

# Tele Radio 860

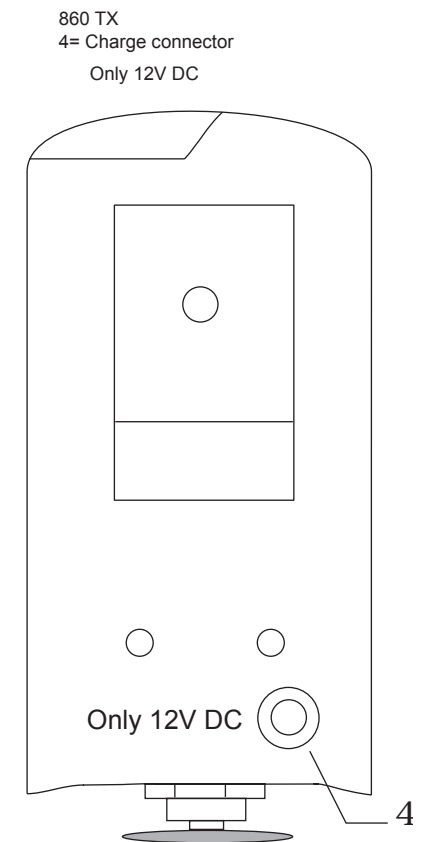
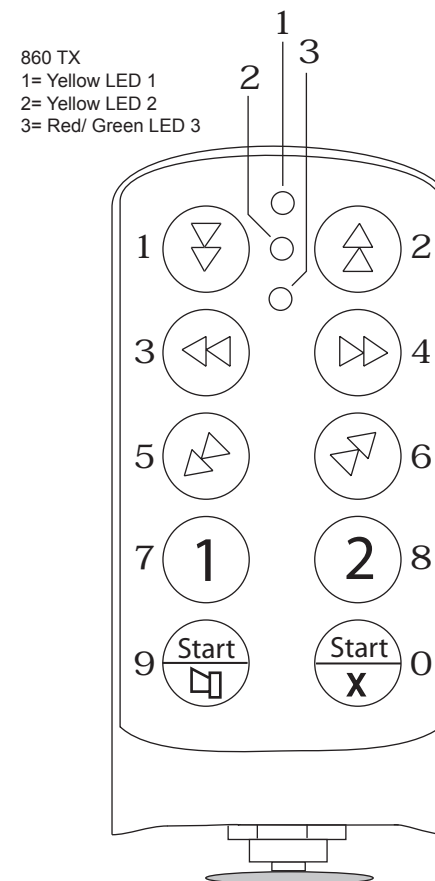
## Manual

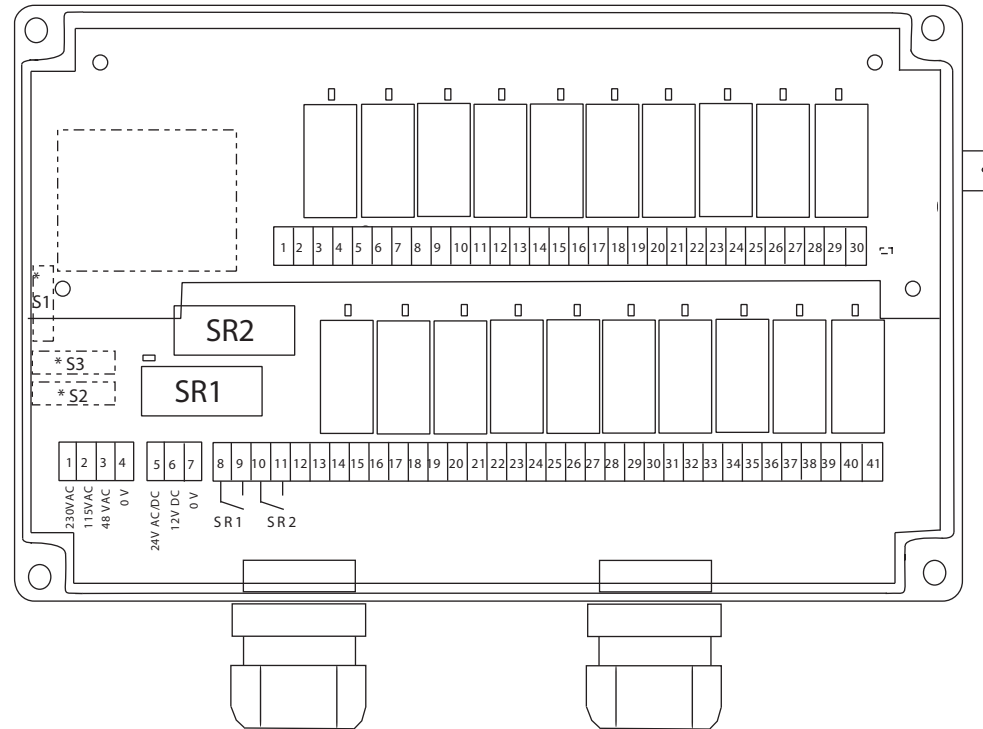


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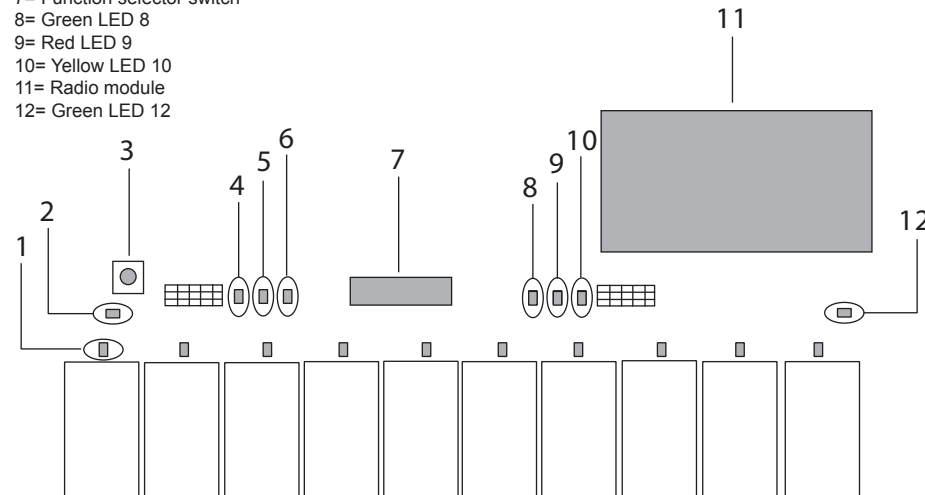




\* Fuse S1, S2 and S3 cermaic slow.  
 S1 □ 200 mA  
 S2 □ 300-315 mA  
 S3 □ 500 mA

860RX

- 1= Red LED 1
- 2= Yellow LED 2
- 3= Reset button
- 4= Green LED 4
- 5= Red LED 5
- 6= Yellow LED 6
- 7= Function selector switch
- 8= Green LED 8
- 9= Red LED 9
- 10= Yellow LED 10
- 11= Radio module
- 12= Green LED 12



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## IMPORTANT!

In order to get the best out of your system it is important you take the time to read through the manual before you start to install/program your equipment.

### ENSURE THAT:

- Qualified personnel receive a review of the system's functions before it is used.
- Only qualified personnel have access to the transmitter.
- The transmitter is not left unsupervised.
- The transmitter is switched off when not in use.
- The operator always has a complete view of the equipment when radio controlled.

### TO GET STARTED:

- Start by entering the system's serial number on the form for the receiver and transmitter settings on page 159. Enter the other data on the form as you program the system.
- It is an advantage to program as many of the required functions as possible before the receiver is installed, if the receiver is to be placed high up or in any other inaccessible position.
- Check that the supply voltage to the receiver is correct.

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## SYSTEM FUNCTIONS

### Frequency:

System 860 uses 32 different frequencies, which makes it possible to use several transmitters and receivers within the same coverage area.

### Battery status:

The transmitter has an integrated battery indicator which shows when only approx. 10% of the battery capacity remains (total operating time; approx. 12 hours). The charging time is approx. 2 hours.

### Automatic shut-off:

The transmitter has an automatic shut-off function built-in to conserve battery power. The available selections for automatic shut-off are: after 2, 6 or 12 minutes, or no automatic shut-off.

### Pin code:

Up to 10 individual/personal PIN codes can be programmed on each transmitter.

### Logging off/on:

The receiver can be programmed to accept up to three different transmitters, where each transmitter has its own unique code. For reasons of safety only one transmitter at a time can be logged on. The current transmitter must first be logged off before another transmitter can be logged on.

### Function selection:

The system offers the possibility of programming different combinations of relay functions.

### Instantaneous or changeover relay functions:

Each function relay can be programmed for instantaneous or changeover relay operations.

### Interlocking:

Using this function it is possible to interlock/prioritise a relay function/button before another. If interlocking has been programmed and two buttons on the transmitter are pressed simultaneously, one of the buttons is given priority/interlocked over the other, which means, for example, up and down movements can not be operated at the same time.

### Safety relay:

The receiver is supplied with two safety relays, which are continuously monitored.

### Integrated safety function when the transmitter starts: 0-position monitoring

If any button is inadvertently pressed when the transmitter is starting, the transmitter will not start. This is indicated by a red LED. A.k.a. 0-position monitoring.

## TRANSMITTER 860TX

Pictures of the transmitter can be found on page 2.

10 two way pushbuttons

32 different frequencies, 433.875 - 434.650 MHz

Stop button

Rechargeable battery

Radio: PLL Synthesizer

Enclosure size: 160x70x35 mm

Weight: approx. 270 g

Enclosure class: IP 54

### Charging the transmitter:

The transmitter is supplied with a rechargeable battery and an integrated charger. The LED in the transmitter indicates red or green depending on the status of the battery. The operating time for the transmitter is approx. 12 hours with continuous usage.

The LED changes colour to red when it is time to charge the battery and approximately 10 % (1 hour of continuous operating time) of the battery capacity remains.

#### NOTE!

The life span of the battery increases if you wait until the LED changes to red before recharging. However, it should be charged at least once every second month.

The LED will remain red during charging (full charge time: approx. 2 hours) until fully charged when it changes colour to green. The transmitter can not be overcharged.

Charging: 12V DC (500 mA) or 230V AC via an adaptor

## RECEIVER 860RX

Pictures of the receiver can be found on page 3.

Relay outputs: Midi: 10+2 for stop function, Maxi: 20+2 for stop function

Stop relay: potential free, makes 8A AC1

Function relay: potential free, breaks/makes 16A AC1

32 different frequencies, 433.875 - 434.650 MHz

Radio: PLL synthesizer

Size: 240x160x80 mm

Enclosure class: IP 65

Antenna connector: BNC

Supply voltage	Power consumption: Min.	Power consumption: Max.
12V DC	150 mA	1 A
24V DC	60 mA	600 mA
24V AC	80 mA	800 mA
48V AC	100 mA	400 mA
115V AC	70 mA	200 mA
230V AC	25 mA	100 mA

### The different status LEDs on the receiver

Yellow LED 2 lights when the receiver has the correct supply voltage.

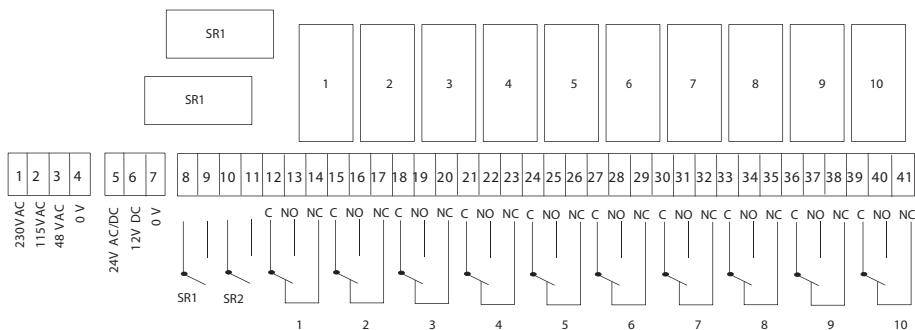
Green LED 12 lights when the receiver receives radio signals (433.875 – 434.650 MHz).

Green LEDs 4 and 8 light when the receiver has locked on a transmitter.

Red LEDs 5 and 9 indicate that there is a fault on the receiver.

Yellow LEDs 6 and 10 flash 1, 2 or 3 times, depending on how many transmitters are programmed on the receiver.

Each relay is fitted with a red LED that lights when the relay switches.



## INSTALLING THE RECEIVER AND THE RECEIVER ANTENNA

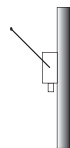
The receiver should be installed:

- As far as possible, protected from the wind and weather.
- With the cable glands downward.

Placement of the receiver antenna:

- Place the antenna high above the ground.
- The antenna should not be in the vicinity of metal objects such as girders, electrical cables and other antennas.

The 1/2-wave antenna is ground plane independent, which is beneficial and a great advantage when there is not a "natural" ground plane such as a metal plate or vehicle roof. It is important that the antenna is angled out from the wall if the receiver is installed on a wall.



The 1/4-433K antenna with three metre coaxial cable makes it possible to place the antenna high and unobstructed. To get the best possible range with the 1/4-433K antenna it should be installed on a flat roof, free from other metal objects and antennae. When installing the antenna on a vehicle it is suitable to use a vehicle bracket (F!).



The 5/8-wave antenna with three metre coaxial cable makes it possible to place the antenna high and unobstructed. To get the best possible range with the 5/8-wave antenna it should be installed on a flat roof, free from other metal objects and antennae. When installing the antenna on a wall it is suitable to use a wall bracket (VM1).





## CO-PROGRAMMING THE TRANSMITTER AND RECEIVER

The receiver can be programmed to accept up to three different transmitters, where each transmitter has its own unique code. The LEDs 6 and 10 on the receiver indicate how many transmitters have been programmed in the receiver.

Not flashing = No transmitter has been programmed

1 flash = 1 transmitter has been programmed

2 flashes = 2 transmitters have been programmed

3 flashes = 3 transmitters have been programmed

- 1) On the receiver: turn the function selector switch 2 to the ON position.
- 2) Press the reset button on the receiver. The green, red and yellow LEDs 4-6 and 8-10 light.
- 3) Release the reset button. The green, (4 and 8) and red, (5 and 9) LEDs go out. The yellow LEDs 6 and 10 light continuously. (If the yellow and red LEDs flash alternately then three transmitters have already been programmed on the receiver, so all the transmitters must be erased and reprogrammed.)
- 4) Start the transmitter by pressing the start buttons (9 and 10) simultaneously for at least 1 second. Release the buttons.
- 5) Press the buttons 9 and 10 simultaneously again until the yellow LEDs 6 and 10 on the receiver start to flash. The receiver has found the transmitter.
- 6) On the receiver: turn the function selector switch 2 to the OFF position.
- 7) The transmitter has been programmed.

Do not forget to complete the form on page 159 after programming!

## ERASING ALL THE TRANSMITTERS IN THE RECEIVER

### ON THE RECEIVER:

- 1) Turn the function selector switch 2 to the ON position.
- 2) Press the reset button. The green, (4 and 8) red (5 and 9) and yellow (6 and 10) LEDs light continuously.
- 3) Release the reset button. The green (4 and 8) and red (5 and 9) LEDs go out. The yellow (6 and 10) LEDs light continuously. If the yellow and red LEDs flash alternately this means 3 transmitters have been programmed in the receiver.
- 4) Turn switch 2 to the OFF position.
- 5) Turn switch 2 to the ON position within 2 seconds. The yellow (6 and 10) LEDs flash and the receiver has been erased.
- 6) Turn switch 2 to the OFF position.

## TO START THE TRANSMITTER

- 1) The stop button must be pulled out.
- 2) Press the start buttons (buttons 9 and 10) simultaneously for at least 1 second.
- 3) Release the start buttons.
- 4) LED 3 is lit green to indicate the transmitter is running.

## TO START A TRANSMITTER WITH A PIN CODE:

- 1) The stop button must be pulled out.
- 2) Press the start buttons (buttons 9 and 10) simultaneously for at least 1 second.
- 3) Release the buttons. The yellow (2) and green (3) LEDs flash.
- 4) Enter the PIN code (4 numbers). The green LED (3) lights continuously. If the wrong PIN code is entered the transmitter will switch itself off.

## TO TURN OFF THE TRANSMITTER

To turn off the transmitter press the stop button. All relays in the receiver are disconnected when the stop button is pressed on the transmitter.

## TO LOCK/UNLOCK A RECEIVER

When a transmitter that is programmed to a receiver starts, the receiver "locks" on to the transmitter's IDcode. In this position the receiver will only accept this transmitter (even if more transmitters have been programmed on the receiver). The green LEDs 4 and 8 light on the receiver to confirm that only the selected transmitter can be used.

When another transmitter is to be used the receiver must first be unlocked. Another programmed transmitter can then be locked on to the receiver.

### UNLOCKING THE RECEIVER:

The transmitter to be logged must be started/logged on.

On the logged on transmitter:

- 1) Press the stop button on the transmitter. The red LED 3 lights continuously for 1 second, then (on the transmitter) the yellow LED 2 lights continuously and the red LED 3 starts to flash.
- 2) Enter the PIN code. You have 2 seconds per button. If no PIN code has been programmed you should enter 4 zeros (0000) to unlock the receiver.
- 3) If the PIN code is approved, the transmitter sends a signal to unlock the receiver. The transmitter switches itself off and is now logged out.. The green LEDs 4 and 8 on the receiver go out and it is now possible for

### UNLOCKING THE RECEIVER WITHOUT A TRANSMITTER

- 1) Turn switch 2 to the ON position.
- 2) Press down the reset button. Green (4 and 8), red (5 and 9) and yellow (6 and 10) LEDs light continuously.
- 3) Release the reset button The green (4 and 8) and red (5 and 9) LEDs go out. Yellow LED (6 and 10) lights continuously.
- 4) Turn switch 2 to the OFF position.
- 5) Yellow (6 and 10) LEDs go out.

The receiver can now be logged on to another transmitter.

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## CHANGING THE FREQUENCY

Decide which channel/frequency you wish to transmit on by using the table below before you start programming. If you want access to channels 17-32, you must contact your dealer.

Programming/changing the frequency can only be carried out with the help of the transmitter. The receiver automatically detects and changes to the new frequency.

### FREQUENCY TABLE:

CHANNEL	FREQUENCY	STRAP	CHANNEL	FREQUENCY	STRAP
01	434.650 MHz	Open	17	434.625 MHz	Closed
02	434.600 MHz	Open	18	434.575 MHz	Closed
03	434.550 MHz	Open	19	434.525 MHz	Closed
04	434.500 MHz	Open	20	434.475 MHz	Closed
05	434.450 MHz	Open	21	434.425 MHz	Closed
06	434.400 MHz	Open	22	434.375 MHz	Closed
07	434.350 MHz	Open	23	434.325 MHz	Closed
08	434.300 MHz	Open	24	434.275 MHz	Closed
09	434.250 MHz	Open	25	434.225 MHz	Closed
10	434.200 MHz	Open	26	434.175 MHz	Closed
11	434.150 MHz	Open	27	434.125 MHz	Closed
12	434.100 MHz	Open	28	434.075 MHz	Closed
13	434.050 MHz	Open	29	434.025 MHz	Closed
14	434.000 MHz	Open	30	434.975 MHz	Closed
15	433.950 MHz	Open	31	433.925 MHz	Closed
16	433.900 MHz	Open	32	433.875 MHz	Closed

### CHANGE FREQUENCY:

- 1) Start the transmitter by pressing the buttons 9 and 10 for at least 1 second. The red LED 3 lights continuously.
- 2) Release button 9, but hold button 10.
- 3) Release button 10 and then select button 2 for the frequency. You have 0.3 seconds to press down the button. The yellow LED 2 lights continuously and the green LED 3 starts to flash. If you do not press any of the function buttons the transmitter starts.
- 4) Enter the safety code 1, 2, 3, 4. You have 5 seconds per button, if the time elapses the transmitter switches off. The green LED 3 flashes and the yellow LED 2 goes out if the safety code is correct.
- 5) Select the channel/frequency. For example, channel 02: first press the 0 button and then the 2 button. The yellow LED 1 lights each time an accepted button is pressed. Once you have selected the frequency the yellow LED (1) flashes 3 times and programming and the change of frequency are then complete.
- 6) Restart the transmitter.

Do not forget to write down the changes on the form on page 159 after programming!

### AUTOMATIC SHUT-OFF

The transmitter can be programmed with an automatic shut-off function once the last command has been given to conserve battery capacity. See the time options below.

#### Time option

Button 0 = No automatic shut-off.

Button 1 = Automatic shut-off after 2 minutes.

Button 2 = Automatic shut-off after 6 minutes.

Button 3 = Automatic shut-off after 12 minutes.

## PROGRAMMING AUTOMATIC SHUT-OFF:

- 1) Start the transmitter by pressing the buttons 9 and 10 for at least 1 second. The red LED 3 lights continuously.
- 2) Release button 9, but hold button 10.
- 3) Release button 10 and then select button 3 for automatic shut-off. You have 0.3 seconds to press down the button. The yellow LED 2 lights continuously and the green LED 3 starts to flash. If you do not press any of the function buttons the transmitter starts.
- 4) Enter the safety code 1, 2, 3, 4. You have 5 seconds per button, if the time elapses the transmitter switches off. The green LED 3 flashes and the yellow LED 2 goes out if the safety code is correct.
- 5) Select the required time option (see the options above). The yellow LED 1 lights each time an accepted button is pressed. Once you have selected an option the yellow LED (1) flashes 3 times and programming is complete.
- 6) Restart the transmitter.

Do not forget to write down the changes on the form on page 159 after programming!

## PIN CODE FUNCTION

It is possible to program 10 PIN codes on each transmitter.

### PROGRAM A PIN CODE:

- 1) Start the transmitter by pressing the buttons 9 and 10 for at least 1 second. The red LED 3 lights continuously.
- 2) Release button 9, but hold button 10.
- 3) Release button 10 and select button 4 for the PIN code. You have 0.3 seconds to press the button. The yellow LED 2 lights continuously and the green LED 3 starts to flash. If you do not press any of the function buttons the transmitter starts.
- 4) Now enter the safety code 1, 2, 3, 4. The yellow LED 1 lights each time an accepted button is pressed. You have 5 seconds per button, if the time elapses the transmitter switches off. The green LED 3 flashes and the yellow LED 2 goes out if the safety code is correct.
- 5) Now select the number (button) the PIN code should be programmed to (0-9). The green LED 3 flashes. The yellow LED 2 will light if the number is used by a PIN code.
- 6) Select on PIN code by entering a combination of 4 numbers. Confirm the code by repeating it. Once you have selected a PIN code the yellow LED (1) flashes 3 times and programming is complete. The transmitter switches itself off.
- 7) Restart the transmitter.

NOTE! The PIN code combination 0000 cannot be used.

Do not forget to write down the changes on the form on page 159 after programming!

### CHANGING/ERASING THE PIN CODE:

- 1) Start the transmitter by pressing the buttons 9 and 10 for at least 1 second. The red LED 3 lights continuously.
- 2) Release button 9, but hold button 10.
- 3) Release button 10 and select button 4 for the PIN code. You have 0.3 seconds to press down the button. The yellow LED 2 lights continuously and the green LED 3 starts to flash. If you do not press any of the function buttons the transmitter starts.
- 4) Now enter the safety code 1, 2, 3, 4. The yellow LED 1 lights each time an accepted button is pressed. You have 5 seconds per button, if the time elapses the transmitter switches off. The green LED 3 flashes and the yellow LED 2 goes out if the safety code is correct.
- 5) Press the number (0-9) which the PIN code is programmed under. The yellow LED 2 lights continuously.
- 6) Enter the existing four digit PIN code. The yellow LED 2 goes out if the PIN code is correct.
- 7) Changing the PIN code:  
Select a PIN code by entering a combination of 4 numbers. Confirm the code by repeating it. Once you have selected a PIN code the yellow LED (1) flashes 3 times and programming is complete.
- 8) Erasing the PIN code  
Enter four zeros (0000) and confirm by entering the four zeros (0000) again.  
The yellow LED (1) flashes 3 times and the erasing procedure is complete. The transmitter switches off.
- 9) Restart the transmitter.

## ERASING ALL PIN-CODES

You can, if necessary, erase all the PIN codes on the transmitter.

### ERASE ALL THE PIN CODES ON THE TRANSMITTER:

- 1) Start the transmitter by pressing the buttons 9 and 10 for at least 1 second. The red LED 3 lights continuously.
- 2) Release button 9, but hold button 10.
- 3) Release button 10 and then select button 8 to erase the PIN codes. The yellow LED 2 lights continuously and the green LED 3 flashes.
- 4) Enter the code 7, 1, 0, 4, 2, 1. Once you have entered the code the yellow LED (1) flashes 3 times and the erasing procedure is complete. The transmitter switches itself off.
- 5) Restart the transmitter.

## FUNCTION SELECTOR

The functions in the table can be programmed by using the buttons on the transmitter and by setting the function selector switches. Note that the table is only an outline and all function options are described in detail in the sections that follow the table.

Func. = No. of functions

Select TX = Function selection TX (transmitter)

LED TX = LED TX (transmitter)

Select RX = Function selection RX (receiver)

Type RX = Receiver model (Maxi or Midi)

F.Selc. 4, 5, 6, 7, 8 = Function selector switch 8(receiver) 4, 5, 6, 7, 8.

Func.	Select TX	LED TX	Select RX	Type RX	F. Selc. 4,5,6,7,8	Comments
10x1	0	-	A	MIDI	OFF,OFF,OFF,OFF,OFF	Only 1 receiver
4x2+2x1	0	-	B	MIDI	OFF,OFF,OFF,OFF,ON	Only 1 receiver
6x2+1x1	0	-	C	MIDI	OFF,OFF,OFF,ON,OFF	Only 1 receiver
10x1	1	1	D	MIDI	OFF,OFF,OFF,OFF,OFF	Receiver 1 (8x1)
10x1	1	2	D	MIDI	ON,OFF,OFF,OFF,OFF	Receiver 2 (8x1)
10x1	1	1+2	D	MIDI	x,OFF,OFF,OFF,OFF	Receiver 1+2 (8x1)
10x1	2	1	E	MIDI	OFF,OFF,OFF,OFF,OFF	Receiver 1 (8x1)
10x1	2	2	E	MIDI	ON,OFF,OFF,OFF,OFF	Receiver 2 (8x1)
10x1	3	1	F	MIDI	OFF,OFF,OFF,OFF,OFF	Receiver 1 (9x1)
10x1	3	2	F	MIDI	ON, OFF, OFF, OFF, OFF	Receiver 2 (9x1)
4x2+2x1	1	1	G	MIDI	OFF,OFF,OFF,OFF,ON	Receiver 1 (4x2+2x1)
4x2+2x1	1	2	G	MIDI	ON,OFF,OFF,OFF,ON	Receiver 2 (4x2+2x1)
4x2+2x1	1	1+2	G	MIDI	x,OFF,OFF,OFF,ON	Receiver 1+2 (4x2+2x1)
4x2+2x1	2	1	H	MIDI	OFF,OFF,OFF,OFF,ON	Receiver 1 (4x2+2x1)
4x2+2x1	2	2	H	MIDI	ON,OFF,OFF,OFF,ON	Receiver 2 (4x2+2x1)
6x2+1x1	1	1	I	MIDI	OFF,OFF,OFF,ON,OFF	Receiver 1 (6x2+1x1)
6x2+1x1	1	2	I	MIDI	ON,OFF,OFF,ON,OFF	Receiver 2 (6x2+1x1)
6x2+1x1	1	1+2	I	MIDI	x,OFF,OFF,ON,OFF	Receiver 1+2 (6x2+1x1)
6x2+1x1	2	1	J	MIDI	OFF,OFF,OFF,ON,OFF	Receiver 1 (6x2+1x1)
6x2+1x1	2	2	J	MIDI	ON,OFF,OFF,ON,OFF	Receiver 2 (6x2+1x1)

Func.	Select TX	LED TX	Select RX	Type RX	F. Selc. 4,5,6,7,8	Comments
10x2	0	-	K	MAXI	OFF,OFF,OFF,OFF,OFF	Only 1 receiver
10x2	1	1	L	MAXI	OFF,OFF,OFF,OFF,OFF	Receiver 1 (8x2)
10x2	1	2	L	MAXI	ON,OFF,OFF,OFF,OFF	Receiver 2 (8x2)
10x2	1	1+2	L	MAXI	x,OFF,OFF,OFF,OFF	Receiver 1+2 (8x2)
10x2	2	1	M	MAXI	OFF,OFF,OFF,OFF,OFF	Receiver 1 (8x2)
10x2	2	2	M	MAXI	ON,OFF,OFF,OFF,OFF	Receiver 2 (8x2)
10x2	1	1	N	MAXI	OFF,OFF,OFF,ON,ON	Lift 1
10x2	1	2	N	MAXI	OFF,OFF,OFF,ON,ON	Lift 2
10x2	1	1+2	N	MAXI	OFF,OFF,OFF,ON,ON	Lift 1+2
10x2	2	1	O	MAXI	OFF,OFF,OFF,ON,ON	Lift 1
10x2	2	2	O	MAXI	OFF,OFF,OFF,ON,ON	Lift 2
10x2	3	1	P	MAXI	OFF,OFF,ON,OFF,OFF	9+9 (Button 1-9->Relay 1-9)
10x2	3	2	P	MAXI	OFF,OFF,ON,OFF,OFF	9+9 (Button 1-9->Relay 11-19)

## THE TRANSMITTER'S FUNCTION SELECTIONS AND LED INDICATIONS

It is possible to program the function selection on the transmitter. The 2 yellow LEDs on the transmitter indicate which receiver/receivers, relay group/groups or the lift on an overhead crane are to be controlled. By setting the receiver's function selector switch at the same time a number of different types of relay functions can be selected (see page 151).

Once you have programmed the function selections 1-3 the transmitter's LED 1 will always light when the transmitter starts.

NOTE! As standard the transmitter is supplied with function selection 0.

### FUNCTION SELECTION 0:

With function selection 0 it is only possible to control one receiver. The two yellow LEDs are not used.

The transmitter's function selection 0 matches with receiver's function selection; A, B, C, K

### FUNCTION SELECTION 1:

Using function selection 1 you can control 2 receivers (receiver 1, receiver 2 or both simultaneously), alternatively you can control 2 lifts on an overhead crane (lift 1, lift 2 or both lifts simultaneously). By pressing button 7 the yellow LED 1 lights, press button 8 and the yellow LED 2 lights. Press buttons 7 and 8 simultaneously and the LEDs 1 and 2 light.

The transmitter's function selection 1 matches with receiver's function selection; D, G, I, L, N

### FUNCTION SELECTION 2:

Using function selection 2 you can control 2 receivers (receiver 1 or receiver 2, but never simultaneously), alternatively you can control 2 lifts on an overhead crane (lift 1 or lift 2 but never simultaneously). By pressing button 7 the yellow LED 1 lights, press button 8 and the yellow LED 2 lights. The yellow LEDs 1 and 2 can never be lit simultaneously.

The transmitter's function selection 2 matches the receiver's function selection; E, H, J, M, O

## FUNCTION SELECTION 3:

With function selection 3 you can control 2 receivers (9 single functions on each receiver) or 1 receiver (9+9 single functions). By pressing button 10 you switch between lighting the yellow LED 1 or LED 2. The yellow LEDs 1 and 2 can never be lit simultaneously.

The transmitter function selection 3 matches the receiver's function selection: F, P

## PROGRAM THE FUNCTION SELECTION ON THE TRANSMITTER:

- 1) Start the transmitter by pressing the buttons 9 and 10 for at least 1 second. The red LED 3 lights continuously.
- 2) Release button 9, but hold button 10.
- 3) Release button 10 and then select button 1 for function selection. You have 0.3 seconds to press down the button 1.  
The yellow LED 2 lights continuously and the green LED 3 starts to flash. If you do not press any of the function buttons the transmitter starts.
- 4) Enter the safety code: 1, 2, 3, 4. You have 5 seconds per button, if the time elapses the transmitter switches off. The green LED 3 flashes and the yellow LED 2 goes out if the safety code is correct.
- 5) Now choose the respective function options (button 0, 1, 2 or 3). NOTE! The function is deprogrammed using the 0 button. The yellow LED 1 lights each time an accepted button is pressed. Once you have selected a function option the yellow LED (1) flashes 3 times and programming is complete.
- 6) Restart the transmitter by pressing buttons 9 and 10.

## THE RECEIVER'S FUNCTION SELECTION/RELAY FUNCTIONS

### PROGRAM THE FUNCTION SELECTION ON THE RECEIVER:

The function selection on the receiver is programmed by setting the function selector switches 4- either the ON or OFF positions. To see how the switches should be set refer to respective function selections or the function selection table.

### RECEIVER 860RX-MIDI

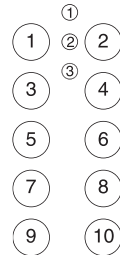
#### Function selection A:

Relay function: 10 single functions (10x1).

See the figure to the right, which buttons control respective relays.

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=OFF, 8=OFF

The receiver's function selection A matches the transmitter's function selection; 0 (see page 150).



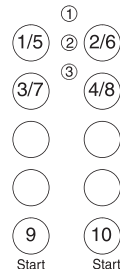
#### Function selection B:

Relay function: 4 double + 2 single functions (4x2+2x1).

See the figure to the right, which buttons control respective relays.

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=OFF, 8=ON

The receiver's function selection B matches the transmitter's function selection; 0 (see page 150).



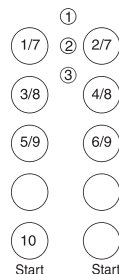
### Function selection C:

Relay function: 6 double + 1 single function ( $6 \times 2 + 1 \times 1$ ).

See the figure to the right, which buttons control respective relays.

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=ON, 8=OFF

The receiver's function selection C matches the transmitter's function selection: 0 (see page 150).



### Function selection D:

Relay function: 8 single functions + 2 relays to indicate that the

receiver is selected. Using the transmitter's buttons 7 and 8 either

receiver 1, 2 or both can be controlled. See the figure to the right, which buttons control respective relays.

Receiver 1:

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=OFF, 8=OFF

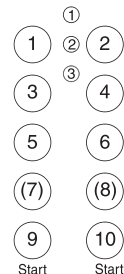
Relay 7 is activated when the yellow LED 1 is lit on the transmitter.

Receiver 2:

The function selector switch: 4=ON, 5=OFF, 6=OFF, 7=OFF, 8=OFF

Relay 8 is activated when the yellow LED 2 is lit on the transmitter.

The receiver's function selection D matches the transmitter's function selection: 1 (see page 150).



### Function selection E:

Relay function: 8 single functions + 2 relays to indicate that the receiver is selected. Using the transmitter's buttons 7 and 8 receivers 1 or 2 can be controlled, but never both receivers simultaneously.

See the figure to the right, which buttons control respective relays.

Receiver 1:

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=OFF, 8=OFF

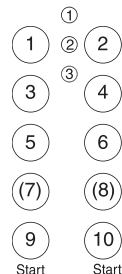
Relay 7 is activated when the yellow LED 1 is lit on the transmitter.

Receiver 2:

The function selector switch: 4=ON, 5=OFF, 6=OFF, 7=OFF, 8=OFF

Relay 8 is activated when the yellow LED 2 is lit on the transmitter.

The receiver's function selection E matches the transmitter's function selection: 2 (see page 150).



### Function selection F:

Relay function: 9 single functions + 1 relay for indication that the

receiver is selected. Using the transmitter's button 10 receivers 1 or

2 can be controlled, but never both receivers simultaneously.

See the figure to the right, which buttons control respective relays.

Receiver 1:

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=OFF, 8=OFF

Relay 10 is activated when the yellow LED 1 is lit on the transmitter.

Receiver 2:

The function selector switch: 4=ON, 5=OFF, 6=OFF, 7=OFF, 8=OFF

Relay 10 is activated when the yellow LED 2 is lit on the transmitter.

The receiver's function selection F matches the transmitter's function selection: 3 (see page 151).





### Function selection G:

Relay function: 4 double + 2 single functions ( $4 \times 2 + 2 \times 1$ ).

Using the transmitter's buttons 7 and 8 either receiver 1, 2 or both can be controlled. See the figure to the right, which buttons control respective relays.

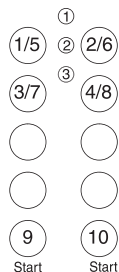
Receiver 1:

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=OFF, 8=ON

Receiver 2:

The function selector switch: 4=ON, 5=OFF, 6=OFF, 7=OFF, 8=ON

The receiver's function selection G matches the transmitter's function selection: 1 (see page 150).



### Function selection H:

Relay function: 4 double + 2 single functions ( $4 \times 2 + 2 \times 1$ )

Using the transmitter's buttons 7 and 8 receivers 1 or 2 can be controlled, but never both receivers simultaneously. See the figure to the right, which buttons control respective relays.

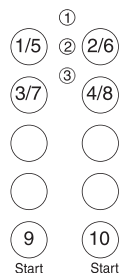
Receiver 1:

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=OFF, 8=ON

Receiver 2:

The function selector switch: 4=ON, 5=OFF, 6=OFF, 7=OFF, 8=ON

The receiver's function selection H matches the transmitter's function selection: 2 (see page 150).



### Function selection I:

Relay function: 6 double + 1 single function ( $6 \times 2 + 1 \times 1$ )

Using the transmitter's buttons 7 and 8 either receiver 1, 2 or both can be controlled. See the figure to the right, which buttons control respective relays.

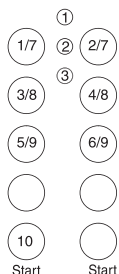
Receiver 1:

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=ON, 8=OFF

Receiver 2:

The function selector switch: 4=ON, 5=OFF, 6=OFF, 7=ON, 8=OFF

The receiver's function selection I matches the transmitter's function selection: 1 (see page 150).



### Function selection J:

Relay function: 6 double + 1 single function ( $6 \times 2 + 1 \times 1$ )

Using the transmitter's buttons 7 and 8 receivers 1 or 2 can be controlled, but never both receivers simultaneously. See the figure to the right, which buttons control respective relays.

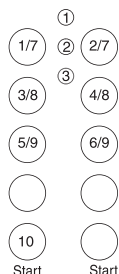
Receiver 1:

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=ON, 8=OFF

Receiver 2:

The function selector switch: 4=ON, 5=OFF, 6=OFF, 7=ON, 8=OFF

The receiver's function selection J matches the transmitter's function selection: 2 (see page 150).



## RECEIVER 860RX-MAXI

### Function selection K:

Relay function: 20 double functions (10x2).

See the figure to the right, which buttons control respective relays.

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=OFF, 8=OFF

The receiver's function selection K matches the transmitter's function selection: 0 (see page 150).



### Function selection L:

Relay function: 8 double functions + 2 relays to indicate that the receiver is selected. Using the transmitter's buttons 7 and 8 either receiver 1, 2 or both can be controlled. See the figure to the right, which buttons control respective relays.

Receiver 1:

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=OFF, 8=OFF

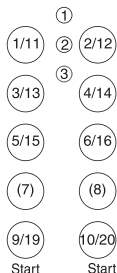
Relay 7 is activated when the yellow LED 1 is lit on the transmitter.

Receiver 2:

The function selector switch: 4=ON, 5=OFF, 6=OFF, 7=OFF, 8=OFF

Relay 8 is activated when the yellow LED 2 is lit on the transmitter.

The receiver's function selection L matches the transmitter's function selection: 1 (see page 150).



### Function selection M:

Relay function: 8 double functions + 2 relays to indicate that the receiver is selected.

Using the transmitter's buttons 7 and 8 receivers 1 or 2 can be controlled, but both receivers simultaneously. See the figure to the right, which buttons control respective relays.

Receiver 1:

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=OFF, 8=OFF

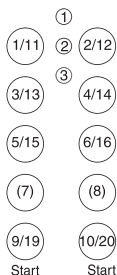
Relay 7 is activated when the yellow LED 1 is lit on the transmitter.

Receiver 2:

The function selector switch: 4=ON, 5=OFF, 6=OFF, 7=OFF, 8=OFF

Relay 8 is activated when the yellow LED 2 is lit on the transmitter.

The receiver's function selection M matches the transmitter's function selection: 2 (see page 150).



### Function selection N:

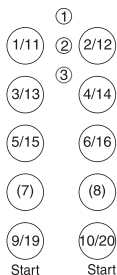
Relay function: 8 double functions + 2 relays to indicate which lift is selected. Using the transmitter's buttons 7 and 8 you can control lift 1, 2 or both simultaneously on an overhead crane. See the figure to the right, which buttons control respective relays.

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=ON, 8=ON

Relay 7 is activated when the yellow LED 1 is lit on the transmitter.

Relay 8 is activated when the yellow LED 2 is lit on the transmitter.

The receiver's function selection N matches the transmitter's function selection: 1 (see page 150).



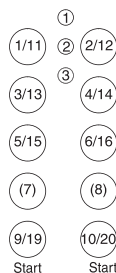
## Function selection O:

Relay function: 8 double functions + 2 relays to indicate which lift is selected.  
Using the transmitter's buttons 7 and 8 you can control lift 1 or 2 on an overhead crane, but never simultaneously. See the figure to the right, which buttons control respective relays.

The function selector switch: 4=OFF, 5=OFF, 6=OFF, 7=ON, 8=ON

Relay 7 is activated when the yellow LED 1 is lit on the transmitter.  
Relay 8 is activated when the yellow LED 2 is lit on the transmitter.

The receiver's function selection 0 matches the transmitter's function selection: 2 (see page 150).



## Function selection P:

Relay function: 9+9 single functions + 2 relays to indicate the selected relay group.  
Using the transmitter's button 10 you can select which relay group you want to control (1-9 or 11-19). See the figure to the right, which buttons control respective relays.

The function selector switch: 4=OFF, 5=OFF, 6=ON, 7=OFF, 8=OFF

Relay 10 is activated when the yellow LED 1 is lit on the transmitter.  
Button 1-9 controls relay 1-9.

Relay 20 is activated when the yellow LED 2 is lit on the transmitter.  
Button 1-9 controls relay 11-19.

The receiver's function selection P matches the transmitter's function selection: 3 (see page 151).



## INSTANTANEOUS OR CHANGEOVER RELAY FUNCTIONS

The system is supplied with an instantaneous function as the default setting. Program as set out below if you want a changeover function.

Instantaneous function = The relay only switches/activates during the period the button on the transmitter is pressed down.

Changeover/Toggling function = The position of the relay changes each time the button on the transmitter is pressed, but maintains its new position once the button has been released.

### PROGRAMMING THE CHANGEOVER RELAY FUNCTION:

- 1) Start the system.
- 2) Turn the receiver's function selector switch 1 to the ON position. All the relays in the receiver are disconnected and the red LEDs for respective relays go out.
- 3) Press the buttons on the transmitter that you wish to assign a changeover/toggling function.  
The red LED will light continuously above respective relays that you have chosen to assign changeover/toggling functions.
- 4) Turn the receiver's function selector switch 1 to the OFF position. Changeover relay functions are programmed and can now be used.

### RETURN TO THE DEFAULT SETTING (INSTANTANEOUS):

- 1) Start the system.
- 2) Turn the receiver's function selector switch 1 to the ON position. All the relays in the receiver are disconnected and the red LEDs for respective relays go out.
- 3) Turn the receiver's function selector switch 1 to the OFF position. All relays have an instantaneous function.

## INTERLOCKS

Interlocking means it is possible to interlock/prioritise a relay function/button before another. interlocking has been programmed and two buttons on the transmitter are pressed simultaneously, one the buttons is given priority/interlocked over the other, which means, for example, up and down movements cannot be operated at the same time.

Look through and decide what options you want to program, by using the table below, before you start programming.

Note that the option OFF, OFF = no interlocking

### Interlocks 10x1

Functions 1-2 are blocked when pressed simultaneously.

Functions 3-4 are blocked when pressed simultaneously.

Functions 5-6 are blocked when pressed simultaneously.

Functions 7-8 are blocked when pressed simultaneously.

Functions 9-10 are blocked when pressed simultaneously.

### Red LEDs for resp. relays

LED 1 = ON.

LED 2 = ON.

LED 3 = ON.

LED 4 = ON.

LED 5 = ON.

LED 6 = ON.

LED 7 = ON.

LED 8 = ON.

LED 9 = ON.

LED 10 = ON.

### Interlocks 10x2

Function 11 has priority over 1, function 12 over 2.

Function 11 has priority over 1, function 12 over 2.

Function 1-2, 11-12 are blocked when pressed simultaneously.

Function 1-2, 11-12 are blocked when pressed simultaneously.

Function 13 has priority over 3, function 14 over 4.

Function 13 has priority over 3, function 14 over 4.

Functions 3-4, 13-14 are blocked when pressed simultaneously.

Functions 3-4, 13-14 are blocked when pressed simultaneously.

Function 15 has priority over 5, function 16 over 6.

Function 15 has priority over 5, function 16 over 6.

Functions 5-6, 15-16 are blocked when pressed simultaneously.

Functions 5-6, 15-16 are blocked when pressed simultaneously.

Function 17 has priority over 7, function 8 over 18.

Function 17 has priority over 7, function 18 over 8.

Functions 7-8, 17-18 are blocked when pressed simultaneously.

Functions 7-8, 17-18 are blocked when pressed simultaneously.

Function 19 has priority over 9, function 10 over 20.

Function 19 has priority over 9, function 10 over 20.

Functions 9-10, 19-20 are blocked when pressed simultaneously.

Functions 9-10, 19-20 are blocked when pressed simultaneously.

### Red LEDs for resp relays

LED 1 = ON.

LED 2 = OFF.

LED 1 = OFF.

LED 2 = ON.

LED 1 = ON.

LED 2 = ON.

LED 3 = ON.

LED 4 = OFF.

LED 3 = OFF.

LED 4 = ON.

LED 3 = ON.

LED 4 = ON.

LED 5 = ON.

LED 6 = OFF.

LED 5 = OFF.

LED 6 = ON.

LED 5 = ON.

LED 6 = ON.

LED 7 = ON.

LED 8 = OFF.

LED 7 = OFF.

LED 8 = ON.

LED 7 = ON.

LED 8 = ON.

LED 9 = ON.

LED 10 = OFF.

LED 9 = OFF.

LED 10 = ON.

LED 9 = ON.

LED 10 = ON.

## Interlocks 4x2+2

Function 5 has priority over 1, function 6 over 2.

Function 5 has priority over 1, function 6 over 2.

Functions 1-2, 5-6 are blocked when pressed simultaneously.

Functions 1-2, 5-6 are blocked when pressed simultaneously.

Function 7 has priority over 3, function 8 over 4.

Function 7 has priority over 3, function 8 over 4.

Functions 3-4, 7-8 are blocked when pressed simultaneously.

Functions 3-4, 7-8 are blocked when pressed simultaneously

Functions 9-10 are blocked when pressed simultaneously.

## Red LEDs for resp. relays

LED 1 = ON

LED 2 = OFF

LED 1 = OFF.

LED 2 = ON.

LED 1 = ON.

LED 2 = ON.

LED 3 = ON.

LED 4 = OFF.

LED 3 = OFF.

LED 4 = ON.

LED 3 = ON.

LED 4 = ON.

LED 9 = ON.

LED 10 = ON

## Interlocks 6x2+1

Function 7 has priority over 1, function 7 over 2.

Function 7 has priority over 1, function 7 over 2.

Functions 1-2 and 7 are blocked when pressed simultaneously.

Functions 1-2 and 7 are blocked when pressed simultaneously.

Function 8 has priority over 3, function 8 over 4.

Function 8 has priority over 3, function 8 over 4.

Functions 3-4 and 8 are blocked when pressed simultaneously.

Functions 3-4 and 8 are blocked when pressed simultaneously.

Function 9 has priority over 5, function 9 over 6.

Function 9 has priority over 5, function 9 over 6.

Functions 5-6 and 9 are blocked when pressed simultaneously.

Functions 5-6 and 9 are blocked when pressed simultaneously.

## Red LEDs for resp relays

LED 1 = ON.

LED 2 = OFF.

LED 1 = OFF.

LED 2 = ON.

LED 1 = ON.

LED 2 = ON.

LED 3 = ON.

LED 4 = OFF.

LED 3 = OFF.

LED 5 = ON.

LED 3 = ON.

LED 6 = ON.

LED 5 = ON.

LED 6 = OFF.

LED 5 = OFF.

LED 6 = ON.

LED 5 = ON.

LED 6 = ON.

## PROGRAMMING THE INTERLOCK:

- 1) Start the system.
- 2) On the receiver: Turn the function selector switch 3 to the ON position. All the relays in the receiver are disconnected and the red LEDs for respective relays go out.
- 3) On the transmitter: program by pressing the buttons (LED) defined as ON in the table: Interlock.  
Example: LED 5 = OFF and LED 6 = ON, is programmed by pressing button 6 on the transmitter, the LEDs will then light according to the required interlock option. The red LEDs will light continuously above the relays you have chosen.
- 4) On the receiver: Turn the switch 3 to the OFF position. The interlock is programmed and can now be used.

## ERASE THE INTERLOCK:

- 1) Start the system.
- 2) On the receiver: Turn the function selector switch 3 to the ON position. All the relays in the receiver are disconnected and the red LEDs for respective relays go out.
- 3) On the receiver: Turn the function selector switch 3 to the OFF position. The interlock is now erased (no relays are interlocked).

## TROUBLE SHOOTING

If the equipment does not work as it should, please check the points set out below.

INCORRECT FUNCTION	POSSIBLE CAUSE	ACTION
The receiver's yellow LED for a correct supply voltage is not lit.	Incorrect operating voltage to the receiver.	Check the operating voltage.
	The fuse in the receiver is not intact.	Replace the fuse.
The receiver's yellow LEDs for the number of programmed transmitters do not flash.	A transmitter has not been programmed on the receiver.	Program the required transmitter.
The transmitter does not work when the buttons 9 and 10 are pressed simultaneously (at least 1 second) and then released. The LED on the transmitter produces a red light.	The battery is discharged.	Charge the transmitter.
	A button on the transmitter is broken.	Contact your dealer.
When the transmitter is started the red LED 3 flashes when you press the buttons 9 and 10 simultaneously.	The stop button is pressed in.	Pull out the stop button.
When the transmitter is started the red LED and the yellow LED 1 flash when you press buttons 9 and 10 simultaneously.	The processor indicates that it has found a fault with the stop button.	Push in the stop button without releasing buttons 9 and 10. If the stop button is intact LED 2 should start to flash. Pull out the stop button and release buttons 9 and 10. If the transmitter does not start after this instruction the stop button needs to be replaced. Contact your dealer.
The range is too short.	The antenna, antenna cables are damaged or installed incorrectly.	Change the position of the antenna. Change the antenna cable.
Red LED (5 or 9) in the receiver flashes (560ms on/560ms off).	Microcontroller EEPROM memory error.	Contact your dealer.
Red LED (5 or 9) in the receiver flashes (150ms on/150ms off).	Safety relays SR1 or SR2 contact error.	Contact your dealer.
Red LED (5 or 9) in the receiver lights constantly.	Microcontroller RAM/ROM memory error.	Contact your dealer.

Please contact your dealer if you have followed these instructions and despite this have not managed to get the radio system to work.

## SETTINGS FORM: RECEIVER AND TRANSMITTER

The following data should be documented. Copy the form and enclose it when a service is required.

Receiver series no: \_\_\_\_\_

Toggling relay: \_\_\_\_\_

Interlocks: \_\_\_\_\_

Programmed transmitters:

ID1: \_\_\_\_\_ ID2: \_\_\_\_\_ ID3: \_\_\_\_\_

Transmitter series no: \_\_\_\_\_

Function selection: \_\_\_\_\_

Automatic shut-off: \_\_\_\_\_

Frequency: \_\_\_\_\_

PIN-position PIN-code /Name

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

4 \_\_\_\_\_

5 \_\_\_\_\_

6 \_\_\_\_\_

7 \_\_\_\_\_

8 \_\_\_\_\_

9 \_\_\_\_\_

0 \_\_\_\_\_

" EC Declaration of Conformity for Tele Radio  
radio remote control systems can be found at  
<http://www.tele-radio.com>"

**CE 0682** !

Trasnmittter series no: \_\_\_\_\_

Function selection: \_\_\_\_\_

Automatic shut-off: \_\_\_\_\_

Frequency: \_\_\_\_\_

PIN-position PIN-code /Name

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

4 \_\_\_\_\_

5 \_\_\_\_\_

6 \_\_\_\_\_

7 \_\_\_\_\_

8 \_\_\_\_\_

9 \_\_\_\_\_

0 \_\_\_\_\_

Transmitter series no: \_\_\_\_\_

Function selection: \_\_\_\_\_

Automatic shut-off: \_\_\_\_\_

Frequency: \_\_\_\_\_

PIN-position PIN-code /Name

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

4 \_\_\_\_\_

5 \_\_\_\_\_

6 \_\_\_\_\_

7 \_\_\_\_\_

8 \_\_\_\_\_

9 \_\_\_\_\_

0 \_\_\_\_\_

DK

NO

SV

NL

ES

FR

DE

GB

US