Wireless emergency stop system
RADIOSAFE Series

Typical applications :

◆ Interventions in dangerous zone in «monitored-diagnostic» mode.

◆ Interventions in «manual» mode for adjustment and maintenance of moving machines and rotating machines, machining centers and automatic production lines.

◆ Interventions on assembly of parts requiring precise commands and, in the event of a problem, immediate shutdown of machine.

CE

1- Presentation

The **RADIOSAFE** system is designed to provide personnel working in a dangerous area with a means of stopping a machine in an emergency.

The system comprises a safety receiver, a transmitter and a charger.

The safety receiver has the following inputs and outputs:
- Depending on the application, one or two emergency stop inputs (ES), two-channel type, or one or two safety light barrier inputs (LB), type 4 per EN 61 496.
- A radio input associated to the emergency stop button on the transmitter ensuring a SIL3 safety level.
- Six static outputs associated to the function buttons on the transmitter.
- 3 static outputs for indication of the operating state
- Depending on the application, one or two inputs monitoring presence of the transmitter on the charger.
- Operating mode selector switches
  - Automatic or manual start [1]
  - Access to protected area with transmitter
  (1) The manual mode can only be used provided the transmitter has been removed from the charger (charger contact open and self-checked).

The transmitter is also equipped with function buttons enabling manual control of a machine in downgraded mode. The operator can:
- Perform step by step adjustments by 2 pushbuttons
- Modulate a rotation speed by 2 pushbuttons
- Control handling of a component by 4 pushbuttons
- Select components by means of selector switches

Special care has been given to operator control ergonomics:
- Transmitter designed to enable one-hand control
- Buttons are easily accessible
- Touch sensitive buttons
- Identification of functions controlled
- Light weight, ultracompact transmitter
- High transmitter endurance and fast battery charging
- Adaptability to all radio configurations in the environment by the possibility for frequency changes by a trained technician
- Function buttons mechanically protected to prevent any unintentional actions

To further enhance safety when using this system, innovative technical solutions and options are also proposed :
- Access authorisation by electronic key only for qualified operator
- Infrared start-up validation (option) to limit start-up of a machine in a given area and ensure identification of the machine started up

Easy to maintain:
- Customisation fully stored in electronic key
- Configuration software
- Diagnostic aid indicator lights

C O N T E N T S

Compliant with European directives and standards :

- Hertzian equipment and telecommunication terminals (low voltage, EM compatibility, radio-frequency spectrum)
- Machinery 2006-42 with SIL3 safety level according to EN 61508-1-7 (2001) EN ISO 13849-1 (2008) for the performance level e (Category 4)
EC type certificate issued by TÜV Rheinland

Functional Safety Type Approved
TÜV Rheinland ® FS

N°01/205/0649/09

jay
électronique

E800 G - 0710

revision01

2- Version, type and number of transmitter functions

2.1 Transmitter URE

The transmitter is formed by a unit comprising 4 function buttons, a "Start" button and an emergency stop palmswitch.
It features a high level of adaptability allowing each position to receive 5 different types of function buttons, such as:
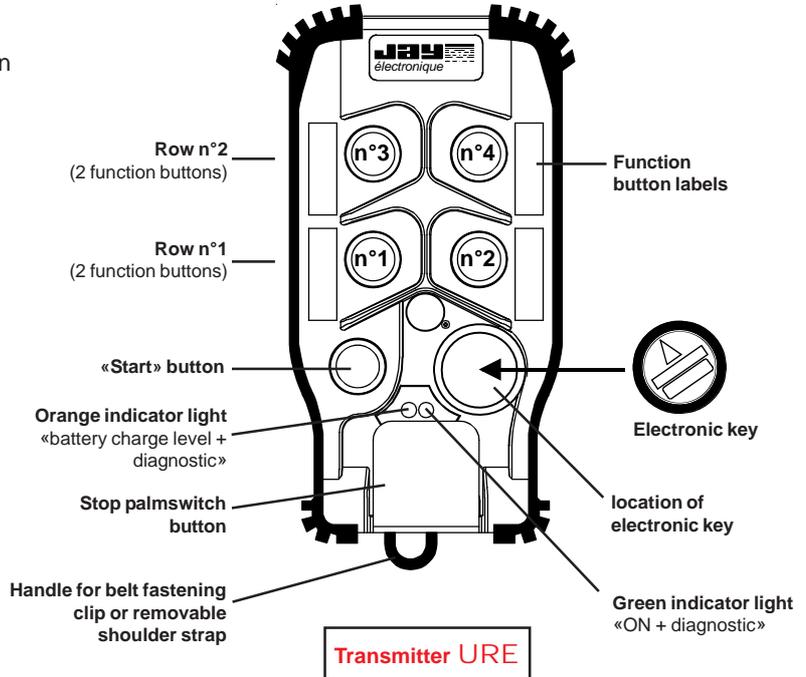
- One-step pushbutton (single speed)
- Two-step pushbutton (double speed)
- Rotary switch with 2 fixed positions
- Rotary switch with 3 fixed positions
- Rotary switch with 3 fixed positions with auto. return

Two parameters can be easily adapted to the environment by a trained operator :

- Operating radio frequency
- Duration of temporization for «dead man» function (Automatic shutdown of remote control in case of prolonged non use)

These operations are performed by procedures implementing buttons nb.1, nb.2, the emergency stop palmswitch and the «Start» button, with no need to open the transmitter or receiver.
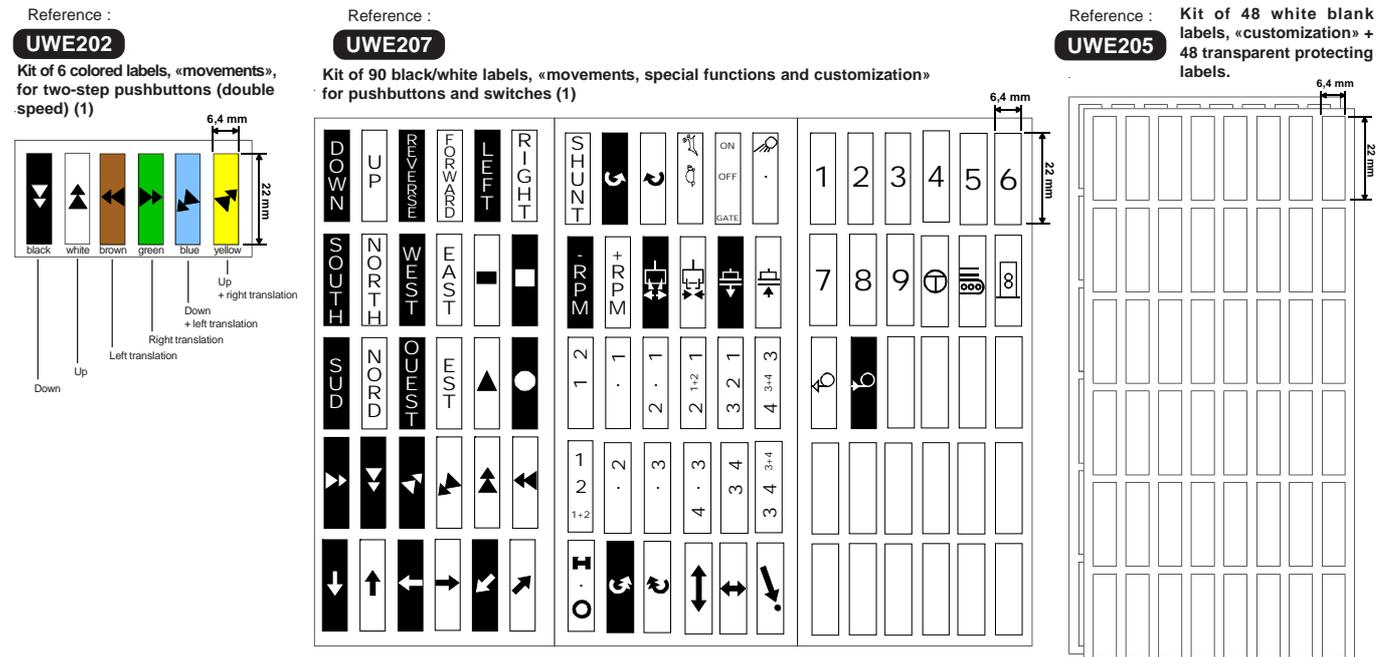The change of parameter can be however locked.

The electronic key contains all the parameters of the controlled receiver, it is possible to use an auxiliary transmitter only with the electronic key and a validation procedure.

Row n°2 (2 function buttons)
Row n°1 (2 function buttons)
Function button labels
«Start» button
Orange indicator light «battery charge level + diagnostic»
Stop palmswitch button
Handle for belt fastening clip or removable shoulder strap
Electronic key
location of electronic key
Green indicator light «ON + diagnostic»

Transmitter URE

2.2 URE transmitter function button labels

The various button functions are identified by means of adhesive labels placed in he recesses provided in the transmitter unit housing at each button location.
The labels are supplied in the form of sheets with the various labels you will need for your application. Simply choose the labels corresponding to your configuration.

Reference : **UWE202**
Kit of 6 colored labels, «movements», for two-step pushbuttons (double speed) (1)

Reference : **UWE207**
Kit of 90 black/white labels, «movements, special functions and customization» for pushbuttons and switches (1)

Reference : **UWE205**
Kit of 48 white blank labels, «customization» + 48 transparent protecting labels.

(1)= 1 kit supplied with the transmitter.
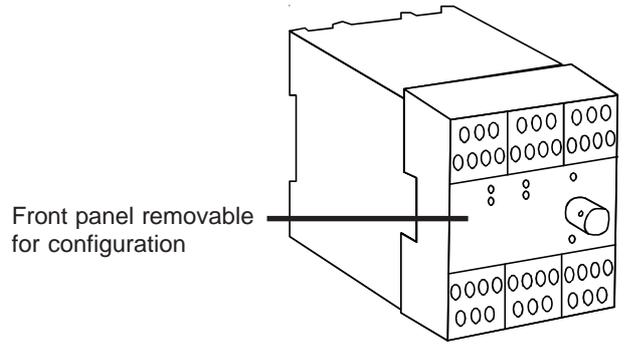
3- Type and number of receiver functions

The receiver RSRA has the following outputs :

Opto-coupled 100 mA static outputs:
- 6 function outputs

Safety relays :
- 2 safety relays with 3 NO guided contacts

Front panel removable for configuration

Receiver RSRA

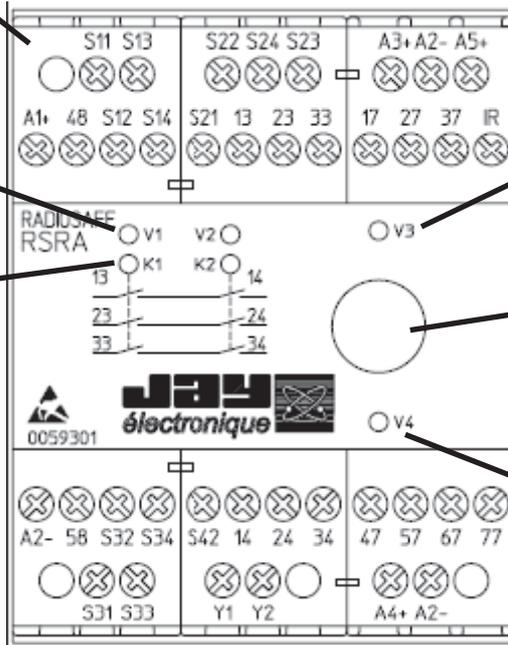Removable connection block, screw terminals

V1 and V2 yellow indicator lights
«Safety module state»

K1 and K2 green indicator lights
«State of safety relays»

V3 red indicator light
"Wrong identity code or diagnostic"

BNC connector
for antenna extensions and BNC antenna

V4 green indicator light
"Radio reception quality"

Terminal	Function
Safety inputs and outputs	
A1+	24 VDC power supply for safety modules of receiver RSR
A2 -	Common ground
48	24 V static output: safety module state
58	Transmitter utilization state
S11 S12	Input 1 for 1st emergency stop or 1st safety light barrier
S13 S14	Input 2 for 1st emergency stop or 1st safety light barrier
S21 S22	Input 1 for 2nd emergency stop or 2nd safety light barrier
S23 S24	Input 2 for 2nd emergency stop or 2ndt safety light barrier
S31 S32	Input for monitoring of first charger
S33 S34	Input for monitoring of second charger
S42	Input for wired START pushbutton
Y1 Y2	Input for auxiliary relay return loop
13 14	1st safety output (NO contact)
23 24	2nd safety output (NO contact)
33 34	3rd safety output (NO contact)
or	or
31 32	monitoring output (NC contact)

Terminal	Function
Static outputs assigned to remote control	
A3+	24 VCD power supply for static output assigned to remote control
A2-	Common ground
17	Presence of the transmitter on the charger
27	Button nb.1 , 1st contact point
37	Button nb.2, 1st contact point
47	Button nb.1 or button nb.2, 2nd contact point
57	Button nb.3, 1st contact point
67	Button nb.4, 1st contact point
77	Button nb.3 or Button nb.4, 2nd contact point

Terminal	Function
Connection for infrared module (UDF)	
A5+	12 VDC output
IR	Receiver signal
A2-	Common ground

4- Technical characteristics

4.1- Transmitter URE

Mechanical characteristics and environmental withstand capacity

Housing	ABS, yellow IP 65 Button mechaniclly protected
Weight (with battery)	240 g
Dimensions	46 x 78 x 143 mm
Operating temperature range	-20°C to +50°C
Storage temperature range	-20°C to +50°C
Fast charging temperature	0°C to +40°C
Complete charging time (at +20°C)	2 hours and 30 minutes
Idle position	Only on charger ref.:**Sci-B**
Carrying	Carrying bags **UWE103** and 3-point strap **UWE104**

Electrical and radio characteristics

Power supply	Lithium ion battery
Autonomy (for buttons typical average use, at 20°C)	50 hours / 50 % operating time
Frequency	64 frequencies, programmable in 433-434 MHz (see list on page 6)
Transmit power	<10 mW (without license), built-in antenna
Modulation	FM
Average range	150 m in industrial space / 350 m in open space **(1)**

Functional characteristics

Functions	Up to 4 function buttons 5 types of different buttons possible: - One-step pushbutton (single speed) **BPSV** ① - Two-step pushbutton (double speed) **BPDV** ①,② - Rotary switch with 2 fixed positions **COM2** - Rotary switch with 3 fixed positions **COM3** - Rotary switch with 3 fixed positions with auto. Return **COM3R** 1 "Start" pushbutton 1 general emergency stop pushbutton, active priority 1 electronic locking key
Dead man function (auto shut-down)	Time delay duration programmable by user
Indicators	1 "battery charge level" and diagnostic orange indicator light 1 "Start", "battery charging" and diagnostic green indicator light

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

4.2- Industrial support charger SCi-B

Mechanical characteristics

Housing	ABS
Mounting	Wall-mounted

Electrical characteristics

Battery charge voltage	5 VDC
Contact (Transmitter detection)	2 "NO" contacts
230 VAC-5 VDC power supply unit model	Wall-mounted
24 VDC-5 VDC power supply unit model	DIN rail

4.3- Receiver RSRA

Mechanical characteristics and environmental withstand capacity

Housing	ABS, black/yellow
	IP 40
Weight	495 g (approx.)
Dimensions	67 x 84 x 129mm (not including antenna)
Operating temperature range	0 °C to + 50 °C
Storage temperature range	- 30 °C to + 70 °C
Connection	Spring terminals for wires 0.08² to 2.5²

Radio characteristics

Characteristics compliant with ETS 300 220	
Frequency	64 frequencies programmable in 433-434 MHz (see list on page 6)
Antenna	1/4 wave, as accessory, plugs in to BNC connector
Sensitivity	< -100 dBm

Electrical characteristics

Power supply voltage Un		24 VDC
Voltage range (at max., 5% ripple)		0.85 to 1.15 Un
Consumption		max., 120 mA (Static output, not loaded)
Secure relay outputs (terminals 13-14, 23-24, 33-34 or 31-32)		
Contacts		3 NO
Type of contacts		Linked contact relays
Pull-in time at Un		
	Automatic start	800 ms max. (power up)
	Automatic restart	70 ms max.
	Manual start	110 ms max.
Trip time (reaction)		
	S12-S14, S22-S24, S32-S34	25 ms max.
		Stop (remote control): 170 ms max.
Assigned output voltage		AC250V
Low voltage switching		$\geq$ 100 mV
Thermal current Ith		5 A
Switching capacity		
	Per AC 15 :	AC 3A/230 V for NO contacts EN60947-5-1
		AC 2A/230 V for NC contacts EN60947-5-1
	Per DC 13 :	DC 8A/24 V at 0.1 Hz EN60947-5-1
Electrical service life		
	Per AC15 at 2A, AC230V	100 000 cycles EN60947-5-1
Short-circuit rating		
	Maximum fuse rating	6 A gL EN60947-5-1
Mechanical service life		10 x 10^6 cycles
Static outputs (terminals 48, 58, 17, 27, 37, 47, 57, 67, 77)		
Type of outputs		Static outputs, PNP
Nominal voltage Un (A3, A4)		DC 24 V
Voltage range		0.85 to 1.15 Un
Output voltage		DC 24V, max. 100mA thermal
		max. 400 mA for 0.5s
		Overload and temperature protection
Indicators		2 yellow indicator lights: state of safety module
		2 red indicator lights: state of safety relays
		1 red indicator light: wrong identity code or diagnostic
		1 green indicator light: radio reception quality

5- Type of radio link and frequency table

The system is equipped with a permanent radio link ensuring command safety.
64 frequency channels are available on the 433-434 MHz band. The radio channel is programmed on the transmitter by a simple procedure.

5.1- List of available radio channels

433 - 434 MHz bands, with adjacent intervals of 0,025 MHz

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

(1) List of frequencies available for Denmark
(2) List of frequencies available for Singapore

6- Safety aspects and intervention modes

The product is designed to meet the following requirements:
- Radio emergency stop for control system (SRECS) complying with standard EN ISO 13849-1 (Performance Level e)
- Complying with standard EN 61508-1-7 SIL3 (Safety Integrity Level 3).
- Key enabling use by an authorized operator only.
- «Transmitter» presence detected on charger inhibiting operation of machine if transmitter is not placed on a charger after use.

6.1- Conditions for intervention on machinery

«Monitoring – diagnostic» mode Satisfies standard NFEN12100-2 §5.5 «Complementary prevention measures»
Applications concerned
This system is intended to provide, if necessary, a wireless means of stopping a machine by qualified personnel intervening on a machine for maintenance or inspection purposes. Such machines are generally mobile and large in size, making it impossible to use conventional wiring, and where a diagnostic with the machine running in downgraded mode may be necessary. For example: a conveyor or transhipment system.

Access to such a machine in operation in this "Monitoring – diagnostic" mode is acceptable provided:
- the risk evaluation shows that the intervening technician can avoid a hazardous situation should an immediate danger arise.
- No additional dangerous situation is created by machine shutdown using the radio emergency stop system
- The operator can regularly press a "dead man" button requiring him to keep his transmitter in hand.
- No change of tool or adjustments is performed by the intervening technician.

If the above 4 conditions are observed, the operator can use the **RADIOSAFE** system to access the machine.
If the above 4 conditions are not observed to operate in the "monitoring-diagnostic" mode, the machine must be stopped and the radio remote control must be used with the machine running in manual operating mode.
Access to the machine area is managed by the safety receiver. 2 inputs are provided on the receiver to temporarily inhibit the gate or safety light barrier.
If the machine speed must be reduced or controlled, the signals generated on outputs 58 and 17 are used to determine when the user picks up or sets down the transmitter on its charger.

«Manual» mode satisfies the requirements of standard NFEN12100-2 §4.11.8 «Principles relative to manual control»
This manual operating mode is possible using the Radiosafe system provided control of the machine movements by the non-secure function buttons associated to an emergency stop function of the transmitter is sufficient to stop the concerned machine if necessary.
The machine should automatically switch to manual mode when the transmitter is removed from its charger. Removal of the transmitter from the charger is detected by the safety receiver which in turn generates two information signals to the machine control station. So long as the transmitter is not returned to its charger, the machine remains in manual mode.

6.2- «IR start-up validation» option

Safety feature requiring IR validation to start up a remote controlled equipment can be used.

- To start the unit, the operator is required to point the transmitter toward the **UDF** IR module installed on the equipment to be controlled (see positioning below). This ensures an error-free match-up between the transmitter and the equipment to be controlled.
- The IR start-up field of action has a range of 0 to 10m (see Fig. A).
- The link can be extended up to 2x10m, i.e. 30m in all (**UDF-RSRA** original link = 10m) by means of the **UDWR10** accessory comprising a shielded cable and its connector.

IMPORTANT : the wiring of the UDF **IR module must be separate from the power cables and all other sources which may generate interference (power regulator, for example).**
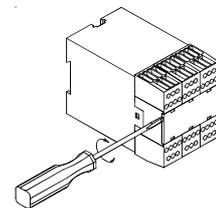
IR module UDF position :

Fig. A
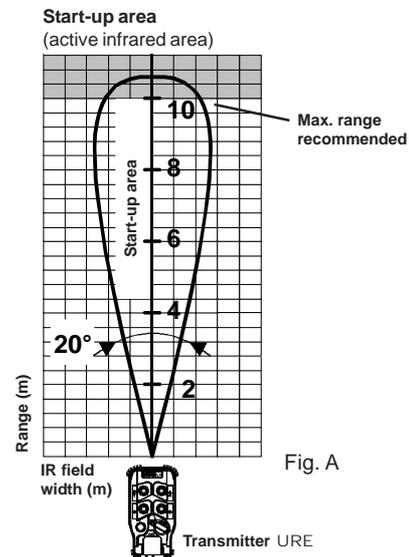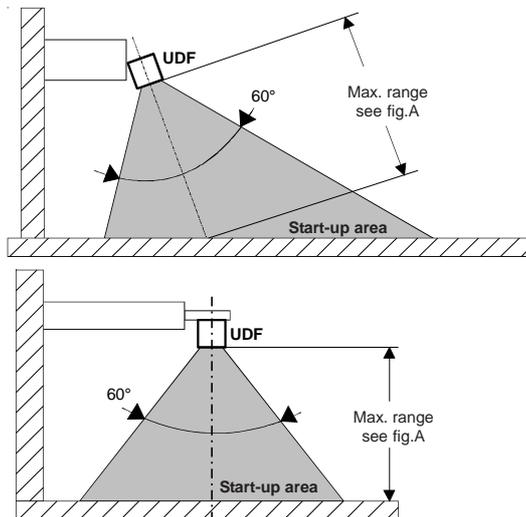
7- Configuring the receiver

The inputs and outputs of the receiver module can be configured to meet the specific needs of your application.
The configuration devices are accessed by removing the front panel from the unit.

7.1- Choosing the receiver RSRA program

The receiver has 10 programs which are user-definable by the 2 "B" selectors.

"B" selector position	Start mode (1)	Reset mode after radio emergency stop (2)	Number of wired emergency stops	Dangerous area access monitoring	IR start-up recommended	Remarks
0	Manual	Radio	2	NO	YES	
1	Manual	Control console	2	NO	NO	
2	Automatic	Radio	2	NO	YES	
3	Automatic	Control console	2	NO	NO	
4	Not used	Radio	Not connected	NO	YES	Special application
8	Manual	Radio	1	YES	YES	The receiver module controls access to the dangerous area with the radio remote control.
9	Manual	Control console	1	YES	NO	The receiver module controls access to the dangerous area with the radio remote control.

(1) Reset mode for protection devices "S11-S14" and "S21-S24"
   Manual start:
   Once the protection devices connected across S11-S14 and S21-S24 are again active, the machine must be restarted using the wired "Start" pushbutton on the control console.
   Automatic start:
   Once the protection devices connected across S11-S14 and S21-S24 are again active, start up takes place automatically provided the remote control is on its charger.

(2) Reset mode after radio emergency stop
   Control console:
   Following an emergency stop using the radio remote control, the machine must be restarted using the "Start" pushbutton wired on the control console.
   Radio:
   Following an emergency stop using the radio remote control, the machine can be restarted using the radio remote control without returning to the control console.

7.2- Time delay adjustment for transmitter pickup or access to protected area

The time during which the transmitter is picked up or during which a protected area is accessed is user-definable between 5 and 30 seconds by 2 "A" selectors. These 2 selectors must always be placed in the same position.

Position of 2 "A" selectors:

Position of "A" selectors	0	1	2	3	4	5	6	7	8	9
Time delay	5 s.	6 s.	7 s.	8 s.	9 s.	10 s.	15 s.	20 s.	25 s.	30 s.

8- Application examples

8.1- Machine control in «manual» mode

For this application, the radio remote control is used in manual mode, for example to ensure the step-by-step adjustment of a machine..

The transmission from automatic mode to radio control mode (manual) of the machine is achieved by removing the transmitter from its charger. See section entitled "Product and intervention safety in manual mode".

Once the intervention has been carried out, the transmitter must again be placed on its charger to allow restarting the machine in automatic mode.

Wiring diagram for this application

B switch: 0 to 4:
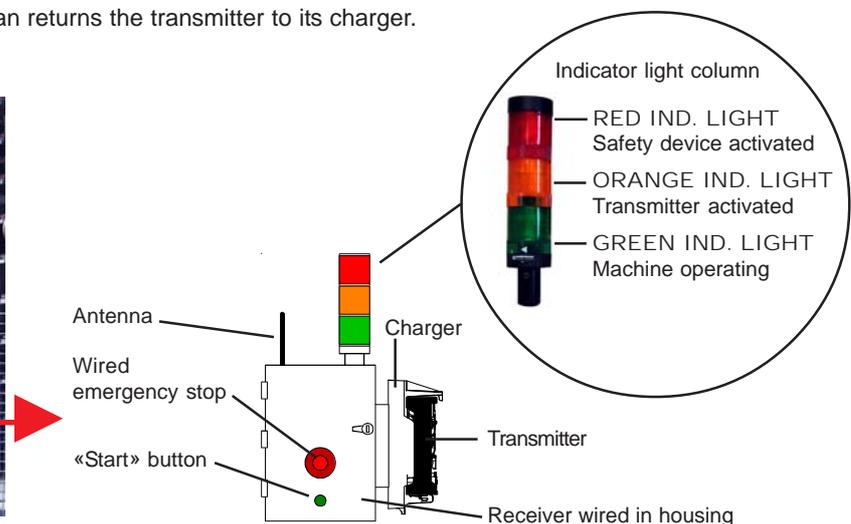• 2 wired emergency stops and one remote-controlled emergency stop
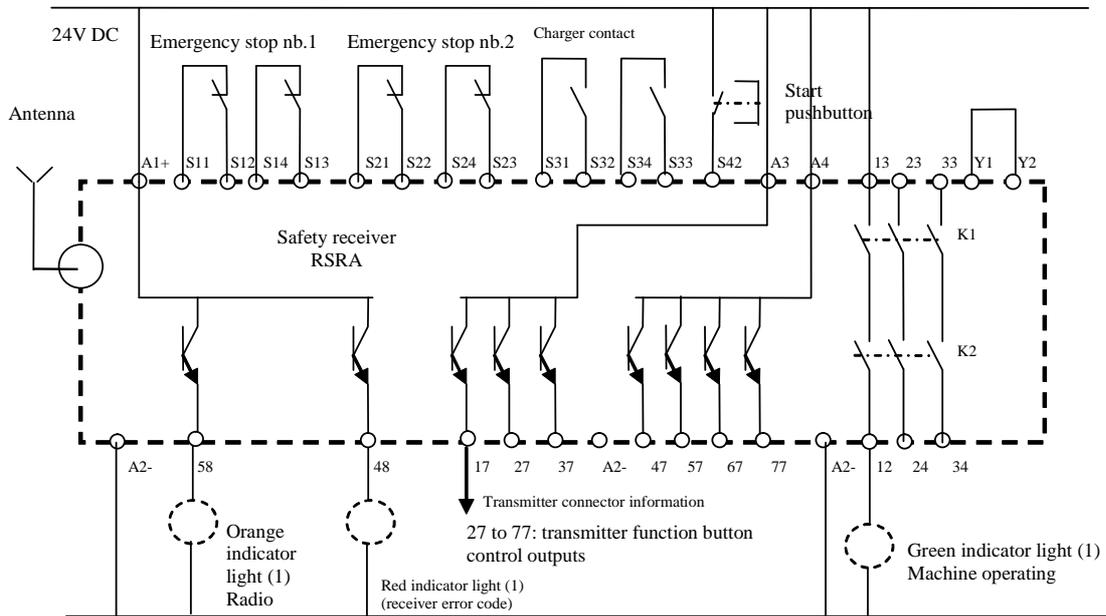
(1) = Indicator light column

8.2- Intervention in «monitored-diagnostic» mode (i.e: Transhipment machine)

In this application, the qualified technician picks up the radio transmitter from its charger then, following an authorization request, penetrates into the transhipment machine area, for example, to detect a malfunction.

If the operator goes through the safety light barrier or the access gate without having the radio transmitter in hand, the transhipment machine immediately shuts down.

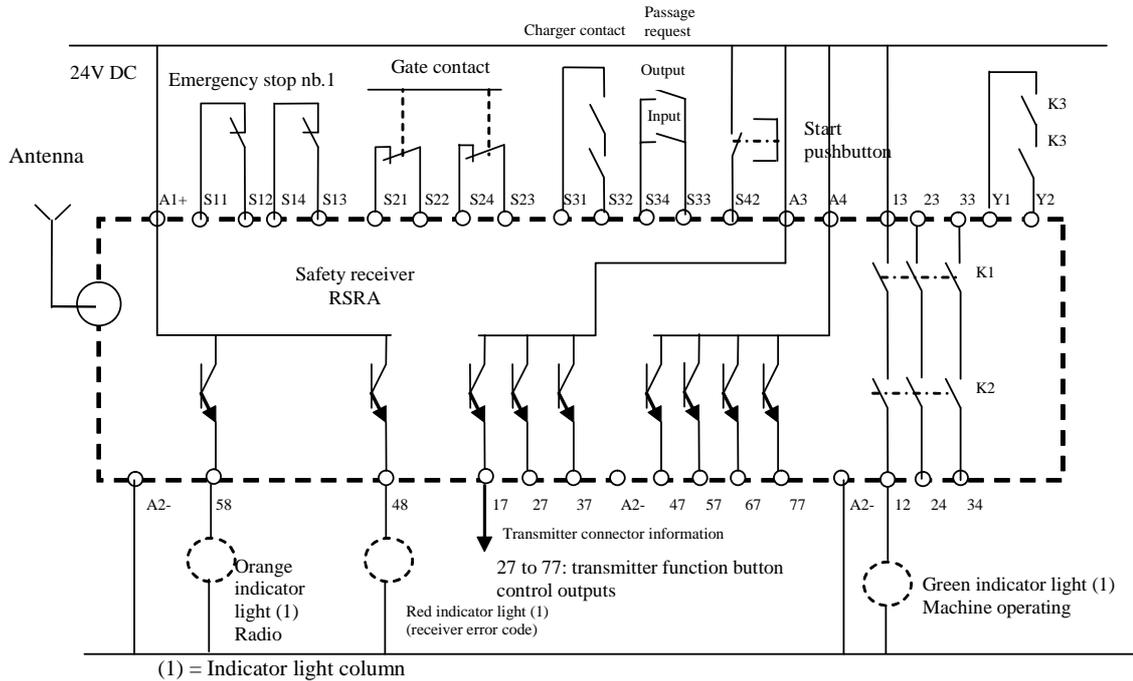Once the intervention is completed, the technician returns the transmitter to its charger.

Wiring diagram for this application

Example of access by area protection gate in "diagnostic-monitoring" mode.
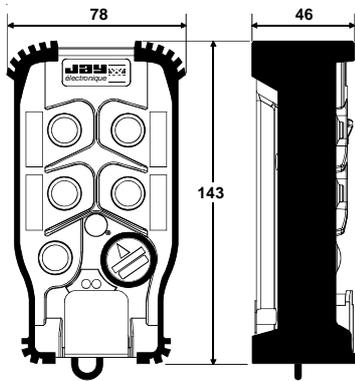
B switch: 8 or 9.
• 1 wired emergency stop and 1 remote-controlled emergency stop.
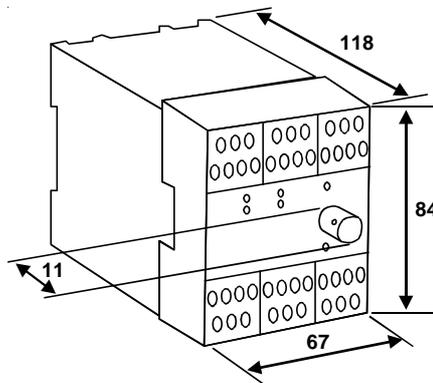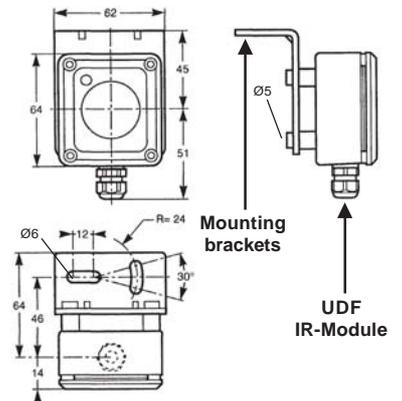• Area access gate control
• Gate passage request

(1) = Indicator light column

9- Dimensions of components

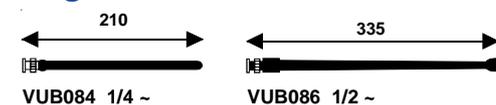### Transmitter URE

Receiver RSRA

IR Module UDF

Mounting brackets

UDF IR-Module

Industrial charger support SCi-B

Power supply adapters UCC•

UCCU
(100-240VAC/5VDC euro. and UK plug

UCC4
(24VDC/5VDC on DIN rail)
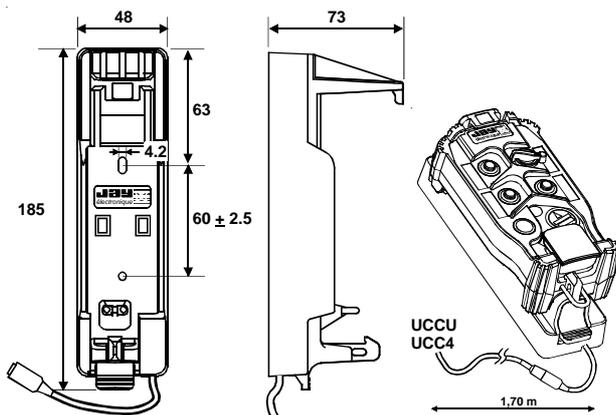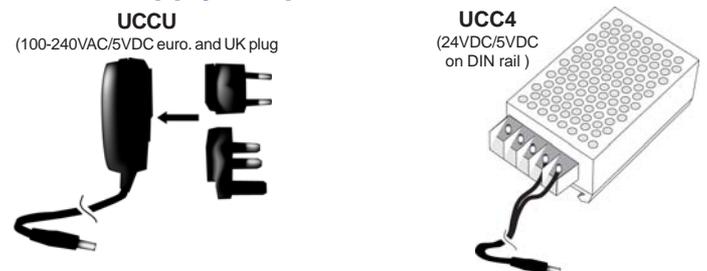
Plug-in antennas VUB08•

VUB084 1/4 ~   VUB086 1/2 ~

10- Selection guide, references for ordering

The **RADIOSAFE** system can be ordered as a set including systematically:

- A transmitter, ref.: URE•••O-B
- A receiver, ref.: RSRA•••OO-B
- A charger support (charging the transmitter), ref.: SCi-B
- A 24 VDC - 5 VDC charger power supply ref.: UCC4
- A 0.5m antenna extension, ref.: VUB170
- An antenna, ref.: VUB084
- A 90° BNC elbow, ref.: VUB060
- A manual

Optionally :
- An UDF IR module, ref.: UDF1 (if «start-up by IR validation» option chosen)

10.1- Standard references and code system for a RADIOSAFE set

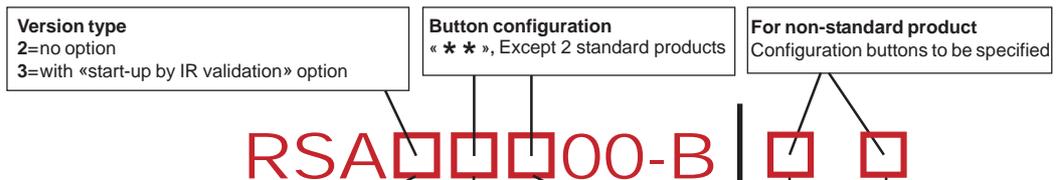### References for standard RADIOSAFE sets :

RSA21100 Assembly formed by : 24 VDC receiver / transmitter, button config.: 4x BPSV / no option
RSA22200 Assembly formed by : 24 VDC receiver / transmitter, button config.: 4x BPDV / no option

References for RADIOSAFE sets with special button configuration :

RSA200** Assembly formed by : 24 VDC receiver / transmitter, button config.: 4 configurable buttons **/ no option
RSA300** Assembly formed by : 24 VDC receiver / transmitter, button config.: 4 configurable buttons **/ with «start-up by IR validation» option

Version type	Button configuration	For non-standard product
2=no option **3**=with «start-up by IR validation» option	« **✱✱** », Except 2 standard products	Configuration buttons to be specified

RSA□□□00-B | □ □

Button configuration table

1st button row	2nd button row	Version	Button config.	Button config.	Non-standard	Non-standard
2 x BPSV	2 x BPSV	2 / 3	1 / ✱	1 / ✱	no	1	1
	BPSV-COM2	2 / 3	✱ / ✱	✱ / ✱	1	3
	BPSV-COM3	2 / 3	✱ / ✱	✱ / ✱	1	4
	2 x COM2	2 / 3	✱ / ✱	✱ / ✱	1	5
	COM2-COM3	2 / 3	✱ / ✱	✱ / ✱	1	6
	BPSV-COM3R	2 / 3	✱ / ✱	✱ / ✱	1	8
	COM2-COM3R	2 / 3	✱ / ✱	✱ / ✱	1	9
	2 x COM3R	2 / 3	✱ / ✱	✱ / ✱	1	B
2 x BPDV	2 x BPDV	2 / 3	2 / ✱	2 / ✱	no	2	2
	BPSV-COM2	2 / 3	✱ / ✱	✱ / ✱	2	3
	2 x COM2	2 / 3	✱ / ✱	✱ / ✱	2	5
	BPSV-COM3R	2 / 3	✱ / ✱	✱ / ✱	2	8
	COM2-COM3R	2 / 3	✱ / ✱	✱ / ✱	2	9

BPSV = One-step pushbutton (single speed) ①
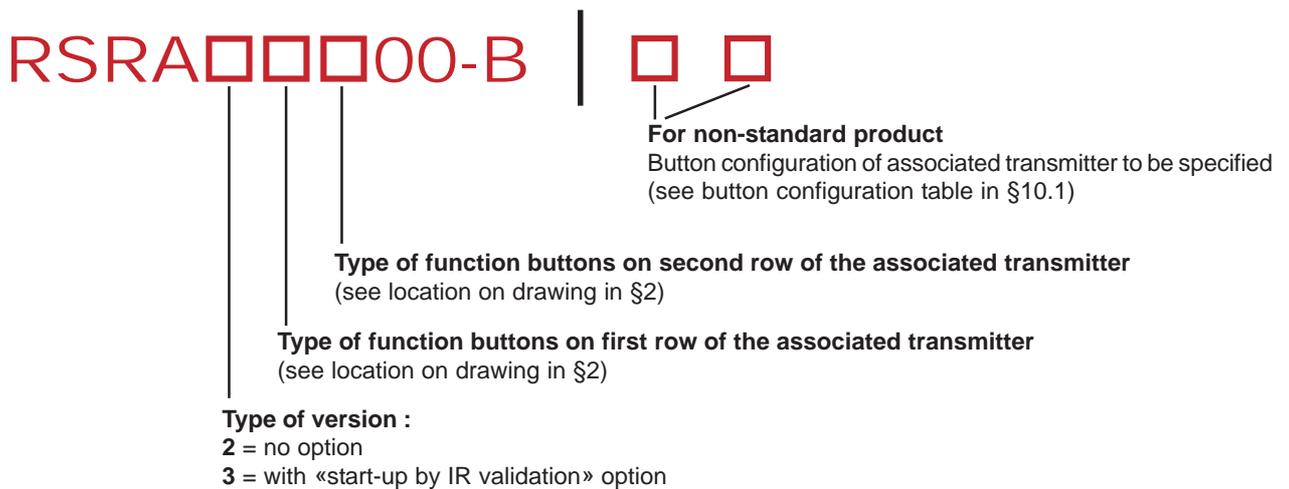
BPDV = Two-step pushbutton (double speed) ①②

COM2 = Rotary switch with 2 fixed positions

COM3 = Rotary switch with 3 fixed positions

COM3R = Rotary switch with 3 fixed positions with auto. return

10.2- Code system for receiver only

☞ **The receiver is delivered with an electronic key programmed according to the model of the associated transmitter.**

RSRA□□□00-B □ □

For non-standard product
Button configuration of associated transmitter to be specified (see button configuration table in §10.1)

Type of function buttons on second row of the associated transmitter
(see location on drawing in §2)

Type of function buttons on first row of the associated transmitter
(see location on drawing in §2)

Type of version :
2 = no option
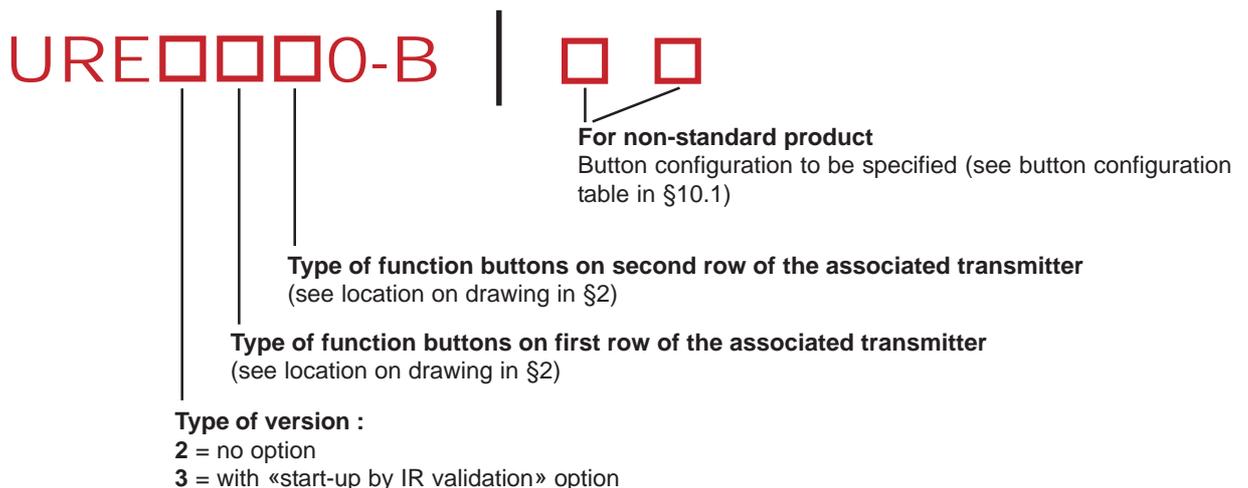**3** = with «start-up by IR validation» option

References for separate receivers (comprising electronic key) :

RSRA2**00 (Receiver operating with a transmitter without «start-up by IR validation» option, button configuration to be specified (see table in §10.1)

RSRA3**00 (Receiver operating with a transmitter with «start-up by IR validation» option, button configuration to be specified (see table in §10.1)

10.3- Code system for transmitter only

☞ **Transmitters are delivered without electronic key, this one being delivered with the associated receiver (or could be separately ordered with the reference : URWE21-B).**

URE□□□0-B □ □

For non-standard product
Button configuration to be specified (see button configuration table in §10.1)

Type of function buttons on second row of the associated transmitter
(see location on drawing in §2)

Type of function buttons on first row of the associated transmitter
(see location on drawing in §2)

Type of version :
2 = no option
3 = with «start-up by IR validation» option

References for separate transmitters :

URE2110 (Transmitter with 4 BPSV without «start-up by IR validation» option)
**URE2220** (Transmitter with 4 BPDV without «start-up by IR validation» option)
URE2**0 (Transmitter without «start-up by IR validation» option, button configuration to be specified (see table §10.1))
URE3**0 (Transmitter with «start-up by IR validation» option, button configuration to be specified (see table §10.1))

10.4- Accessories

Accessories for transmitter :

Reference	Designation
SCi-B	Industrial charger support (power supply adapter **UCC•** to be ordered separately)
UCCU	Power supply adapter 100-240VAC (Euro. & UK plug) / 5VDC for indus. charger support **SCi-B**
UCC4	Power supply adapter on DIN rail 24VDC / 5VDC for industrial charger support **SCi-B**
UWE103	Transmitter carrying bag
UWE104	3-point strap
UWE202	Label kit of 6 colored labels "movements" for 2-step pushbuttons (double speed) (1)
UWE205	Label kit of 48 white blank labels for cutomized marking
UWE207	Label kit of 90 white/black labels "movements, special functions and customization" for switches and pushbuttons (1)

3-point strap
UWE104

Transmitter
carrying bag
UWE103
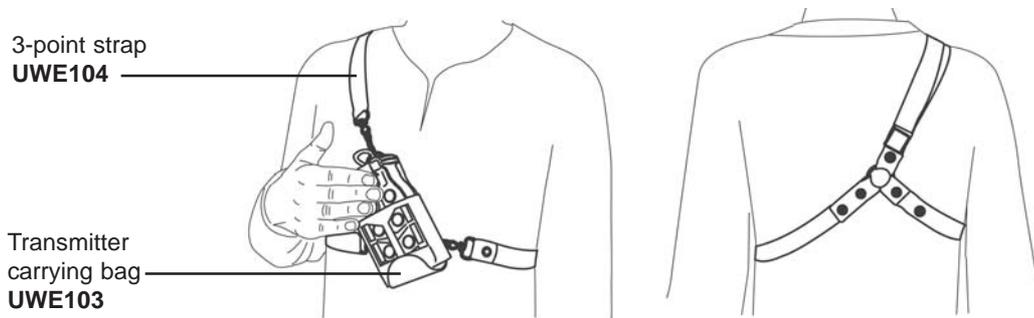
Accessories for receiver :

Reference	Designation
RSWE21-B	Programmed electronic key (please, specify the key number) (1)
VUB084	1/4 wave straight antenna - BNC
VUB086	1/2 wave straight antenna - BNC
VUB060	90° BNC elbow for antenna **VUB084** or antenna extension (2)
VUB170	0,5 m extension for BNC antenna (1)
VUB105	2 m extension for BNC antenna + bracket
VUB125	5 m extension for BNC antenna + bracket
VUB131	10 m extension for BNC antenna + bracket
UWE001	Adhesive directional arrows, 2 directions, color
UWE002	Adhesive directional arrows, 4 directions, color
UDF1	1 IR module (**UDF**) for "start-up by IR validation" option (10 m cable included)
UDWR10	10m cable extension + connector, for IR module (**UDF**)

(1) = 1 accessory delivered with product
(2) = Not suitable for direct connection to antenna Ref.: **VUB086**.

E800 G - 0710

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