Industrial radio remote controls

UC Series

CE

Typical applications:

◆ **Industrial lifting**

- Standard travelling cranes
- Standard gantry cranes

◆ **Construction equipment**

- Tower cranes

1- Description

▐▐▐➡ **A radio remote control provides numerous advantages:**

- Large freedom of movement
- Easy to use
- Precise, quality manoeuvres
- Visibility
- Productivity

▐▐▐➡ **With the UC radio remote controls, Jay Electronique provides solutions to the broad range of standard industrial lifting applications.**

▐▐▐➡ **Besides, a special attention has been given to ensure operator comfort through the following features:**

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

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

- Access is enabled by insertion of an electronic key in transmitter housing
- Memorisation of use of remote control by recording number of operations and durations for each movement (option)

▐▐▐➡ **The receiver is also very easy to install:**

- Compact receiver
- Spring-type connection terminals

▐▐▐➡ **Easy maintenance :**

- Customization entirely stored in electronic key
- Diagnostic aid indicator lights
- Fast repair by insertion of electronic key in an auxiliary transmitter
- Parameter definition software (option)

CONTENTS

- **Compliance with European directives:**
  - Machines
    Cat.3 safety stop as defined by EN954-1
  - Hertzian equipment and telecommunication terminals (low voltage, EM compatibility, radiofrequency spectrum)
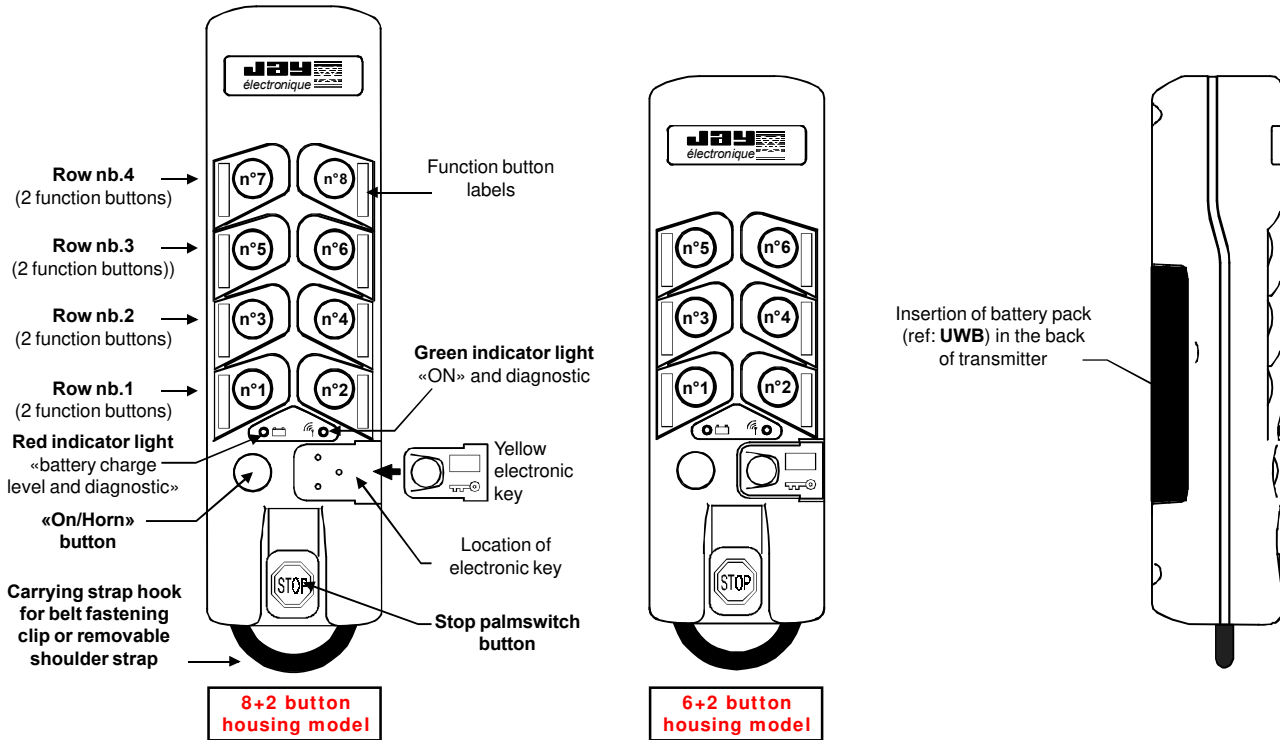   *ART conformity certificate*

- **Compliance with applicatives standards :**
  - EN15011 (travelling cranes)
  - EN13557 (lifting machines with suspended load)

Jay électronique

E770 F - 0707

revision04

2- Product features

2.1 Transmitter UCE

Row nb.4 (2 function buttons)
Row nb.3 (2 function buttons))
Row nb.2 (2 function buttons)
Row nb.1 (2 function buttons)
Red indicator light «battery charge level and diagnostic»
«On/Horn» button
Carrying strap hook for belt fastening clip or removable shoulder strap
Function button labels
Green indicator light «ON» and diagnostic
Yellow electronic key
Location of electronic key
Stop palmswitch button

8+2 button housing model

6+2 button housing model

Insertion of battery pack (ref: **UWB**) in the back of transmitter

The transmitter comes in 3 versions:

6 two-step pushbuttons (double speed)
+ 1 «On/Horn» button
+ 1 stop palmswitch button
or
8 two-step pushbuttons (double speed)
+ 1 «On/Horn» button
+ 1 stop palmswitch button
or
6 two-step pushbuttons (double speed)
+ 1 one-step pushbutton (single speed)
+ 1 electronic switch with 3 positions
+ 1 «On/Horn» button
+ 1 stop palmswitch button

Two parameters can be easily adapted to the environment by a trained operator with the transmitter:
• Operating radio frequency
• Duration of temporization for «dead man» function (Automatic shutdown of remote control in case of prolonged non use)
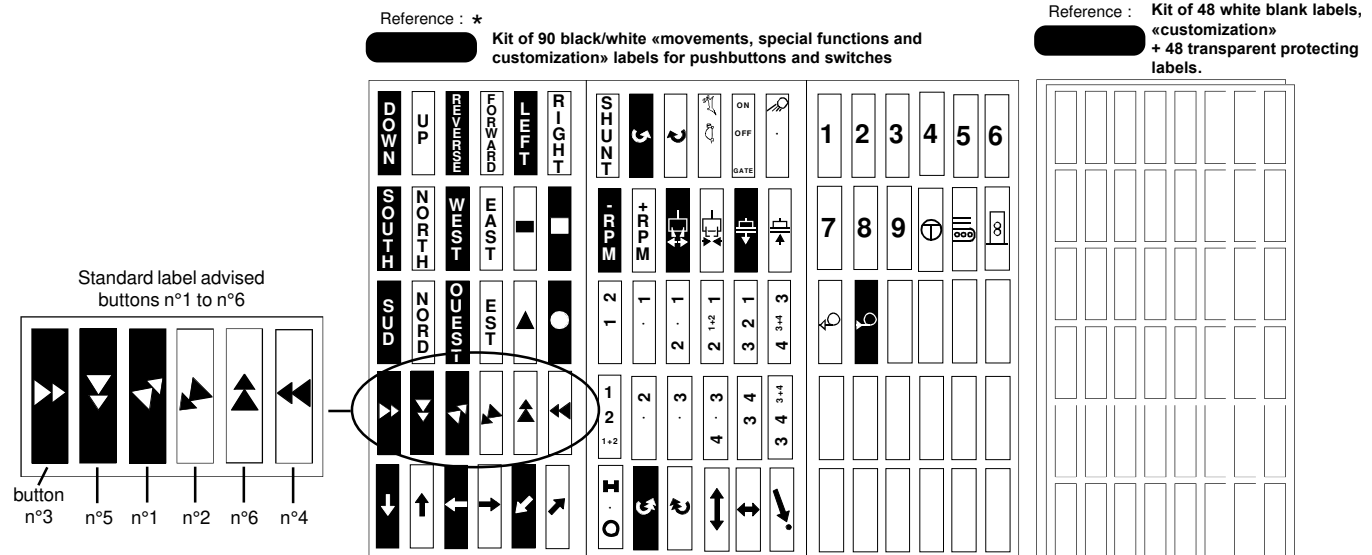
These operations are performed by simple procedures implementing buttons nb.1, 2, 3, the stop palmswitch button and the «On/Horn» button, with no need to open the transmitter or receiver.
The change of parameter can be however locked.

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

2.2 Function button labeling

The various button functions are identified by means of adhesive labels placed in the 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.
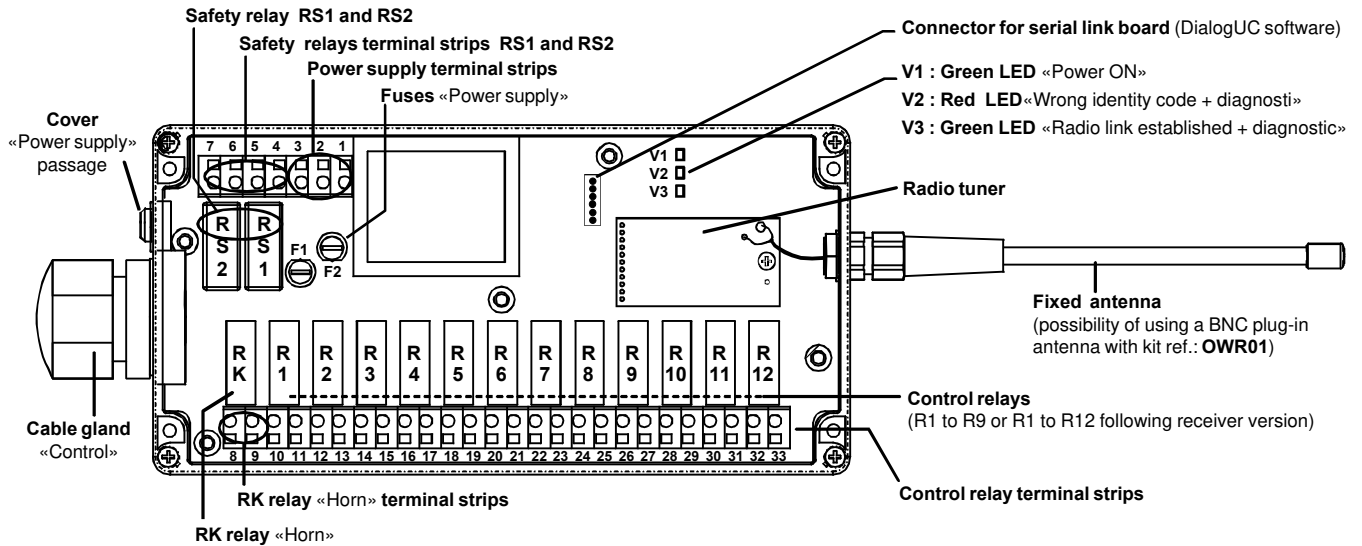
Reference : ★ **Kit of 90 black/white «movements, special functions and customization» labels for pushbuttons and switches**

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

Standard label advised buttons n°1 to n°6

button n°3 n°5 n°1 n°2 n°6 n°4

★ = 1 kit is supplied with **UCE** transmitter
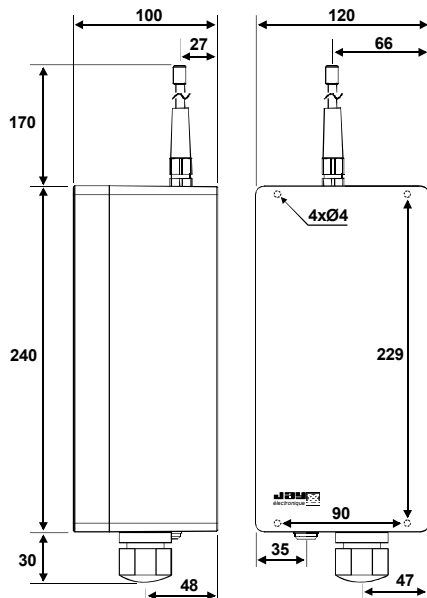
2.3 Receiver UCR

The receiver comes in 8 versions with :

- A basic board comprising 9 or 12 control relays following version.
  + **1 «Horn» relay** (active when the «On/Horn» button is pressed, not auto-maintained)
  + **2 safety relay** (active when the «On/Horn» transmitter button is pressed, auto-maintained until passive or active stop)

- Two types of power supply following version : 48-115 VAC or 48-230 VAC

- Three types of relay configuration according to the associated transmitter version.
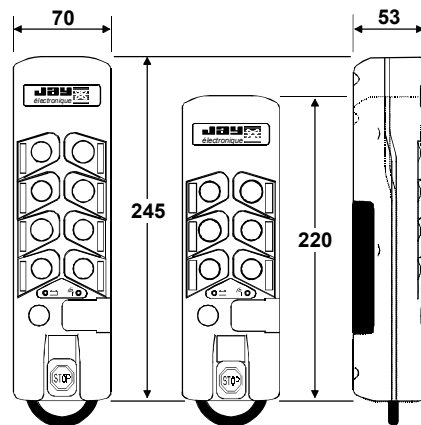

Safety relay RS1 and RS2
Safety relays terminal strips RS1 and RS2
Power supply terminal strips
Fuses «Power supply»
Cover «Power supply» passage
Cable gland «Control»
RK relay «Horn» terminal strips
RK relay «Horn»

Connector for serial link board (DialogUC software)
V1 : Green LED «Power ON»
V2 : Red LED«Wrong identity code + diagnosti»
V3 : Green LED «Radio link established + diagnostic»
Radio tuner
Fixed antenna (possibility of using a BNC plug-in antenna with kit ref.: OWR01)
Control relays (R1 to R9 or R1 to R12 following receiver version)
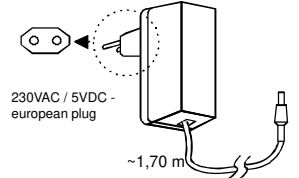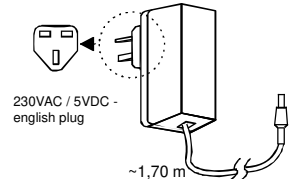Control relay terminal strips

3- Dimensions

Receiver UCR

Transmitter UCE
(6+2 and 8+2 button housing versions)

Charger UCCU

230VAC / 5VDC - european plug
~1,70 m

Charger UCCW

230VAC / 5VDC - english plug
~1,70 m

To UCC· charger
Battery pack UWB
Transmitter UCE
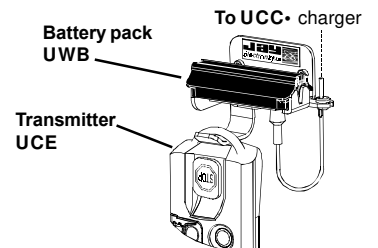
Battery pack UWB

Plug-in antennas
(for use with kit Ref. : OWR01)

VUB084 1/4 ~

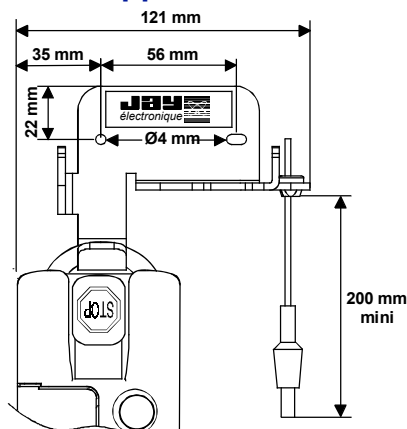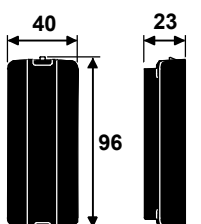VUB086 1/2 ~

Wall support UDC1
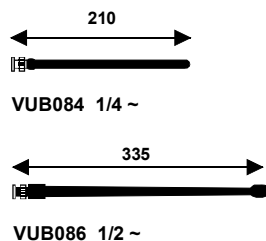
Self-adhesive arrows UWE003
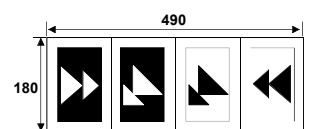
4- Safety aspects and optional functions

The UC remote controls implement numerous safety features, in particular :

Transmitter/receiver communication safety features :

- Permanent radio link : by its non-directional design and insensitivity to the presence of obstacles, the operator is protected from exposure to handling risks during precision manoeuvres and movements.
- Each transmitter-receiver pair has its own specific identity code.
- Hamming distance (minimum number of bits that differ between 2 different messages) of 4.

Transmitter safety feature :

- An active priority general shutdown command is generated when the «stop palmswitch button» is pressed.
- An electronic key limits access to the system to authorised persons only.
- An indicator light indicates an alarm in the event of an insufficiently charged battery.
- A «dead man» function shuts down the transmitter after a pre-programmed time period (1 to 98 mn) when no controls have been generated.
  This function can be disabled at any time to meet specific needs.
- Buttons protected mechanically against unintentional actions.

Receiver safety feature :

- Category 3 safety per EN 954-1 is ensured by redundant control of the emergency stop circuit and use of guided contact safety relays.
- A passive shutdown device shuts down the system if the radio link is jammed.
- **An electric interlocking for contradictory commands (between buttons nb. 1 and nb. 2, nb. 3 and nb. 4, nb. 5 and nb. 6).**

Functional safety feature:

- Start-up sequences are implemented to ensure safe operation by a trained, experienced operator.
- 55 ms response time compatible with the movement speeds of the controlled equipment.

5- Technical characteristics

5.1 Transmitter UCE

Mechanical and environment withstand characteristics	
Housing	ABS Choc, yellow, with mechanical button protection IP65
Weight (with battery pack)	"6+2 buttons" housing model : 380 g "8+2 buttons" housing model : 470 g
Dimensions	"6+2 buttons" housing model: 70x53x220 mm "8+2 buttons" housing model : 70x53x245 mm
Operating temperature range	-20°C to +50°C
Storage temperature range (without battery pack)	-30°C to +70°C
Storage temperature range (with battery pack)	-20°C to +35°C
Attachment when idle	Wall-mounted (by fastening hook) or on belt (by fastening clip)
Electrical and radio characteristics	
Power supply	Plug-in NiMH battery (battery pack, ref : **UWB**)
Autonomy	
433-434Mhz bands :	24 hours / 50 % transmit time / buttons typical average use
869MHz band :	20 hours / 50 % transmit time / buttons typical average use
Radio transmission type	UHF
Radio frequency	64 user programmable frequencies in 433-434 MHz bands (see frequency list page 6)
	12 user programmable frequencies in 869 MHz band (see frequency list page 6)
Transmission power	<10 mW (license not required) fixed antenna
Modulation	FM
Average range with fixed antenna (1)	100 m in typical industrial environment / 300m in unobstructed area
Functional characteristics	
Functions	**All versions comprise :** - 6 two-step pushbuttons (double speed) - 1 "On/Horn" pushbutton - 1 active priority emergency stop palmswitch button - 1 electronic key lock **Additional functions for "8+2 buttons" housing model versions:** - 2 two-step pushbuttons (double speed) **or** - 1 one-step pushbutton (single speed) + 1 electronic switch with 3 positions
"Dead man" function	Time is user-programmable (01 to 98 mn or infinite)
Indications	- 1 red indicator light : "battery level" and "diagnostic" - 1 green indicator light : "On" and "diagnostic"

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

5.2 Receiver UCR

Mechanical and environment withstand characteristics	
Housing	ABS, grey
	IP65
Weight	1,2 kg (approx.)
Dimensions	120x240x100 mm (without antenna and without cable gland)
Operating temperature range	-20°C to +50°C
Storage temperature range	-30°C to +70°C
Cable lead-out	
Power supply :	1 M16 cover (for cable diameter Ø 5 to 7 mm) (1)
Control outputs :	1 M32 plastic cable gland (for cable diameter Ø 20 à 26 mm)
Connection	Spring-type terminal strips for 0.08² to 2.5² section wires
Radio characteristics *(complying with ETS 300 220)*	
Radio frequencies	64 programmable frequencies in 433-434MHz bands (see list on page 6)
	12 programmable frequencies in 869 MHz band (see list on page 6)
Fixed antenna (2)	
433-434Mhz bands :	1/4 wave
869MHz band :	1/2 wave
Sensitivity	Better than -100dBm
Electrical characteristics	
Power supply and consumption (with 2 safety relays + "horn" relay and 5 functions relays pulled in)	48 VAC, -15% to +10%: 550 mA
	115 VAC, -15% to +10%: 200 mA
	230 VAC, -15% to +10%: 70 mA
Control	9 relays + 1 "Horn" relay
	or
	12 relays + 1 "Horn" relay
Safety	2 relays with linked and guided contacts
Number of output relays simultaneously controllable	8 (including "RS1-RS2" safety relays and the "horn" relay)
Outputs	Independent 1 NO relay
Category :	DC13 0,5A / 24VDC
	AC15 2A / 230VAC
Max. breaking capacity :	2000VA
Max. current :	8A (control relays and "Horn" relay), 6A ("Safety" relay)
Min. current :	10 mA (12 Vmin.), 100 mA recommended
Max. voltage :	250VAC
Service life :	under 230VAC, 70VA, cosphi=0,75 : 3x106 cycles
Response time	
On start-up :	0,5 s max.
On control :	0,07 s max.
Active shutdown time	0,16 s max.
Passive shutdown time	1,15 s max.
Indications	1 green indicator light: "Power supply ON"
	1 red indicator light: "wrong identity code" and "diagnostic"
	1 green indicator light: "radio link established" and "diagnostic"
Power supply protection	Against overcurrent by fuse

(1)= The cover can be replaced by a M16 plastic cable gland to be mounted at the same place.
(2)= possibility to use plug-in antenna with ref.: **OWR01** accessory

5.3 Plug-in battery pack UWB

Mechanical, functional and environmental characteristics	
Housing	ABS, black
	IP40
Dimensions	40x96x23 mm
Storage temperature range	-20°C to +35°C
Fast charging time temperature range	0°C to +35°C
Complete charging time	7 hours if battery pack is completely discharged
Partial load time (at +20°C)	10 mn of charge get approximately 1 hour of autonomy
	1 hour of charge gets approximately 8 hours of autonomy
	6 hours of charge get approximately 12 hours of autonomy
Indications (Charge status)	1 indicator light on battery pack (charging):
	Orange = fast charge
	Green = slow charge and up-keep charge
	1 red indicator light on transmitter (low battery)
Charge voltage	5 VDC (by **UCC•** charger)

6- Frequencies

433-434 MHz bands

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

869 MHz band

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

Adjacent intervals: 0,025 MHz
(1) = List of frequencies available for Denmark
(2) = List of frequencies available for Singapore

7- Selection guide, references for ordering

7.1 Standard unit selection guide
(transmitter + receiver + charger - 433-434MHz bands, radio channel nb : 01 on delivery)

Applications	Transmitter		Receiver			Charger	Standard unit
	Transmitter configuration	Transmitter reference	Receiver configuration	Receiver power supply	Receiver reference	Charger reference	Standard unit reference
Travelling cranes **Gantry cranes** **Tower cranes**	6 two-step pushbuttons (double speed) + "On/Horn" button + 1 stop palmswitch button *Delivered with :* 1 battery pack (ref. : **UWB**) + 1 label kit (ref. : **UWE207**)	**UCE22220**	9 + 2 relays With common 2nd speed relay for two-step pushbuttons	48-115 VAC	UCR0AL0	**UCCU** 230 VAC / 5VDC European plug	**UC11AL00**
						UCCW 230 VAC / 5VDC English plug	**UC11AL20**
			Delivered with : 1 electronic key	48-230 VAC	UCR0AM0	**UCCU** 230 VAC / 5VDC European plug	**UC11AM00**
						UCCW 230 VAC / 5VDC English plug	**UC11AM20**
			12 + 3 relays With dedicated 2nd speed relay for two-step pushbuttons	48-115 VAC	UCR0BL0	**UCCU** 230 VAC / 5VDC European plug	**UC11BL00**
						UCCW 230 VAC / 5VDC English plug	**UC11BL20**
			Delivered with : 1 electronic key	48-230 VAC	UCR0BM0	**UCCU** 230 VAC / 5VDC European plug	**UC11BM00**
						UCCW 230 VAC / 5VDC English plug	**UC11BM20**
Travelling cranes **Gantry cranes**	6 two-step pushbuttons (double speed) + 1 one-step pushbutton (single speed) + 1 electronic switch with 3 positions + 1 "On/Horn" button + 1 stop palmswitch button *Delivered with :* 1 battery pack (ref. : **UWB**) + 1 label kit (ref. : **UWE207**)	**UCE2222D0**	12 + 3 relays With common 2nd speed relay for two-step pushbuttons + 1 relay for the one-step pushbutton + 2 relays (1/1+2/2) for the electronic switch with 3 positions *Delivered with :* 1 electronic key	48-115 VAC	UCR0BL1	**UCCU** 230 VAC / 5VDC European plug	**UC21BL00**
						UCCW 230 VAC / 5VDC English plug	**UC21BL20**
				48-230 VAC	UCR0BM1	**UCCU** 230 VAC / 5VDC European plug	**UC21BM00**
						UCCW 230 VAC / 5VDC English plug	**UC21BM20**
Travelling cranes **Gantry cranes** **Tower cranes**	8 two-step pushbuttons (double speed) + 1 "On/Horn" button + 1 stop palmswitch button *Delivered with :* 1 battery pack (ref. : **UWB**) + 1 label kit (ref. : **UWE207**)	**UCE222220**	12 + 3 relays With common 2nd speed relay for two-step pushbuttons *Delivered with :* 1 electronic key	48-115 VAC	UCR0BL2	**UCCU** 230 VAC / 5VDC European plug	**UC23BL00**
						UCCW 230 VAC / 5VDC English plug	**UC23BL20**
				48-230 VAC	UCR0BM2	**UCCU** 230 VAC / 5VDC European plug	**UC23BM00**
						UCCW 230 VAC / 5VDC English plug	**UC23BM20**

A unit comprises:
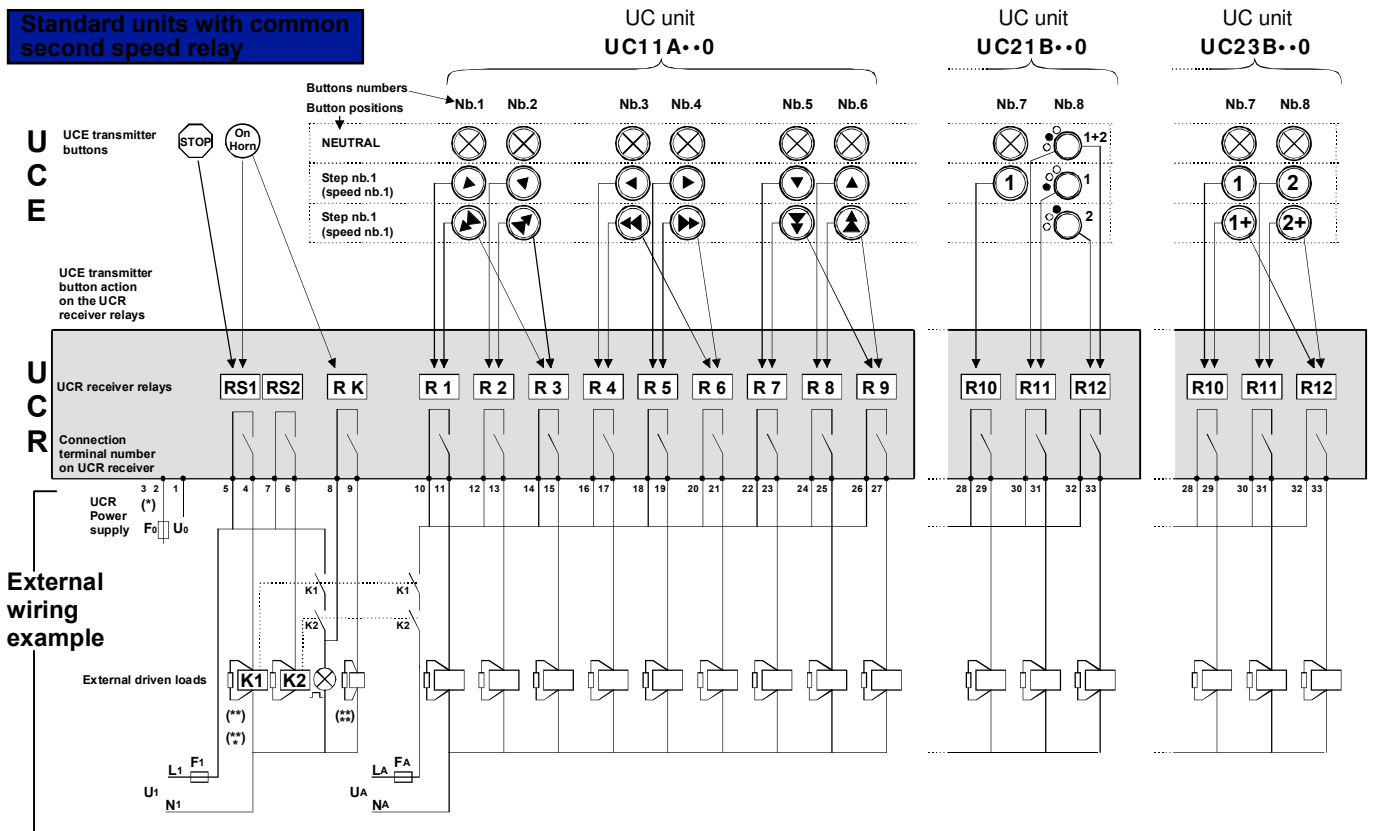- 1 transmitter with 1 battery pack + 1 label kit (ref. : **UWE207**)
- 1 receiver with fixed antenna + 1 electronic key
- 1 charger (for battery pack charging)
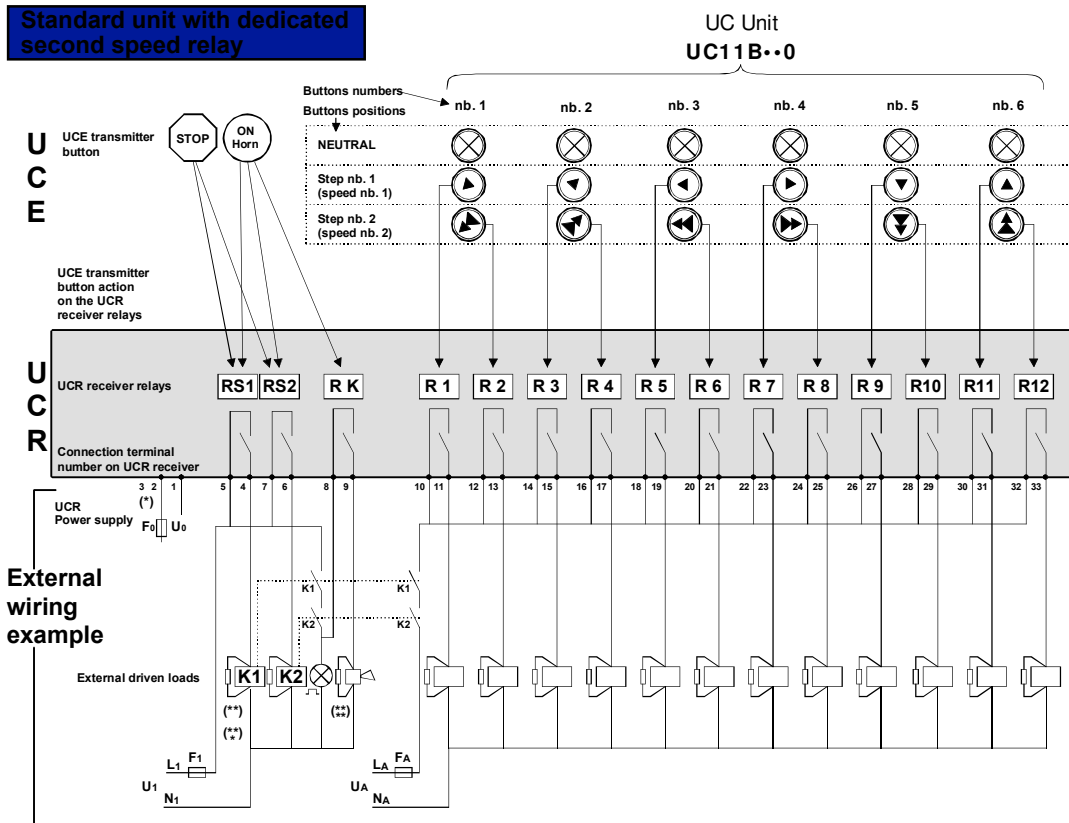- 1 installation and user technical manual

Example :
Standard unit **UC11AM00** =
1 transmitter **UCE22220** with 1 battery pack and 1 label kit
+ 1 receiver **UCR0AM0** with fixed antenna and 1 electronic key
+ 1 charger **UCCU**

7.1.1 Wiring diagram for standard units

Standard units with common second speed relay

UC unit **UC11A··0**

UC unit **UC21B··0**

UC unit **UC23B··0**

Buttons numbers
Button positions

Nb.1 Nb.2   Nb.3 Nb.4   Nb.5 Nb.6   Nb.7 Nb.8   Nb.7 Nb.8

UCE — UCE transmitter buttons — STOP On/Horn

NEUTRAL

Step nb.1 (speed nb.1)

Step nb.1 (speed nb.1)

1+2 / 1 / 2 (UC21B)

1 2 / 1+ 2+ (UC23B)

UCE transmitter button action on the UCR receiver relays

UCR — UCR receiver relays

RS1 RS2   R K   R 1 R 2 R 3 R 4 R 5 R 6 R 7 R 8 R 9   R10 R11 R12   R10 R11 R12

Connection terminal number on UCR receiver

3 2 1 (*) F0 U0   5 4 7 6 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27   28 29 30 31 32 33   28 29 30 31 32 33

UCR Power supply

External wiring example

K1 K1
K2 K2

External driven loads   K1 K2   (**)(**) (*/**)

L1 F1   U1 N1

LA FA   UA NA

Standard unit with dedicated second speed relay

UC Unit **UC11B··0**

Buttons numbers
Buttons positions

nb. 1   nb. 2   nb. 3   nb. 4   nb. 5   nb. 6

UCE — UCE transmitter button — STOP ON/Horn

NEUTRAL

Step nb. 1 (speed nb. 1)

Step nb. 2 (speed nb. 2)

UCE transmitter button action on the UCR receiver relays

UCR — UCR receiver relays

RS1 RS2   R K   R 1 R 2 R 3 R 4 R 5 R 6 R 7 R 8 R 9 R10 R11 R12

Connection terminal number on UCR receiver

3 2 1 (*) F0 U0   5 4 7 6 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

UCR Power supply

External wiring example

K1 K1
K2 K2

External driven loads   K1 K2   (**)(**) (*/**)

L1 F1   U1 N1

LA FA   UA NA

(*)= The power supply connection depends on the type of receiver and the power supply required.
(terminals 2 - 1 for power supply 48VAC or 3 - 1 for power supplies 230VAC or 115VAC following versions)

(**)= Relay life is increased by the use of surge limiters (ex: RC network for AC, Zener + diodes for DC etc...)

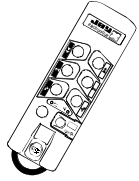(**/*)= K1 and K2 must have guided contacts

(**/**)= Elements wich indicate start of remote controlled machines (ex: horn, rotating / flashing light etc...)
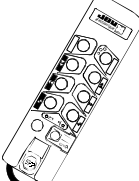
"Safety" relay RS1 and RS2 are switched "on" by the "On/Horn" transmitter pushbutton, and is held in position until the stop palmswitch is pressed (active shutdown) or until the loss of the radio transmission (passive shutdown).
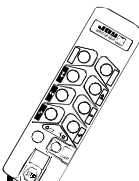
7.2 Selection guide for separate elements (transmitter / receiver / accessories)

Transmitter UCE

Transmitters are delivered with a **single battery pack** (a second can be ordered separately with the reference: **UWB**) and **without electronic key**, this one being delivered with the receiver (or can be ordered separately with the reference **UCWE22X**).

Receiver UCR

Receivers are delivered **with an electronic key** programmed according to the number of receiver relays and to the transmitter model.

Button configuration description	Transmitter reference

Transmitter UCE with:
   6 two-step pushbuttons (double speed).
   + 1 "On/Horn" button
   + 1 stop palmswitch button
 	
 delivered with:
   1 battery pack (ref.**UWB**)
   + 1 label kit (ref.**UWE207**)
	UCE22220 (433MHz)
	 UCEC2220 (869MHz)

Number of relays	12+3 [(1)] relays		9+3 [(1)] relays	
Power supply	48 - 115 VAC	48 - 230 VAC	48 - 115 VAC	48 - 230 VAC
Receiver reference 433 MHz	UCR0BL0	UCR0BM0	UCR0AL0	UCR0AM0
869 MHz	UCRABL0	UCRABM0	UCRAAL0	UCRAAM0
Relay configuration description	With dedicated second speed relay for two-step pushbuttons		With common second speed relay for two-step pushbuttons	

Button configuration description	Transmitter reference

Transmitter UCE with:
   6 two-step pushbuttons (double speed)
   + 1 one-step pushbutton (single speed)
   + 1 electronic switch with 3 positions
   + 1 "On/Horn" button
   + 1 stop palmswitch button
 	
 delivered with:
   1 battery pack (ref.**UWB**)
   + 1 label kit (ref.**UWE207**)
	UCE2222D0 (433MHz)
	 UCEC222D0 (869MHz)

Number of relays	12+3 [(1)] relays	
Power supply	48 - 115 VAC	48 - 230 VAC
Receiver reference 433 MHz	UCR0BL1	UCR0BM1
869 MHz	UCRABL1	UCRABM1
Relay configuration description	With common second speed relay for two-step pushbuttons + 1 relay for the one-step pushbutton + 2 relays (1/1+2/2) for the electronic switch with 3 positions	

Button configuration description	Transmitter reference

Transmitter UCE with:
   8 two-step pushbuttons (double speed)
   + 1 "On/Horn" button
   + 1 stop palmswitch button
 	
 delivered with:
   1 battery pack (ref.**UWB**)
   + 1 label kit (réf.**UWE207**)
	UCE222220 (433MHz)
	 UCEC22220 (869MHz)

Number of relays	12+3 [(1)] relays	
Power supply	48 - 115 VAC	48 - 230 VAC
Receiver reference 433 MHz	UCR0BL2	UCR0BM2
869 MHz	UCRABL2	UCRABM2
Relay configuration description	With common second speed relay for two-step pushbuttons	

(1)= 2 safety relays + 1 «Horn» relay

◆ Accessories for UCE transmitter:

Reference	Description
UCCU	Charger 230VAC(european plug)/5VDC (for **UWB** battery pack charging)
UCCW	Charger 230VAC(english plug)/5VDC (for **UWB** battery pack charging)
UWB	Plug-in battery pack (2)
UDC1	Wall support for stowing when idle and battery pack in charge
UDP1	Belt fastening clip
UWE102	Removable shoulder strap
UWE311	Protective case for transmitter 6+2 button version
UWE205	Kit of 48 white blank labels, "customization"
UWE207	Kit of 90 b/w labels "movements, special functions and customization" for pushbuttons and switches (2)

(2) = 1 accessory supplied with product
(3) = A programmed electronic key is delivered with the receiver, it is however possible to order an electronic key by supplying us the following 2 parameters:
  - the receiver identity code,
  - the transmitter reference.
(4) = BNC antenna and BNC extension to be ordered separately.
(5) = Require BNC tuner connector kit ref.: **OWR01**
(6) = Not suitable for direct connection to antenna ref.: **VUB086**; in this case, use an intermediate extension type **VUB1••**
(7) = Require serial link board ref.: **UCWR32**

◆ Accessories for UCR receiver:

Reference	Description
UCWE22X	Programmed electronic key (parameters to be supplied) (2) (3)
OWR01	BNC tuner connector for BNC plug-in antenna (4)
VUB084	1/4 wave straight antenna, BNC (5)
VUB086	1/2 wave straight antenna, BNC (5)
VUB060	90° BNC elbow for **VUB084** antenna or BNC antenna extension (5) (6)
VUB105	2 m extension for BNC antenna + non insulated bracket (5)
VUB125	5 m extension for BNC antenna + non insulated bracket (5)
VUB131	10 m extension for BNC antenna + non insulated bracket (5)
UWE003	4 Self-adhesive directional black/white arrows on travelling cranes
UDWR12	Common wiring accessory
UDWR13	24-pin plug-in connector + 2 m cable
UDWR14	16-pin plug-in connector + 2m cable
UDWR38	Fastening Kit for receivers by magnetic contacts
UCWR32	Serial link board for "DialogUC" PC Software
UCWR36	"DialogUC" PC Software (CD-ROM + cable PC/UCR) (7)

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