

Manipulator-type industrial radio remote controls

OMNICONTRON
Series
CE

Typical applications :

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



1- Description

A radio remote control provides numerous advantages :

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

With the OMNICONTRON 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 controlled identified by pictogram
- Light-weight compact transmitters
- Adjustable carrying belt which adjusts to the operator's body, or carrying strap.
- Transmitter endurance, and fast, easy to replace plug-in battery
- Adaptability to all radio configurations of the environment by possibility for changing frequency by trained technician.
- Mechanical protection of manipulators and function buttons to avoid unintentional actions

The receiver is also very easy to install :

- Compact receiver
- Screw-type connection terminals
- Led display (current frequency, coding, outputs activated ...)

CONTENTS

Para.	Page
1 Description.....	1
2 Examples of product features.....	2
3 Safety aspects	4
4 Additional functions	4
5 Dimensions.....	5
6 Technical characteristics.....	5
7 Wiring diagrams.....	7
8 Radio frequencies.....	11
9 Customisation.....	11
10 Selection guide	12

- **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)



E840 B - 0209

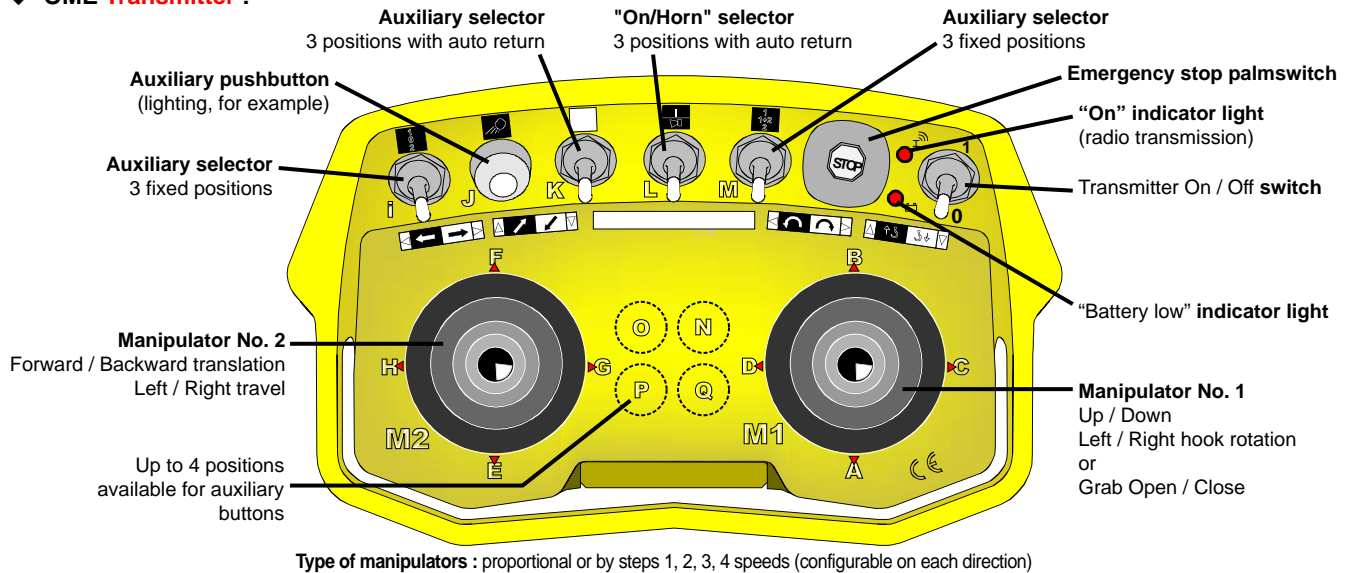
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2- Examples of product features with respect to application

Note : Each product requires a customisation data sheet defining the desired configuration

2.1 Application for control of travelling crane, gantry crane

◆ OME Transmitter :



◆ OMR Receiver :

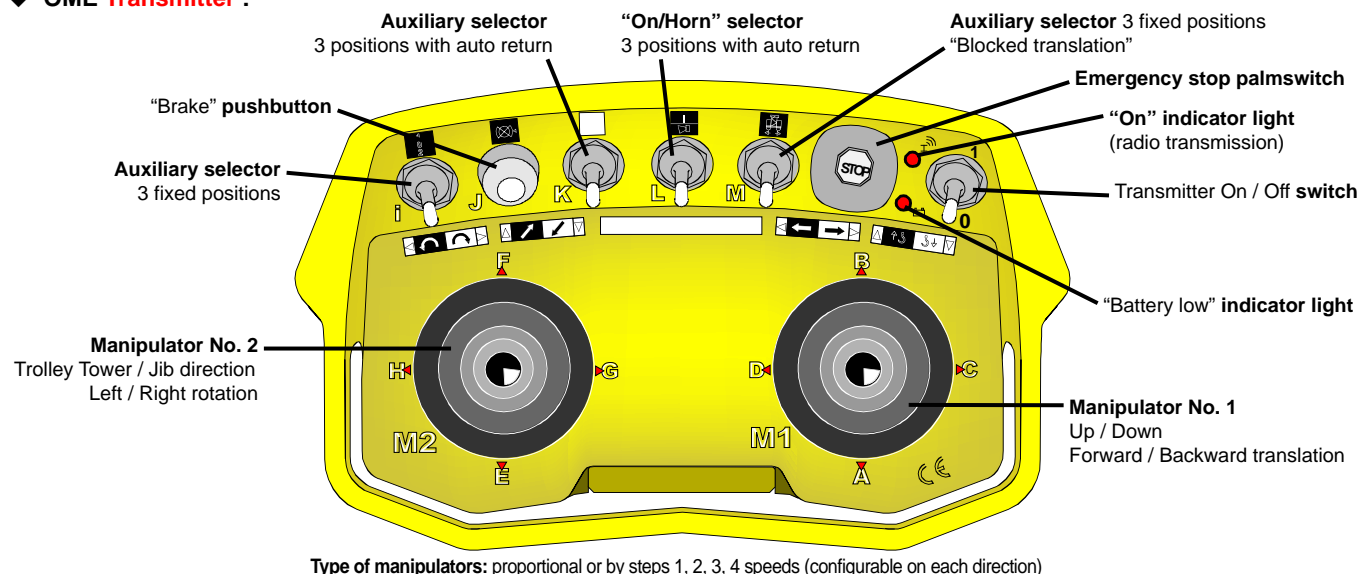
Number and type of function outputs : 21 relays, 25 relays, 17 relays + 6 analogue outputs or 20 relays + 3 analogue outputs
 Additional outputs (on-horn, 2 for safety devices) : 3 relays
 Housing lead-out : connector
 Power supply : 48-115-230 VAC

◆ OMCU Charger for UMB2 plug-in battery :

Power supply : 115-230 VAC, European plug

2.2 Application for control of tower crane, fast assembly crane

◆ OME Transmitter :



◆ OMR Receiver :

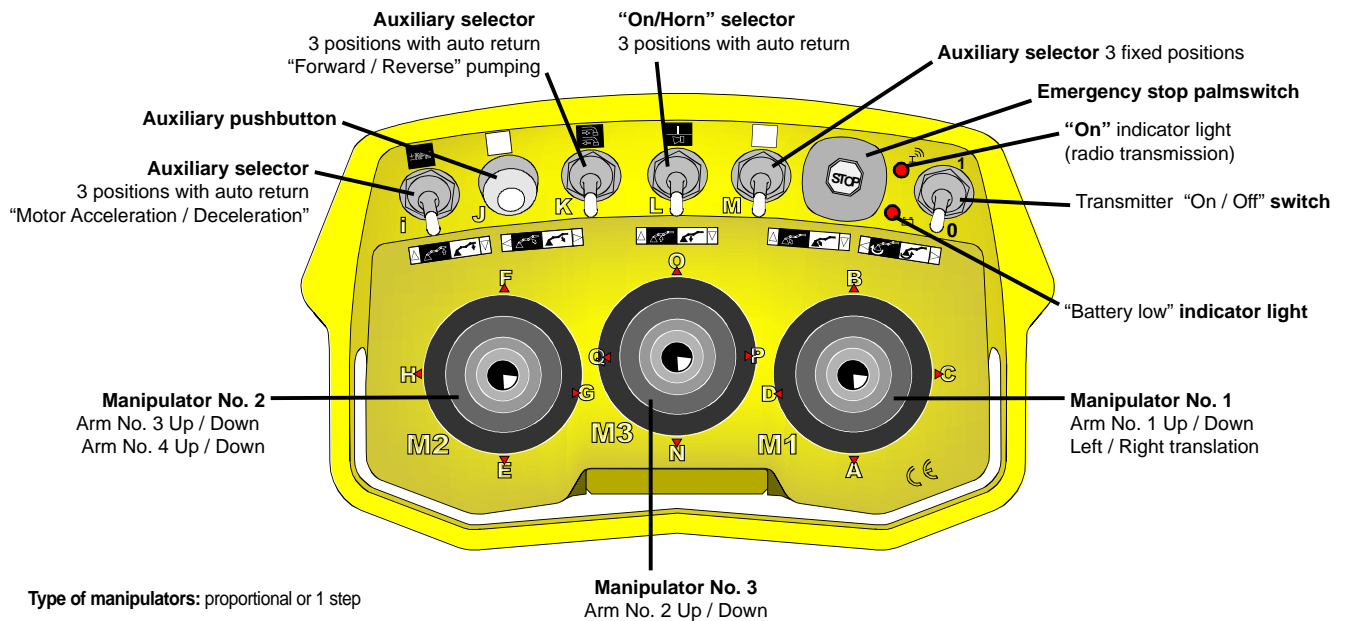
Number and type of function outputs : 21 relays, 25 relays, 17 relays + 6 analogue outputs or 20 relays + 3 analogue outputs
 Additional outputs (on-horn, 2 for safety devices) : 3 relays
 Housing lead-out : connector
 Power supply : 48-115-230 VAC

◆ OMCU Charger for UMB2 plug-in battery :

Power supply : 115-230 VAC, European plug

2.3 Application for control of concrete pump

◆ OME Transmitter :



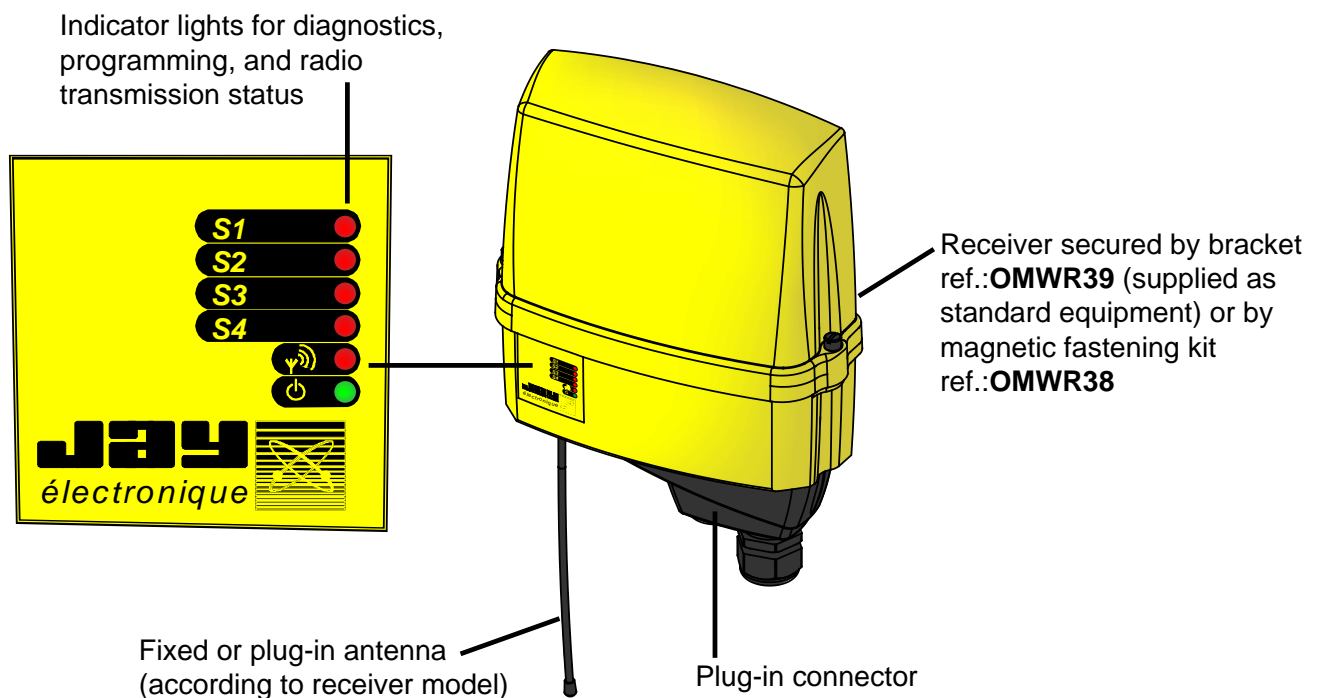
◆ OMR Receiver :

Number and type of function outputs : 21 relays, 25 relays, 17 relays + 6 analogue outputs or 20 relays + 3 analogue outputs
 Additional outputs (on-horn, 2 for safety devices) : 3 relays
 Housing lead-out : connector
 Power supply : 24 VDC

◆ OMC1 Charger for UMB2 plug-in battery :

Power supply : Connector on battery or stabilized 24VDC max. power supply

2.4 OMR Receiver



3- Safety aspects

The **OMNICONTR**OL 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 has its own specific code contained in a plug-in memory.
- 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 radiolink is jammed.
- Category 3 safety per EN 954-1 is ensured by the use of 2 guided contact safety relays.
- Overload protection by fuses.
- A «Manipulator safety on analogue output» function inhibits a movement if a manipulator is operated too quickly (OPTION).

Transmitter safety features :

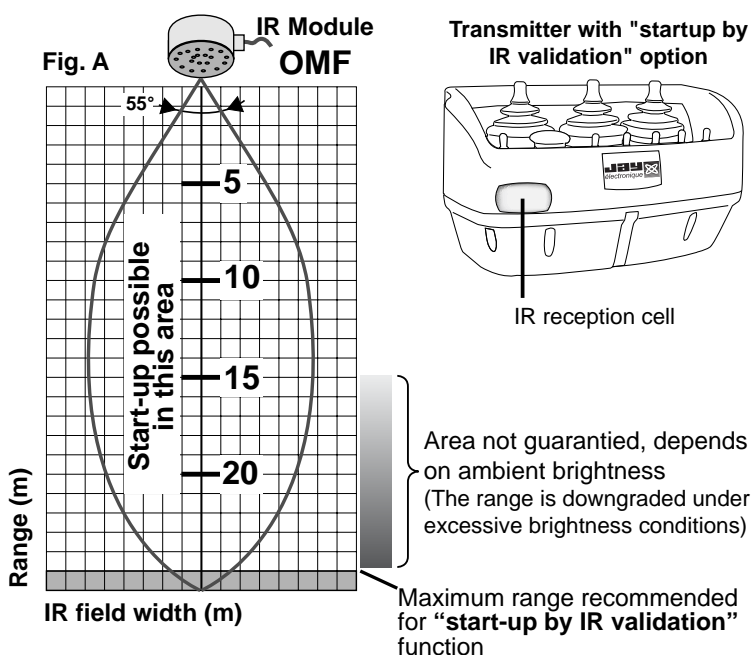
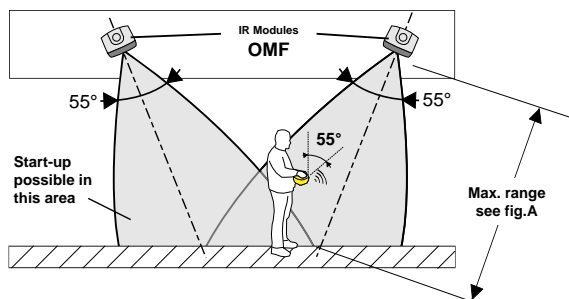
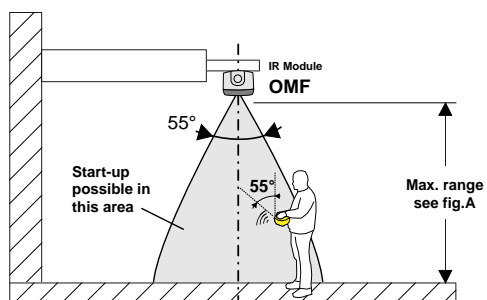
- An active priority general shutdown command is generated when the "palmswitch" is pressed.
- An indicator light indicates an alarm in the event of an insufficiently charged battery (the receiver "horn" output is also activated in this case).
- A "Dead man" function shut downs the transmitter after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

4- Additional functions

Start-up by infrared validation :

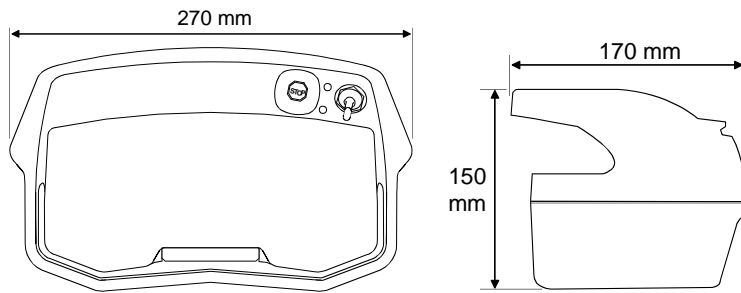
The start-up area of an equipment and the equipment's identification can be secured by an infrared validation on start-up :

- To start up the equipment, the operator must take position in the infrared coverage area of one of the **OMF** modules (called "Start-up area") and actuate the "on/off" switch on the transmitter.
- Once the validation has been performed, the "Transmitter and the Equipment to be controlled" are matched up with no possibility for error. The operator can then move freely with no limitation.
- The infrared start-up function has a range of action of 0 to 25 m (see fig. A). The 15 to 25 m area is not guaranteed as it depends on the ambient brightness.
- **N OMF** infrared modules can be used.
- With this function, two separate buttons are required for the "On" and "Horn" functions.

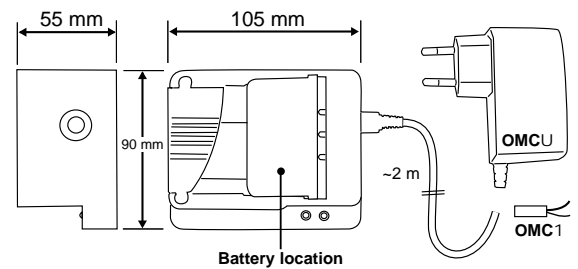


5- Dimensions

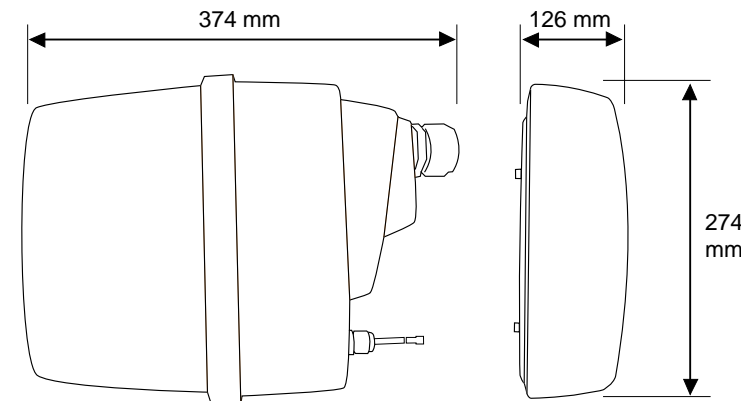
OME Transmitter



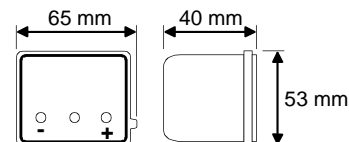
OMC Charger



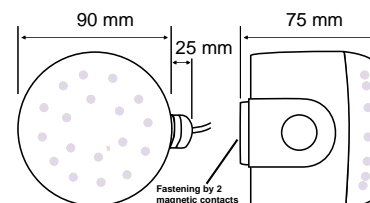
OMR Receiver



UMB2 Battery



OMF IR Module

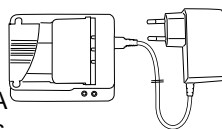


6- Technical characteristics

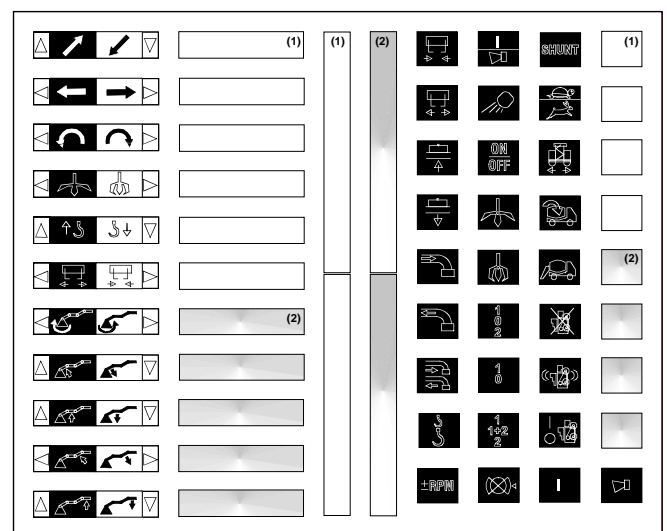
6.1 Accessories

◆ OMC Charger

Consumption : 0,5 A
 Charging current : 120 mA
 Complete charging time : 8 hours
 Protection indicator level : IP30
 Power supply : on 24 VDC for OMC1 model
 or 115-230VAC for OMCU model
 Housing : polyamide 6-6,
 15% glass fibre
 Weight : 400g with battery
 Charging temperature range : .. 0°C to +40°C
 Storage temperature range : -20°C to +80°C
 Overload protection.
 2 indicator lights: power supply present and battery
 charging



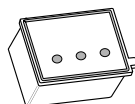
◆ Label sheet OMWE201 for OME transmitter (one sheet of labels supplied with each transmitter)



(1) = labels for customized marking (indelible felt tip marker)
 (2) = transparent protection labels

◆ UMB2 plug-in battery

Technology : NiMH
 Weight : 200 g



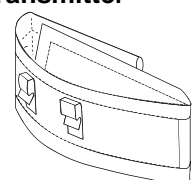
◆ Carrying strap UWE101 for OME transmitter

Secured to transmitter housing
 by fasteners.
 Strap size is adjustable



◆ Carrying belt UMP for OME transmitter

Secured to transmitter housing
 by 2 clips
 Belt size is adjustable.



6.2 OME Transmitter

Mechanical and environment withstand characteristics	
Housing	Polyamide 6-6, 15% glass fibre, yellow IP 65 Mechanical protection for manipulators, selectors and function buttons
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"> - 2 manipulators (proportional or by steps 1, 2, 3, 4 speeds), or 3 manipulators (proportional or by steps 1, 2, 3, 4 speeds, except for middle manipulator, proportional or by steps 1, 2 speeds) - 4 to 8 auxiliary buttons (pushbutton PB or selector with 2 fixed positions SEL2 or selector with 3 fixed positions SEL3 or selector with 3 auto-return positions SEL3R) - 0 to 2 rotary switches: 10 positions COM10 or 2 positions with metal key COM2CM - 1 selector with 3 positions "on / horn" - 1 active priority general shutdown palmswitch (50 ms response time) - 1 transmitter "on / off" switch
«Dead man» function	5 mn 30 s (1)
Indicator lights	<ul style="list-style-type: none"> - 1 red "battery low" indicator light (remaining endurance: 30 min. approx) - 1 red "on" indicator light
Electrical and radio characteristics	
Power supply	NiMH plug-in battery
Endurance	11 hours / 100% transmit time
Transmit frequency and power	30 user-programmable UHF 433-434 MHz bands 10mW 64 user-programmable UHF 868-869 MHz bands 5mW
Modulation	FM
Average range in typical industrial environment (2)	200 m in 433-434MHz 10mW and 868-869MHz 5mW 100 m in 868-869MHz 5mW receiver with plug-in BNC antenna

(1)= Time delay programmed by default on delivery of product, except when a value has been specified when drawing up the customisation sheet.

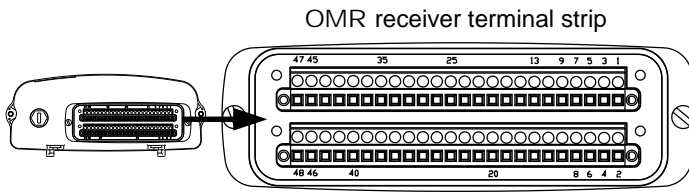
(2)= Range will vary according to environment conditions of transmitter and reception antenna (metal frameworks, walls ...).

6.3 OMR Receiver

Mechanical and environment withstand characteristics			
Housing	Polyamide 6-6, 15% glass fibre, yellow, IP65		
Connection	- Screw terminals - Outputs by 48-pin connector		
Attachment	1 bracket (supplied by receiver)		
Weight	4,2 Kg		
Dimensions	374x274x126 mm		
Operating temperature range	- 10°C to + 55°C		
Storage temperature range	- 20°C to + 80°C		
Radio-electric characteristics			
Radio frequency	30 user-programmable UHF 433-434 MHz bands 10mW 64 user-programmable UHF 868-869 MHz bands 5mW		
Antenna	Fixed, ½ wave “whip” antenna or BNC plug-in type (according to receiver model)		
Sensitivity	0,3 µV		
Electrical characteristics			
Power supply	AC Model : three-voltage 48-115-230 VAC (-20%, +15%) DC Model : 24 VDC		
Max current	AC Model : 0,9 A (48 VAC), 0,5 A (115 VAC), 0,2 A (230 VAC) DC Model : 2 A (24 VDC)		
Outputs	Relays : - Contact type : 1 T NO - Max. current : 5A (230VAC and 30VDC) , cosØ=0,4 : 3A (250VAC) - Min. current : 10mA at 5VDC - Max. voltage : 380VAC or 125VDC - Service life : 10 ⁶ cycles with 230VAC or 30VDC, 2A, cosØ=1 - Service life : 10 ⁶ cycles with 230VAC or 30VDC, 1,2A, cosØ=0,4		
	Analog, 3 versions : <table><tr><td>1) 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</td><td>2) 0 / 5 VDC or 0 / 10 VDC or 0 / 15 VDC</td><td>3) -10 / 0 / +10 VDC or -15 / 0 / +15 VDC</td></tr></table>	1) 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	2) 0 / 5 VDC or 0 / 10 VDC or 0 / 15 VDC
1) 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	2) 0 / 5 VDC or 0 / 10 VDC or 0 / 15 VDC	3) -10 / 0 / +10 VDC or -15 / 0 / +15 VDC	
Active shutdown time	50 ms (transmitter priority general shutdown palmswitch)		
Passive shutdown time	1,9 s (transmitter battery discharged, radio jamming...)		
Indicator lights	- 1 display with red leds for diagnostics (frequency used, output controlled) - 1 “power on” green led indicator light - 1 “on” red led indicator light - 1 status red led per relay		

7- Wiring diagrams

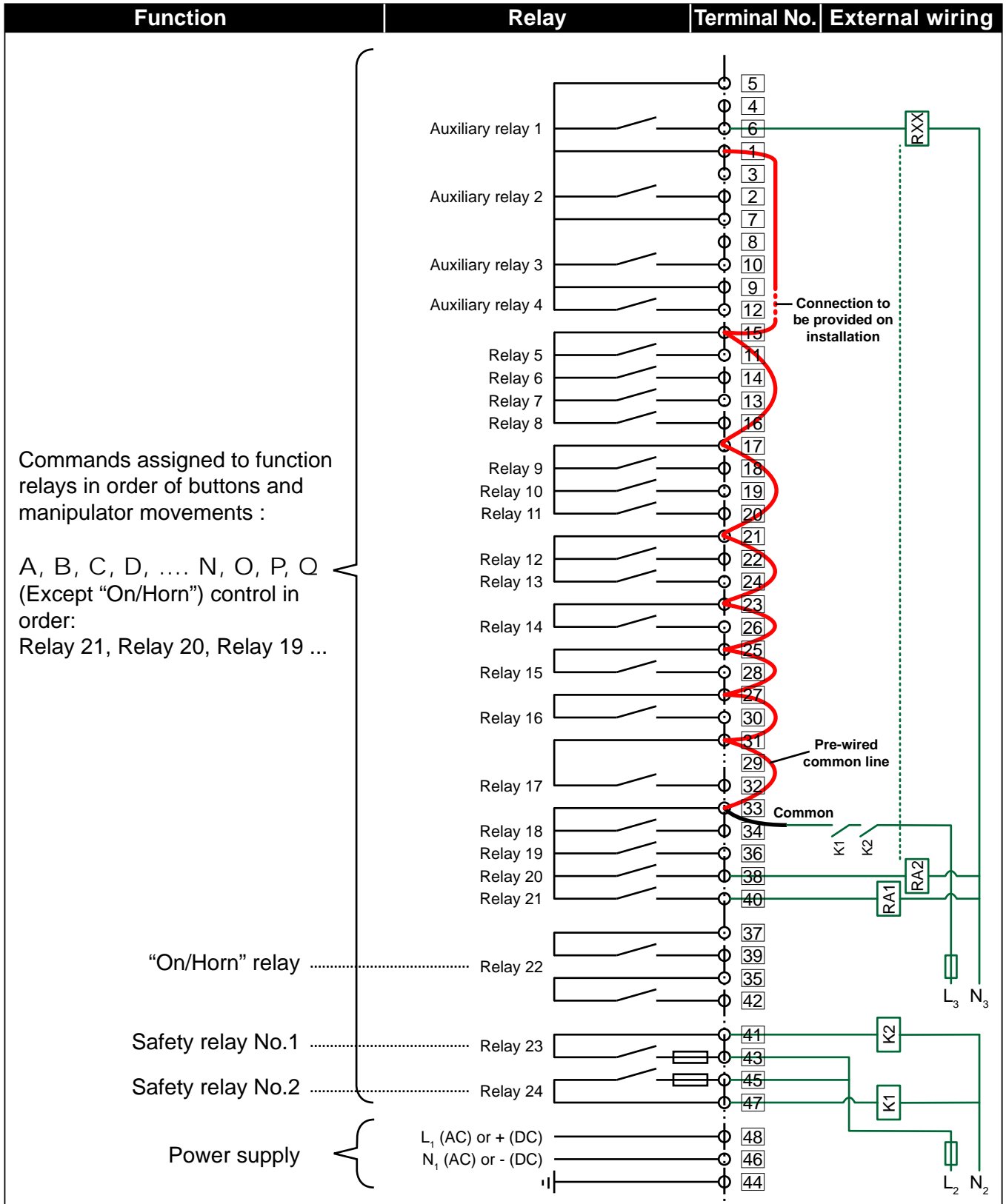
7.1 Diagram for OMR receiver, "21+3" relays model



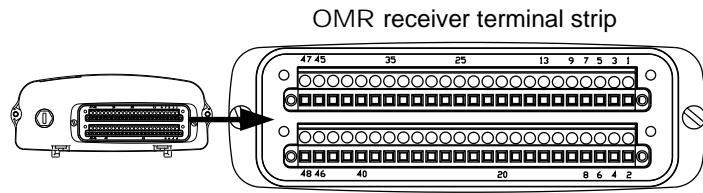
⚠ K1 and K2 are guided contact contactors, to be integrated in the safety circuit of the system controlled.

⚠ The use of overvoltage limiting circuits will increase the service life of the relay contacts (ex: RC circuits with AC, diodes + Zener with DC, etc.)

The 2 safety relays are activated when radio communication is set up between the transmitter and the receiver, and are automatically maintained up to the moment of active or passive shutdown (action on palm switch, loss of radio link, battery discharged, "Dead man" time elapsed ...)



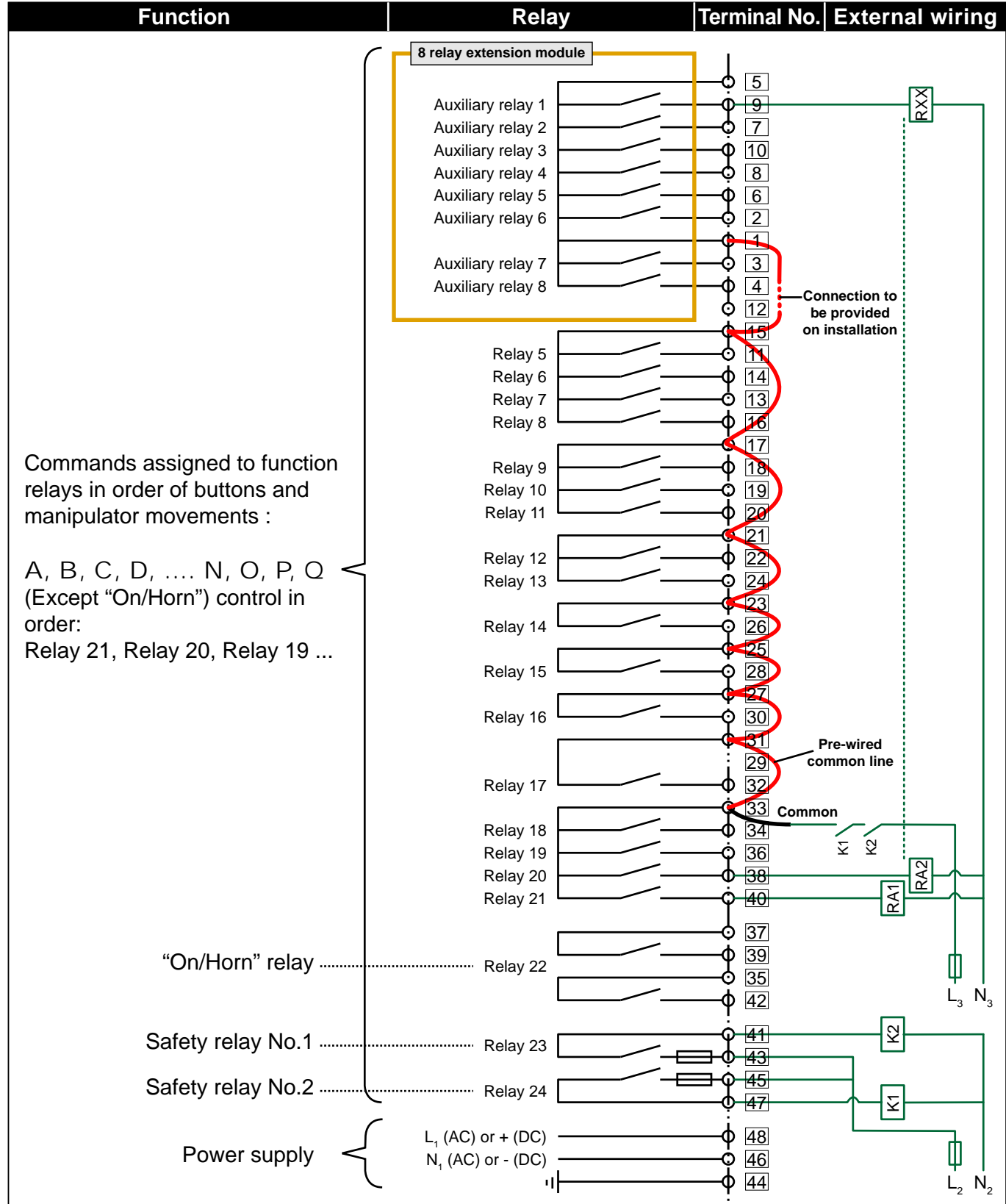
7.2 Diagram for OMR receiver, “25+3” relays model



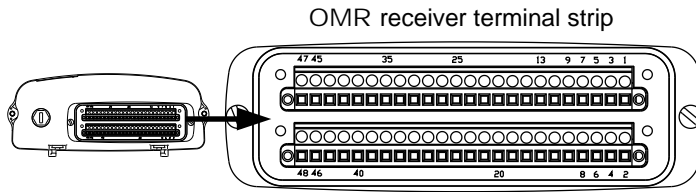
! K1 and K2 are guided contact contactors, to be integrated in the safety circuit of the system controlled.

! The use of overvoltage limiting circuits will increase the service life of the relay contacts (ex: RC circuits with AC, diodes + Zener with DC, etc.)

The 2 safety relays are activated when radio communication is set up between the transmitter and the receiver, and are automatically maintained up to the moment of active or passive shutdown (action on palm switch, loss of radio link, battery discharged, “Dead man” time elapsed ...)



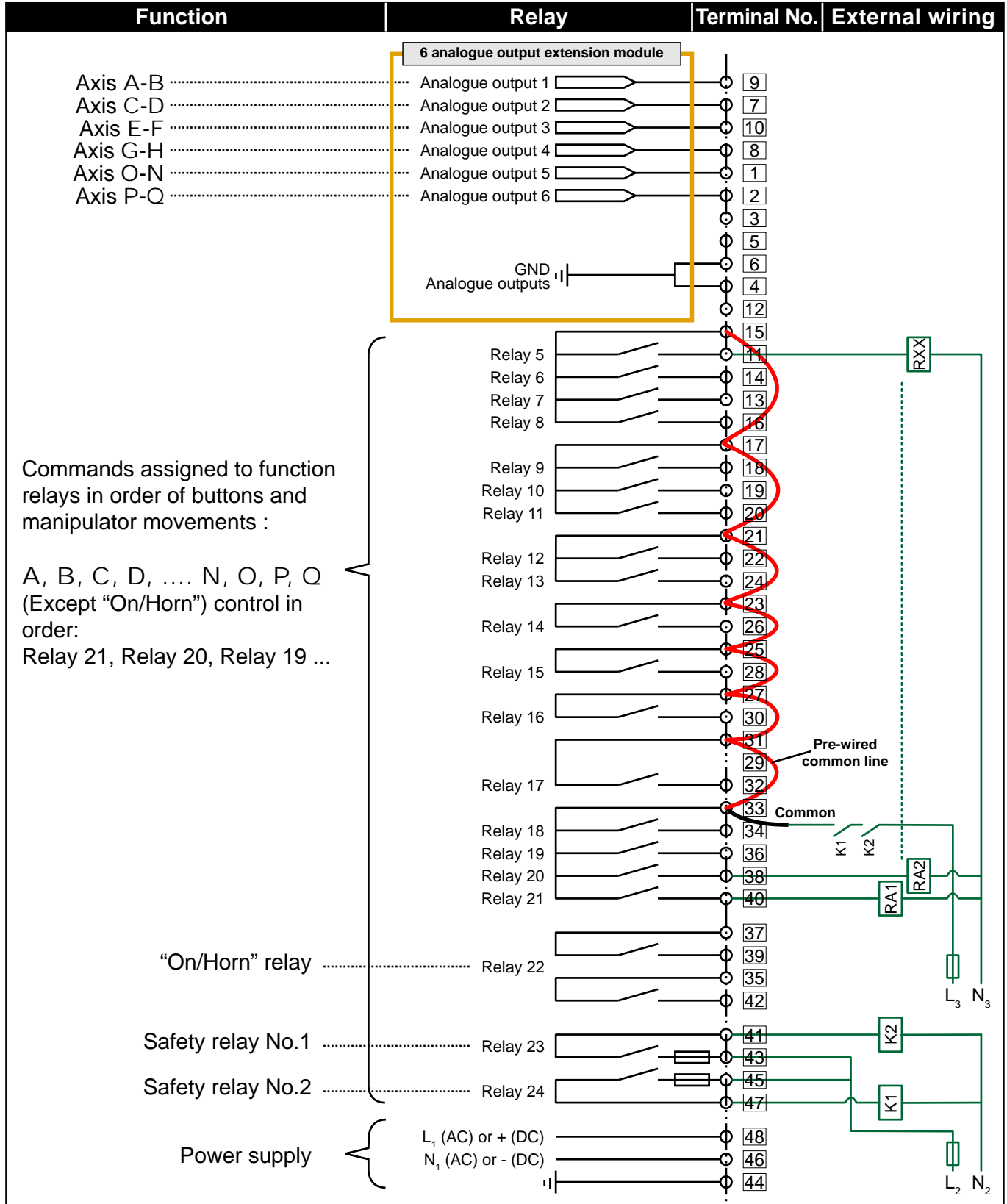
7.3 Diagram for OMR receiver, “17+3” relays + 6 analogue outputs model



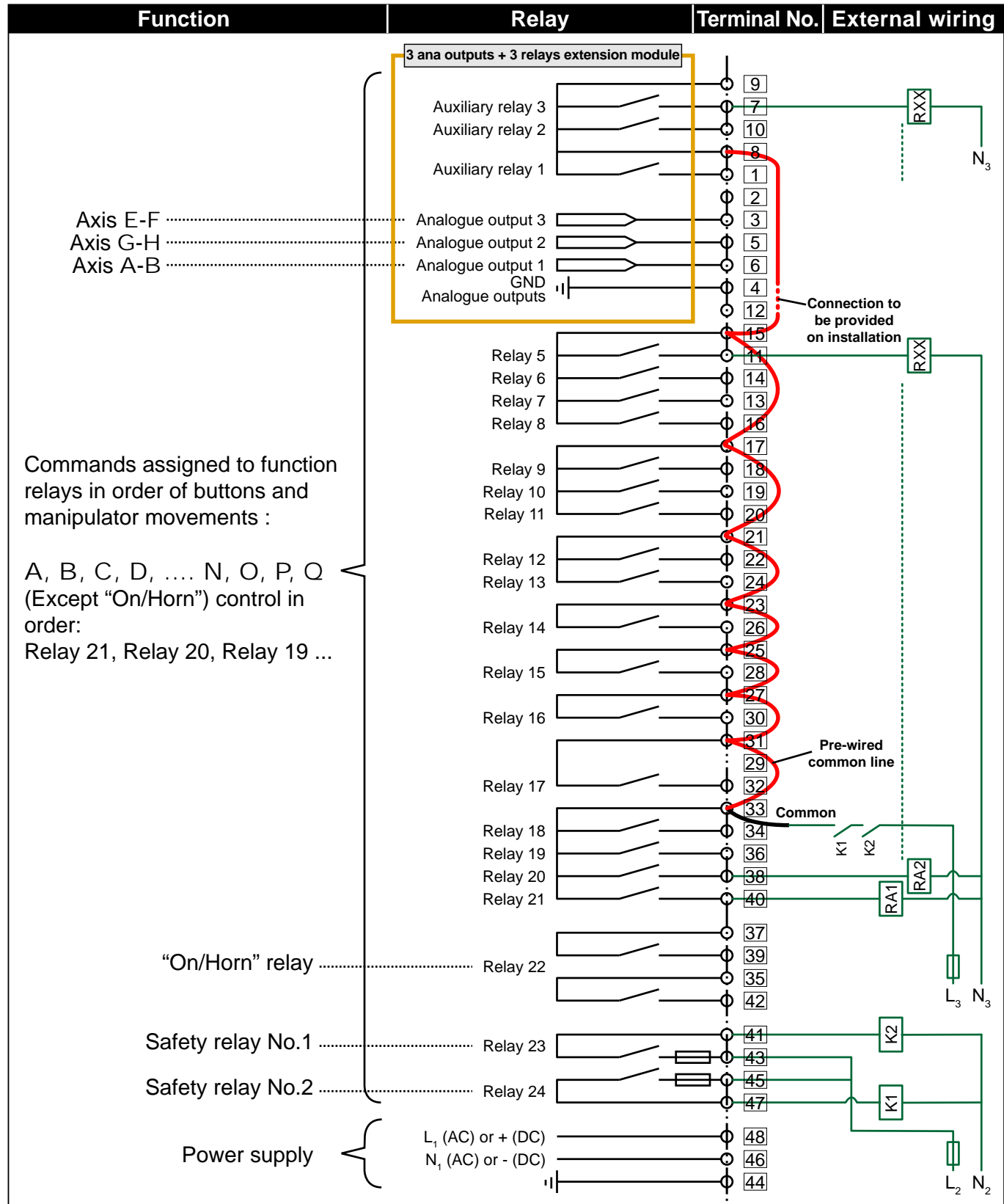
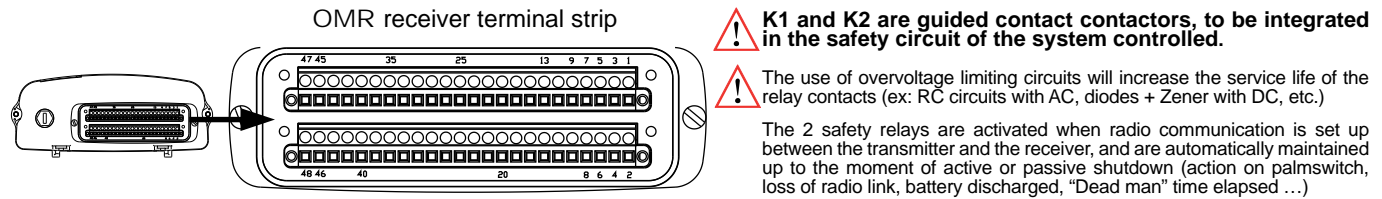
⚠ K1 and K2 are guided contact contactors, to be integrated in the safety circuit of the system controlled.

⚠ The use of overvoltage limiting circuits will increase the service life of the relay contacts (ex: RC circuits with AC, diodes + Zener with DC, etc.)

The 2 safety relays are activated when radio communication is set up between the transmitter and the receiver, and are automatically maintained up to the moment of active or passive shutdown (action on palm switch, loss of radio link, battery discharged, “Dead man” time elapsed ...)



7.4 Diagram for OMR receiver, “20+3” relays + 3 analogue outputs model



8- Radio frequencies list

8.1 433-434 MHz bands, transmit power = 10 mW (30 available channels)

Channel n°	Frequency MHz
41	434,050
42	434,075
43	434,100
44	434,125
45	434,150
46	434,175

Channel n°	Frequency MHz
47	434,200
48	434,225
49	434,250
50	434,275
51	434,300
52	434,325

Channel n°	Frequency MHz
53	434,350
54	434,375
55	434,400
56	434,425
57	434,450
58	434,475

Channel n°	Frequency MHz
59	434,500
60	434,525
61	434,550
62	434,575
63	434,600
64	434,625

Channel n°	Frequency MHz
65	434,650
66	434,675
67	434,700
68	434,725
69	434,750
70	434,775

8.2 868-869MHz bands, transmit power = 5 mW (64 available channels)

Channel n°	Frequency MHz
01	868,000
02	868,025
03	868,050
04	868,075
05	868,100
06	868,125
07	868,150
08	868,175
09	868,200
10	868,225
11	868,250
12	868,275
13	868,300

Channel n°	Frequency MHz
14	868,325
15	868,350
16	868,375
17	868,400
18	868,425
19	868,450
20	868,475
21	868,500
22	868,525
23	868,550
24	868,575
30	868,725
31	868,750

Channel n°	Frequency MHz
32	868,775
33	868,800
34	868,825
35	868,850
36	868,875
37	868,900
38	868,925
39	868,950
40	868,975
41	869,000
42	869,025
43	869,050
44	869,075

Channel n°	Frequency MHz
45	869,100
46	869,125
47	869,150
48	869,175
58	869,425
59	869,450
60	869,475
61	869,500
62	869,525
63	869,550
64	869,575
65	869,600
66	869,625

Channel n°	Frequency MHz
70	869,725
71	869,750
72	869,775
73	869,800
74	869,825
75	869,850
76	869,875
77	869,900
78	869,925
79	869,950
80	869,975
81	870,000

 = Radio channels available only in some countries

9- Product customisation to an application

All our products are customisable to the application. The following special configurations are proposed with realization of special applications by means of customisation sheets :

- different types of manipulators (2 or 3): proportional, with 1, 2, 3 or 4 steps, with adjustment on each direction,
- different types of auxiliary buttons (pushbuttons, selectors with 2 fixed positions, selectors with 3 fixed positions or automatic return type, rotary switches with up to 10 positions) for a maximum number of 8 buttons,
- mechanical cross-locking inhibiting two actions at the same time on a single manipulator (limited to 3 speeds),
- "on-off" switch or rotary switch with metal key on transmitter,
- rotary switch with metal key for cab / radio remote control,
- receiver with up to 25 function relays and 6 analogue outputs,
- 30 frequencies in 433-434 MHz 10mW and 64 frequencies 868-869 MHz bands 5 mW.

10- Selection guide, references for ordering

Note : Each product requires a customisation data sheet defining the desired configuration

10.1 Transmitter and receiver coding principle

OME Transmitter :

O	M	E	1	2	3	4	5	6
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OMR Receiver :

O	M	R	3	7	8	9
---	---	---	---	---	---	---

1 Number and type of manipulators

- 2 : 2 Manipulators
- 3 : 3 Manipulators
- C : 2 Manipulators with cross-locking of manipulators
- D : 3 Manipulators with cross-locking of manipulators

4 Additional buttons between 2 manipulators (pushbutton or SEL2 or SEL3 or SEL3R type)

- 0 : No
- 1 : Yes, 1 additional button
- 2 : Yes, 2 additional buttons
- 3 : Yes, 3 additional buttons
- 4 : Yes, 4 additional buttons

7 Number and type of outputs

- A : 21 + 3 (1) relays
- B : 25 + 3 (1) relays
- G : 17 + 3 (1) relays and 6 analogue outputs
- F : 20 + 3 (1) relays and 3 analogue outputs

(1) = 2 safety relays + 1 "On-Horn" relay

2 IR Option

- 0 : No IR option
- 1 : Start-up by IR validation

5 10-position rotary switch COM10 between 2 manipulators

- 0 : No
- 1 : Yes, 1 10-position rotary switch
- 2 : Yes, 2 10-position rotary switches

8 Receiver power supply voltage

- 2 : 24 VDC
- N : 48-115-230 VAC

3 Frequency band

- 1 : 433-434MHz 10mW
- A : 868-869MHz 5mW

6 Rotary switch with 2 fixed positions and metal key COM2CM

- 0 : No
- 1 : Yes, 1 rotary switch with 2 fixed positions with metal key

9 Type of antenna

- 0 : Antenne fixe
- B : Plug-in antenna with BNC connector output

10.2 Accessories

Reference	Description
OMWE401	Rotary switch with 2 fixed positions and metal key
OMCU	Battery charger with voltage adaptor for 115-240 VAC power supply
OMC1	Battery charger to be connected to stabilized power supply or 24 VDC battery
UMB2	Plug-in battery (2)
OMF	1 infrared module for "start-up by infrared validation" option, 48-115-230 VAC power supply
UMP	Transmitter carrying belt
UWE101	Transmitter carrying strap
OMWE201	Function label sheet for transmitter (2)
UDWR13	2m cable with 24-pin connector
UDWR14	2m cable with 16-pin connector
OMWR38	Fastening Kit for receiver by magnetic contacts
OMWR39	Mecanical fastening Kit for receiver (3)
VUB086	1/2 wave, straight, plugin BNC antenna, for 433-434MHz frequency bands (4)
VUB084	1/4 wave, straight, plugin BNC antenna, for 868-869MHz frequency bands (4)
VUB170	0,5m extension for BNC antenna (without bracket) (5)
VUB105	2m extension for BNC antenna (with bracket) (5)
VUB125	5m extension for BNC antenna (with bracket) (5)
VUB131	10m extension for BNC antenna (with bracket) (5)

(2) = accessory supplied as standard equipment with transmitter

(3) = accessory supplied as standard equipment with receiver

(4) = accessory supplied as standard equipment with receiver if antenna BNC connector output is present

(5) = Require plug-in antenna with BNC connector output (choice when ordering the receiver)

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 to download the most recent updates to our documentation.

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