFF	ON	ON
18	433,525	ON	OFF	OFF	OFF	ON	OFF		50	434,325	ON	OFF	OFF	OFF	ON	ON
19	433,550	OFF	ON	OFF	OFF	ON	OFF		51	434,350	OFF	ON	OFF	OFF	ON	ON
20	433,575	ON	ON	OFF	OFF	ON	OFF		52	434,375	ON	ON	OFF	OFF	ON	ON
21	433,600	OFF	OFF	ON	OFF	ON	OFF		53	434,400	OFF	OFF	ON	OFF	ON	ON
22	433,625	ON	OFF	ON	OFF	ON	OFF		54	434,425	ON	OFF	ON	OFF	ON	ON
23	433,650	OFF	ON	ON	OFF	ON	OFF		55	434,450	OFF	ON	ON	OFF	ON	ON
24	433,675	ON	ON	ON	OFF	ON	OFF		56	434,475	ON	ON	ON	OFF	ON	ON
25	433,700	OFF	OFF	OFF	ON	ON	OFF		57	434,500	OFF	OFF	OFF	ON	ON	ON
26	433,725	ON	OFF	OFF	ON	ON	OFF		58	434,525	ON	OFF	OFF	ON	ON	ON
27	433,750	OFF	ON	OFF	ON	ON	OFF		59	434,550	OFF	ON	OFF	ON	ON	ON
28	433,775	ON	ON	OFF	ON	ON	OFF		60	434,575	ON	ON	OFF	ON	ON	ON
29	433,800	OFF	OFF	ON	ON	ON	OFF		61	434,600	OFF	OFF	ON	ON	ON	ON
30	433,825	ON	OFF	ON	ON	ON	OFF		62	434,625	ON	OFF	ON	ON	ON	ON
31	433,850	OFF	ON	ON	ON	ON	OFF		63	434,650	OFF	ON	ON	ON	ON	ON
32	433,875	ON	ON	ON	ON	ON	OFF		64	434,675	ON	ON	ON	ON	ON	ON

3.1.4 Radio channel programming table for 911-918 MHz range

Chan.	Freq. (MHz)	1	2	3	4	5	6		Chan.	Freq. (MHz)	1	2	3	4	5	6
01	911,800	OFF	OFF	OFF	OFF	OFF	OFF		33	915,100	OFF	OFF	OFF	OFF	OFF	ON
02	911,900	ON	OFF	OFF	OFF	OFF	OFF		34	915,200	ON	OFF	OFF	OFF	OFF	ON
03	912,000	OFF	ON	OFF	OFF	OFF	OFF		35	915,300	OFF	ON	OFF	OFF	OFF	ON
04	912,100	ON	ON	OFF	OFF	OFF	OFF		36	915,400	ON	ON	OFF	OFF	OFF	ON
05	912,200	OFF	OFF	ON	OFF	OFF	OFF		37	915,500	OFF	OFF	ON	OFF	OFF	ON
06	912,300	ON	OFF	ON	OFF	OFF	OFF		38	915,600	ON	OFF	ON	OFF	OFF	ON
07	912,400	OFF	ON	ON	OFF	OFF	OFF		39	915,700	OFF	ON	ON	OFF	OFF	ON
08	912,500	ON	ON	ON	OFF	OFF	OFF		40	915,800	ON	ON	ON	OFF	OFF	ON
09	912,600	OFF	OFF	OFF	ON	OFF	OFF		41	915,900	OFF	OFF	OFF	ON	OFF	ON
10	912,700	ON	OFF	OFF	ON	OFF	OFF		42	916,000	ON	OFF	OFF	ON	OFF	ON
11	912,800	OFF	ON	OFF	ON	OFF	OFF		43	916,100	OFF	ON	OFF	ON	OFF	ON
12	912,900	ON	ON	OFF	ON	OFF	OFF		44	916,200	ON	ON	OFF	ON	OFF	ON
13	913,000	OFF	OFF	ON	ON	OFF	OFF		45	916,300	OFF	OFF	ON	ON	OFF	ON
14	913,100	ON	OFF	ON	ON	OFF	OFF		46	916,400	ON	OFF	ON	ON	OFF	ON
15	913,200	OFF	ON	ON	ON	OFF	OFF		47	916,500	OFF	ON	ON	ON	OFF	ON
16	913,300	ON	ON	ON	ON	OFF	OFF		48	916,600	ON	ON	ON	ON	OFF	ON
17	913,400	OFF	OFF	OFF	OFF	ON	OFF		49	916,700	OFF	OFF	OFF	OFF	ON	ON
18	913,500	ON	OFF	OFF	OFF	ON	OFF		50	916,800	ON	OFF	OFF	OFF	ON	ON
19	913,600	OFF	ON	OFF	OFF	ON	OFF		51	916,900	OFF	ON	OFF	OFF	ON	ON
20	913,700	ON	ON	OFF	OFF	ON	OFF		52	917,000	ON	ON	OFF	OFF	ON	ON
21	913,800	OFF	OFF	ON	OFF	ON	OFF		53	917,100	OFF	OFF	ON	OFF	ON	ON
22	913,900	ON	OFF	ON	OFF	ON	OFF		54	917,200	ON	OFF	ON	OFF	ON	ON
23	914,000	OFF	ON	ON	OFF	ON	OFF		55	917,300	OFF	ON	ON	OFF	ON	ON
24	914,100	ON	ON	ON	OFF	ON	OFF		56	917,400	ON	ON	ON	OFF	ON	ON
25	914,300	OFF	OFF	OFF	ON	ON	OFF		57	917,500	OFF	OFF	OFF	ON	ON	ON
26	914,400	ON	OFF	OFF	ON	ON	OFF		58	917,600	ON	OFF	OFF	ON	ON	ON
27	914,500	OFF	ON	OFF	ON	ON	OFF		59	917,700	OFF	ON	OFF	ON	ON	ON
28	914,600	ON	ON	OFF	ON	ON	OFF		60	917,800	ON	ON	OFF	ON	ON	ON
29	914,700	OFF	OFF	ON	ON	ON	OFF		61	917,900	OFF	OFF	ON	ON	ON	ON
30	914,800	ON	OFF	ON	ON	ON	OFF		62	918,000	ON	OFF	ON	ON	ON	ON
31	914,900	OFF	ON	ON	ON	ON	OFF		63	918,100	OFF	ON	ON	ON	ON	ON
32	915,000	ON	ON	ON	ON	ON	OFF		64	918,200	ON	ON	ON	ON	ON	ON

3.1.5 Radio channel programming table for 869 MHz range

Chan	Freq. (MHz)	DIP switch position					
		1	2	3	4	5	6
01	869,7125	OFF	OFF	OFF	OFF	OFF	OFF
02	869,7375	ON	OFF	OFF	OFF	OFF	OFF
03	869,7625	OFF	ON	OFF	OFF	OFF	OFF
04	869,7875	ON	ON	OFF	OFF	OFF	OFF
05	869,8125	OFF	OFF	ON	OFF	OFF	OFF
06	869,8375	ON	OFF	ON	OFF	OFF	OFF
07	869,8625	OFF	ON	ON	OFF	OFF	OFF
08	869,8875	ON	ON	ON	OFF	OFF	OFF
09	869,9125	OFF	OFF	OFF	ON	OFF	OFF
10	869,9375	ON	OFF	OFF	ON	OFF	OFF
11	869,9625	OFF	ON	OFF	ON	OFF	OFF
12	869,9875	ON	ON	OFF	ON	OFF	OFF

⚠️

all the other switch positions not described in the table are considered as an error and are signaled by 2 flashes of the V1 V2 indicators lights

5mW (7dBm)

3.1.6 Radio channel programming table for 920 MHz range

Chan	Freq. (MHz)	DIP switch position					
		1	2	3	4	5	6
01	920,6	OFF	OFF	OFF	OFF	OFF	ON
02	920,8	ON	OFF	OFF	OFF	OFF	ON
03	921.0	OFF	ON	OFF	OFF	OFF	ON
04	921.2	ON	ON	OFF	OFF	OFF	ON
05	921,4	OFF	OFF	ON	OFF	OFF	ON
06	921,6	ON	OFF	ON	OFF	OFF	ON
07	921,8	OFF	ON	ON	OFF	OFF	ON
08	922.0	ON	ON	ON	OFF	OFF	ON
09	922.2	OFF	OFF	OFF	ON	OFF	ON
10	922.4	ON	OFF	OFF	ON	OFF	ON
11	922.6	OFF	ON	OFF	ON	OFF	ON
12	922.8	ON	ON	OFF	ON	OFF	ON
13	923.0	OFF	OFF	ON	ON	OFF	ON
14	923.2	ON	OFF	ON	ON	OFF	ON
15	923.4	OFF	ON	ON	ON	OFF	ON

20mW (13dBm)

Chan	Freq. (MHz)	DIP switch position					
		1	2	3	4	5	6
16	928.15	ON	ON	ON	ON	OFF	ON
17	928.25	OFF	OFF	OFF	OFF	ON	ON
18	928.35	ON	OFF	OFF	OFF	ON	ON
19	928.45	OFF	ON	OFF	OFF	ON	ON
20	928.55	ON	ON	OFF	OFF	ON	ON
21	928.65	OFF	OFF	ON	OFF	ON	ON
22	928.75	ON	OFF	ON	OFF	ON	ON
23	928.85	OFF	ON	ON	OFF	ON	ON
24	928.95	ON	ON	ON	OFF	ON	ON
25	929.05	OFF	OFF	OFF	ON	ON	ON
26	929.15	ON	OFF	OFF	ON	ON	ON
27	929.25	OFF	ON	OFF	ON	ON	ON
28	929.35	ON	ON	OFF	ON	ON	ON
29	929.45	OFF	OFF	ON	ON	ON	ON
30	929.55	ON	OFF	ON	ON	ON	ON
31	929.65	OFF	ON	ON	ON	ON	ON

1mW (0dBm)

Chan	Freq. (MHz)	DIP switch position					
		1	2	3	4	5	6
01	920,6	OFF	OFF	OFF	OFF	OFF	OFF
02	920,8	ON	OFF	OFF	OFF	OFF	OFF
03	921.0	OFF	ON	OFF	OFF	OFF	OFF
04	921.2	ON	ON	OFF	OFF	OFF	OFF
05	921,4	OFF	OFF	ON	OFF	OFF	OFF
06	921,6	ON	OFF	ON	OFF	OFF	OFF
07	921,8	OFF	ON	ON	OFF	OFF	OFF
08	922.0	ON	ON	ON	OFF	OFF	OFF
09	922.2	OFF	OFF	OFF	ON	OFF	OFF
09	922.2	OFF	OFF	OFF	ON	OFF	OFF

⚠️

all the other switch positions not described in the table are considered as an error and are signaled by 2 flashes of the V1 V2 indicators lights

100mW (20dBm)

Channel transmission operating mode :

- Radio transmission mode for channels 01 to 15 (20 mW) or 01to 9 (100mW):
- A strict frequency plan must be put in place to ensure that the chosen channel is available.
- Each transmission cycle consists of 3 phases :
- listening phase: the selected channel must be free of any signal for 5 ms before starting the transmission phase. In case it is busy, the transmitter keeps on listening until the channel happens to be free for 5 ms.
After 300 ms without transmission possibility, the red led V2 will be activated for information, but the system keeps on listening until the channel is free for 5 ms.
It is necessary to press the white validation button for 4 seconds to reset red led V2 (or switch off/on the transmitter)
- 4-second transmission phase: normal transmission of radio frames.
- 50-ms pause phase: no radio function at all during 50 ms prior to listening phase.

- Radio transmission mode for channels 16 to 31 (1 mW) :
- A frequency plan remains recommended for all radio applications.
- The safety signal is emitted approximately every 100 ms, for a duration of approximately 50 ms.
- The analysis of the quality of the radio signal shows a value close to 50% corresponding to the 50% duty cycle: the signal must not be polluted by third party sources.
- If it is necessary to go beyond the range of the RSEF transmitter, the use of a JUMP repeater will be carried out with additional synchronization to the initial duty cycle.

3.1.7 **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 **DIP switch No. 7.**

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

2- Activate or deactivate the input check function using **DIP switch No. 7** :
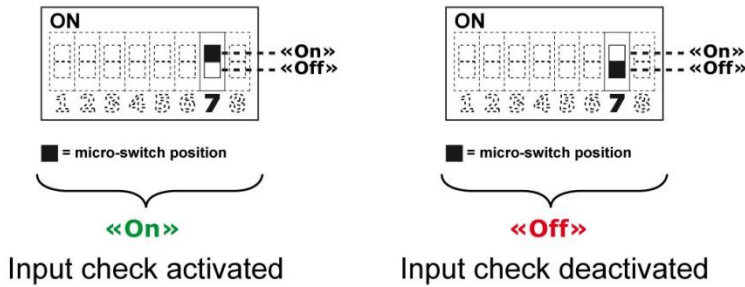
3- Activate the safety input of the transmitter **RSEF** (2) ; the two indicator lights, **V1** and **V2**, flash alternately to indicate the system is on standby for validation.

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 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.

Example of fault on input No. 3 (NO contact faulty) :
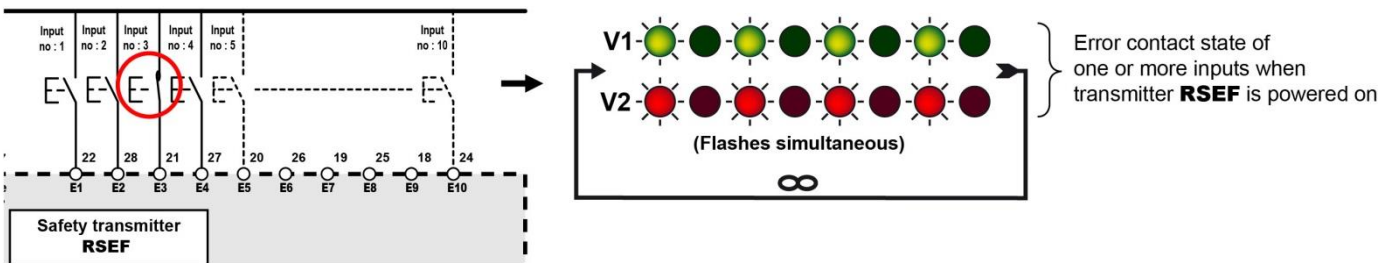
Note :
    If other settings are to be modified during this procedure (such as "inputs check" or "restart mode"),
    they need to be modified and validated <u>one by one</u>.

3.1.8 Configuring the restart mode of **RSEF** transmitter

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.

- ■   **« 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 **DIP switch No. 8**

1-   Deactivate the safety input of the transmitter **RSEF** (1)
2-   Using **DIP switch No. 8**, select the transmitter restart mode : « Automatic » or « Manual » :
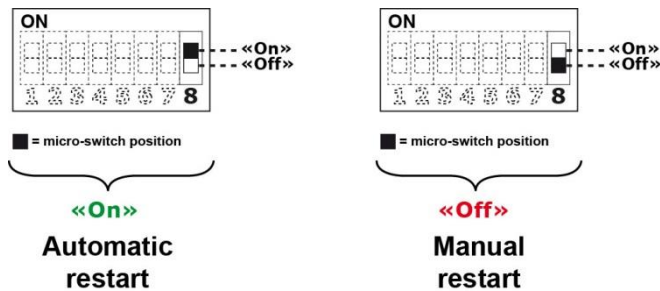
3-   Activate the safety input of the transmitter **RSEF** (2) ; the two indicator lights, **V1** and **V2**, flash alternately to indicate the system is on standby for validation.

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 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.

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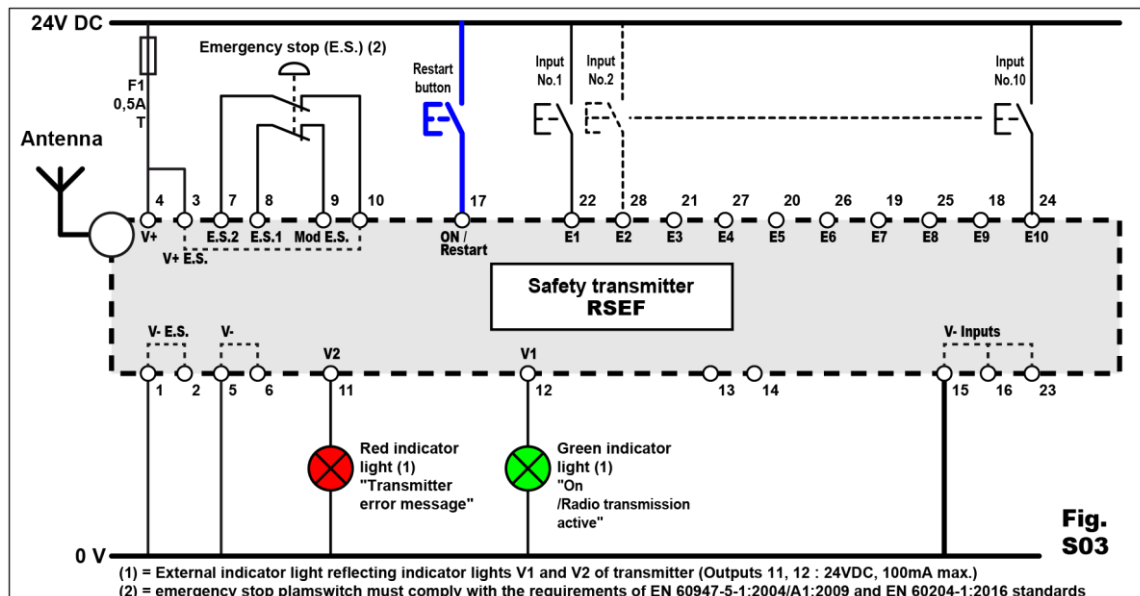
Note :
   If the other setting has also been modified during this procedure (as "Radio channel number" or "restart mode"), each modified setting have to be performed one by one.

3.2 RSRDevice receiver configuration

3.2.1 General principle

The **RSRDevice** 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 <u>normal operations</u>

To change the operating modes there are two possibilities:

- **use the physical switch SW1**   switch SW1 up for normal operations
- **use the configuration input (4-6/J3)**   deactivate this input for normal operations

When the **RSRDevice** receiver is set to **Programming mode**, the serial link terminals 1-3-5 on J3 terminal block allows you to configure the RSRDevice receiver. There are two ways of programming your RSRDevices:

- **with direct RS232 instructions**   use normal RS232 cable to any controller or PLC
- **with the help of DialogRSRDevice software**   use dedicated RSW39 cable to a laptop/PC

Additional support and documentations are available:

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

The dedicated programming software DialogRSRDevice, 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 RSRDevice 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 folowwing cases :

- during a local emergency stop (stop pushbutton wired to receiver RSRDevice **J2**-03,04,05,06),
- when using a wired enabling handle (connected to receiver RSRDevice **J2**-07,08,09,10,11,12)
- when a system error appears

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 **RSEF** transmitter

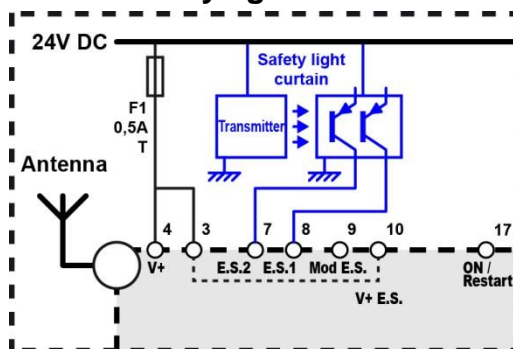**NOTE 1:** See description of all terminals in section **2.2.**
NOTE 2: See correspondence between inputs of transmitter **RSEF** and outputs of receiver **RSRDevice** in section **2.4.1.**

4.1.1 Typical wiring diagram

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

Fig. E01

(1) = External indicator light reflecting indicator lights V1 and V2 of transmitter (Outputs 11, 12 : 24VDC, 100mA max.)
(2) = emergency stop plamswitch must comply with the requirements of EN 60947-5-1:2004/A1:2009 and EN 60204-1:2016 standards
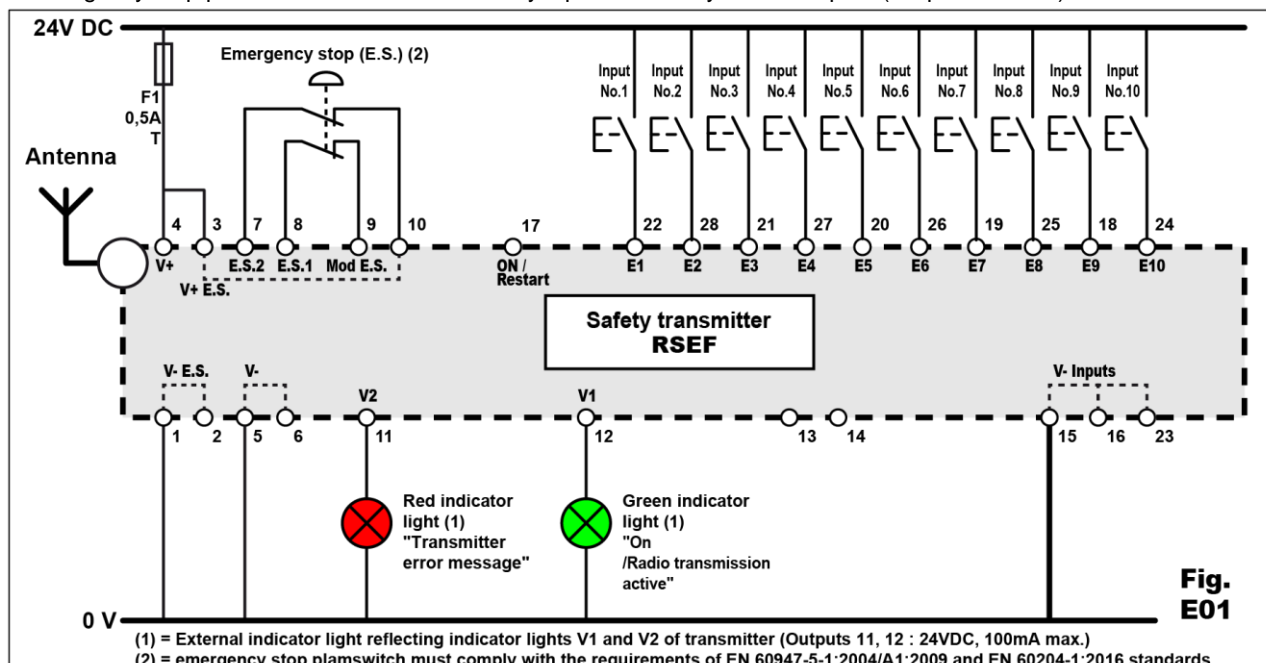
4.1.2 Example connection of a safety light curtain on transmitter safety input

4.1.3 Example with static inputs (PLC for example)
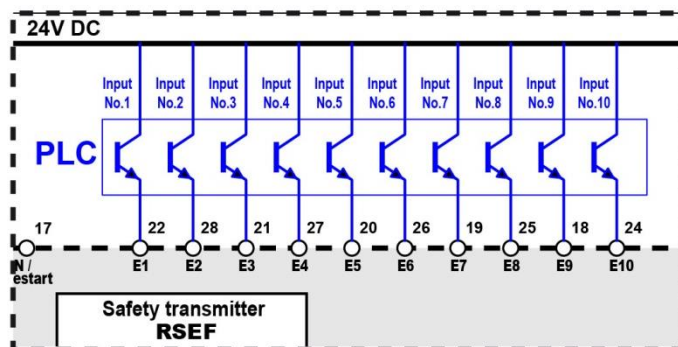
4.2 Wiring the **RSRDevice** receiver

NOTE 1 : See description of all terminals in section **2.4.**

NOTE 2 : See correspondence between inputs of transmitter **RSEF** and outputs of receiver **RSRDevice** in section **2.4.1**.

CAUTION : The loads connected to the receiver outputs must not consume more than 100 mA with 24VDC.

4.2.1 Multi-strand wires: use of wire end ferrules is mandatory

Where flexible multi-strand wires are used, wire end ferrules must be used to avoid false contacts and short-circuits.

4.2.2 Conductor wire sections to be observed

Be sure to observe the min. /max. wire sections listed below for electrical connection an Terminal blocks :

J1 & J2	0,50 mm² to 1,5 mm²
J3	0,25 mm² to 1,5 mm²

4.2.3 USA/Canada specifications for installation and conductor wires to be used

- **Particularity for a wall installation:** A code inspector will allow a cord if it is not a long run and not likely to be damaged. It may be required to remove the cord and install conduit if the installation is under these clauses.

- **The circuit breaker supplying the RSRDevice must be accessible and close to the RSRDevice.**

- **The type of wires used for wiring the J1 Terminal block (Safety relay outputs), is mandatory:** class 1 size 18AWG with min temperature range -25°C to +60°C.

- **Maximum switching voltage** : 30 V rms, 42.4 V peak, or 60 V dc according to UL61010-1 3rd edition: 2012

4.2.4 Operation of safety relays RS1-RS2 of **RSRDevice** receiver

Interruption of the safety stop chain is ensured by safety relays **RS1** and **RS2** (internal to receiver **RSRDevice**) which control the contacts accessible by terminals **Y1-Z3**, **Y2-Z2** and **Y3-Z1**.

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

- the safety input of the transmitter **RSEF** ,
- the safety input of the receiver **RSRDevice** (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 pushbutton, or a gate control device wired to the inputs provided for this purpose on the receiver (connection terminals **J2 03-04** / **J2 05-06**). 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 (connection terminals **J2 07-08** / **J2 09-10** and **J2-11-12**). The state of these inputs will act directly on relays **RS1** and **RS2** and change the receiver operating mode, see section 4.2.6.

4.2.5 Monitoring of main contactors

The input connected to terminals **J3 13-14** 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 **RSRDevice** receiver.

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

4.2.6 Enabling handle : Wiring and operating mode

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

The receiver RSRDevice 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.

4.2.7 Typical wiring diagram for **RSRDevice** receiver
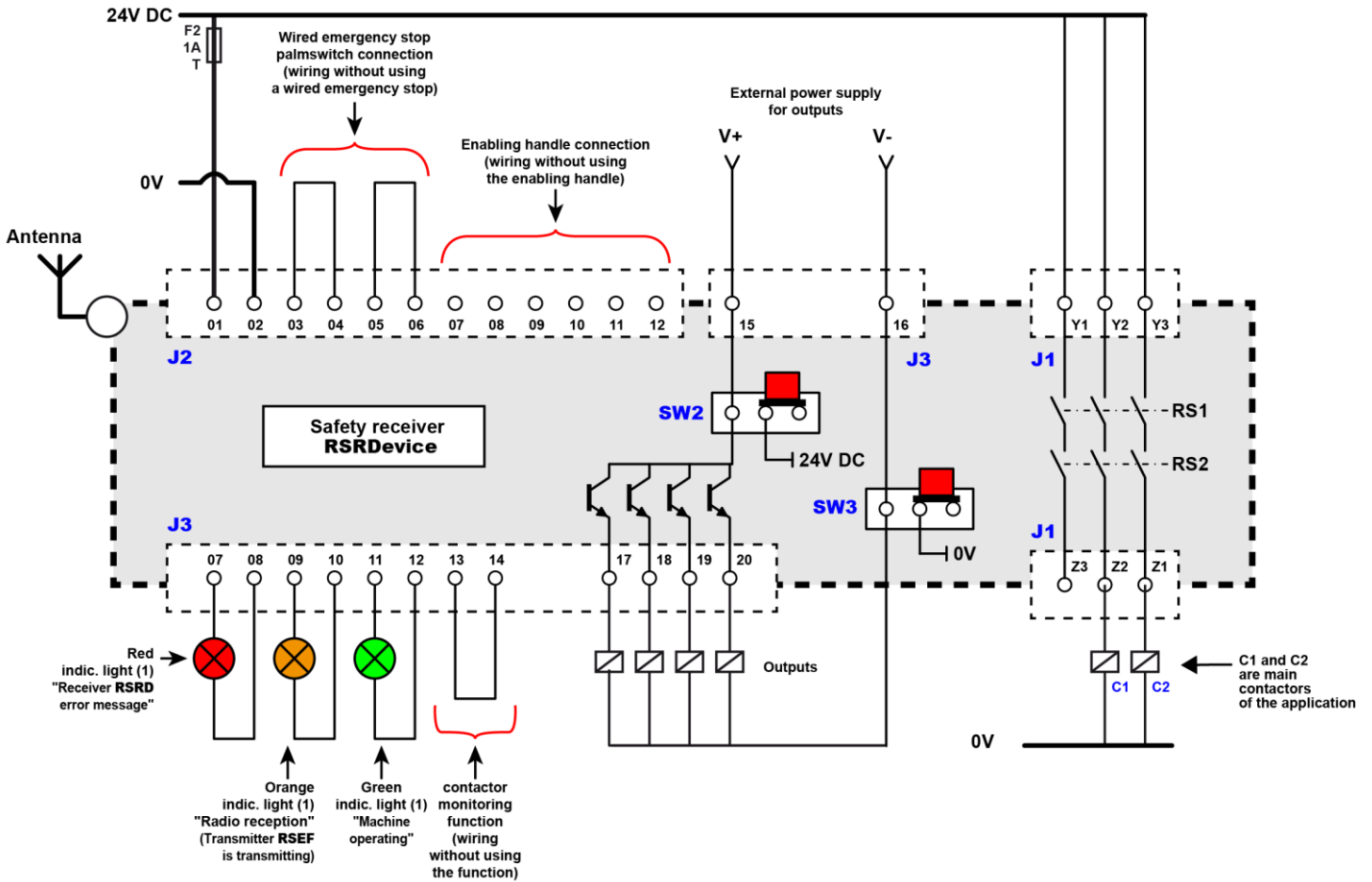
Fig. S05

(1) = Indicator light of indicator light column (24VDC, 100 mA max.)

4.2.8 Example with wired emergency stop button

> **IMPORTANT :** The emergency stop pusbutton must comply with the requirements of EN 60947-5-5:2016 and EN 60204-1:2016 standards.
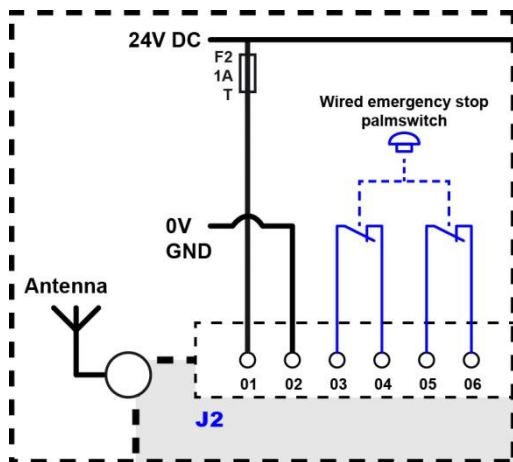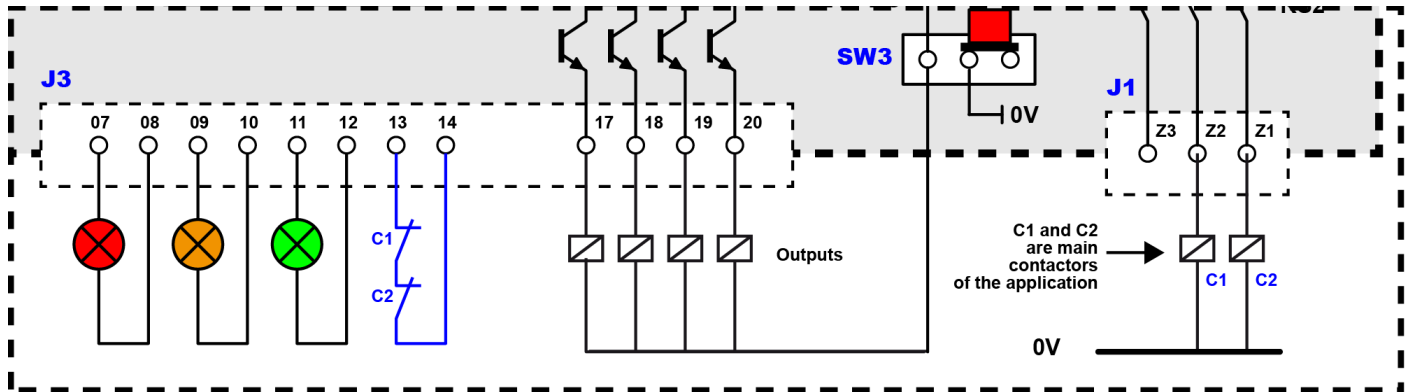
4.2.9 Example with a wired enabling handle

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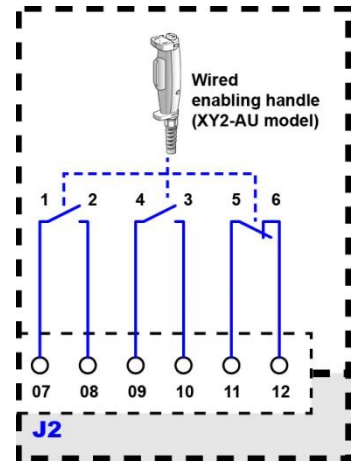
4.2.10 Example with the contactor monitoring function

4.2.11 Wiring an beacon light column

A beacon light column should be wired to the receiver. The column will indicate the status of the equipment monitored and of the receiver **RSRDevice**. The indicator light status sheet should be fastened near to the indicator light column (Example given in last page of this user manual).

The consumption of each indicator light of the column must not exceed 100 mA with 24VDC. Should this be the case, the indicator lights must be controlled by auxiliary relays.

> **IMPORTANT :** a standard indicator light column does not provide a safe information (correct operation of lights is not certified)

light	On steady	Flashing	Off
Red	Equipment stopped	Red indicator lights flash a specific number of times in the event of a receiver malfunction (see section 7.2)	Equipment operating
Orange	active radio link between transmitter and receiver	/	/
Green	Equipment operating	/	Equipment stopped

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 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 No. **4** (24V DC) of the transmitter.
- Familiarise yourself with all the characteristics given in the « technical characteristics » appendix.

5.3 RSRDevice 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.
- Secure, on the top of the unit, a 3-color indicator light column (green, orange, red) to indicate the operating status of the system.
- Fasten, near the indicator light column, a colour code sheet showing the meaning of the indicator light statuses (Example given in last page of this user manual).
- Connect a 250V/0.5 amp delay-action fuse protection device in series on input **J2-01** (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 **RSRDevice** shall be positioned with its electronic components facing down.

- The receiver **RSRDevice** must be installed on a rigid frame (min. 3 mm thick sheet metal) fastened with 4 M5 screws in the recesses of the housing provided for this purpose.

- If poor radiowave propagation is observed, for example : closed area, the antenna should be remote-mounted.

See installation instructions:

Receiver RSRDevice:
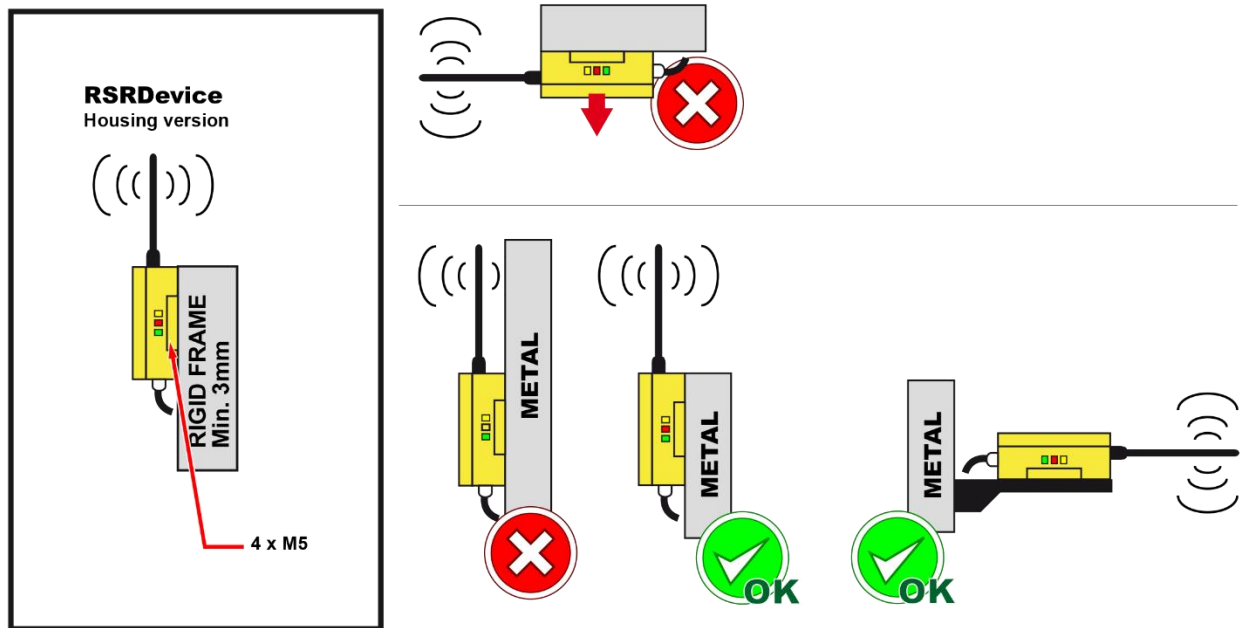
Transmitter RSEF:
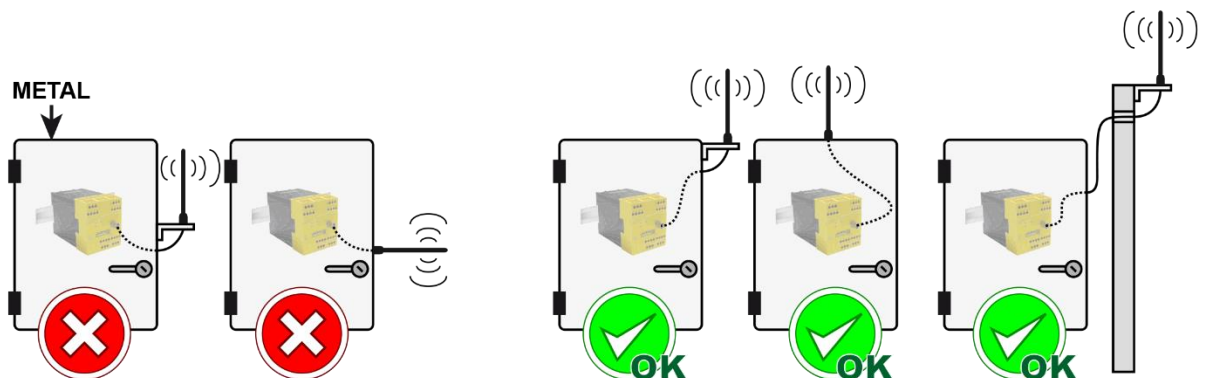
IMPORTANT :   Do not remove the plastic insulating washer placed between the nut and the BNC connector mounted on the bracket of antenna extension.

6 Optional radio components

6.1 Radio Frequency switch (ref. VUB090)

The RF switch is an optional component for **RSEF** with sales reference RSEF** - 1

This optional component avoids radio signal cancellation even in clear sight environments, for example due to background reflections. It also ensures continuous radio link in congested RF environments, where signal reflections and shadow zones are more common, by transmitting radio waves from two separate antennas alternatively.

The RSEF** - 1 transmitter is fitted with 2 extra outputs, terminals **29** and **30**, which deliver the power supply to the RF switch as well as the TTL output (terminal 14) to control the RF switch. See wiring diagram here below.

IMPORTANT :
The total length of coaxial cables connected to **RSEF**, with those on RF switch, shall not exceed 30m.
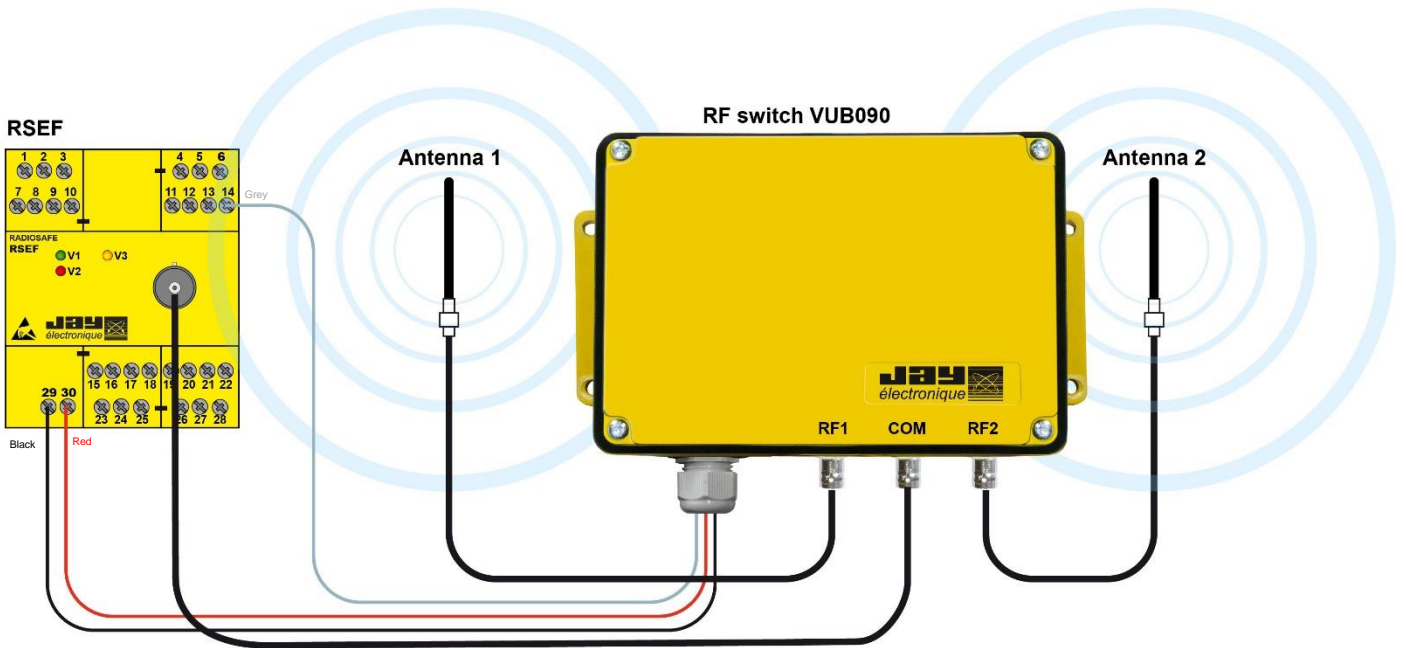
RSEF terminal	RF switch connection	Cable color
14	TTL	
29	0 V	Please refer to label on the product for wiring
30	+5 VDC	
RF Signal	COM	

6.2 JUMP repeater and RF switch (ref. VUB095)

In situations where radio performance must be extended to cover a greater distance, a greater area, a new building hall, a new warehouse aisle, or whenever heavy obstacles are met, etc, the **JUMP** radio repeater provides a solution to guarantee the proper transmission of a radio safety signal (initially emitted by a JAY mono-directional product).
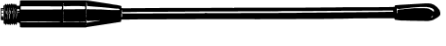
RSEF and **RSRDevice** are compatible with **JUMP**, which is compatible with the optional **RF switch** (ref VUB095)

Please refer to **JUMP** documentation for specific details

Doc. ref : **333130C_A001-EN**
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6.3   Antennas for 433-434 MHz band

Antenna reference: **VUA001A (supplied by default)**
    Type: straight, 1/4 wave, BNC connection
    Approximate length: 190mm	

Antenna reference: **VUA002A**
    Type: straight, 1/2 wave, BNC connection
    Approximate length: 335mm	

Antenna references:
    • **VUA100AH** (with 0,5m cable), **VUA102AH** (with 2m cable),
      VUA105AH (with 5m cable), **VUA110AH** (with 10m cable)
    Type: through insulated remote, 1/2 wave, BNC connection
    Approximate length: 320mm / Required drill hole: 15mm	

Antenna references:
    • **VUA103AM** (with 3m cable), **VUA105AM** (with 5m cable)
    Type: insulated magnetic remote, tuned, BNC connection
    Approximate length: 440mm	

Antenna references:
    • **VUA103AV** (with 3m cable), **VUA105AV** (with 5m cable)
    Type: through uninsulated remote, 1/4 wave, BNC connection
    Approximate length: 180mm / Required drill hole: 12mm or 19mm	

Antenna reference: **VUA102CP**
    Type: flat and circular, 2-m long coaxial cable with BNC connector
    Size: 45mm by 15mm / Required drill hole: 12mm
    (for mounting on metallic structures, it is advised to add an insulating gasket
    between the thightening nut and the metallic structure)	

6.4   Antennas for 869, 911-918 MHz band

|		

Antenna reference: **VUA001B (supplied by default)**
    Type: straight, 1/4 wave, BNC connection
    Approximate length: 90mm
	860-920 MHz	

Antenna reference: **VUA002B**
    Type: straight, 1/2 wave, BNC connection
    Approximate length: 200mm
	820-960 MHz	

Antenna references:
    • **VUA100BH** (with 0,5m cable), **VUA102BH** (with 2m cable),
      VUA105BH (with 5m cable), **VUA110BH** (with 10m cable)
    Type: through insulated remote, 1/2 wave, BNC connection
    Approximate length: 190mm / Required drill hole: 15mm
	860-960 MHz	

Antenna references:
    • **VUA103BM** (with 3m cable), **VUA105BM** (with 5m cable)
    Type: insulated magnetic remote, tuned, BNC connection
    Approximate length: 320mm
	820-960 MHz	

Antenna references:
    • **VUA103BV** (with 3m cable), **VUA105BV** (with 5m cable)
    Type: through uninsulated remote, 1/4 wave, BNC connection
    Approximate length: 100mm / Required drill hole: 12mm or 19mm
	900-920 MHz	

6.5   Antennas for 920 MHz band

Antenna reference: **VUA001B (supplied by default)**
    Type: straight, 1/4 wave, BNC connection
    Approximate length: 90mm
	860-920 MHz	

Antenna reference: **VUA002B**
    Type: straight, 1/2 wave, BNC connection
    Approximate length: 200mm
	820-960 MHz	

Antenna references:
  • **VUA100BH** (with 0,5m cable), **VUA102BH** (with 2m cable),
    VUA105BH (with 5m cable), **VUA110BH** (with 10m cable)
    Type: through insulated remote, 1/2 wave, BNC connection
    Approximate length: 190mm / Required drill hole: 15mm
	860-960 MHz	

Antenna references:
  • **VUA103BM** (with 3m cable), **VUA105BM** (with 5m cable)
    Type: insulated magnetic remote, tuned, BNC connection
    Approximate length: 320mm
	820-960 MHz	

Antenna references:
  • **VUA103BV** (with 3m cable),**VUA105BV** (with 5m cable)
    Type: through uninsulated remote, 1/4 wave, BNC connection
    Approximate length: 100mm / Required drill hole: 12mm or 19mm
	900-920 MHz	

Antenna references:
  • **VUA102BP** (with 2,5m de cable)
    Type : flat and circular, with BNC connexion
    Size : 80mm x 23mm x 10mm / Required drill hole : 17,5mm
    (Gain 2 dBi)
	700-960 MHz	

7 Troubleshooting, Maintenance, Warranty

7.1 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**.
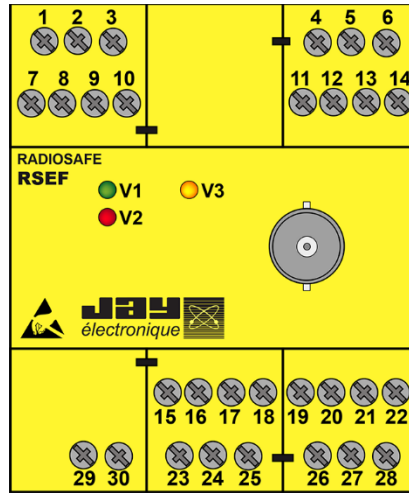
Normal operation :

Transmitter status	V1 (green)	V2 (red)	Message indicated by indicator lights	Solution
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	433MHz frequency band: Channel inaccessible with 10mW	Change radio channel (41 to 64)
			other frequency bands: Channel innaccessible	Change radio channel in accordance with the Configuring the transmission channel chapter

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 - Check condition of protection fuse
After transmitter power up Or after activation of **safety** input	OFF	OFF	ON	SIM card read error	- SIM card not present, - SIM card incorrectly inserted or removed from its location - 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 - check the security entrance
	5 flashes	5 flashes	ON	Configuration DIP switches changed	see section 3.1
	Alternate flashes		ON		

7.2 Diagnosis - RSRDevice receiver

Error messages are given by the indicator light (RED color on indicator light column) connected to 07-08/**J3** terminals.

This indicator light blinks a specific number of times in the event of a receiver malfunction:

| number of blinking	Message	Solution
1	Error on MCUs: Miscellaneous electronic fault	If the error persists after restarting the system, please contact our customer service
2	Error on MCUs: RAM	Requires a factory return of the product, please contact our customer service
3	Error on MCUs: ROM	Requires a factory return of the product, please contact our customer service
4	Error on MCUs: Parameters	Check the configuration using dedicated software*
5	Error on MCUs: Link with MCU no2	This error can occur after a system shutdown. If the problem persists after a reboot, please contact our customer service
6	Error on MCUs: EEPROM	Requires a factory return of the product, please contact our customer service
7	Error on MCUs: LOW VOLTAGE	Check power supply
8	Error on MCUs: RADIO	Requires a factory return of the product, please contact our customer service
9	Error on MCUs: Safety relay	This error can occur after a system shutdown. If the problem persists after a reboot, please contact our customer service
Every second	Wired emergency stop button activated (pressed)	Unlock the emergency stop button
Fast blinks	Error detected on wired emergency stop button	Repeat a complete emergency stop cycle to clear the error. If the error appears again, check the wiring and the emergency stop button.

* The dedicated programming software "**DialogRSRDevice**" 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 RSRDevice receiver parameters).

7.3 Connect the RSRDevice to a PC

The link between a PC and a RSRDevice is made via a serial COM port RS232. You can connect directly the COM port to RSRDevice 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 "**DialogRSRDevice**" (separate documentation)
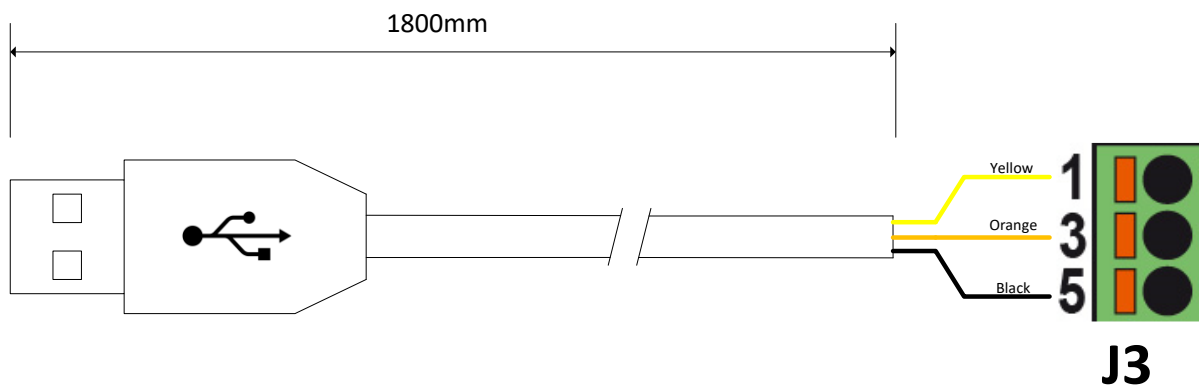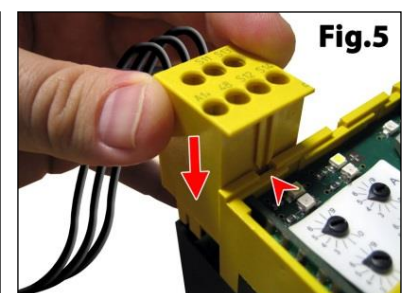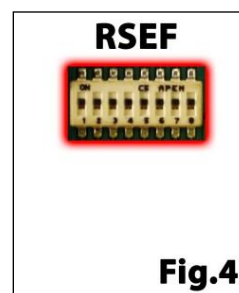
7.4 Servicing

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.

7.5 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.

Fig.1 / Fig.2

Fig.3 / RSEF Fig.4 / Fig.5
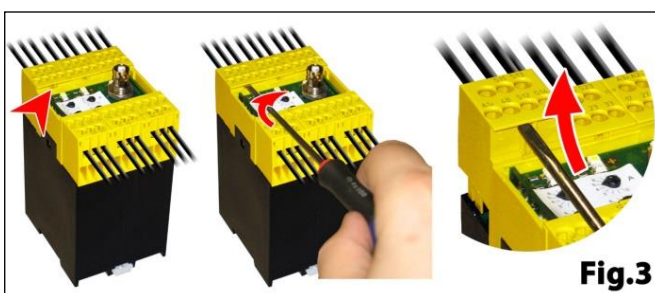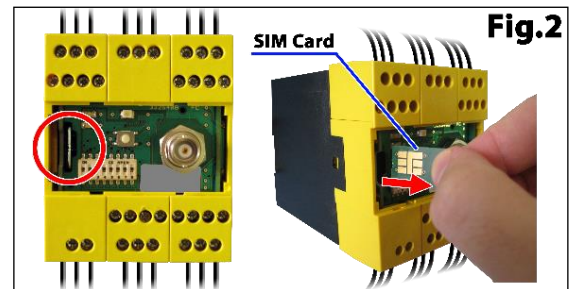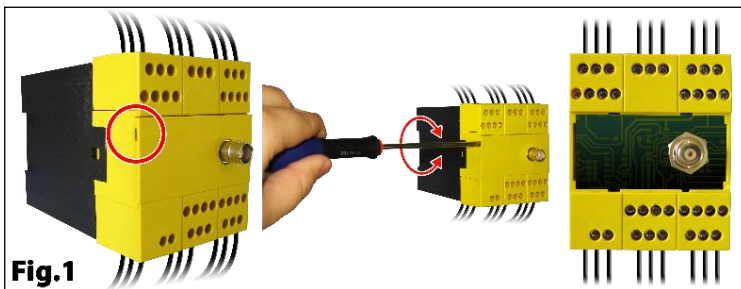
7.6 Inspection and servicing of **RSRDevice** receiver

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 and 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.

For the RSRDevice Housing:

- Check the condition of cover seal, tightening of screws and cable glands.

- Clean the receiver by eliminating any foreign body.

- Only use non aggressive cleaning product on base of soapy solution.

7.7 Warranty

All our products are guarantied 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.

Limits:

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.

8 Applicable standards and regulations

8.1 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 6.4 « Antennas for 911-918 MHz band »

Antenna installation requirements:
see section 5.4 « 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

Warning:
Those devices must be professionally installed.

8.2 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-RSEF) 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 6.4 « Antennas for 911-918 MHz band »

Antenna installation requirements:
see section 5.4 « Positioning the components and antennas »

This device complies with Industry Canada's licence-exempt RSSs.
Operation is subject to the following two conditions:
1. This device may not cause harmful interference; and
2. This device must accept any interference received, including interference that may cause undesired operation of the device.
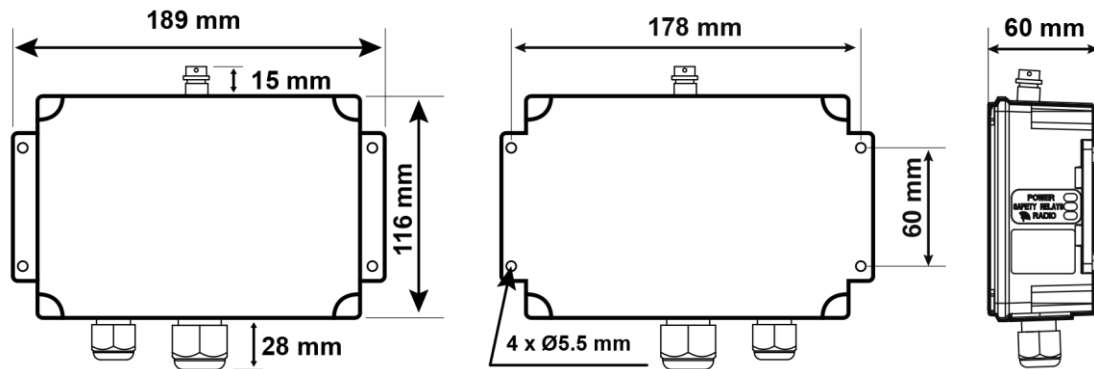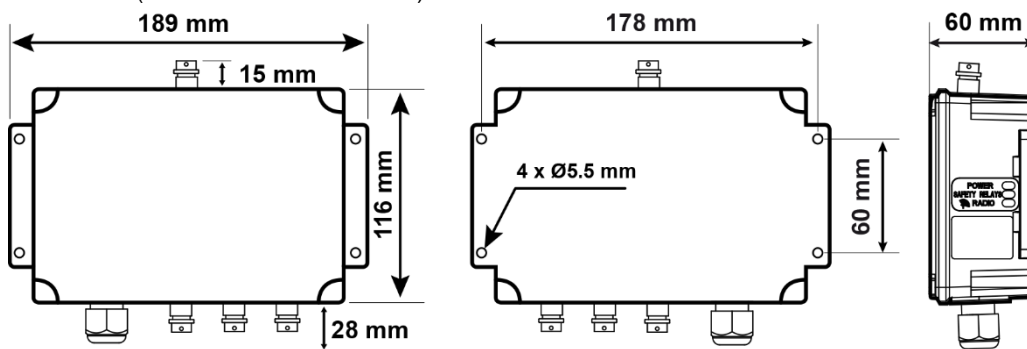
9 Appendices

9.1 Component dimensions (mm)

• Safety transmitter RSEF
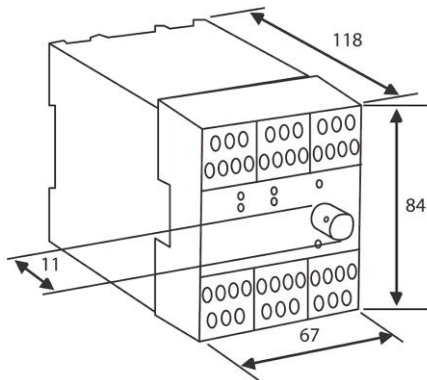
• Safety receiver RSRDevice (version with electronic housing)

• RF switch (ref. VUB090 and VUB095)

• BNC plug-in antennas VUB•••

9.2 Technical characteristics

9.2.1 Transmitter RSEF

Mechanical and environment withstand characteristics
Housing material : Plastic
Protection index : IP 40   **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 :
    RSEF40 : 64 frequencies, from 433.100 MHz to 434.675 MHz   **RSEF9- :** 64 frequencies, from 911.800 to 918.20 MHz
    RSEF41 : 25 frequencies, from 434.100 to 434.675 MHz   **RSEFJ :** 31 frequencies from 920,600 to 929,650 MHz
    RSFE80 : 12 frequencies, from 869.7125 to 869.9875

Transmit power :
   RSEF40: 1mW   RSEF9: 0,5mW   RSEF80 : 5 mW
   RSEF41: 10mW   RSEFJ (cannaux 1 à 15): 20mW
                     RSEFJ (cannaux 16 à 31): 1mW

Average range in typical industrial environment (1) :
   RSEF40: 150 m   RSEF9 : 40 m   RSEF80 : 150m
   RSEF41: 250 m   RSEFJ (20mW cannaux 1 à 15): 200m
                     RSEFJ (1mW cannaux 16 à 31): 50m

Electrical and functional characteristics
Power supply voltage : 24 VDC SELV/PELV   +/- 20%   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
Max. consumption : 100 mA (non-loaded static outputs and without any activated input)   **Max. consumption protected by fuse :** 500 mA

Number of inputs : 13
    -    2 safety inputs (for emergency stop, safety light curtain, etc.)
    -    10 function inputs
    -    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) :
   Number and type of outputs : 2 PNP outputs (Images of indicator lights V1 and V2)
   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.).

9.2.2 Receiver **RSRDevice**

Mechanical and environment withstand characteristics

Housing material: Polyamide 6/6 (PA6/6), glass bead filled

Protection index: IP 65

Weight: 700 g (complete model with housing)

Operating temperature range: - 20 °C to + 60 °C

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

Connection: Spring – type plug in connectors
      Minimum Cable rated voltage of 250 VAC
      Conductor wire sections to be observed on T-blocks :
      J1 & J2..... 0,2 mm² to 2,5 mm²
      J3 .... 0,25 mm² to 1,5 mm²

Antenna: Depending on frequency

Cable lead-out: - M16 cable gland for safety relays (tightening torque to be respected = 2N.m)
                - M25 cable gland for power supply and other signals (tightening torque to be respected = 5N.m)

Electrical characteristics

Power supply voltage : 24 VDC SELV/PELV   +/- 20%
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 : 120 mA (non-loaded static outputs)
Max. consumption protected by fuse : 500mA

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 : 55 ms + 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	3.6 A 30 VAC	Resistive load	SAT 85 °C	70.000 cycles
	3.6 A 30 VDC			100.000 cycles
	2 A 30 VAC	Pilot Duty load	T. ambient 25 °C	10.000 cycles
	1.5 A 30 VAC	Pilot Duty load	T. ambient 60 °C	
	3.6 A 250 VAC			50.000 cycles
	3.6 A 30 VDC			50.000 cycles
VDE	Per AC15 : 2 A / 240 V for 1 NO contact loaded EN 60947-5-1:2004/A1:2009			

Static outputs (not secure) :   **Number and type of outputs :** 4 PNP outputs
                                      Output voltage: 24 VDC, 100 mA max.

Indication : 3 indicator lights 24 VDC, 100 mA max

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 RSRDevice receiver parameters).

9.2.1 **VUB 090 Augmented connectivity module (RF splitter)**

Mechanical and environment withstand characteristics
Housing material: Polyamide 6/6 (PA6/6)
Protection index: IP 65
Weight: 700 g (complete model with housing)
Operating temperature range: - 20 °C to + 60 °C
Storage temperature range: - 30 °C to + 70 °C
Connection:

- 3 BNC connector for the Radio Frequency I/O
- 1 cable for the power supply and signals

Electrical characteristics
supply voltage : 5V VDC provide by RSEF   **current supply** : 10mA max

Input characteristics:
- TTL INPUT HIGH THRESHOLD 2Vmin.
- TTL INPUT LOW THRESHOLD : 0.8V Max

Typical Performance RF Data for all frequency band:
- INSERTION LOSS : 1dB
- ISOLATION : 40dB

SWITCHING TIME : 4.0µs Max

9.3 Environmental data

Mechanical: 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 RSRDevice lifetime: 20 years

9.4 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 product

EN ISO 13849-1:2015 for performance level PLe (Category 4) and IEC 62061:2005+AC:2010 + A1:2013+A2:2015 for SIL 3 emergency stop function.

9.4.1 Characteristic data according to IEC 61508-1 till -7 and IEC 62061:2005

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	Safety integrity level	SIL 3
	PFH[1/h]	1.6E-09
	Proof Test Interval T1	20 years

Product	Parameters	Results
Receiver RSRDevice	Safety integrity level	SIL 3
	PFH[1/h]	1.04E-09
	SFF	99.42%
	Proof Test Interval T1	20 years
	Type	B
	Safe state	Open of at least one of the 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: 600/h

Product	Parameters	Results
Receiver RSRDevice	Safety integrity level	SIL 3
	PFH	7.97E-08
	SFF	99.42%
	Proof Test Interval T1	20 years
	Type	B
	Safe state	Open of at least one of the both safety relays

9.4.2 **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	Performance level	PL e
	Category	4
	MTTFD	186 years
	Diagnostic Coverage DC	98%

Product	Parameters	Results
Receiver RSRDevice	Performance level	PL e
	Category	4
	MTTFD	838.32 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: 600/h

Product	Parameters	Results
Receiver RSRDevice	Performance level	PL e
	Category	4
	MTTFD	155.28 years
	Diagnostic Coverage DC	99%
	CCF	80%

9.5   RSEF Transmitter case thermal capability

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

9.6   Miscellaneous

9.6.1   Residual risks

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

9.6.2   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 RSRDevice: *see troubleshooting guidelines in Section 7.2.*

9.6.3   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.

9.6.4   Products references

See the sales documentation of the product.

9.6.5   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.

9.6.6   Countries limitation of the use

See ERC/REC 70-03 for eventual limitation of the use of Annex 1 Band F1 (Non- Specific SRDs) 433.050-434.790 MHz (6 October 2010 edition Russian Federation Not implemented).

9.6.7   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

10 Declaration of conformity

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
RSRDxxxx-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 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) EN 61508-1-7 :2010 Exigences pour le SIL 3 EN 62061 :2005 + Cor. :2010 + A1 :2013 + A2 : 2015 Exigences pour le SIL 3 UL 1998 :2013 IEC 60204-1 :2016 EN 60204-32 :2008
Déclaration individuelle de conformité Preuve de conformité	La fonction d'arrêt d'urgence sans fil (arrêt de catégorie 0 ou catégorie 1), la function d'arrêt d'urgence filaire (arrêt catégorie 0) et la poignée de validation (arrêt de catégorie 0) du RSRD peuvent être utilisé dans des applications jusqu'à la Catégorie 4 (PL e) selon EN ISO 13849-1 :2015 et SIL 3 selon l'EN 62061 :2005 + Cor. :2010 + A1 :2013 + A2 : 2015 et l'EN 61508-1-7 :2010. L'organisme notifié n°0123 : TÜV SÜD Rail GmbH Barthstr, 16 D-80339 München Germany A délivré un examen CE de type n° **M6A 035304 0009 Rev00** sur la base de la conformité aux normes
DIRECTIVE 2014/35/UE DU PARLEMENT EUROPÉEN ET DU CONSEIL 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	IEC 61010-1 :2010 EN 62479 :2010 IEC 60204-1 :2016 EN 60204-32 :2008 NFPA 79 :2018
DIRECTIVE 2014/30/UE DU PARLEMENT EUROPÉEN ET DU CONSEIL du 26 février 2014 relative à l'harmonisation des législations des États membres concernant la compatibilité électromagnétique (refonte)	EN 301 489,3 V2.1.1 EN 301 489-1 V2.2.3 EN 61000-6-2 :2005 EN 61000-6-2:2016 EN 61000-6-7 :2015 EN 62061 : 2005/AC : 2010/A1: 2013/ A2:2015 EN 61326-3-1:2017 EN 61326-1:2013
DIRECTIVE 2014/53/UE DU PARLEMENT EUROPÉEN ET DU CONSEIL 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 • frequency Band 433.05-434.79 MHz • frequency Band 869.7-870 MHz
DIRECTIVE 2011/65/UE DU PARLEMENT EUROPEEN ET DU CONSEIL 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 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),
Jean-Christophe Trochet, Responsable Technique - JAY électronique ZAC la Bâtie, rue Champrond 38334 St Ismier-France

Fait à : Saint Ismier, FRANCE, 13/07/2022.

Signature:

331190C

333190C_RSRD_UE_Declaration_de_conformite_FR.docx

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
RSRDxxxx-x

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 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)* *EN 61508-1-7 :2010 Requirements for SIL 3* *EN 62061 :2005 + Cor. :2010 + A1 :2013 + A2 : 2015 Requirements for SIL 3* *UL 1998 :2013* *IEC 60204-1 :2016* *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 equipment can be used in applications up to Category 4 (PLe) according to EN ISO 13849-1 :2015 and SIL 3 according to EN 62061 :2005 + Cor. :2010 + A1 :2013 + A2: 2015 and EN 61508-1-7 :2010.
Conformity evidence	The notified body No. 0123: *TÜV SÜD Rail GmbH* *Barthstr, 16* *D-80339 München* *Germany* Has issued an EC-Type examination n° **M6A 035304 0009 Rev00** reflecting compliance with the standards
DIRECTIVE 2014/35/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL 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	*IEC 61010-1 :2010* *EN 62479 :2010* *IEC 60204-1 :2016* *EN 60204-32 :2008* *NFPA 79 :2018*
DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast)	*EN 301 489,3 V2.1.1* *EN 301 489-1 V2.2.3* *EN 61000-6-2 :2005* *EN 61000-6-2:2016* *EN 61000-6-7 :2015* *EN 62061 : 2005/AC : 2010/A1: 2013/ A2:2015* *EN 61326-3-1:2017* *EN 61326-1:2013*
DIRECTIVE 2014/53/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL 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* • *frequency Band 433.05-434.79 MHz* • *frequency Band 869.7-870 MHz*
DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL 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 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:
Jean-Christophe Trochet, Technical Manager - JAY électronique ZAC la Bâtie, rue Champrond 38334 St Ismier-France

Issued at: Saint Ismier, FRANCE, 2022/07/13.

Signature: *signed on original*

331190C

333190C_RSRD_UE_Declaration_de_conformite_EN.docx

DECLARATION UK OF CONFORMITY
ORIGINAL

EN

The manufacturer

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

Declares that for the following receiver set :

RS Series
RSRDxxxx-x

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

Regulations	Designated Standards & Other standards
UK REGULATION – S.I. 2008 No. 1597 Supply of Machinery (Safety) Regulations 2008	*EN ISO 13849-1 :2015 Requirements for performance level PL e (Category 4)* *EN 61508-1-7 :2010 Requirements for SIL 3* *EN 62061 :2005 + Cor. :2010 + A1 :2013 + A2 : 2015 Requirements for SIL 3* *UL 1998 :2013* *IEC 60204-1 :2016* *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 equipment can be used in applications up to Category 4 (PLe) according to EN ISO 13849-1 :2015 and SIL 3 according to EN 62061 :2005 + Cor. :2010 + A1 :2013 + A2: 2015 and EN 61508-1-7 :2010.
Conformity evidence	The approved body No. 0168: ***TÜV SÜD BABT*** ***Octagon House,*** ***Concorde Way, Segensworth North,*** ***Fareham, Hampshire,*** ***PO15 5RL, United Kingdom*** Has issued an UKCA-Type examination n° **UK-MAC000087 i01** reflecting compliance with the standards
UK REGULATION – S.I. 2016 No. 1101 The Electrical Equipment (Safety) Regulations 2016	*IEC 61010-1 :2010* *EN 62479 :2010* *IEC 60204-1 :2016* *EN 60204-32 :2008* *NFPA 79 :2018*
UK REGULATION – S.I. 2016 No. 1091 Electromagnetic Compatibility Regulations 2016	*EN 301 489,3 V2.1.1* *EN 301 489-1 V2.2.3* *EN 61000-6-2 :2005* *EN 61000-6-2:2016* *EN 61000-6-7 :2015* *EN 62061 : 2005/AC : 2010/A1: 2013/ A2:2015* *EN 61326-3-1:2017* *EN 61326-1:2013*
UK REGULATION – S.I. 2017 No. 1206 Radio Equipment Regulations 2017	*EN 300 220-2 V3.1.1* • *frequency Band 433.05-434.79 MHz* • *frequency Band 869.7-870 MHz*
UK REGULATION – S.I. 2012 NO. 3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012	
UK REGULATION – S.I. 2013 NO. 3113 The Waste Electrical and Electronic Equipment Regulations 2013	

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:
Jean-Christophe Trochet, Technical Manager - JAY électronique ZAC la Bâtie, rue Champrond 38334 St Ismier-France

Issued at: Saint Ismier, FRANCE, 2022/07/13.

Signature:

331190C

333190C_RSRD_UK_Declaration_de_conformite_EN.docx

CONDUCTIX wampfler

Doc. ref : **333130C_A001-EN**
2022/07/18

Page 46 / 57

DECLARATION UE DE CONFORMITE
ORIGINAL

FR

Le fabricant :

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

Déclare que pour l'émetteur suivant :

Série RS
RSEFxx-x

Est en conformité aux exigences des directives suivantes et que cette conformité a été vérifiée selon les normes suivantes :
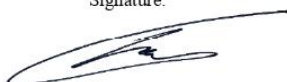
Directives	Normes Harmonisées & Autres normes
DIRECTIVE 2006/42/CE DU PARLEMENT EUROPÉEN ET DU CONSEIL du 17 mai 2006 relative aux machines et modifiant la directive 95/16/CE	*EN ISO 13849-1 :2015 Exigences pour le niveau de performance PL e (Catégorie 4)* *EN 61508-1-7 :2010 Exigences pour le SIL 3* *EN 62061 :2005 + Cor. :2010 + A1 :2013 + A2 : 2015 Exigences pour le SIL 3* *UL 1998 :2013* *IEC 60204-1 :2016* *EN 60204-32 :2008*
Déclaration individuelle de conformité 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 peuvent être utilisé dans des applications jusqu'à la Catégorie 4 (PL e) selon EN ISO 13849-1 :2015 et SIL 3 selon l'EN 62061 :2005 + Cor. :2010 + A1 :2013 + A2 : 2015 et l'EN 61508-1-7 :2010. L'organisme notifié n°0123 : *TÜV SÜD Rail GmbH* *Barthstr, 16* *D-80339 München* *Germany* A délivré un examen CE de type n° **M6A 035304 0009 Rev00** sur la base de la conformité aux normes
DIRECTIVE 2014/35/UE DU PARLEMENT EUROPÉEN ET DU CONSEIL 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	*IEC 61010-1 :2010* *EN 62479 :2010* *IEC 60204-1 :2016* *EN 60204-32 :2008* *NFPA 79 :2018*
DIRECTIVE 2014/30/UE DU PARLEMENT EUROPÉEN ET DU CONSEIL du 26 février 2014 relative à l'harmonisation des législations des États membres concernant la compatibilité électromagnétique (refonte)	*EN 301 489,3 V2.1.1* *EN 301 489-1 V2.2.3* *EN 61000-6-2 :2005* *EN 61000-6-2:2016* *EN 61000-6-7 :2015* *EN 62061 : 2005/AC : 2010/A1: 2013/ A2:2015* *EN 61326-3-1:2017* *EN 61326-1:2013*
DIRECTIVE 2014/53/UE DU PARLEMENT EUROPÉEN ET DU CONSEIL 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* • *frequency Band 433.05-434.79 MHz* • *frequency Band 869.7-870 MHz*
DIRECTIVE 2011/65/UE DU PARLEMENT EUROPEEN ET DU CONSEIL 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 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),
Jean-Christophe Trochet, Responsable Technique - JAY électronique ZAC la Bâtie, rue Champrond 38334 St Ismier-France

Fait à : Saint Ismier, FRANCE, 18/07/2022.

Signature:

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

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 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)* *EN 61508-1-7 :2010 Requirements for SIL 3* *EN 62061 :2005 + Cor. :2010 + A1 :2013 + A2 : 2015 Requirements for SIL 3* *UL 1998 :2013* *IEC 60204-1 :2016* *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 equipment can be used in applications up to Category 4 (PLe) according to EN ISO 13849-1 :2015 and SIL 3 according to EN 62061 :2005 + Cor. :2010 + A1 :2013 + A2: 2015 and EN 61508-1-7 :2010.
Conformity evidence	The notified body No. 0123: *TÜV SÜD Rail GmbH* *Barthstr, 16* *D-80339 München* *Germany* Has issued an EC-Type examination n° **M6A 035304 0009 Rev00** reflecting compliance with the standards
DIRECTIVE 2014/35/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL 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	*IEC 61010-1 :2010* *EN 62479 :2010* *IEC 60204-1 :2016* *EN 60204-32 :2008* *NFPA 79 :2018*
DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast)	*EN 301 489,3 V2.1.1* *EN 301 489-1 V2.2.3* *EN 61000-6-2 :2005* *EN 61000-6-2 :2016* *EN 61000-6-7 :2015* *EN 62061 : 2005/AC : 2010/A1: 2013/ A2:2015* *EN 61326-3-1:2017* *EN 61326-1:2013*
DIRECTIVE 2014/53/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL 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* • *frequency Band 433.05-434.79 MHz* • *frequency Band 869.7-870 MHz*
DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL 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 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:
Jean-Christophe Trochet, Technical Manager - JAY électronique ZAC la Bâtie, rue Champrond 38334 St Ismier-France

Issued at: Saint Ismier, FRANCE, 2022/07/18.

Signature: *signed on original*

354740A

354740A_RSEF_UE_Declaration_de_conformite_EN.docx

CONDUCTIX wampfler

DECLARATION UK OF CONFORMITY
ORIGINAL

EN

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

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

Regulations	Designated Standards & Other standards
UK REGULATION – S.I. 2008 No. 1597 Supply of Machinery (Safety) Regulations 2008	*EN ISO 13849-1 :2015 Requirements for performance level PL e (Category 4)* *EN 61508-1-7 :2010 Requirements for SIL 3* *EN 62061 :2005 + Cor. :2010 + A1 :2013 + A2 : 2015 Requirements for SIL 3* *UL 1998 :2013* *IEC 60204-1 :2016* *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 equipment can be used in applications up to Category 4 (PLe) according to EN ISO 13849-1 :2015 and SIL 3 according to EN 62061 :2005 + Cor. :2010 + A1 :2013 + A2: 2015 and EN 61508-1-7 :2010.
Conformity evidence	The approved body No. 0168: ***TÜV SÜD BABT*** ***Octagon House,*** ***Concorde Way, Segensworth North,*** ***Fareham, Hampshire,*** ***PO15 5RL, United Kingdom*** Has issued an UKCA-Type examination n° **UK-MAC000087 i01** reflecting compliance with the standards
UK REGULATION – S.I. 2016 No. 1101 The Electrical Equipment (Safety) Regulations 2016	*IEC 61010-1 :2010* *EN 62479 :2010* *IEC 60204-1 :2016* *EN 60204-32 :2008* *NFPA 79 :2018*
UK REGULATION – S.I. 2016 No. 1091 Electromagnetic Compatibility Regulations 2016	*EN 301 489,3 V2.1.1* *EN 301 489-1 V2.2.3* *EN 61000-6-2 :2005* *EN 61000-6-2:2016* *EN 61000-6-7 :2015* *EN 62061 : 2005/AC : 2010/A1: 2013/ A2:2015* *EN 61326-3-1:2017* *EN 61326-1:2013*

UK REGULATION – S.I. 2017 No. 1206
Radio Equipment Regulations 2017
	EN 300 220-2 V3.1.1
	   • *frequency Band 433.05-434.79 MHz*
	   • *frequency Band 869.7-870 MHz*

UK REGULATION – S.I. 2012 NO. 3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012	
UK REGULATION – S.I. 2013 NO. 3113 The Waste Electrical and Electronic Equipment Regulations 2013	

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:
Jean-Christophe Trochet, Technical Manager - JAY électronique ZAC la Bâtie, rue Champrond 38334 St Ismier-France

Issued at: Saint Ismier, FRANCE, 2022/07/18.

Signature:

354740A

CONDUCTIX wampfler

Certification Radio test report

According to the standard:
CFR 47 FCC PART 15

Equipment under test:
TRANSMITTER RSEF

FCC ID: OQMRSEF

Company:
JAY ELECTRONIQUE

DISTRIBUTION: Mr VANREMOORTERE   **(Company:** JAY ELECTRONIQUE**)**

Number of pages: 51 with 6 appendixes

Ed.	Date	Modified Page(s)	Technical Verification and Quality Approval	
			Name and Function	Visa
0	09-MAR-2017	Creation	T. LEDRESSEUR Radio Technician	

Duplication of this test report is only permitted for an integral photographic facsimile. It includes the number of pages referenced here above.
This document is the result of testing a specimen or a sample of the product submitted. It does not imply an assessment of the conformity of the whole manufactured products of the tested sample.

Siège Social : Emitech - 3, rue des Coudriers - Z.A. de l'Observatoire - 78180 MONTIGNY LE BX - France
Siret : 344 545 645 00022 - Tél. : 33 (0)1 30 57 55 55 - Fax : 33 (0)1 30 43 74 48 - E-mail : contact@emitech.fr - URL : www.emitech.fr
S.A. au capital de 1 560 000 € - R.C.S. VERSAILLES 344 545 645 - APE 7112B

Doc. ref : **333130C_A001-EN**
2022/07/18

Page 50 / 57

Certification Radio test report

According to the standards:
RSS GEN – Issue 4
RSS 210 - Issue 9

Equipment under test:
TRANSMITTER RSEF

IC NUMBER: 3393A-RSEF

Company:
JAY ELECTRONIQUE

DISTRIBUTION: Mr VANREMOORTERE   **(Company:** JAY ELECTRONIQUE**)**

Number of pages: 49 with 6 appendixes

Ed.	Date	Modified Page(s)	Technical Verification and Quality Approval	
			Name and Function	**Visa**
0	09-MAR-2017	Creation	T. LEDRESSEUR Radio Technician	

Doc. ref : **333130C_A001-EN**
2022/07/18

Verification Radio test report

According to the standard:
CFR 47 FCC PART 15

Equipment under test:
RECEIVER RSRD

Company:
JAY ELECTRONIQUE

DISTRIBUTION: Mr VANREMOORTERE   **(Company:** JAY ELECTRONIQUE**)**

Number of pages: 22 with 3 appendixes

Ed.	Date	Modified Page(s)	Technical Verification and Quality Approval	
			Name and Function	**Visa**
0	09-MAR-2017	Creation	T. LEDRESSEUR Radio Technician	DUMESNIL M.

Duplication of this document is only permitted for an integral photographic facsimile. It includes the number of pages referenced here above.
This document is the result of testing a specimen or a sample of the product submitted. It does not imply an assessment of the conformity of the whole manufactured products of the tested sample.

ACCREDITATIONS N°
1-0107, 1-0826,
1-0827, 1-1925,
1-2069, 1-2070,
1-2376 & 1-6086

ESSAIS

LISTE DES SITES ACCREDITES ET
PORTEES
DISPONIBLES SUR WWW.COFRAC.FR

Verification Radio test report

According to the standard:
ICES 003 – Issue 6
RSS GEN – Issue 4

Equipment under test:
RECEIVER RSRD

Company:
JAY ELECTRONIQUE

DISTRIBUTION: Mr VANREMOORTERE   **(Company:** JAY ELECTRONIQUE)

Number of pages: 21 with 3 appendixes

Ed.	Date	Modified Page(s)	Technical Verification and Quality Approval	
			Name and Function	**Visa**
0	09-MAR-2017	Creation	T. LEDRESSEUR Radio Technician	DUMESNIL M.

Duplication of this test report is only permitted for an integral photographic facsimile. It includes the number of pages referenced here above.
This document is the result of testing a specimen or a sample of the product submitted. It does not imply an assessment of the conformity of the whole manufactured products of the tested sample.

ACCREDITATIONS N°
1-0107, 1-0826,
1-0827,1-1925,
1-2069,1-2070,
1-2376 & 1-6086
cofrac
ESSAIS
LISTE DES SITES ACCREDITES ET
PORTEES
DISPONIBLES SUR WWW.COFRAC.FR

工事設計認証書

社名　JAY Electronique
代表者　Patrick Berthet　殿

認証番号	018-210092
認証を受けた者の氏名又は名称 住所	JAY Electronique ZAC la Bâtie, rue Champrond 38334 Saint Ismier, FRANCE
特定無線設備の種別	第2条第1項第8号に掲げる無線設備
特定無線設備の型式又は名称	RSEF(transmitter)/RSRD(receiver)
電波の型式、 周波数及び空中線電力	F1D　920.6～923.4MHz(200kHz間隔15波)　20.0mW
認証をした年月日	2021-04-20
備考	

上記のとおり、電波法第38条の24第1項の規定に基づく工事設計について認証を行ったことを証する。

発行：2021-04-20

C&S
株式会社　認証技術支援センター

CONDUCTIX wampfler

工事設計認証書

社名　　JAY Electronique
代表者　Patrick Berthet　　　殿

認証番号	018-210091
認証を受けた者の氏名又は名称 住所	JAY Electronique ZAC la Bâtie, rue Champrond 38334 Saint Ismier, FRANCE
特定無線設備の種別	第2条第1項第8号に掲げる無線設備
特定無線設備の型式又は名称	RSEF(transmitter)/RSRD(receiver)
電波の型式、周波数及び空中線電力	F1D　928.15～929.65MHz(100kHz間隔16波)　1.0mW
認証をした年月日	2021-04-20
備考	

上記のとおり、電波法第38条の24第1項の規定に基づく工事設計について認証を行ったことを証する。

発行：2021-04-20

C&S
株式会社　認証技術支援センター

JAY électronique
ZAC la Bâtie, rue Champrond
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