

# Manipulator-type industrial radio remote controls

# UM Series



## Typical applications :

- ◆ **Handling / Industrial lifting**
  - Travelling cranes, gantry cranes
  - Air handling systems
  - Self-propelled devices
- ◆ **Industrial vehicles**
  - Hydraulic cranes on truck
- ◆ **Industrial equipment**
  - Compactors, grinders
  - Drilling machines
- ◆ **Building industry and civil engineering**
  - Tower cranes, fast assembly cranes
  - Concrete pumps
  - Concrete mats
- ◆ **Other equipment**
  - Elevating platforms
  - Cinema vehicles



## 1- Description

■■■➔ A radio remote control provides numerous advantages:

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

■■■➔ With the UM radio remote controls, JAY Electronique provides solutions to the broad range of industrial applications and applications implementing manipulators.

To satisfy these requirements, the JAY Electronique system integrates numerous possibilities in terms of :

- Number and type of manipulators
- Number and type of function buttons
- Number and type of outputs

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

- Transmitter ergonomics
- Easily accessible manipulators and function buttons
- Functions identified by pictograms
- Light-weight compact transmitters
- Adjustable carrying belt to adapt to the operator's body (accessory supplied with product)
- Transmitter endurance, and fast, easy to replace plug-in battery
- Adaptability to all radio configurations of the environment by possibility for changing frequency by a trained operator
- Mechanical protection of manipulators and function buttons to avoid any unintentional action

■■■➔ The receiver is also very easy to install:

- Compact receiver
- Spring-type connection terminals
- LCD display (current frequency, coding, activated output...)

## C O N T E N T S

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



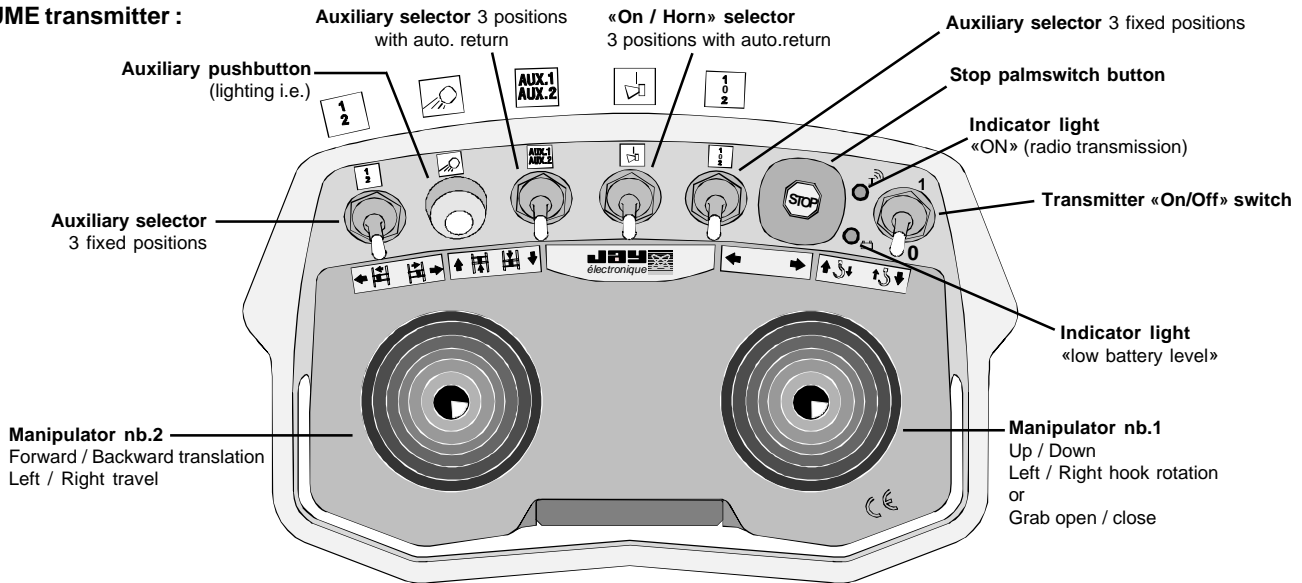
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électronique

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## 2- Product features with respect to application

### 2.1 Application for control of travelling crane, gantry crane

#### ◆ UME transmitter :



Type of manipulators : proportional or by steps 1,2,3,4 speeds (configurable on each direction)

#### ◆ UMR receiver:

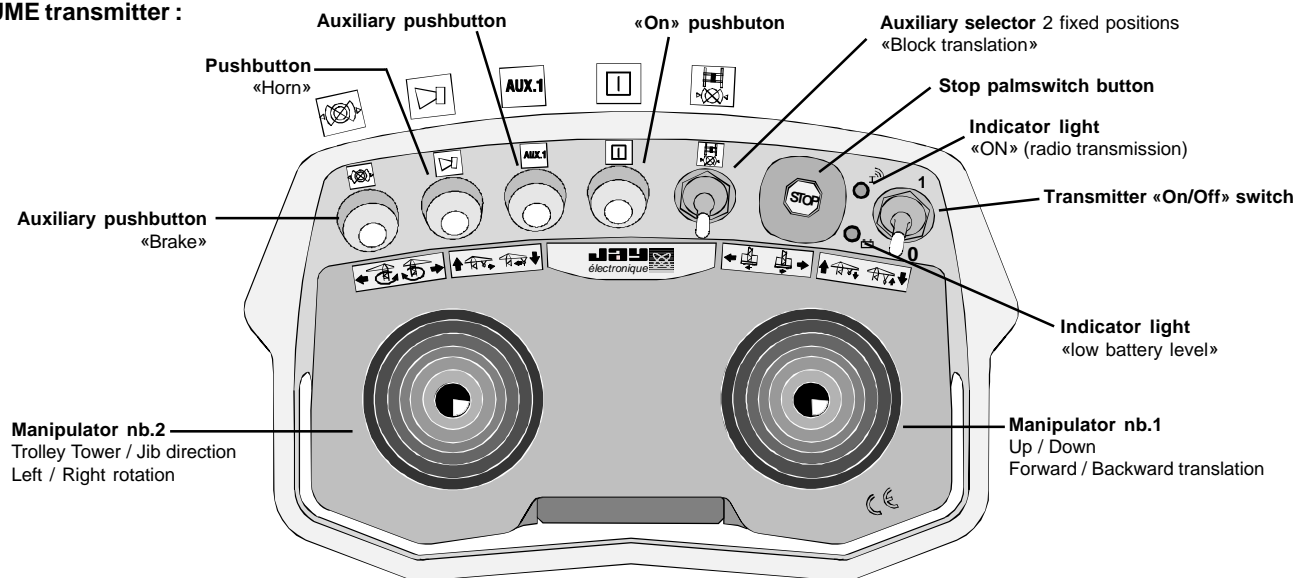
Number and type of function outputs : ..... 12 relays, 20 relays, 28 relays or 12 relays + 4 analog outputs (ANA)  
 Additional outputs (On, Horn, 2 for safety) : ..... 4 relays  
 Housing lead-out : ..... cable gland  
 Power supply : ..... 48-115-230 VAC

#### ◆ UMC charger for UMB2 plug-in battery (with its power supply adapter) :

Power supply : ..... 230 VAC, European plug

### 2.2 Application for control of tower crane, fast assembly crane

#### ◆ UME transmitter :



Type of manipulators : proportional or by steps 1,2,3,4 speeds (configurable on each direction)

#### ◆ UMR receiver :

Number and type of function outputs : ..... 12 relays ou 20 relays  
 Additional outputs (On, Horn, 2 for safety) : ..... 4 relays  
 Housing lead-out : ..... cable gland  
 Power supply : ..... 48-115-230 VAC

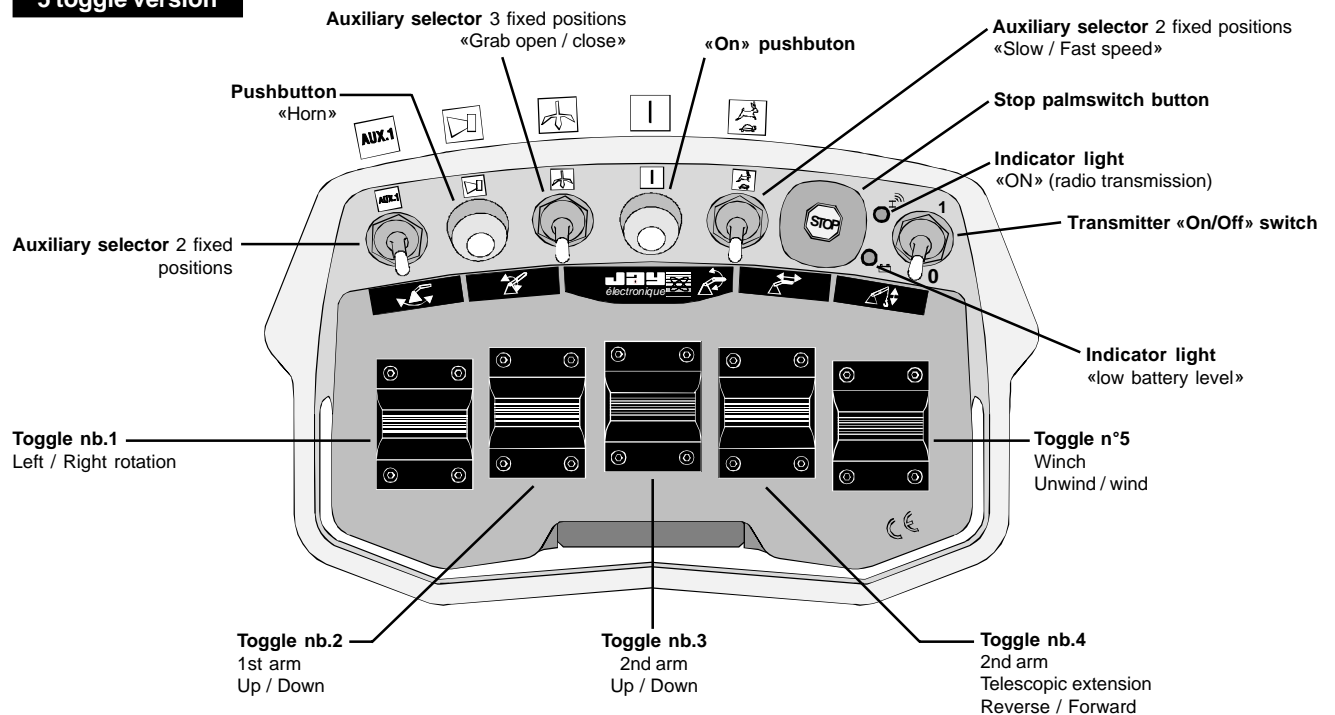
#### ◆ UMC charger for UMB2 plug-in battery (with its power supply adapter) :

Power supply : ..... 230 VAC, European plug

## 2.3 Application for control of hydraulic crane on truck

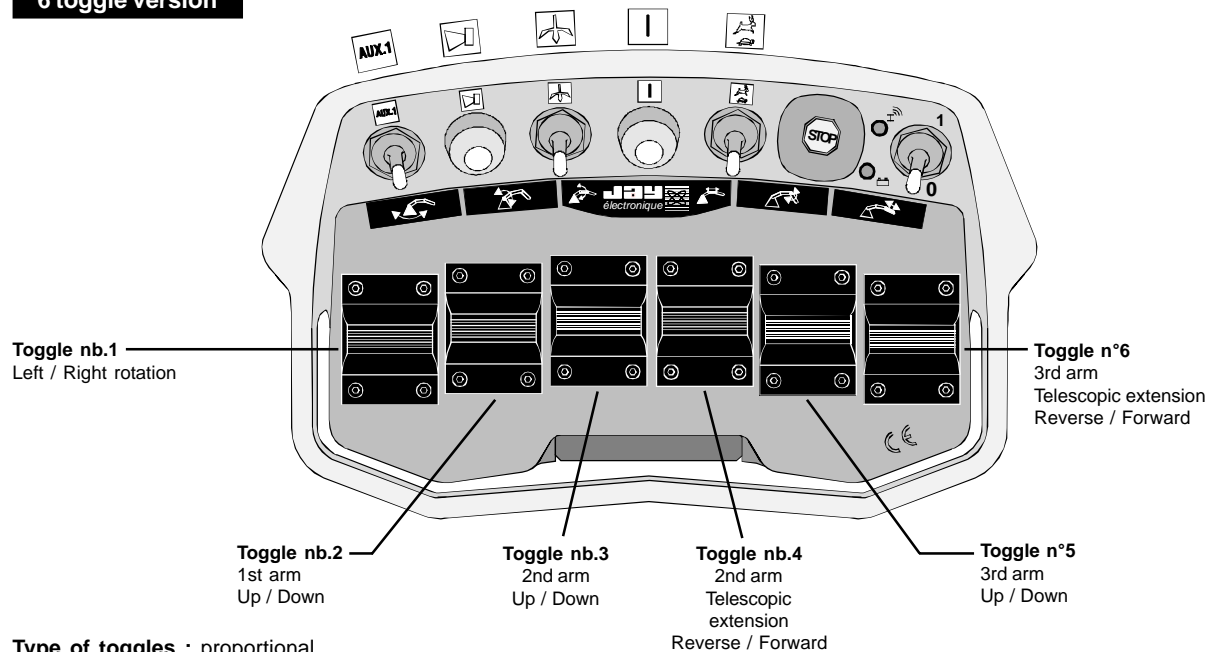
### ◆ UME transmitter :

#### 5 toggle version



Type of toggles : proportional

#### 6 toggle version



Type of toggles : proportional

### ◆ UMR receiver :

Number and type of function outputs : ..... 12 relays + 5 analog outputs (ANA) or 12 relays + 6 analog outputs (ANA)

Additional outputs (On, Horn, 2 for safety) : ..... 4 relays

Housing lead-out : ..... cable gland

Power supply : ..... 24 VDC

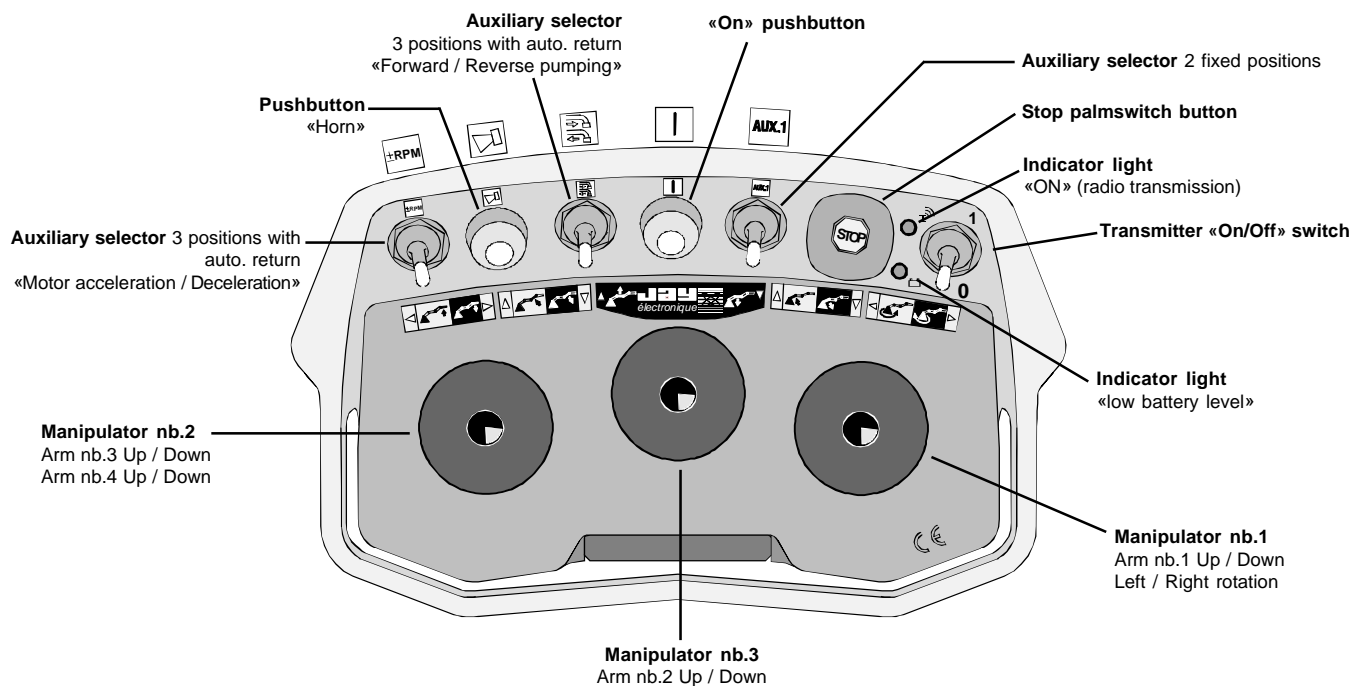
### ◆ UMC charger for UMB2 plug-in battery (with its power supply adapter) :

Power supply : ..... by cable, to be connected on a battery or 12 - 24VDC max. stabilized power supply

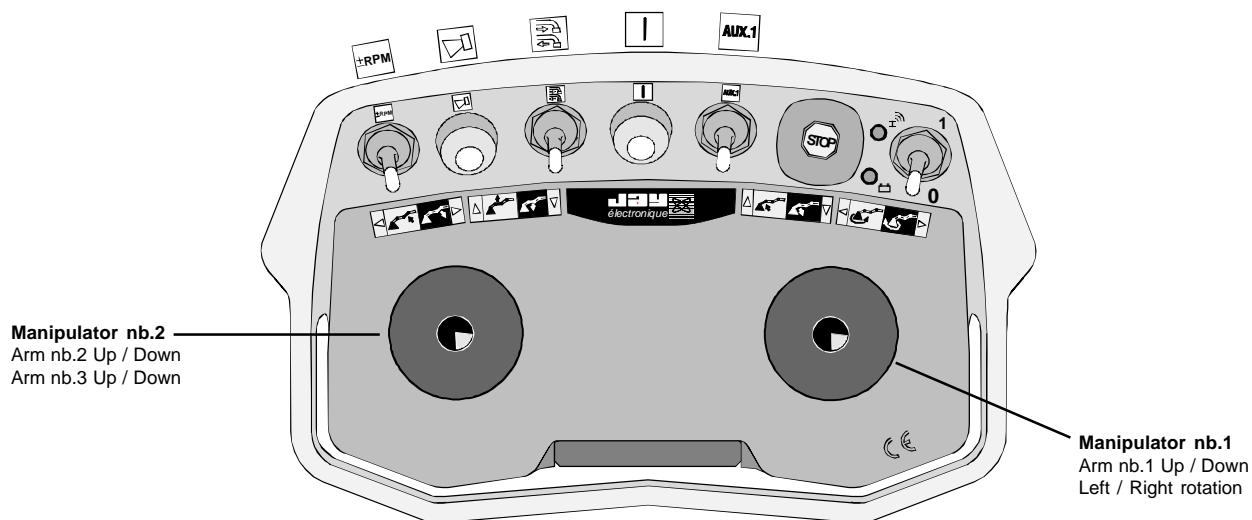
## 2.4 Application for control of concrete pump

### ◆ UME transmitter :

#### 2 manipulators 1 step version (1 speed)



#### 3 manipulators 1 step version (1 speed)



### ◆ UMR receiver :

Number and type of function outputs : ..... 12 or 20 relays  
 Additional outputs (On, Horn, 2 for safety) : ..... 4 relays  
 Housing lead-out : ..... 24-pin connector  
 Power supply : ..... 24 VDC

### ◆ UMC charger for UMB2 plug-in battery (with its power supply adapter) :

Power supply : ..... by cable, to be connected on a battery or 12 - 24VDC max. stabilized power supply

## 3- Safety aspects

The **UM** 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 code.
- Message quality is ensured by a high-level communication protocol.

### Functional safety features:

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

### Receiver safety features:

- A passive shutdown device shuts down the system if the radio link is jammed.
- Category 3 safety per EN 954-1 is ensured by the use of 2 guided contact safety relays.
- Overload protection by fuses.

### Transmitter safety features:

- An active priority general shutdown command is generated when the "palmswitch" is pressed.
- An indicator light indicates an alarm in the event of an insufficiently charged battery (the receiver "Horn" output relay is also activated in this case).
- A "dead man" function shuts down the transmitter after 5mn and 30 seconds if no command has been generated.
- Manipulators, toggles and function buttons protected mechanically against unintentional actions.

## 4- Technical characteristics

### 4.1 UME transmitter

Mechanical and environment withstand characteristics	
Housing	<ul style="list-style-type: none"> <li>◆ Polyamide 6-6, 15% glass fibre, yellow-black</li> <li>◆ IP 65</li> <li>◆ Mechanical protection for manipulators, toggles and function buttons</li> <li>◆ Carrying belt</li> </ul>
Weight (with battery)	1,7 Kg
Dimensions	270x150x170 mm
Operating temperature range	- 10°C to + 55°C
Storage temperature range	- 20°C to + 80°C
Functional characteristics	
Type and function of controls	<ul style="list-style-type: none"> <li>◆ 2 manipulators (proportional or by steps 1, 2, 3, 4 speeds) or 3 manipulators with 1 step (1 speed) or 5, 6 proportional toggles</li> <li>◆ 3 auxiliary buttons (pushbutton or selector 2 fixed positions or selector 3 fixed positions or selector 3 positions with automatic return)</li> <li>◆ 1 "On" pushbutton + 1 "Horn" pushbutton or 1 selector 3 positions "On / horn" + 1 auxiliary pushbutton</li> <li>◆ 1 active priority general shutdown palmswitch (50 ms response time)</li> <li>◆ 1 transmitter "On / Off" switch</li> </ul>
"Dead man" function	5 mn 30 s
Indicator lights	<ul style="list-style-type: none"> <li>◆ 1 red indicator light "low battery level" (~ 30mn radio transmission left)</li> <li>◆ 1 red indicator light "On"</li> </ul>
Electrical and radio characteristics	
Power supply	NiMH plug-in battery
Endurance	11 hours / 100% transmit time
Transmit frequency	69 user-programmable UHF 433-434 MHz bands (see list of frequencies on page 7)
Transmit power	<10 mW (license not required), built-in
Modulation	FM
Average range	200 m in typical industrial environment (1)

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

## 4.2 UMR Receiver

Mechanical and environment withstand characteristics	
Housing	IP56, yellow
Weight	<ul style="list-style-type: none"> <li>◆ 2,8 Kg ("16 relays" version)</li> <li>◆ 4,2 kg ("32 relays / analog outputs" version)</li> </ul>
Dimensions	<ul style="list-style-type: none"> <li>◆ 255 x 200 x 95 mm ("16 relays" version)</li> <li>◆ 315 x 235 x 120 mm ("32 relays / analog outputs" version)</li> </ul>
Operating temperature range	- 10°C to + 55°C
Storage temperature range	- 20°C to + 80°C
Connection and cable lead-outs	<ul style="list-style-type: none"> <li>◆ Spring-type terminal</li> <li>◆ Outputs by cable gland PG21 + PG9 or 24-pin connector</li> </ul>
Radio-electric characteristics	
Transmit frequency	69 user-programmable UHF 433-434 MHz bands (see list of frequencies on page 7)
Antenna	½-wave whip integrated antenna
Sensitivity	0,3 µV
Electrical characteristics	
Power supply	<ul style="list-style-type: none"> <li>◆ 3-voltage version : 48 VAC-115 VAC-230 VAC (-20%, +15%) (voltage selection by a selector in receiver housing)</li> <li>or</li> <li>◆ 24 VDC version</li> </ul>
Consumption	20 VA
Type of outputs	<ul style="list-style-type: none"> <li>◆ Relays, 16 A, 1T</li> <li>◆ Analog (ANA) : 2 / 4 / 6 VDC or 3 / 6 / 9 VDC or 6 / 12 / 18 VDC or 2 / 3.5 / 5 VDC or 1.5 / 5 / 8.5 VDC or 0 / 5 VDC or 0 / 10 VDC or 0 / 15 VDC or -10 / 0 / +10 VDC or -15 / 0 / +15 VDC</li> </ul>
Response time	50 ms
Passive shutdown time (if : battery is discharged, transmitter switch is turned to "OFF" position, radio-link is jammed ...)	1,9 s
Indicator lights	<ul style="list-style-type: none"> <li>◆ 1 LCD display for diagnostic (current radio frequency, activated output)</li> <li>◆ 1 red indicator light "Power ON"</li> <li>◆ 1 red indicator light "On"</li> <li>◆ 1 red status indicator light per relay</li> </ul>

## 4.3 Charger and accessories

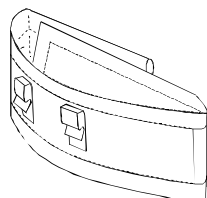
### ◆ UMC charger

Power supply (by voltage adapter) : ... 12 to 24 VDC  
 Consumption : ..... 0,5 A  
 Charging current : ..... 120 mA  
 Complete charging time : ..... 8 hours  
 Housing : ..... polyamide 6-6,  
 15% glass fibre  
 Protection indicator level : ..... IP30  
 Weight : ..... 400g with battery  
 Charging temperature range : ..... 0°C to +40°C  
 Storage temperature range : ..... -20°C to +80°C  
 Overload protection.

### ◆ UMP carrying belt for UME transmitter

Secured on transmitter unit by 2 clips.

The belt size is adjustable.

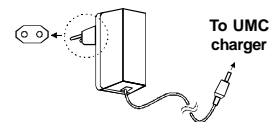


### ◆ UMB2 plug-in battery

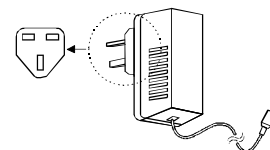
Technology : ..... NiMH  
 Weight : ..... 200 g

### ◆ Voltage adapters for UMC charger

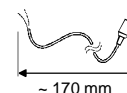
UMAU : 230 VAC / 12VDC  
 European plug



UBCW : 230 VAC / 12VDC  
 English plug



UBC1 : Cable with connector for UMC (to be connected on a battery or 12 - 24VDC max. stabilized power supply)



# 5- Radio frequencies list

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

Radio channel	Frequency MHz
01	433.075
02	433.100
03	433.125
04	433.150
05	433.175
06	433.200
07	433.225
08	433.250
09	433.275
10	433.300
11	433.325
12	433.350
13	433.375
14	433.400
15	433.425
16	433.450
17	433.475
18	433.500
19	433.525
20	433.550
21	433.575 (1)
22	433.600 (1)
23	433.625 (1)

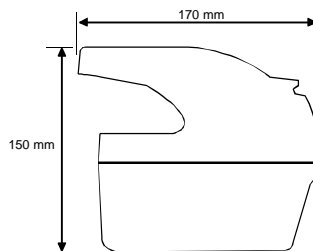
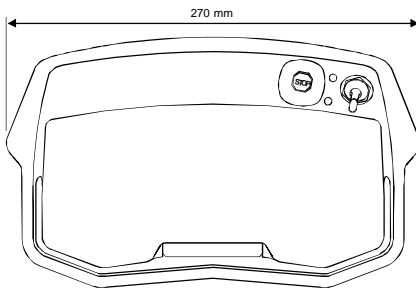
Radio channel	Frequency MHz
24	433.650
25	433.675 (1)
26	433.700
27	433.725 (1)
28	433.750
29	433.775 (1)
30	433.800 (2)
31	433.825 (1) (2)
32	433.850 (2)
33	433.875 (1) (2)
34	433.900 (2)
35	433.925 (1) (2)
36	433.950 (2)
37	433.975 (1) (2)
38	434.000 (2)
39	434.025 (1) (2)
40	434.050 (2)
41	434.075 (2)
42	434.100 (2)
43	434.125 (2)
44	434.150 (2)
45	434.175 (2)
46	434.200 (2)

Radio channel	Frequency MHz
47	434.225 (2)
48	434.250 (2)
49	434.275 (2)
50	434.300 (2)
51	434.325 (2)
52	434.350 (2)
53	434.375 (2)
54	434.400 (2)
55	434.425 (2)
56	434.450 (2)
57	434.475 (2)
58	434.500 (2)
59	434.525 (2)
60	434.550 (2)
61	434.575 (2)
62	434.600 (2)
63	434.625 (2)
64	434.650 (2)
65	434.675 (2)
66	434.700 (2)
67	434.725 (2)
68	434.750 (2)
69	434.775 (2)

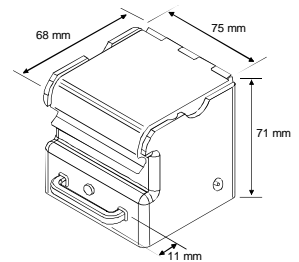
(1)= List of frequencies available for Denmark  
 (2)= List of frequencies available for Singapore

# 6- Dimensions

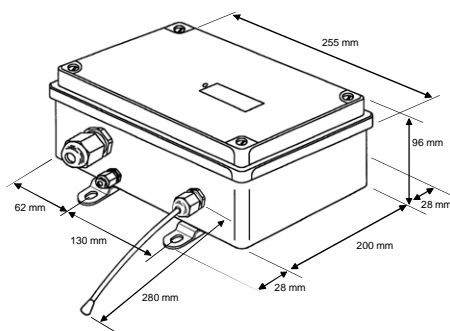
## 6.1 UME transmitter



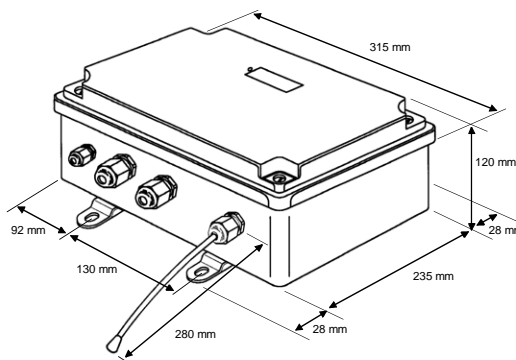
## 6.2 UMC charger



## 6.3 UMR receivers

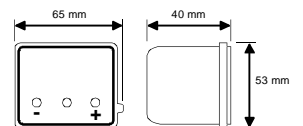


«16 relays» version  
(model without analog output)



«32 relays / analog outputs» version

## 6.4 UMB2 battery



## 7- Selection guide, references for ordering

### 7.1 Units

Applications	Transmitter configuration	Receiver configuration	Unit references
Travelling cranes Gantry cranes Self-propelled devices	2 manipulators <sup>(1)</sup>	16 relay outputs <sup>(2)</sup>	<b>UM12AM010</b>
		24 relay outputs <sup>(2)</sup>	<b>UM12BM010</b>
		32 relay outputs <sup>(2)</sup>	<b>UM12CM010</b>
		16 relay outputs <sup>(2)</sup> + 4 analog outputs	<b>UM12GM010</b>
Tower cranes Fast assembly cranes	2 manipulators <sup>(1)</sup>	16 relay outputs <sup>(2)</sup>	<b>UM22AM010</b>
		24 relay outputs <sup>(2)</sup>	<b>UM22BM010</b>
Hydraulic cranes on truck	5 toggles	16 relay outputs <sup>(2)</sup> + 5 analog outputs	<b>UM35M2010</b>
	6 toggles	16 relay outputs <sup>(2)</sup> + 6 analog outputs	<b>UM36H2010</b>
Concrete pumps and mats	3 manipulators	16 relay outputs <sup>(2)</sup>	<b>UM42A2020</b>
	3 manipulators	24 relay outputs <sup>(2)</sup>	<b>UM43B2020</b>

(1) = For each manipulator direction, specify desired type on order (proportional or step type 1,2,3,4 speeds)

(2) = Including : 2 safety relays, 1 «On» relay and 1 «Horn» relay

#### A unit comprises :

- 1 UME transmitter
- 1 UMP carrying belt for transmitter
- 1 UMR receiver with its antenna
- 2 UMB2 batteries
- 1 UMC charger
- 1 voltage adapter for the charger (UMAU or UBC1 according to the application)
- 1 installation and user manual

## 8- Product customization to an application

#### We propose :

- special configurations : realization of special applications by means of customization sheets
- several manipulator types (3 manipulators max.), or proportional toggles (6 toggles max.)
- several auxiliary button types (pushbuttons, selectors 2 fixed positions, selectors 3 fixed positions or with automatic return, rotary switches up to 10 positions) with 9 max. buttons.
- validation button on manipulator
- software interlocking to avoid 2 actions in the same time on a manipulator
- inclinometer
- «On/Off» switch or lock with metallic key on transmitter
- receiver up to 32 relays and 8 analog outputs
- «coupled travelling cranes» function, «Tandem lift» type
- «travelling crane transfer» function, «Pitch and catch» type
- plug-in receiver antenna with extension (several lengths available)
- 13 frequencies available in 869MHz bandwidth

The products presented in this document are subject to change. Product descriptions and characteristics are not contractually binding. Please go to our internet site [www.jay-electronique.fr](http://www.jay-electronique.fr) to download the most recent updates to our documentation.

**E329 A - 1104**



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