TELE RADIO TIGER G2

INDUSTRIAL RADIO REMOTE CONTROLS

Installation instructions

TG-T9-1 (TG-TX-MNL8), TG-T9-11 (TG-TX-MNR8), TG-T11-5 (TG-TX-MXL12), TG-T11-15 (TG-TX-MXR12),

TG-R9-1 (TG-RX-MXL12), TG-R9-11 (TG-RX-MXL28), TG-R9-6 (TG-RX-MXLANY), TG-R9-2 (TG-RX-MXR12), TG-R9-12 (TG-RX-MXR28)

LANGUAGE: English (original)

IM-TG2-RX006-A05-EN

TELE RADIO® REMOTE CONTROL

CONTENTS

CHAPTER 1: CUSTOMER INFORMATION

THANK YOU FOR PURCHASING A TELE RADIO AB PRODUCT

READ ALL INSTRUCTIONS AND WARNINGS CAREFULLY BEFORE MOUNTING, INSTALLING AND CONFIGURATING THE PRODUCTS.

These instructions are published by Tele Radio AB without any guarantee. The instructions may be removed or revised by Tele Radio AB at any time and without further notice. Corrections and additions will be added to the latest version of the instruction.

IMPORTANT! These instructions are directed to installers. There are separate instructions directed towards end users. The instructions that contain information on the installation and configuration of the radio remote control unit on the machine are not intended to be passed on to the end user. Only such information may be passed on to the end user that is needed to operate the machine correctly by radio remote control.

Tele Radio AB products are covered by a guarantee/ warranty against material, construction or manufacturing faults. During the guarantee/ warranty period, Tele Radio AB may replace the product or faulty parts with new. Work under guarantee/ warranty must be carried out by Tele Radio AB or by an authorized service center specified by Tele Radio AB. Contact your Tele Radio AB representative if you need support or service.

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WARNINGS & RESTRICTIONS

WARNING! Tele Radio remote controls are often built into wider applications. We recommend that the system is provided with a wired emergency stop where necessary.

NOTE! We recommend that the functionality of the STOP button is being tested at a regular basis: At a minimum, when used for 200 hours. To test the STOP button: press, twist and pull it out.

INSTALLING, CONNECTING AND MOUNTING

- Allow only licensed or qualified personnel to install the product.
- Switch the power supply off to the receiver before connecting the equipment.
- Check that you have connected the power supply to the correct connection terminal.
- To utilize the safety of the system, use the stop relays in the safety circuitry of the object that you want to control.
- Use undamaged cables. No cables should hang loose.
- Avoid installing in areas affected by strong vibrations.
- Place the receiver well away from wind, damp and water.
- Cable glands and vent plugs must face down to prevent water from seeping in.

THE USER

- Make sure that the user is following the instructions.
- Make sure that the user has reached the certified age of your country to operate the equipment.
- Make sure that the user is not under the influence of drugs, alcohol and medicines.
- Allow only qualified personnel to have access to the transmitter and operate the equipment.
- Make sure that the user does not leave the transmitter unsupervised.
- Make sure that the user always turns the transmitter off when not in use.
- Make sure that the user keeps a good overview of the work area.

MAINTENANCE

- Use the stop button to start and turn off the transmitter as often as possible.
- When error messages are shown, it is very important to find out what caused them.
- If the stop button is mechanically damaged, contact your representative for service immediately.
- Always contact your representative for service and maintenance work on the product.
- Write down the serial numbers/ ID codes of the receivers and transmitters used. This information should be recorded on the “Settings document” for your product (download from our website).
- Avoid registering transmitters to receivers where it is not being used.
- Keep the safety instruction for future reference. Always download the configurations instruction from our web site for the latest version available.

CHAPTER 2: SYSTEM INFORMATION

APPLICATION AREA FOR THE TIGER SYSTEM

The Tele Radio AB Tiger remote control systems are aimed for remote controlling of lifting or mobile equipment where a high safety level is required.

AUTHORIZATION BY PIN CODE

To prevent from unauthorized users being able to start the transmitter and control the receiver, you can enable PIN codes for start-up protection. 1-6 PIN codes can be stored in the TG-TX-MNL8, TG-TX-MNR8, TG-TX-MXL12, TG-TX-MXR12 transmitters. PIN codes have to be set in the PC program Settings manager.

STOP FUNCTION

The transmitters have a stop button that controls the 2 stop relays in the receiver. 2 safety microcontrollers are supervising and controlling the stop relays. A valid signal must be provided from both microcontrollers to activate the stop relays.

SYSTEM INFORMATION (IN ENGLISH)

System requirements

The product holds one or two safety-related functions that comply with the requirements for SIL3 according to IEC61508:

Stop function: Deactivates all relays on the receiver when the stop button on the transmitter is pressed. The stop function is available on all Tiger systems. The maximum delay of the stop function is 500 ms.

Safe function: Activates the safe function relays on the receiver when both of the safe buttons on the transmitter are pressed. The safe function is available on Tiger systems consisting of receiver models TG-RX-MXL12, TG-RX-MXL28, TG-RX-MXR12, TG-RX-MXR28. TG-RX-MXLANY combined with any of the following transmitters:
TG-TX-MDL10, TG-TX-MDR10, TG-TX-MDP10, TG-TX-MXL12, TG-TX-MXR12, TG-TX-JDL20, TG-TX-JDL21, TG-TX-JDL22, TG-TX-JDL23, TG-TX-JDL24, TG-TX-JDL25, TG-TX-JDR20, TG-TX-JDR21, TG-TX-JDR22, TG-TX-JDR23, TG-TX-JDR24, TG-TX-JDR25

The safety-related functions comply with the requirements for SIL3 according to IEC61508 only when they are a part of a complete end user system that complies with the requirements for SIL3 according to IEC61508.

Connecting and controlling the safety function

The stop function controls the stop relays from the stop button. The safe function controls the safe function relays from the safe buttons. In order to comply with the requirements for SIL3 according to IEC61508, the safety-related functions shall use their corresponding two relay output in an active redundant configuration in a safety-related application.

Measures for probability of hardware failures

Transmitter stop function	
Probability of dangerous failure per hour	PFHd= 8.5 FITs (=λdu)
Fraction of total failure rate with dangerous and detected consequence	λdd= 357 FITs
Diagnostic coverage	DC= 98.3 %
Safe failure fraction	SFF= 99.1 %
Common cause failure	0 FIT
Level of hardware fault tolerance	HFT = 1
Proof test interval	10 years
Diagnostic test interval	Continuous

Transmitter safe function	
Probability of dangerous failure per hour	PFHd = 5.5 FITs (=λdu)
Fraction of total failure rate with dangerous and detected consequence	λdd = 255 FITs
Diagnostic coverage	DC = 98.1 %
Safe failure fraction	SFF = 99.2 %
Common cause failure	0.5 FIT
Diagnostic test interval	Continuous

Receiver stop function	
Probability of dangerous failure per hour	PFHd = 30.1 FITs (=λdu)
Fraction of total failure rate with dangerous and detected consequence	λdd = 685.0 FITs
Diagnostic coverage	DC = 96.9 %
Safe failure fraction	SFF = 98.7 %
Common cause failure	8.0 FIT
Level of hardware fault tolerance	HFT = 1
Proof test interval	10 years
Diagnostic test interval	Continuous

Receiver safe function	
Probability of dangerous failure per hour	PFHd = 30.1 FITs (=λdu)
Fraction of total failure rate with dangerous and detected consequence	λdd = 685.0 FITs
Diagnostic coverage	DC = 96.9 %
Safe failure fraction	SFF = 98.7 %
Common cause failure	8.0 FIT
Level of hardware fault tolerance	HFT = 1
Proof test interval	10 years
Diagnostic test interval	Continuous

Radio communication between transmitter and receiver	
Probability of dangerous failure per hour	PFHd = 3.0 FITs

Stop function for a complete system*	
Probability of dangerous failure per hour	PFHd = 41.6 FITs(=λdu)

Safe function for a complete system*	
Probability of dangerous failure per hour	PFHd = 38.6 FITs(=λdu)

* a complete system = transmitter + radio communication + receiver

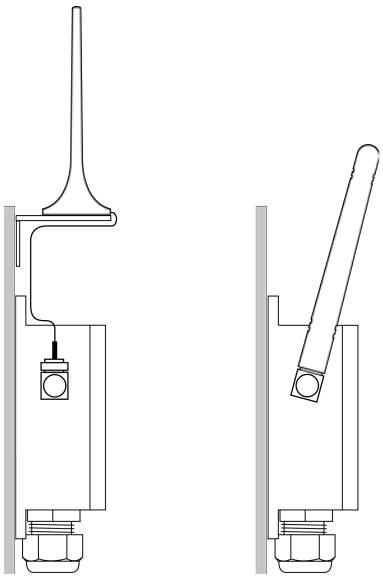
CHAPTER 3: PRODUCT PAGES

ANTENNA

NOTE! For optimum performance: Place well away from metal objects, such as metal girders, high-voltage cables and other antennas.

NOTE! For optimum performance, place the antennas as far away from each other as possible. The recommended distance is more than 1 meter. We recommend that you test the equipment before mounting the receivers permanently.

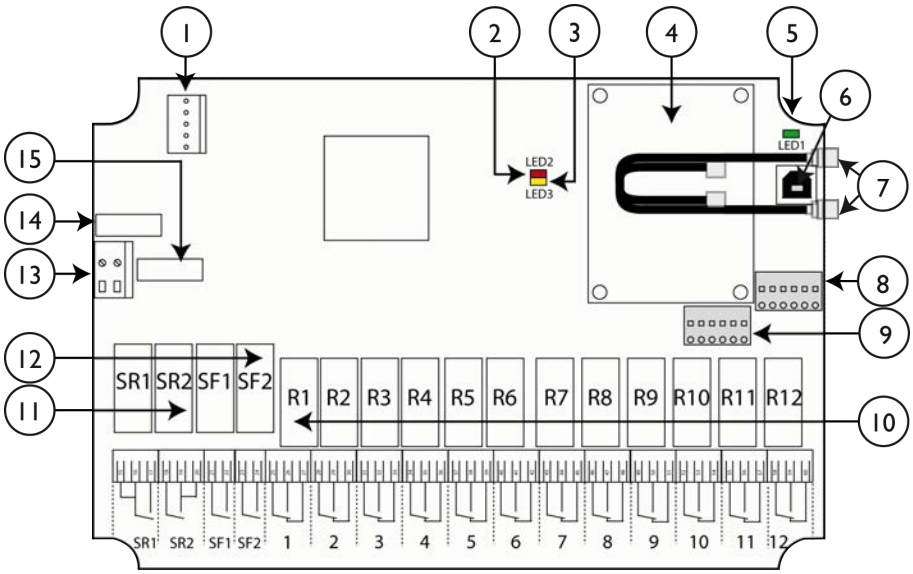
Antenna with a cable: The cable makes it possible for the antenna to be positioned freely and high above the ground.
Antenna without a cable: If the receiver is mounted on a wall, the antenna should be angled out from the wall.



TG-RX-MXL12, TG-RX-MXR12 BASE BOARD RECEIVER

WARNING! The receiver must NOT be opened by any other than a qualified installer. Make sure to turn the electricity off before opening the receiver.

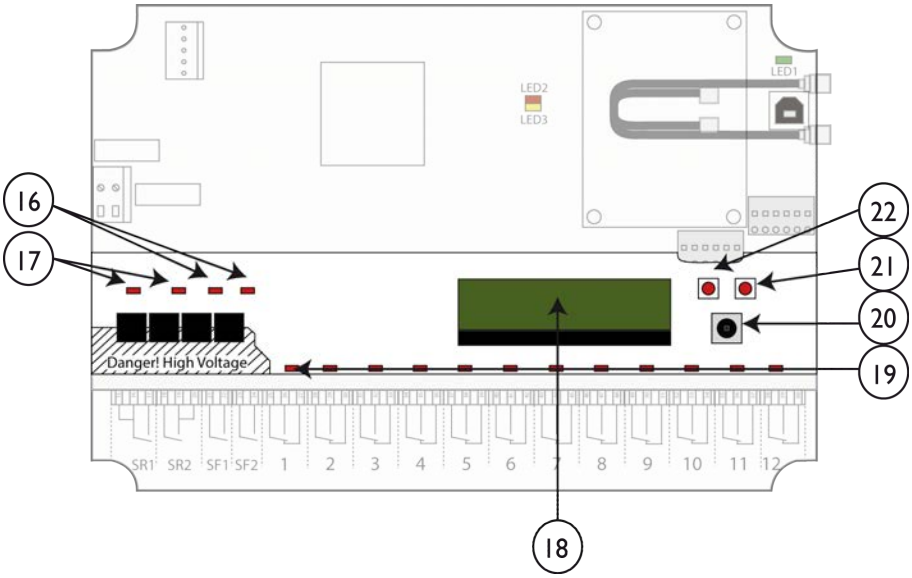
WARNING! Tele Radio remote controls are often built into wider applications. We recommend that the system is provided with a wired emergency stop where necessary.



Base board- no display board mounted:

1. Rectifier bridge connector	9. Terminal block for digital I/O
2. Function LED 2 (red)	10. Function relays 1-12
3. Function LED 3 (yellow)	11. Stop relays 1-2
4. Radio module	12. Safe function relays 1-2
5. Function LED 1 (green)	13. Terminal block for input power
6. USB programming connector	14. Obligatory fuse: Ceramic 3.15A(T)
7. Antenna connectors	15. Optional fuse
8. Terminal block for RS232/ RS485	

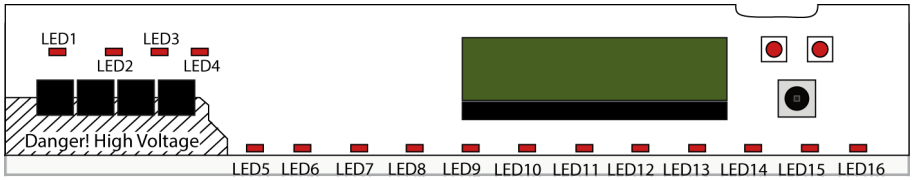
WARNING! Do not touch the area marked with danger when the receiver has been powered by electricity. Touching may be very hazardous.



Base board with display board mounted:

16. Safe function relay LEDs 3-4 (red)	20. Mini joystick
17. Stop relay LEDs 1-2 (red)	21. Right push button
18. Display	22. Left push button
19. Function relay LEDs (red)	

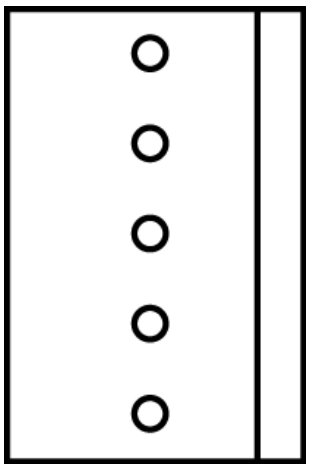
RELAY LEDS ON THE DISPLAY BOARD



The relays on the base board are hidden under the display board. The corresponding relay LEDs are placed on the display board. LED 1+2 are the relay LEDs for the stop relays. LED 3+4 are the safe function relay LEDs. LED 5-16 are the LEDs for function relays 1-12.

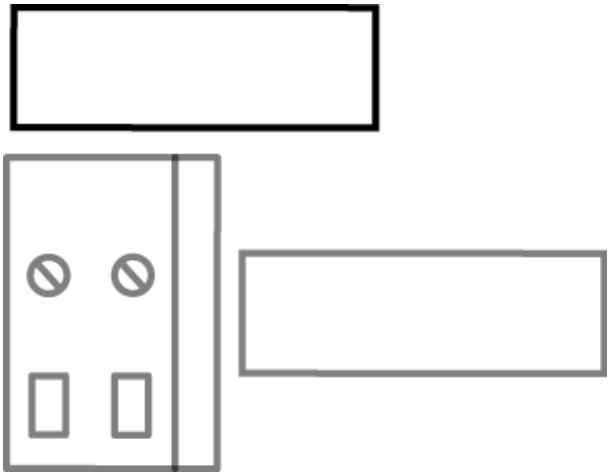
LED 1= stop relay 1	LED 9 = function relay 5
LED 2= stop relay 2	LED 10 = function relay 6
LED 3= safe function relay 1	LED 11 = function relay 7
LED 4= safe function relay 2	LED 12 = function relay 8
LED 5 = function relay 1	LED 13 = function relay 9
LED 6 = function relay 2	LED 14 = function relay 10
LED 7 = function relay 3	LED 15 = function relay 11
LED 8 = function relay 4	LED 16 = function relay 12

RECTIFIER BRIDGE CONNECTOR



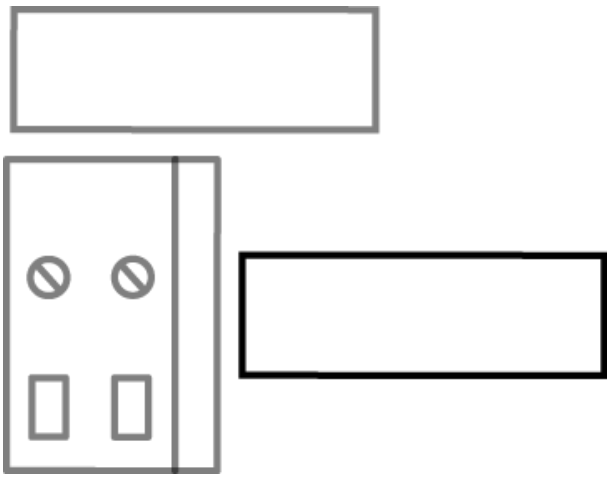
Can be used to improve the performance when the receiver is powered with low DC voltage (12-24 V DC). **NOTE! DO NOT USE FOR AC!**

OBLIGATORY FUSE



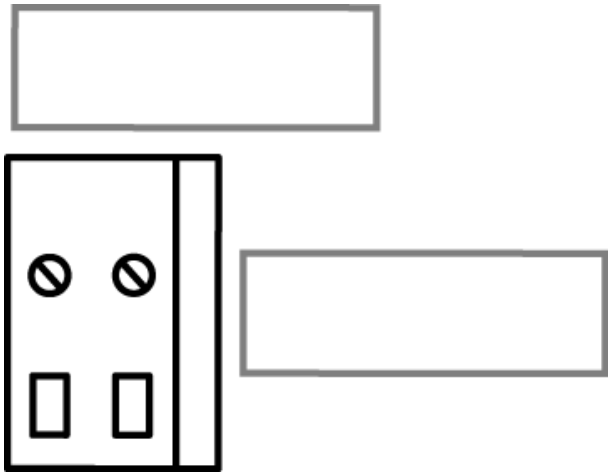
An obligatory ceramic fuse 3.15A(T). Must be used.

OPTIONAL FUSE



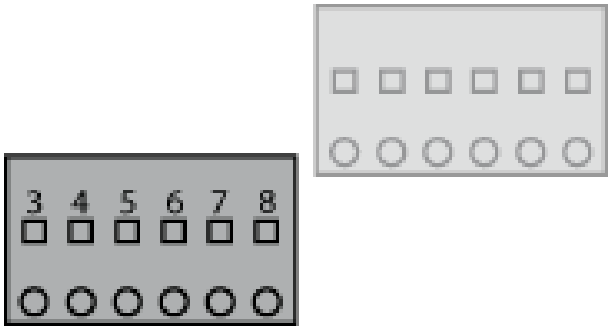
An optional ceramic fuse 3.15A(T). Can be used for connecting input power from the power supply connector with the relay outputs. Select a fuse that match the application, max. 16A.

TERMINAL BLOCK FOR INPUT POWER



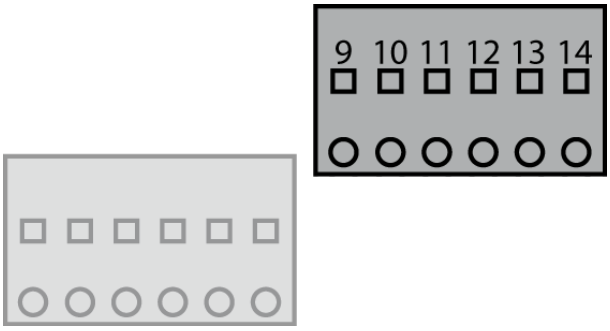
For input power 12-350V DC, 24-230V AC.

TERMINAL BLOCK FOR DIGITAL I/O



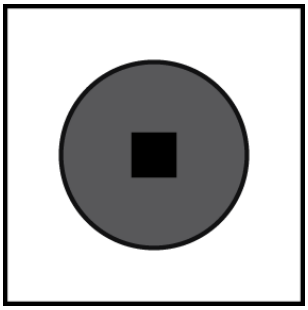
3. GND	6. Transistor output
4. Digital input 1	7. +12V DC
5. Digital input 2	8. +3.3V DC

TERMINAL BLOCK FOR RS232/RS485



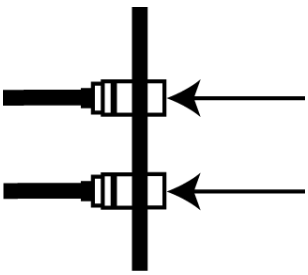
9. RS232 RX	12. +12V DC
10. RS232 TX	13. RS485 A-
11. GND	14. RS485 A+

JOYSTICK



The mini joystick is used for navigating and selecting in the display menu. It can be pressed up, down, left and right. Keep pressed in the same direction to scroll several steps in the menu. Can also be used as a button.

ANTENNA CONNECTORS



The receiver have 2 connectors for antennas. If you want to use only one antenna, connect the antenna to any one of the antenna connectors. If you want to use 2 antennas, one of them has to be connected through a coaxial cable (at least 1 m./ 39 in.) to avoid radio disturbances. Using two antennas may improve the radio communication as well as increase the range. NOTE! Use 1/2 wave antennas for optimum performance.

TECHNICAL DATA

Number of stop relays	2 (potential free*16A, 250VAC)*
Number of safe relays	2 (potential free*16A, 250VAC)*
Number of function relays	12 (potential free*, 16A, 250VAC)
Input power	12-350V DC, 24-230V AC
Digital inputs	2
Transistor output	1
Duplex communication	Possible
Max. number of registered transmitters	15 (only one transmitter at a time)
IP class	66
Size	256 x 175 x 85 mm./ 10.1 x 6.9 x 3.3 in.
Weight	1800 g./ 3.9 lbs.
Sensitivity	Better than -110 dBm
Operating temperature	-20- +55°C/ -4-+130°F
Operating frequency	TG-RX-MXL12: 433.075-434.775 MHz TG-RX-MXR12: 903.0125-926.9875 MHz
Number of channels/ frequency banks	TG-RX-MXL12: 69 channels TG-RX-MXR12: 15 banks
Channel separation	TG-RX-MXL12: 25 kHz TG-RX-MXR12: 25 kHz
Antenna	TG-RX-MXL12: 2 external BNC antennas possible TG-RX-MXR12: 2 external RPSMA antennas possible

*potential free means that you have to supply voltage to get voltage out of a relay (e.g. via the included connection comb.)

CURRENT CONSUMPTION

Input power	Min.*	Max.**
12V AC	-	-
24V AC	0.2A	0.5A
48V AC	0.06A	0.4A
115V AC	0.02A	0.08A
230V AC	0.02A	0.05A
12V DC	0.3A	1.1A
24V DC	0.2A	0.5A

* Minimum current consumption= Receiver powered, no radio session established, nothing else activated on the receiver
** Maximum current consumption= All relays activated on the receiver

TG-RX-MXL28, TG-RX-MXR28 RECEIVER

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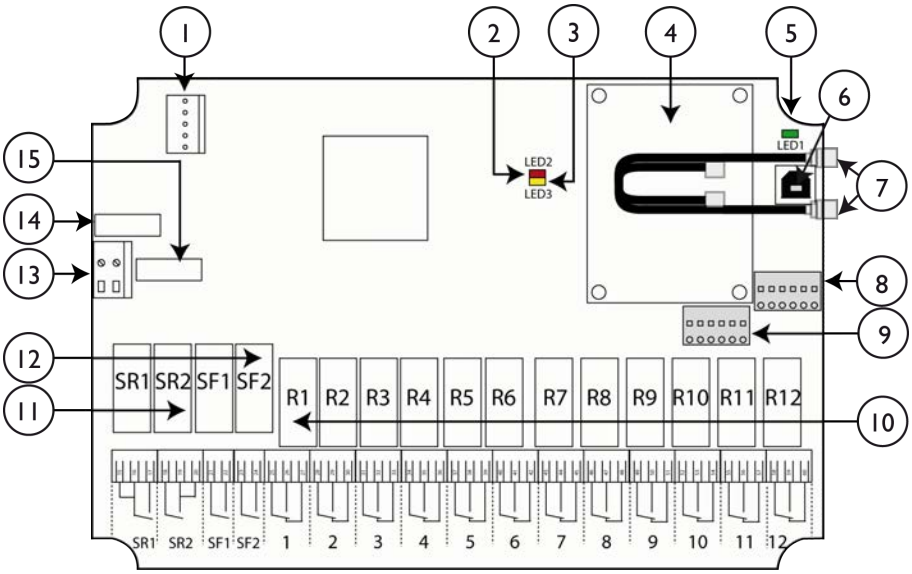

Base board- no display board mounted:

1. Rectifier bridge connector	9. Terminal block for digital I/O
2. Function LED 2 (red)	10. Function relays 1-12
3. Function LED 3 (yellow)	11. Stop relays 1-2
4. Radio module	12. Safe function relays 1-2
5. Function LED 1 (green)	13. Terminal block for input power
6. USB programming connector	14. Obligatory fuse: Ceramic 3.15A(T)
7. Antenna connectors	15. Optional fuse
8. Terminal block for RS232/ RS485	

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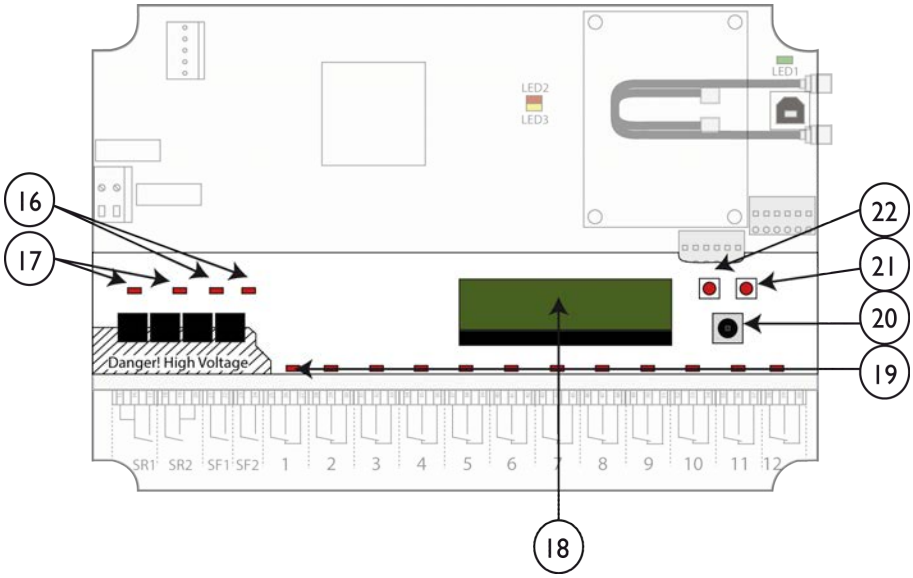

Base board with display board mounted:

16. Safe function relay LEDs 3-4 (red)	20. Mini joystick
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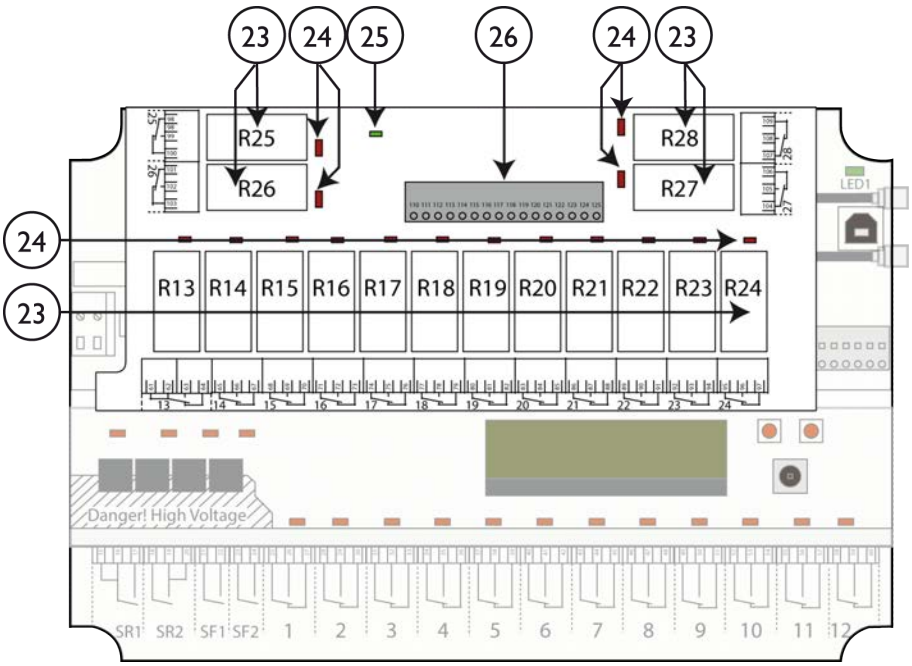
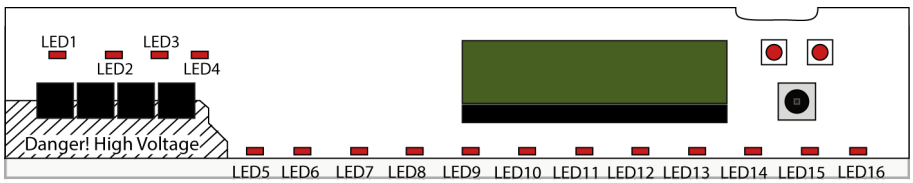
18. Display	22. Left push button
19. Function relay LEDs (red)	



Expansion board:

23. Function relays 13-28	25. Communication LED
24. Function relay LEDs	26. Terminal block for digital inputs

RELAY LEDS ON THE DISPLAY BOARD



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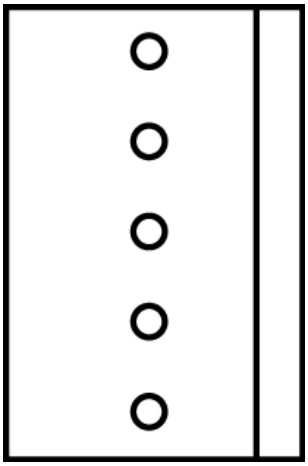
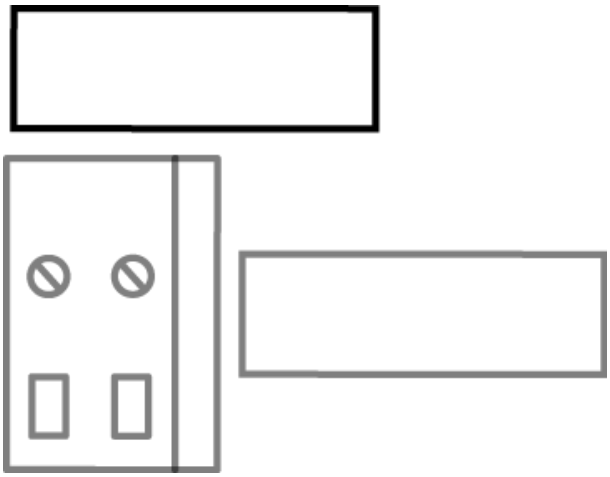
RECTIFIER BRIDGE CONNECTOR



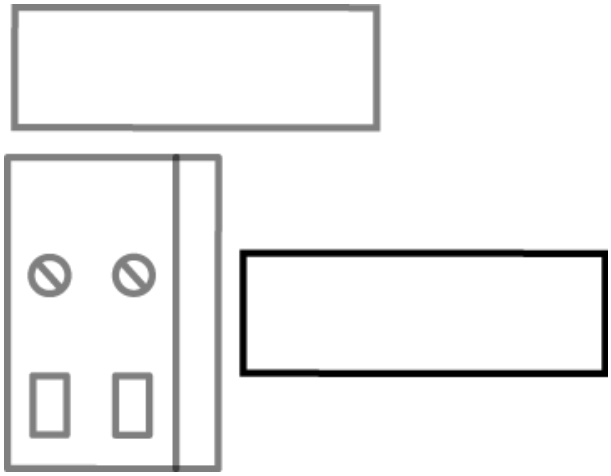
Can be used to improve the performance when the receiver is powered with low DC voltage (12-24 V DC). **NOTE! DO NOT USE FOR AC!**

OBLIGATORY FUSE



An obligatory ceramic fuse 3.15A(T). Must be used.

OPTIONAL FUSE

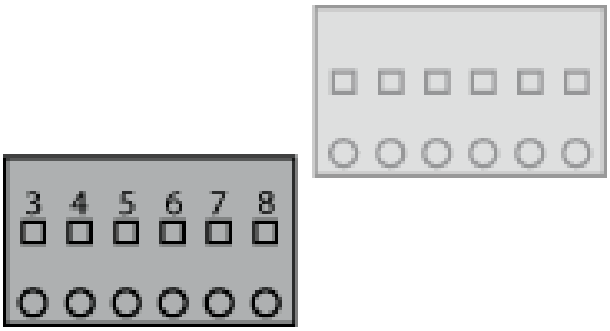


An optional ceramic fuse 3.15A(T). Can be used for connecting input power from the power supply connector with the relay outputs. Select a fuse that match the application, max. 16A.

INPUT POWER

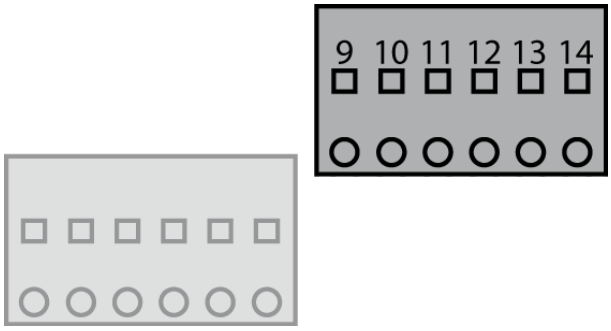
IMPORTANT! We do not recommend activation of more than 10 relays at the same time when the input power is 12V DC, or the receiver might turn off.

TERMINAL BLOCK FOR DIGITAL I/O



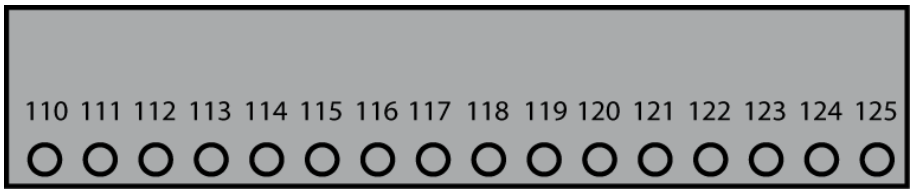
3. GND	6. Transistor output
4. Digital input 1	7. +12V DC
5. Digital input 2	8. +3.3V DC

TERMINAL BLOCK FOR RS232/RS485



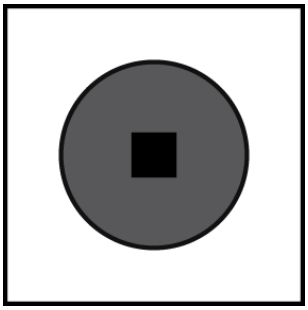
9. RS232 RX	12. +12V DC
10. RS232 TX	13. RS485 A-
11. GND	14. RS485 A+

TERMINAL BLOCK FOR DIGITAL INPUTS



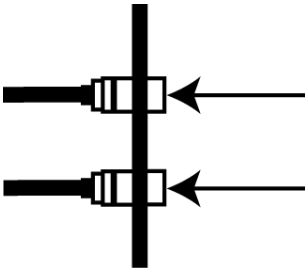
110. Not in use	118. Digital input 9
111. Not in use	119. Digital input 10
112. Digital input 3	120. +3.3V DC
113. Digital input 4	121. GND
114. Digital input 5	122. GND
115. Digital input 6	123. GND
116. Digital input 7	124. GND
117. Digital input 8	125. GND

JOYSTICK



The mini joystick is used for navigating and selecting in the display menu. It can be pressed up, down, left and right. Keep pressed in the same direction to scroll several steps in the menu. Can also be used as a button.

ANTENNA CONNECTORS



The receiver have 2 connectors for antennas. If you want to use only one antenna, connect the antenna to any one of the antenna connectors. If you want to use 2 antennas, one of them has to be connected through a coaxial cable (at least 1 m./ 39 in.) to avoid radio disturbances. Using two antennas may improve the radio communication as well as increase the range. NOTE! Use 1/2 wave antennas for optimum performance.

CURRENT CONSUMPTION

Input power	Min.*	Max.**
12V AC	-	-
24V AC	0.2A	0.8A
48V AC	0.06A	0.5A
115V AC	0.02A	0.2A
230V AC	0.02A	0.08A
12V DC***	0.3A	1.3A
24V DC	0.2A	0.8A

* Minimum current consumption= Receiver powered, no radio session established, nothing else activated on the receiver
** Maximum current consumption= All relays activated on the receiver

*** IMPORTANT! We recommend that you do not activate more than 10 relays when the input power is 12V DC, or the receiver might turn off.

TECHNICAL DATA

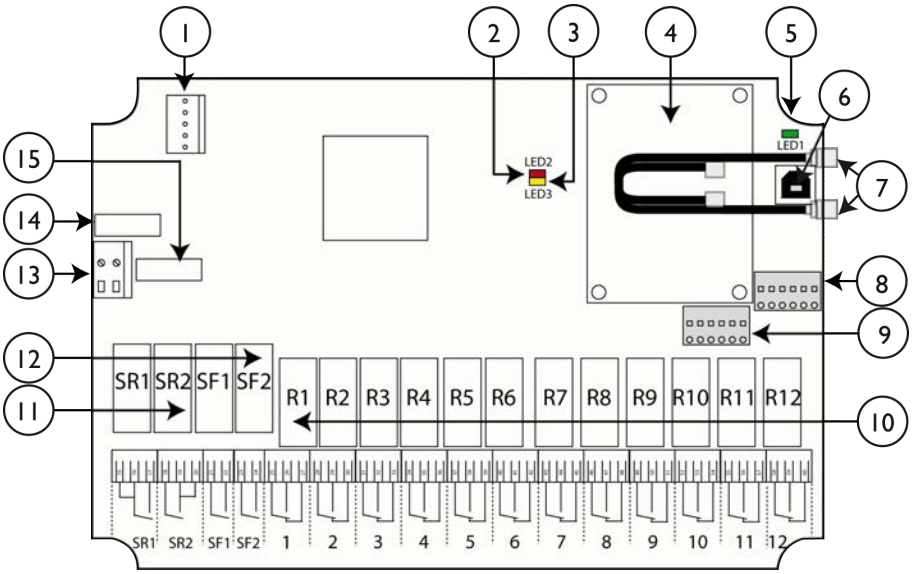
Number of stop relays	2 (potential free*16A, 250VAC)*
Number of safe relays	2 (potential free*16A, 250VAC)*
Number of function relays	28 (potential free*, 16A, 250VAC)
Input power	12-350V DC, 24-230V AC
Digital inputs	2
Transistor output	1
Duplex communication	Possible
Max. number of registered transmitters	15 (only one transmitter at a time)
IP class	66
Size	256 x 175 x 85 mm./ 10.1 x 6.9 x 3.3 in.
Weight	2200 g./ 4.8 lbs.
Sensitivity	Better than -110 dBm
Operating temperature	-20- +55°C/ -4-+130°F
Operating frequency	TG-RX-MXL28: 433.075-434.775 MHz TG-RX-MXR28: 903.0125-926.9875 MHz
Number of channels/ frequency banks	TG-RX-MXL28: 69 channels TG-RX-MXR28: 15 banks
Channel separation	TG-RX-MXL28: 25 kHz TG-RX-MXR28: 25 kHz
Antenna	TG-RX-MXL28: 2 external BNC antennas possible TG-RX-MXR28: 2 external RPSMA antennas possible

*potential free means that you have to supply voltage to get voltage out of a relay (e.g. via the included connection comb.)

TG-RX-MXLANY RECEIVER

WARNING! The receiver must NOT be opened by any other than a qualified installer. Make sure to turn the electricity off before opening the receiver.

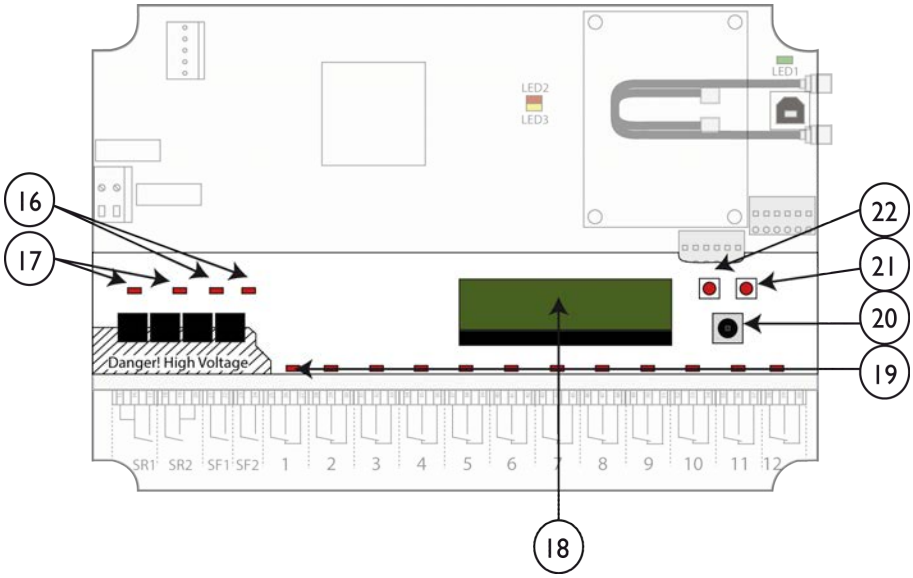
WARNING! Tele Radio remote controls are often built into wider applications. We recommend that the system is provided with a wired emergency stop where necessary.



Base board- no display board mounted:

1. Rectifier bridge connector	9. Terminal block for digital I/O
2. Function LED 2 (red)	10. Function relays 1-12
3. Function LED 3 (yellow)	11. Stop relays 1-2
4. Radio module	12. Safe function relays 1-2
5. Function LED 1 (green)	13. Terminal block for input power
6. USB programming connector	14. Obligatory fuse: Ceramic 3.15A(T)
7. Antenna connectors	15. Optional fuse
8. Terminal block for RS232/ RS485	

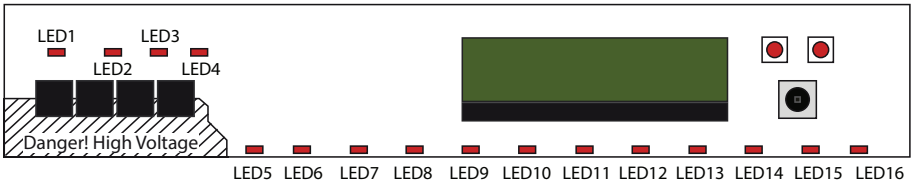
WARNING! Do not touch the area marked with danger when the receiver has been powered by electricity. Touching may be very hazardous.



Base board with display board mounted:

16. Safe function relay LEDs 3-4 (red)	20. Mini joystick
17. Stop relay LEDs 1-2 (red)	21. Right push button
18. Display	22. Left push button
19. Function relay LEDs (red)	

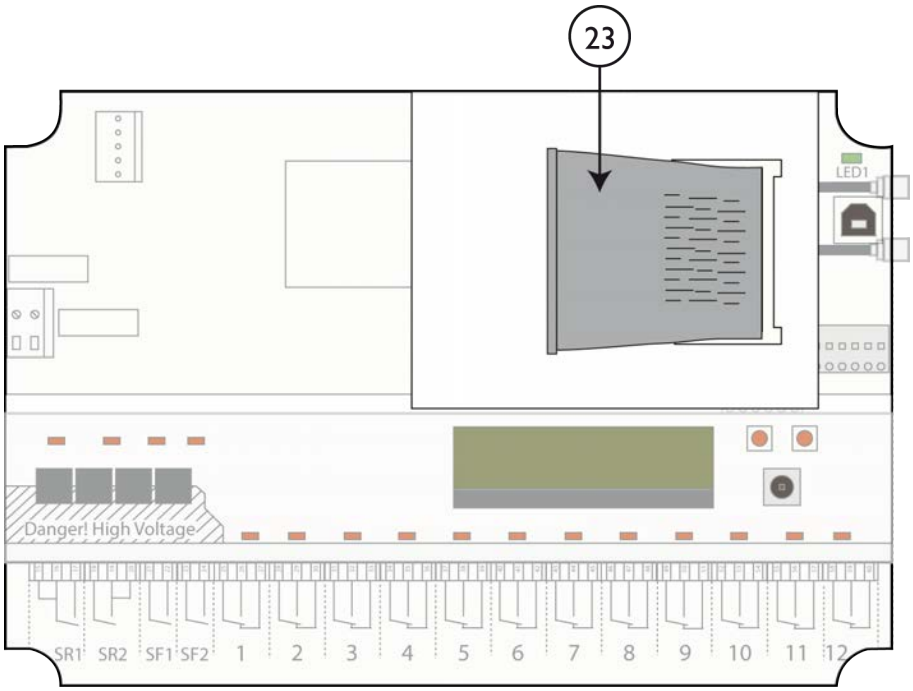
RELAY LEDS ON THE DISPLAY BOARD



The relays on the base board are hidden under the display board. The corresponding relay LEDs are placed on the display board. LED 1+2 are the relay LEDs for the stop relays. LED 3+4 are the safe function relay LEDs. LED 5-16 are the LEDs for function relays 1-12.

LED 1= stop relay 1	LED 9 = function relay 5
LED 2= stop relay 2	LED 10 = function relay 6
LED 3= safe function relay 1	LED 11 = function relay 7
LED 4= safe function relay 2	LED 12 = function relay 8
LED 5 = function relay 1	LED 13 = function relay 9
LED 6 = function relay 2	LED 14 = function relay 10
LED 7 = function relay 3	LED 15 = function relay 11
LED 8 = function relay 4	LED 16 = function relay 12

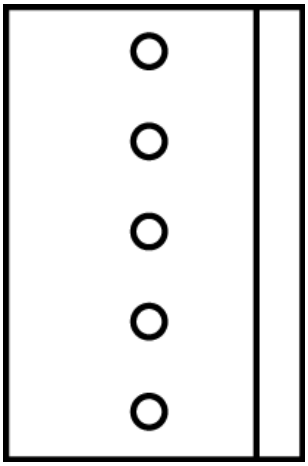
WARNING! The receiver must NOT be opened by any other than a qualified installer. Make sure to turn the electricity off before opening the receiver.



Expansion board:

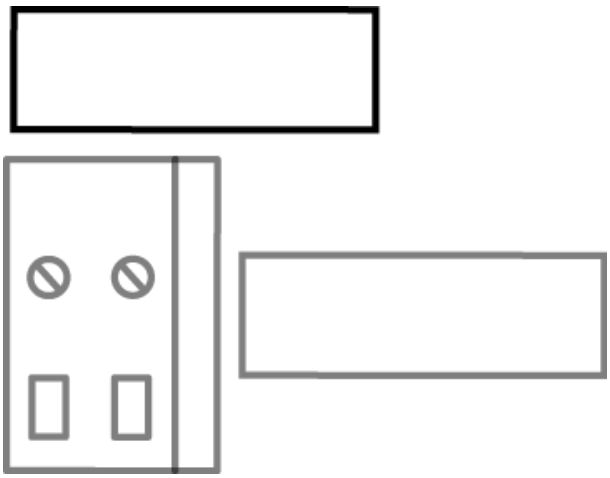
23. The fieldbus unit is a separate article. It should be mounted on the expansion board.

RECTIFIER BRIDGE CONNECTOR



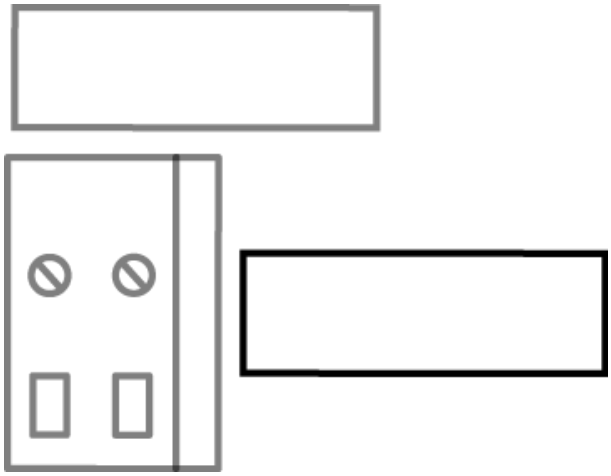
Can be used to improve the performance when the receiver is powered with low DC voltage (12-24 V DC). **NOTE! DO NOT USE FOR AC!**

OBLIGATORY FUSE



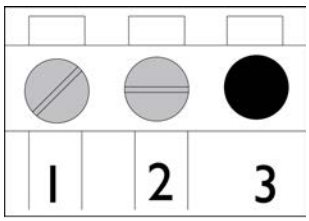
An obligatory ceramic fuse 3.15A(T). Must be used.

OPTIONAL FUSE



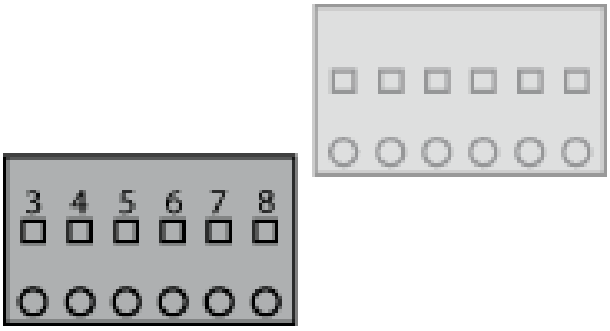
An optional ceramic fuse 3.15A(T). Can be used for connecting input power from the power supply connector with the relay outputs. Select a fuse that match the application, max. 16A.

INPUT POWER



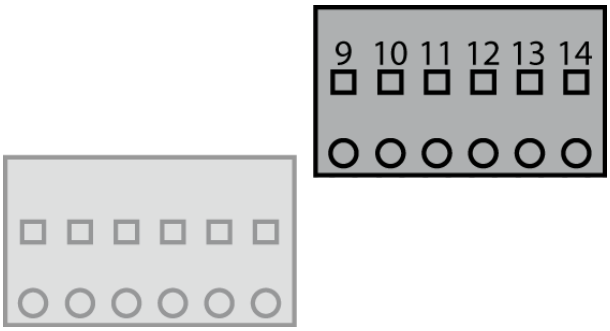
1. 48-230 V AC
2. 48-230 V AC
3. (not used)

TERMINAL BLOCK FOR DIGITAL I/O



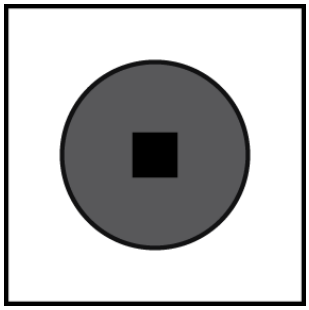
3. GND	6. Transistor output
4. Digital input 1	7. +12V DC
5. Digital input 2	8. +3.3V DC

TERMINAL BLOCK FOR RS232/RS485



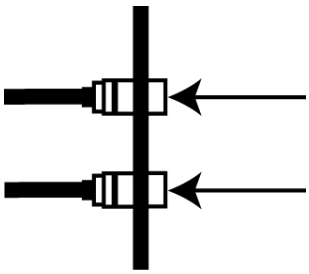
9. RS232 RX	12. +12V DC
10. RS232 TX	13. RS485 A-
11. GND	14. RS485 A+

JOYSTICK



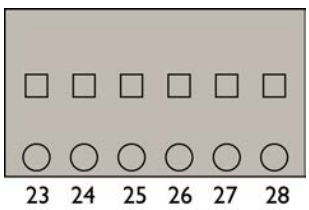
The mini joystick is used for navigating and selecting in the display menu. It can be pressed up, down, left and right. Keep pressed in the same direction to scroll several steps in the menu. Can also be used as a button.

ANTENNA CONNECTORS



The receiver have 2 connectors for antennas. If you want to use only one antenna, connect the antenna to any one of the antenna connectors. If you want to use 2 antennas, one of them has to be connected through a coaxial cable (at least 1 m./ 39 in.) to avoid radio disturbances. Using two antennas may improve the radio communication as well as increase the range. NOTE! Use 1/2 wave antennas for optimum performance.

TERMINAL BLOCK FOR MIXED I/O



23. +12 V DC	26. Ground
24. Transistor output	27. Digital input 2
25. Digital input 1	28. Ground

CURRENT CONSUMPTION

Input power	Min.*	Max.**
24V AC	0.2A	0.5A
48V AC	0.06A	0.4A
115V AC	0.02A	0.08A
230V AC	0.02A	0.05A
12V DC	0.3A	1.1A
24V DC	0.2A	0.5A

* Minimum current consumption= Receiver powered, no radio session established, nothing else activated on the receiver
** Maximum current consumption= All relays activated on the receiver

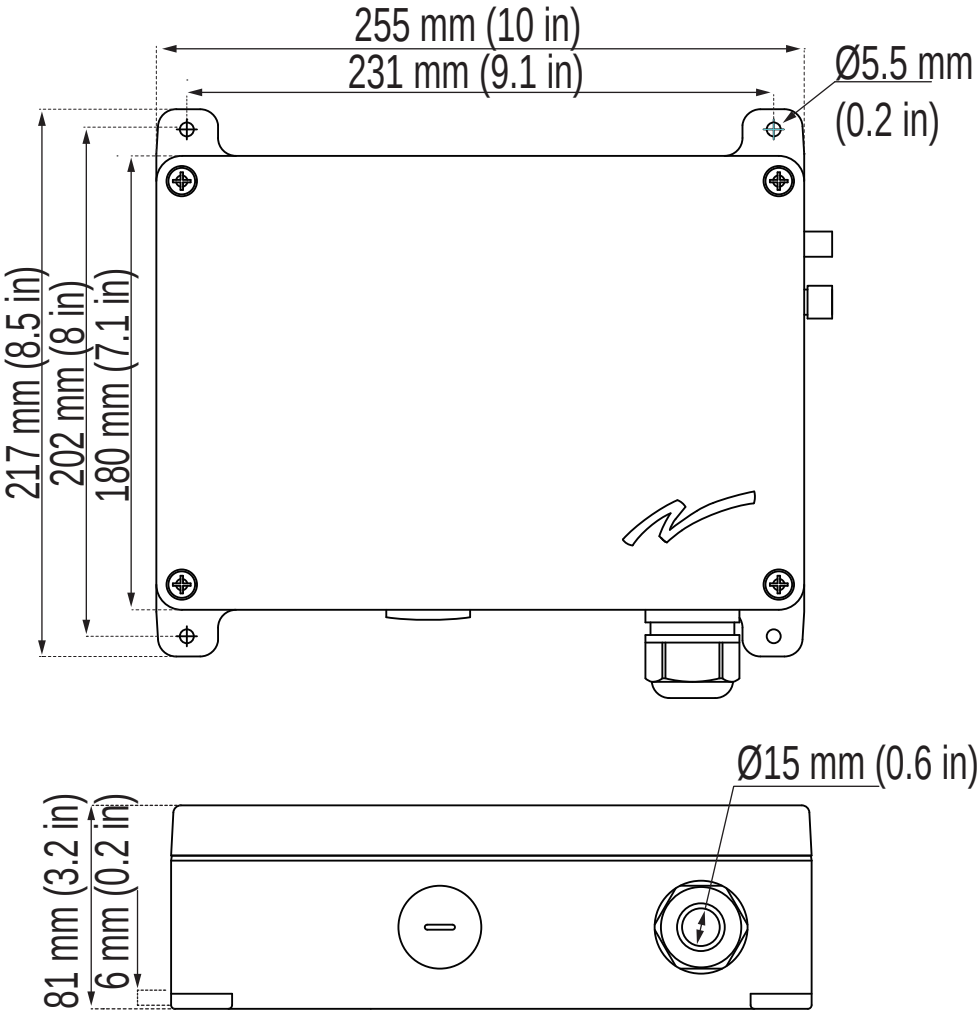
TECHNICAL DATA

Number of stop relays	2 (potential free*16A, 250VAC)*
Number of safe relays	2 (potential free*16A, 250VAC)*
Number of function relays	12 (potential free*, 16A, 250VAC)
Input power	12-350V DC, 24-230V AC
Digital inputs	2
Transistor output	1
Duplex communication	Possible
Max. number of registered transmitters	15 (only one transmitter at a time)
IP class	66
Size	256 x 175 x 85 mm./ 10.1 x 6.9 x 3.3 in.
Weight	1900 g./ 4 lbs.
Sensitivity	Better than -110 dBm
Operating temperature	-20- +55°C/ -4-+130°F
Operating frequency	433.075-434.775 MHz
Number of channels	69
Channel separation	25 kHz
Antenna	2 external BNC antennas possible

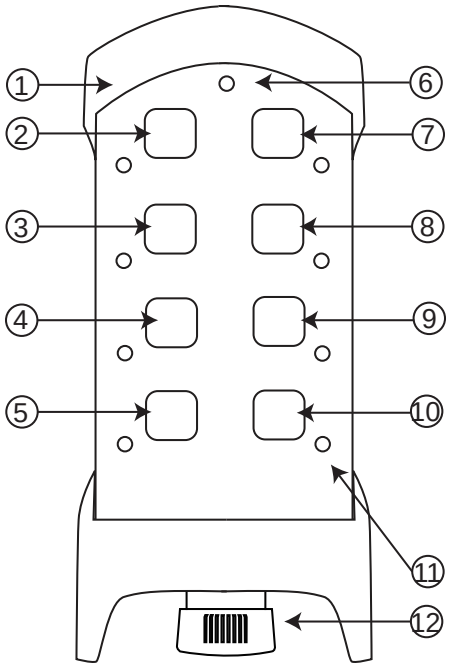
*potential free means that you have to supply voltage to get voltage out of a relay (e.g. via the included connection comb.)

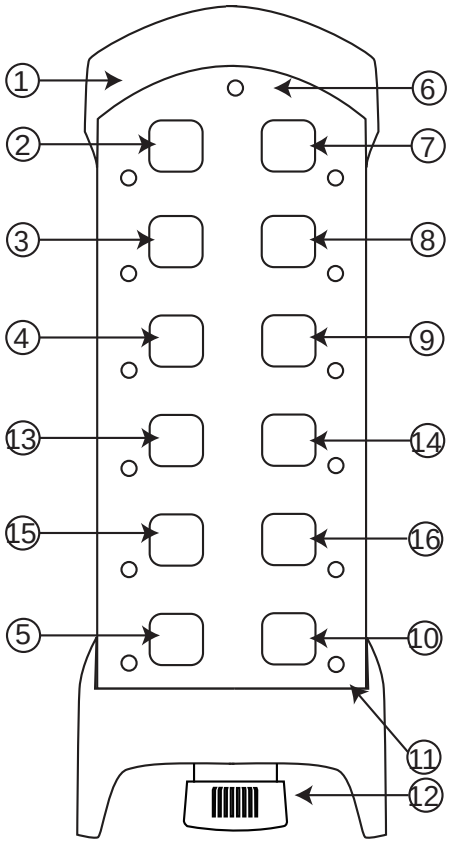
RECEIVER MEASUREMENTS

TG-RX-MXL12, TG-RX-MXR12, TG-RX-MXL28, TG-RX-MXR28, TG-RX-MXLANY



TG-TX-MNL8, TG-TX-MNR8, TG-TX-MXL12, TG-TX-MXR12 TRANSMITTER

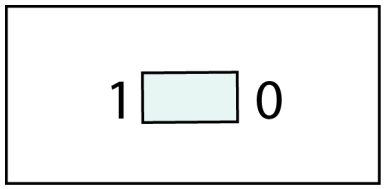




1. Rubber cover	9. Button 6
2. Button 1	10. Right start button
3. Button 3	11. Button LEDs
4. Button 5	12. Stop button
5. Left start button	13. Button 7
6. Top LED	14. Button 8
7. Button 2	15. Button 9 (safe button)
8. Button 4	16. Button 10 (safe button)

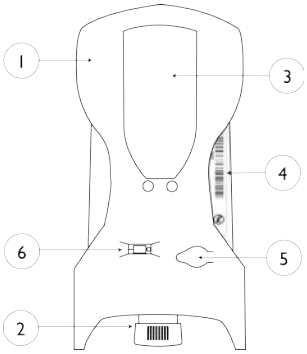
ON/OFF SWITCH

The TG-TX-MNL8, TG-TX-MNR8 transmitter has an on/off switch on the backside.The switch breaks the power supply from the battery. When in position 0/off, the transmitter cannot be started unless you connect the charger plug. When the transmitter is transported by airplane, the on/off switch must be in 0/off position. The switch should not be used as an on/off button for the transmitter. To turn the transmitter off, use the stop button.

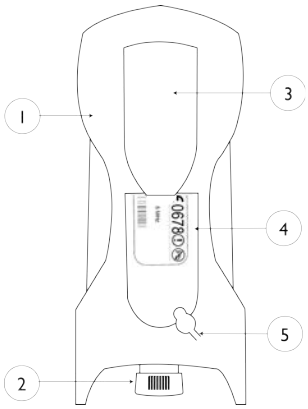


TRANSMITTER BACKSIDE

TG-TX-MNL8
TG-TX-MNR8



TG-TX-MXL12
TG-TX-MXR12



1. Rubber cover	4. CE and product label
2. Stop button	5. Battery charger socket
3. Clip	6. On/off switch*

*only on TG-TX-MNL8, TG-TX-MNR8

TECHNICAL DATA

NO. OF BUTTONS	
TG-TX-MNL8, TG-TX-MNR8	8 x 2-step buttons
TG-TX-MXL12, TG-TX-MXR12	12 x 2-step buttons

BATTERY	
TG-TX-MNL8, TG-TX-MNR8	Internal, rechargeable lithium-ion
TG-TX-MXL12, TG-TX-MXR12	External, rechargeable lithium-ion

ON/OFF SWITCH	
TG-TX-MNL8, TG-TX-MNR8	Yes
TG-TX-MXL12, TG-TX-MXR12	No

DUPLEX COMMUNICATION	
TG-TX-MNL8, TG-TX-MNR8, TG-TX-MDL10, TG-TX-MXL12, TG-TX-MXR12	Possible

MAX. NO OF REGISTERED RECEIVERS	
TG-TX-MNL8, TG-TX-MNR8	6
TG-TX-MXL12, TG-TX-MXR12	10

SIZE	
TG-TX-MNL8, TG-TX-MNR8	160 x 76 x 37 mm./ 6.3 x 3 x 1.4 in.
TG-TX-MXL12, TG-TX-MXR12	210 x 76 x 37 mm./ 8.2 x 3 x 1.4 in.

WEIGHT	
TG-TX-MNL8, TG-TX-MNR8	295 g./ 0.6 lbs.
TG-TX-MXL12, TG-TX-MXR12	400 g./ 0.9 lbs.

OPERATING FREQUENCY	
TG-TX-MNL8, TG-TX-MX12	433.075-434.775 MHz
TG-TX-MNR8, TG-TX-MXR12	903.0125-926.9875 MHz

NO. OF CHANNELS/FREQUENCY BANKS	
TG-TX-MNL8, TG-TX-MX12	69
TG-TX-MNR8, TG-TX-MXR12	15

CHANNEL SEPARATION	
TG-TX-MNL8, TG-TX-MNR8, TG-TX-MXL12, TG-TX-MXR12	25 kHz

OPERATING TIME (WITH CONTINUOUS USAGE)	
TG-TX-MNL8, TG-TX-MNR8, TG-TX-MXL12, TG-TX-MXR12	24 h.

IP CLASS	
TG-TX-MNL8, TG-TX-MNR8, TG-TX-MXL12, TG-TX-MXR12	66

SENSITIVITY	
TG-TX-MNL8, TG-TX-MNR8, TG-TX-MXL12, TG-TX-MXR12	Better than -110 dBm

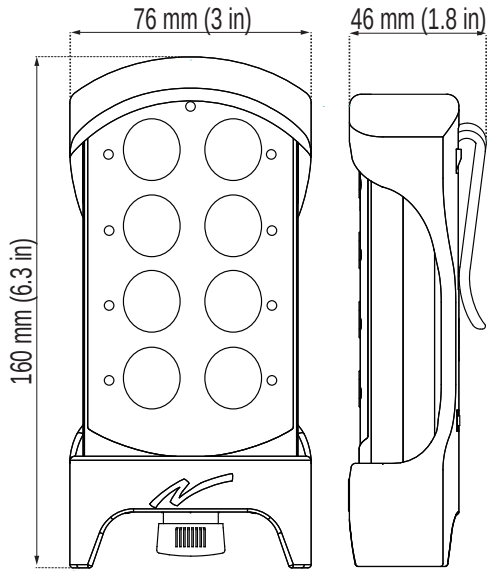
OPERATING TEMPERATURE	
TG-TX-MNL8, TG-TX-MNR8, TG-TX-MXL12, TG-TX-MXR12	-20 - +55°C/ -4 - +130°F

NO. OF PIN CODES POSSIBLE	
TG-TX-MNL8, TG-TX-MNR8, TG-TX-MXL12, TG-TX-MXR12	6

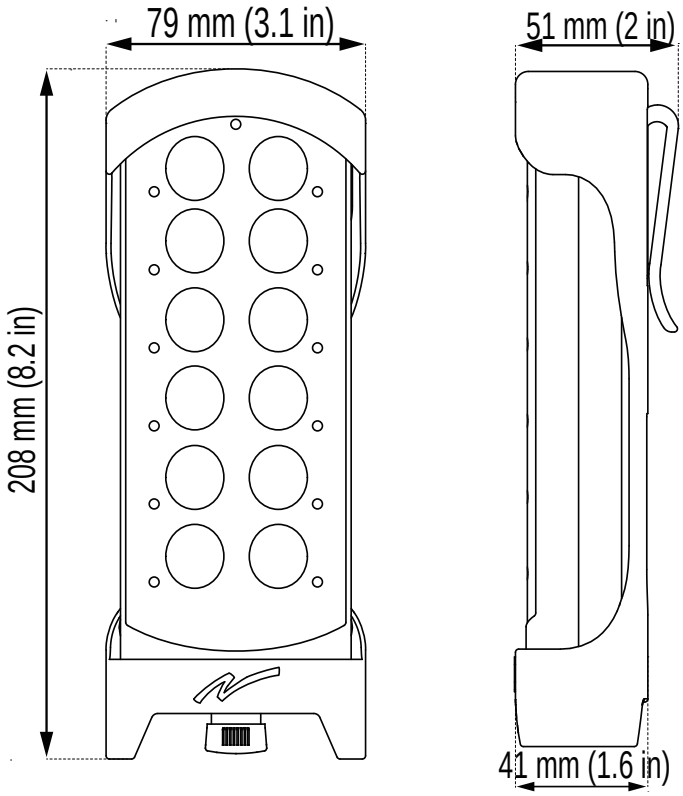
ANTENNA	
TG-TX-MNL8, TG-TX-MNR8, TG-TX-MXL12, TG-TX-MXR12	1 internal PCB antenna

TRANSMITTER MEASUREMENTS

TG-TX-MNL8,TG-TX-MNR8



TG-TX-MXL12,TG-TX-MXR12



CHAPTER 4: INSTALLERS GUIDE

SETTINGS FOR PIN CODES

If you want to enable PIN codes for transmitter start-up protection, this can be done in the PC program Settings manager. All settings for PIN codes are made in the PC program.

START THE TRANSMITTER IN OPERATING MODE

1. Make sure that the stop button is pressed.

2. Twist and pull out the stop button.
The top LED lights (green when the battery capacity is good, red when the battery capacity is poor).

3. If PIN codes are used for authorization: Go to the next section.

4. WITHIN 3 MINUTES FROM PULLING OUT THE STOP BUTTON:
Press a button to select the receiver(s) that you want to operate.
The receiver(s) that was selected in the last session will be automatically selected, which is indicated by the corresponding LED(s) that light red. If no receiver(s) has been selected, the LEDs for all available receivers will flash red. If a receiver is selected, the LEDs next to the left and the right start buttons flash red. If no receiver(s) are selected, only the LED next to the right start button flashes red.

5. Press both start buttons at the same time.
The buzzer beeps.

6. Release the start buttons.
The buzzer stops beeping. The top LED flashes (green when the battery capacity is good, red when the battery capacity is poor).

7. When radio communication has been established, the top LED lights (green when the battery capacity is good, red when the battery capacity is poor).
If radio communication is not established within 25 seconds, the transmitter turns off.

START THE TRANSMITTER IN OPERATING MODE WITH PIN CODES

1. Make sure that the stop button is pressed.

2. Twist and pull out the stop button.
The top LED lights (green when the battery capacity is good, red when the battery capacity is poor).

3. If a PIN code is needed to enter,
TG-TX-MNL8, TG-TX-MNR8: LEDs 1-6 flash red.
TG-TX-MXL12, TG-TX-MXR12: LEDs 1-10 flash red.

WITHIN 3 MINUTES : Enter the PIN code (4 digits) by pressing the buttons according to the table.

For digit:	1	2	3	4	5	6	7	8	9	0
TG-TX-MNL8, TG-TX-MNR8, PRESS BUTTON:	1	2	3	4	5	6	-	-	-	-
TG-TX-MXL12, TG-TX-MXR12, PRESS BUTTON:	1	2	3	4	5	6	7	8	9	10

4. WITHIN 3 MINUTES FROM PULLING OUT THE STOP BUTTON:
Press a button to select the receiver(s) that you want to operate. The receiver(s) that was selected in the last session will be automatically selected, which is indicated by the corresponding LED(s) that light red. If no receiver(s) has been selected, the LEDs for all available receivers will flash red. If a receiver is selected, the LEDs next to the left and the right start buttons flash red. If no receiver(s) are selected, only the LED next to the right start button flashes red.

5. Press both start buttons at the same time.The buzzer beeps.

6. Release the start buttons. The buzzer stops beeping. The top LED flashes (green when the battery capacity is good, red when the battery capacity is poor).

7. When radio communication has been established, the top LED lights (green when the battery capacity is good, red when the battery capacity is poor).
If radio communication is not established within 25 seconds, the transmitter turns off.

TURN THE TRANSMITTER OFF

1. Press the stop button. The transmitter turns off. All relays deactivate.

LOGIN/LOGOUT

NOTE! If you need to log out a transmitter that is lost or damaged, it is possible to log out from the receiver. We do not recommend this way of logging out. Contact your representative for assistance.

NOTE! To be able to control a receiver, the transmitter must be registered in the receiver, and logged in to the receiver. If another transmitter is already logged in to the receiver, it has to be logged out before any other transmitter can be logged in. If no transmitter is logged in to a receiver, a registered transmitter will automatically log in when sending radio signals to the receiver. The transmitter will stay logged in until it is manually logged out. More than one transmitter can be registered in the receiver, but only one transmitter can be logged in at a time.

Quick logout

NOTE! When the transmitter has established radio communication with one or more receivers, you can make a Quick logout from those receivers. Note that the Quick logout will log the transmitter out from all receivers that are participating in the session.

1. Make sure that the transmitter is started in operating mode.
NOTE! The transmitter must have established a radio session with one or more receivers.

2. Press the left start button. Keep pressed.

3. Press the stop button.

4. Release the left start button.
The top LED lights red.
The transmitter turns off after logging out.

Logout from menu mode

1. Make sure that the stop button is pressed.

2. Twist and pull out the stop button.
The top LED lights (green when the battery capacity is good, red when the battery capacity is poor).

3. Press the right start button. Keep pressed.

4. Press the stop button.

5. Release the right start button.
The top LED flashes (green when the battery capacity is good, red when the battery capacity is poor) when in menu mode.

6. Press the left start button.

7. To select what receiver to log out from, press:
TG-TX-MNL8, TG-TX-MNR8: button 1-6
TG-TX-MXL12, TG-TX-MXR12: button 1-10
The corresponding LED lights.

8. Press the left start button.

When completed successfully, the top LED lights green. If not completed successfully within 25 seconds, the top LED lights red and the transmitter turns off.

REGISTER

WARNING! Do not perform this when the receiver is in a session with another transmitter. The radio communication may become disturbed or broken.

NOTE! Before starting to perform these settings, make sure that the stop relays are deactivated!

Register the transmitter in the receiver

1. Select [Register Tx] from the receiver display menu. Select [Yes] to start registering. The receiver will stay in registering mode for 1 minute or until a transmitter has been registered.

2. On the transmitter: Make sure that the stop button is pressed.

3. Twist and pull out the stop button.
The top LED lights (green when the battery capacity is good, red when the battery capacity is poor).

4. Press the right start button. Keep pressed.

5. Press the stop button.

6. Release the right start button.
The top LED flashes (green when the battery capacity is good, red when the battery capacity is poor) when in menu mode.

7. Press button 1 to enter registering mode on the transmitter.

8. Select an empty slot by pressing any button on the transmitter, except the start buttons. If a slot is occupied, the corresponding LED lights red. When you have selected an available slot, the corresponding LED flashes.

9. Press the left start button.

10. When the receiver has found the transmitter, confirm by pressing the receiver joystick.

11. The transmitter is now registered in the receiver. The transmitter turns off..

ERASE

WARNING! If a transmitter is lost or becomes seriously damaged, it is possible to erase it from the receiver. We do not recommend this way. Contact your representative for assistance.

NOTE! If the transmitter already have receivers registered, we recommend that you erase all receivers from the transmitter before starting the replacement. The receiver will automatically be stored in the same position as it was stored in the old transmitter. If this position is not available, the replacement will not take place.

1. Make sure that the stop button is pressed.

2. Twist and pull out the stop button.
The top LED lights (green when the battery capacity is good, red when the battery capacity is poor).

3. Press the right start button. Keep pressed.

4. Press the stop button.

5. Release the right start button.
The top LED flashes (green when the battery capacity is good, red when the battery capacity is poor) when in menu mode.

6. Press button 2.

7. When the transmitter was registered in a receiver, a storing position was selected. If the transmitter is registered in one receiver only and the storing position selected was position 1, LED 1 lights. In that case, press button 1 to erase the transmitter. If the transmitter is registered in more than one receiver you have to find out what storing position the receiver is stored in. Go to the receiver display menu to find out.

8. Press the left start button.

9. When completed successfully, the top LED lights green. If not completed successfully within 25 seconds, the top LED lights red and the transmitter turns off.

REPLACE

WARNING! Do not perform this when the receiver is in a session with another transmitter. The radio communication may become disturbed or broken.

NOTE! You can replace a registered transmitter with another transmitter without having access to the receiver.

NOTE! If the transmitter that needs to be replaced is registered in more than one receiver, it will only be replaced in one receiver at a time. If you want to replace a transmitter in more than one receiver, you need to perform a replacement for each receiver.

NOTE! If the transmitter already have receivers registered, we recommend that you erase all receivers from the transmitter before starting the replacement. The receiver will automatically be stored in the same position as it was stored in the old transmitter. If this position is not available, the replacement will not take place.

Replace a transmitter with a new transmitter

1. Make sure that the stop button is pressed.

2. Twist and pull out the stop button.
The top LED lights (green when the battery capacity is good, red when the battery capacity is poor).

3. Press the right start button. Keep pressed.

4. Press the stop button.

5. Release the right start button.
The top LED flashes (green when the battery capacity is good, red when the battery capacity is poor) when in menu mode.

6. Press button 3.

7. Enter the serial number/ ID code for the transmitter that you want to replace by pressing the buttons according to the table below:

DIGITS	TG-TX-MNL8, TG-TX-MNR8: BUTTON TO PRESS	TG-TX-MXL12, TG-TX-MXR12: BUTTON TO PRESS
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	the right start button + 1	7
8	the right start button + 2	8
9	the right start button + 3	9
0	the right start button + 4	10

8. Press the left start button.
When completed successfully, the top LED lights green. If not completed successfully within 25 seconds, the top LED lights red and the transmitter turns off.

AUTOMATIC SHUTDOWN

Turning on automatic shutdown can save battery capacity by automatically turning the transmitter off when no function has been activated for a set time.

Set the time for automatic shutdown

1. Make sure that the stop button is pressed.

2. Twist and pull out the stop button.
The top LED lights (green when the battery capacity is good, red when the battery capacity is poor).

3. Press the right start button. Keep pressed.

4. Press the stop button.

5. Release the right start button.
The top LED flashes (green when the battery capacity is good, red when the battery capacity is poor) when in menu mode.

6. Press button 5.

7. Press a button according to the table.

Press...	Results in...
Left start button	auto shutdown off
Button 1	auto shutdown after 2 minutes
Button 2	auto shutdown after 6 minutes
Button 3	auto shutdown after 12 minutes

FREQUENCIES & CHANNELS

NOTE! If your system is transmitting on the frequency bands 433MHz eller 2.4 GHz, the receiver will automatically detect and switch to the same channel that the transmitter is using. If your system is transmitting the 915 MHz frequency band, you have to switch bank in the receiver by using the PC program Settings manager. Contact your representative for assistance.

Switch channel on the transmitter

1. Make sure that the stop button is pressed.

2. Twist and pull out the stop button.
The top LED lights (green when the battery capacity is good, red when the battery capacity is poor).

3. Press the right start button. Keep pressed.

4. Press the stop button.

5. Release the right start button.
The top LED flashes (green when the battery capacity is good, red when the battery capacity is poor) when in menu mode.

6. Press the right start button. Keep pressed.

7. Press button 4. NOTE! Release button 4 before releasing the right start button.

8. Go to the frequency table and select a channel.

9. Enter a new channel with the buttons according to the table. The LED next to the left start button lights when a digit has been entered. If the channel that you have selected contains only one digit, press the left start button directly after entering the first digit.

DIGITS	TG-TX-MNL8, TG-TX-MNR8: BUTTON TO PRESS	TG-TX-MXL12, TG-TX-MXR12: BUTTON TO PRESS
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	the right start button + 1	7
8	the right start button + 2	8
9	the right start button + 3	9
0	the right start button + 4	10

Show channel

1. Make sure that the stop button is pressed.

2. Pull out the stop button.
The top LED lights (green when the battery capacity is good, red when the battery capacity is poor).

3. Press the right start button. Keep pressed.

4. Press the stop button.

5. Release the right start button.
The top LED flashes (green when the battery capacity is good, red when the battery capacity is poor) when in menu mode.

6. Press button 4.

7. The number of times that LED1 flashes, equals the 1st digit in the channel. The number of times that LED2 flashes, equals the 2nd digit.

Example: Channel 54- LED 1 flashes 5 times. LED 2 flashes 4 times.

8. Turn the transmitter off to exit.

FREQUENCY BAND 433 MHZ

Channel	Frequency	Channel	Frequency
01	433.075	36	433.950
02	433.100	37	433.975
03	433.125	38	434.000
04	433.150	39	434.025
05	433.175	40	434.050
06	433.200	41	434.075
07	433.225	42	434.100
08	433.250	43	434.125
09	433.275	44	434.150
10	433.300	45	434.175
11	433.325	46	434.200
12	433.350	47	434.225
13	433.375	48	434.250
14	433.400	49	434.275
15	433.425	50	434.300
16	433.450	51	434.325
17	433.475	52	434.350
18	433.500	53	434.375
19	433.525	54	434.400
20	433.550	55	434.425
21	433.575	56	434.450
22	433.600	57	434.475
23	433.625	58	434.500
24	433.650	59	434.525
25	433.675	60	434.550
26	433.700	61	434.575
27	433.725	62	434.600
28	433.750	63	434.625
29	433.775	64	434.650
30	433.800	65	434.675
31	433.825	66	434.700
32	433.850	67	434.725
33	433.875	68	434.750
34	433.900	69	434.775
35	433.925		

FREQUENCY BAND 915 MHZ

Frequency-hopping spread spectrum (FHSS) is a method of transmitting radio signals by rapidly switching a carrier among many frequency channels, using a pseudorandom sequence known to both transmitter and receiver. For further information about the frequencies used in this frequency band and about frequency-hopping, please contact your representative.

FREQUENCY BAND 2.4 GHZ

Channel	Frequency
11	2405
12	2410
13	2415
14	2420
15	2425
16	2430
17	2435
18	2440
19	2445
20	2450
21	2455
22	2460
23	2465
24	2470
25	2475
26	2480

RELAY FUNCTIONALITY

NOTE! Momentary relay functionality is default. That means that the relay will only be activated when you press a button on the transmitter. When the button is released, the relay deactivates. Setting a relay to latching means that the relay gets activated every time that you press a button, but in this case the relay remains active until the button is pressed again.

Momentary and latching relay functionality

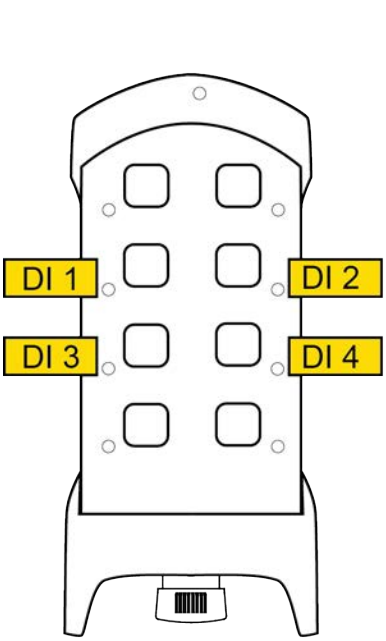
Momentary and latching relays are set in the PC program Settings manager. Contact your representative for further assistance.

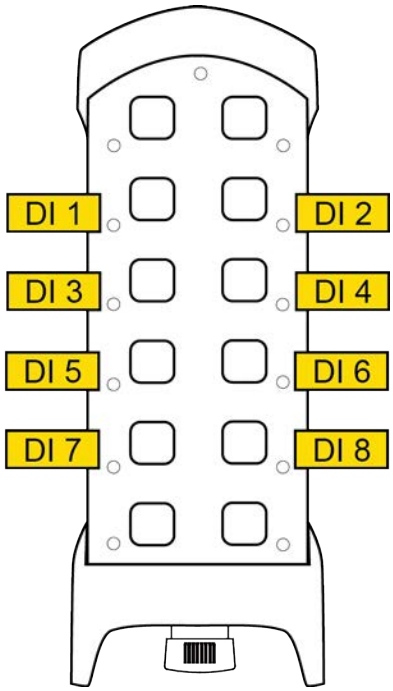
Interlocking

What function relays that are available for interlocking, i.e. that can be blocked or prioritized when pressed at the same time, are set in the PC program Settings manager. Contact your representative for further assistance.

DIGITAL INPUTS

The digital inputs on the receiver are connected to the transmitter LEDs. If you need to make other settings for the digital inputs indications on the transmitter, please contact your representative for assistance.





CHAPTER 5: OPERATING MODES

SELECT OPERATING MODE

NOTE! To select Operating mode, the PC program Settings manager must be used. Contact your representative for assistance.

CHAPTER 6: LOAD SELECT MODES

MAKE A LOAD SELECTION

NOTE! Before starting to perform these settings, make sure that the stop relays are deactivated!

1. Make sure that the stop button is pressed.

2. Twist and pull out the stop button.
The top LED lights (green when the battery capacity is good, red when the battery capacity is poor).

3. Press the right start button. Keep pressed.

4. Press the stop button.

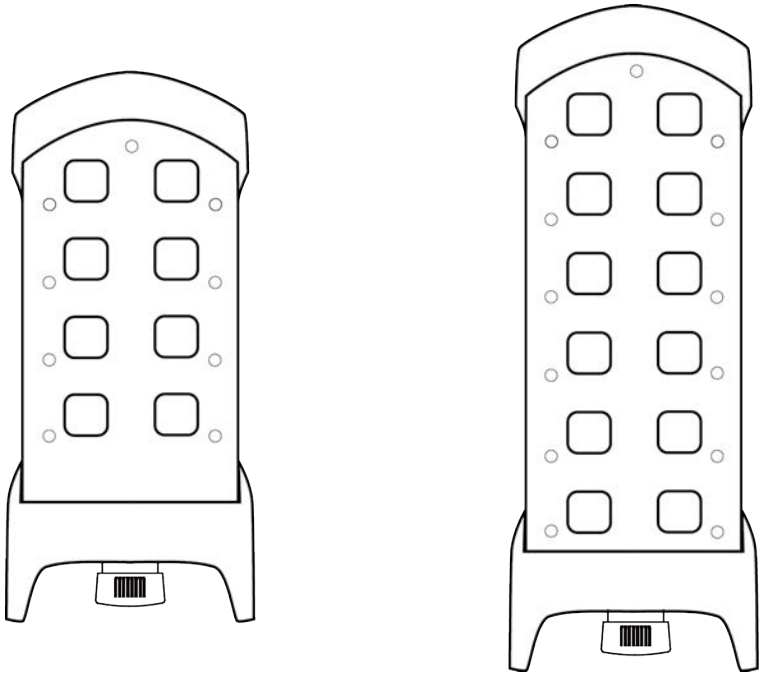
5. Release the right start button.
The top LED flashes (green when the battery capacity is good, red when the battery capacity is poor) when in menu mode.

6. Press button 6.

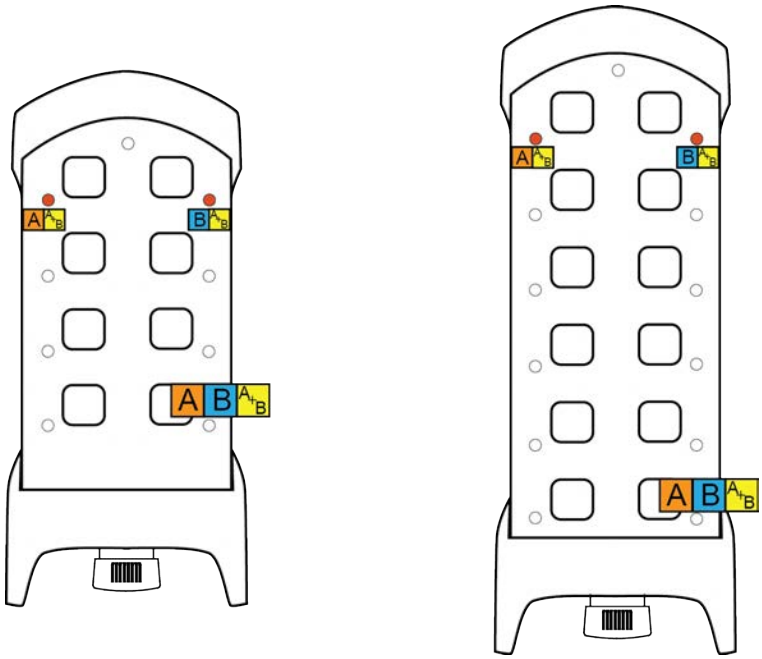
7. To select Load selection, press a button according to the table:

Press...	to achieve Load select mode...
Button 1	1
Button 2	2
Button 3	3
Button 4	4
Button 5	5
Button 6	6
Left start button	0

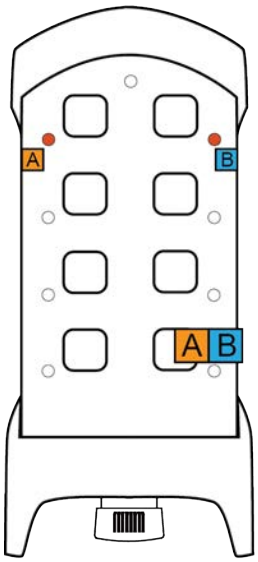
LOAD SELECT MODE 0

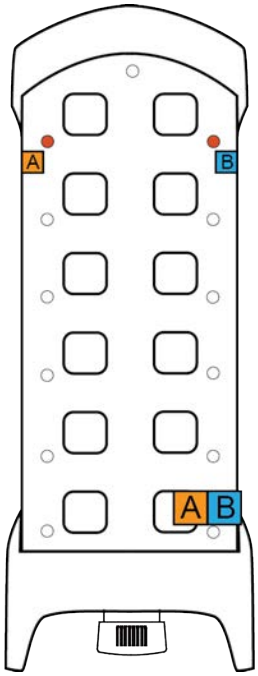


LOAD SELECT MODE 1

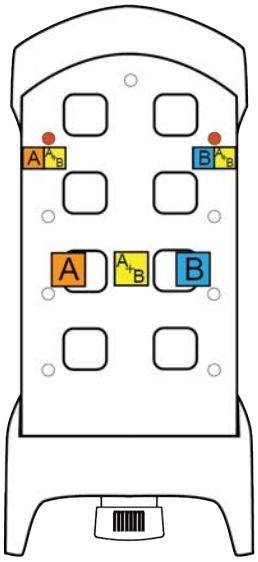


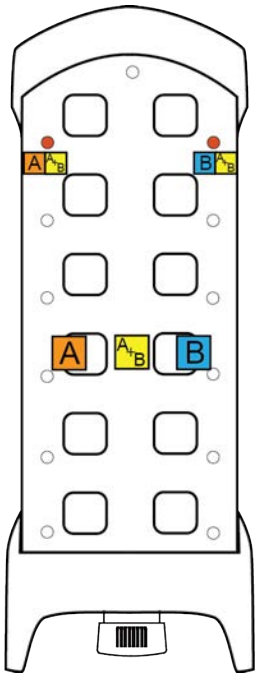
LOAD SELECT MODE 2



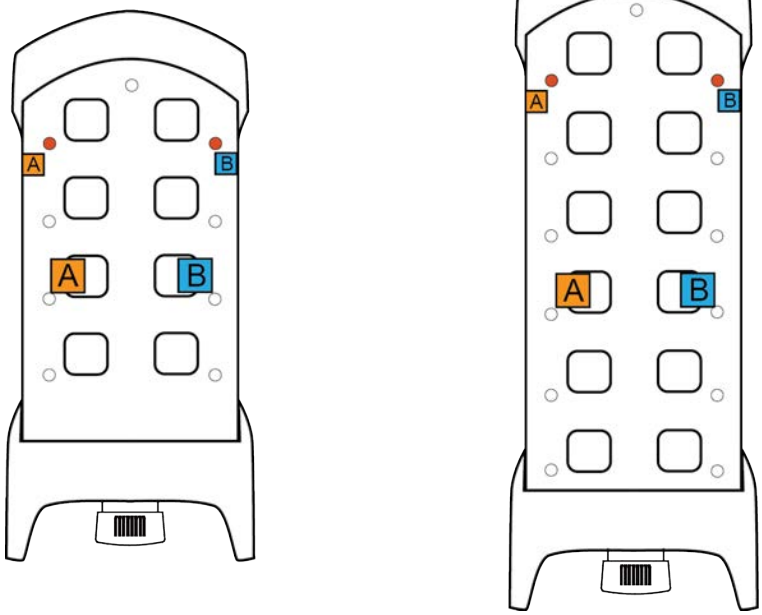


LOAD SELECT MODE 3

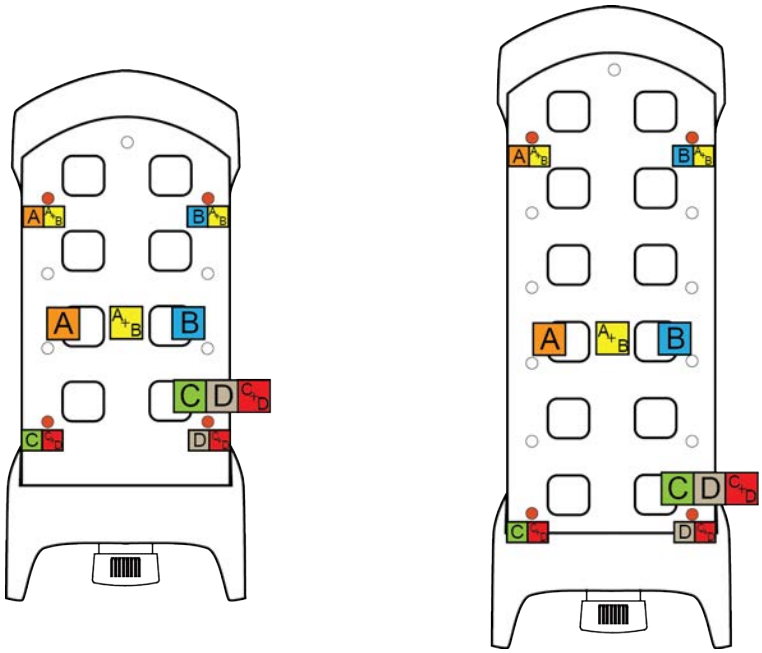




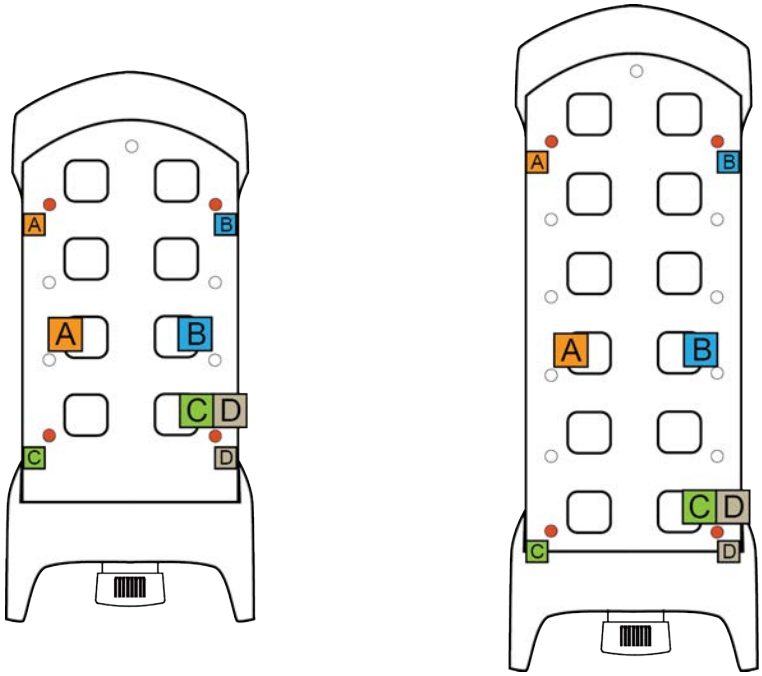
LOAD SELECT MODE 4



LOAD SELECT MODE 5



LOAD SELECT MODE 6



LOAD SELECT MODE 7

The loads are selected in the PC program Settings manager. When you start the transmitter, you can not switch loads. The LEDs on the transmitter do not indicate what load that is activated.

CHAPTER 7: BATTERY GUIDE

BATTERY INFORMATION

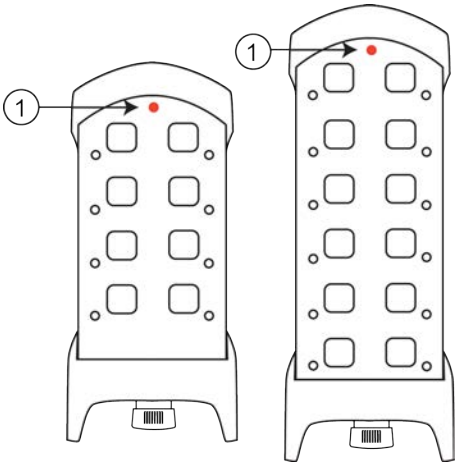
BATTERY TYPE	
TG-TX-MNL8, TG-TX-MNR8	Internal, rechargeable lithium-ion battery
TG-TX-MXL12, TG-TX-MXR12	External, rechargeable lithium-ion battery

OPERATING TIME	
TG-TX-MNL8, TG-TX-MNR8, TG-TX-MXL12, TG-TX-MXR12	Approx. 24 h. with continuous usage

CHARGE	
TG-TX-MNL8, TG-TX-MNR8	Charger plug in the back of the transmitter
TG-TX-MXL12, TG-TX-MXR12	Charger plug in the back of the transmitter or in the Tele Radio 5 V DC charger unit

CHARGING TEMPERATURE	
TG-TX-MNL8, TG-TX-MNR8, TG-TX-MXL12, TG-TX-MXR12	0- 45°C/ 32-113 °F

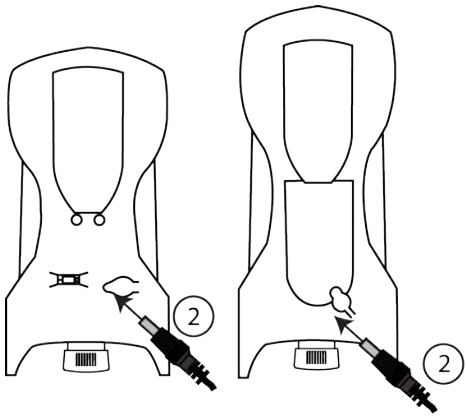
CHARGE THE BATTERY

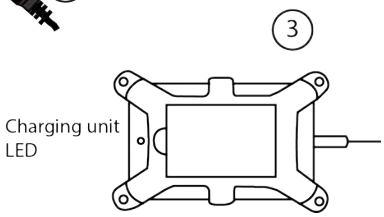


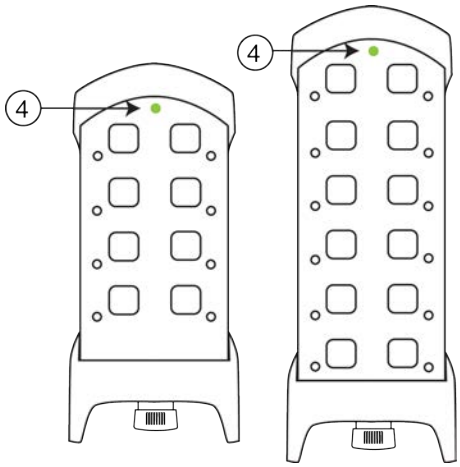
1.When approx. 10% of the battery capacity remains, the top LED lights red and the internal buzzer beeps 3 times.

2. Put the charger plug into the socket in the back of the transmitter. While charging, the top LED flashes red.

3.The external battery can also be charged in a Tele Radio AB charger unit.







4. When fully charged, the top LED lights green.

BATTERY PRECAUTIONS

Observe the following general battery warnings:

- As batteries contains flammable substances such as lithium or other organic solvents, they may cause heating, rupture or ignition.
- Risk of explosion if battery is replaced with a battery of an incorrect type.
- Do not short circuit, disassemble, deform or heat batteries.
- Never try to charge a visibly damaged or frozen battery.
- Keep batteries out of reach of small children. Should a child swallow a battery, consult a physician immediately.
- Avoid direct soldering to batteries.
- When discarding batteries, insulate the + and - terminals of batteries with insulating/ masking tape. Do not put multiple batteries in the same plastic bag.
- When improperly disposed, lithium batteries may short circuit, causing them to become hot, burst or ignite.
- Store in a cool location. Keep batteries away from direct sunlight, high temperature, and high humidity.
- Do not throw batteries into fire.

REMOVAL/DISPOSAL OF INTERNAL BATTERY

NOTE! Electronics and batteries must be physically separated before disposal. Make sure that electronics or batteries are not thrown in the household waste.

1. Remove the clip. Use a screwdriver to unscrew the screws.
2. Remove the rubber cover by hand.
3. Use a screwdriver to unscrew the screws in the back of the transmitter. Remove the front encapsulation by hand. Turn the transmitter around, so that the buttons face up.
4. Use a screwdriver to unscrew the screw in the middle of the circuit board. Lift the circuit board up by hand.
5. The battery pack is placed behind the circuit board. Remove the battery by hand.

ROHS AND WEEE

In accordance with Directive 2011/65/EU on restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) and Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), Tele Radio AB strives to minimize the use of hazardous materials, promotes reuse and recycling, and reduces emissions to air, soil and water. When a commercially viable alternative is available, Tele Radio AB strives to restrict or eliminate substances and materials that pose an environmental, health or safety risk.

GUARANTEE, SERVICE, REPAIRS AND MAINTENANCE

The Tele Radio AB products are covered by a guarantee/warranty against material, construction and manufacturing faults. During the guarantee/warranty period, Tele Radio AB may replace the product or faulty parts. Work under guarantee/warranty must be carried out by Tele Radio AB or by an authorized service centre specified by Tele Radio AB.

This is not covered by the guarantee/ warranty:

- Faults resulting from normal wear and tear
- Parts of a consumable nature
- Products that have been subject to unauthorized modifications
- Faults resulting from incorrect installation and use
- Damp and water damage

Maintenance:

- Repairs and maintenance must be carried out by qualified personnel
- Use spare parts from Tele Radio AB only
- Contact your representative if you require service or other assistance
- Keep the product in a dry, clean place
- Keep contacts and antennas clean
- Wipe off dust using a slightly damp, clean cloth

WARNING! Never use cleaning solutions or high-pressure water.

CHAPTER 8: CERTIFICATIONS CHAPTER

FCC/IC

FCC STATEMENT

Statement for warning:

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.
To ensure compliance, operations at closer than this distance is not recommended.
Les antennes installées doivent être situées de facon à ce que la population ne puisse y être exposée à une distance de moin de 20 cm. Installer les antennes de facon à ce que le personnel ne puisse approcher à 20 cm ou moins de la position centrale de l' antenne.
La FCC des éltats-unis stipule que cet appareil doit être en tout temps éloigné d'au moins 20 cm des personnes pendant son functionnement.

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
This device complies with Industry Canada licence-exempt RSS standard(s) and Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence et la partie 15 des Règles FCC. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. End user must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
Cet appareil est conforme aux limites d'exposition au rayonnement RF stipulées par la FCC et l'IC pour une utilisation dans un environnement non contrôlé. L'utilisateur final doit suivre les instructions de fonctionnement spécifiques pour le respect d'exposition aux RF. Lesémetteurs ne doivent pas être placées près d'autres antennes ou émetteurs ou fonctionner avec ceux-ci.
Note: this equipment has been tested and found to comply with the limits for a class b digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—reorient or relocate the receiving antenna.
—increase the separation between the equipment and receiver.
—connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—consult the dealer or an experienced radio/TV technician for help.

The radio module in this product is labelled with its own FCC ID and IC number. The FCC ID and IC is not visible when the radio module is installed inside another device. Therefore, the outside of the device into which the module is installed must also display a label referring to the radio module. The final end device must be labelled in a visible area with the following:

“Contains FCC ID: ONFC1108A”
“Contains IC: 4807A-C1108A”
or
“Contains FCC ID: ONFC1303A”
“Contains IC: 4807A-C1303A”

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.
Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

This radio transmitter has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.
Gain of antenna: 3.0dBi max.
Type of antenna: 50ohm, Omni-directional
Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne.
Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.
Gain d'antenne: 3.0dBi maximal
Type d'antenne: 50 ohm, Omni-directionnel

THE RADIO MODULE

Each radio module is specifically designed to match a Tele Radio product in terms of physical dimensions, connection points, voltage levels, signal interface etc. To use the radio modules in non Tele Radio products is not permitted. The radio modules are designed to interface directly to the main board of the receiver/transmitter unit. They are power supplied by the main board and the radio circuit operates strictly according to instructions from a microprocessor on the main board. The radio circuit configuration is stored in a flash memory on the radio module. A receiver/transmitter unit with a defective/no radio module will give an error message immediately after power up, and it will not be possible to start a radio session.

RADIO MODULE LIST

The products in this instruction contain the radio modules:

D00005-06	TG-TX-MNR8, TG-TX-MXR12
D00005-11	TG-RX-MXR12, TG-RX-MXR28

RECEIVER LABELS

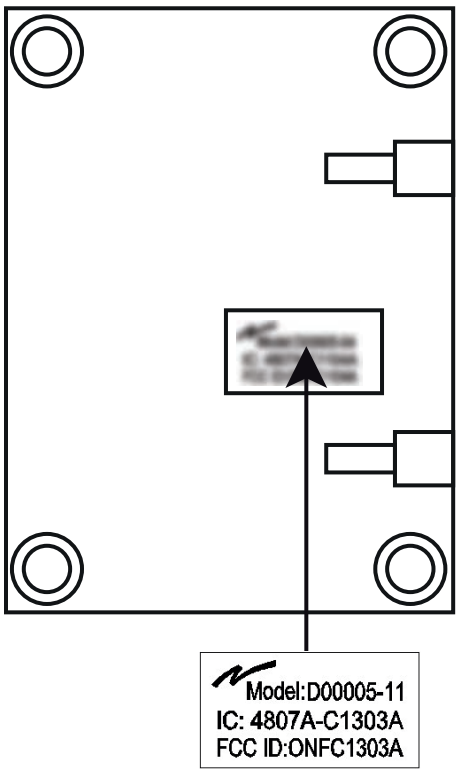
PRODUCT LABEL ON THE RECEIVER

You will find the product label on the outside of the enclosure of the receiver.

FCC / IC LABEL IN THE RECEIVER

The FCC/ IC label is placed on the radio module. The radio module is mounted inside the receiver.

D00005-11: TG-RX-MXR12, TG-RX-MXR28

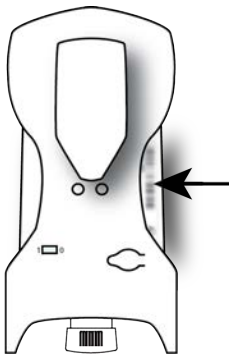


TRANSMITTERS LABELS

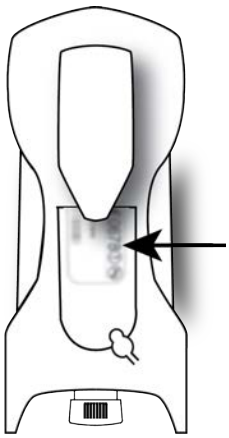
PRODUCT LABEL IN THE TRANSMITTER

You will find the product label in the back of the transmitter.

TG-TX-MNR8



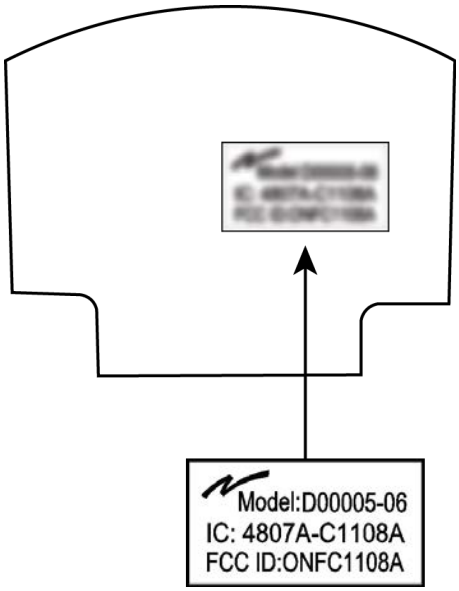
TG-TX-MXR12



FCC/IC LABEL IN THE TRANSMITTER

The FCC/IC label is placed on the radio module. The radio module is mounted inside the transmitter.

D00005-06:
TG-TX-MNR8, TG-TX-MXR12



EC/EEA DECLARATION OF CONFORMITY

EC/EEA DECLARATION OF CONFORMITY

TELE RADIO REMOTE CONTROL

The undersigned, representing the following manufacturer:

NAME: Tele Radio AB
ADDRESS: Datavägen 21, SE-436 32 Askim, SWEDEN
TELEPHONE NO: 46-31-7485460 TELEFAX NO: 46-31-685464

Herewith declares that the product(s):

RECEIVERS TG-R4-1, TG-R4-6, TG-R4-26, TG-R4-36, TG-R4-41, TG-R4-46, TG-R10-1, TG-R10-2, TG-R9-1, TG-R9-6, TG-R9-11

Is in conformity with the provisions of the following harmonized standards, other standards and directives:

2006/42/EC[1]	Directive 2006/42/EC of the European Parliament and of the Council on machinery	
1999/5/EC	Directive 1999/5/EC of the European Parliament and of the Council on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE)	
2006/95/EC	Directive 2006/95/EC of the European Parliament and of the Council on harmonisation of the laws of the Member states relating to electrical equipment designed for use within certain voltage limits	
2004/108/EC	Directive 2004/108/EC of the European Parliament and of the Council on the approximation of the laws of the Member states relating to electromagnetic compatibility	
2011/65/EC	Directive 2011/65/EC of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment	
EN 50371	Generic Standard to Demonstrate the Compliance of Low-Power Electronic and Electrical Apparatus with the Basic Restrictions Related to Human Exposure to Electromagnetic Fields (10 MHz–300 GHz)—General Public	HEALTH
EN 60950-1	Information technology equipment–SAFETY–Part 1: General requirements	SAFETY/LVD
EN 301489-1/-3	Electromagnetic compatibility and Radio spectrum Matters (ERM): ElectroMagnetic Compatibility (EMC) standard for radio equipment and services: Part 1: Common technical requirements- Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 KHz and 40 GHz	EMC
EN 300 220-1/-2	Electromagnetic compatibility and Radio spectrum Matters (ERM): Short Range Devices (SRD): Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW: Part 1: Technical characteristics and test methods- Part 2: Supplementary parameters not intended for conformity purposes	RADIO
EN 62061[2]	Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems	
EN 60204-1/-32[2]	Safety of machinery - Electrical equipment of machines- Part 1: General requirements. Part 32: Requirements for hoisting machines- Cranes - Controls and control stations	
EN 50581	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances	
EN ISO 13849-1	Safety of machinery- Safety-related parts of control systems- Part 1: General principles for design	PL e (Performance Level)
Other standards:		
IEC 61508	Functional safety of electrical/electronic/programmable electronic safety-related systems	SIL3 (Safety Integrity Level)

1) According to Annex IV, paragraph 21 and article 12 (3), option (a).
2) The products fulfill the relevant parts for cableless controls and electrical equipment when mounted and installed correctly.

Authorized to compile technical file:
NAME: Jesper Ribbe
ADDRESS: Same as manufacturer
Askim June 13th, 2014

Jesper Ribbe
Research & Development Manager, Tele Radio AB

CER-TG2-EC002-A07

EC/EEA DECLARATION OF CONFORMITY

TELE RADIO REMOTE CONTROL

The undersigned, representing the following manufacturer:

NAME: Tele Radio AB
ADDRESS: Datavägen 21, SE-436 32 Askim, SWEDEN
TELEPHONE NO: 46-31-7485460 TELEFAX NO: 46-31-685464

Herewith declares that the product(s):

TRANSMITTERS TG-T11-4,TG-T11-5,TG-T9-1,TG-T9-2,TG-T12-20,TG-T12-21,TG-T12-22,TG-T12-23, TG-T12-24,TG-T12-25,TG-T14-7,TG-T15-7

Is in conformity with the provisions of the following harmonized standards, other standards and directives:

2006/42/EC[1]	Directive 2006/42/EC of the European Parliament and of the Council on machinery	
1999/5/EC	Directive 1999/5/EC of the European Parliament and of the Council on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE)	
2006/95/EC	Directive 2006/95/EC of the European Parliament and of the Council on harmonisation of the laws of the Member states relating to electrical equipment designed for use within certain voltage limits	
2004/108/EC	Directive 2004/108/EC of the European Parliament and of the Council on the approximation of the laws of the Member states relating to electromagnetic compatibility	
2011/65/EC	Directive 2011/65/EC of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment	
EN 50371	Generic Standard to Demonstrate the Compliance of Low-Power Electronic and Electrical Apparatus with the Basic Restrictions Related to Human Exposure to Electromagnetic Fields (10 MHz–300 GHz)—General Public	HEALTH
EN 60950-1	Information technology equipment–SAFETY–Part 1: General requirements	SAFETY/LVD
EN 301489-1/-3	Electromagnetic compatibility and Radio spectrum Matters (ERM): ElectroMagnetic Compatibility (EMC) standard for radio equipment and services: Part 1: Common technical requirements- Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 KHz and 40 GHz	EMC
EN 300 220-1/-2	Electromagnetic compatibility and Radio spectrum Matters (ERM): Short Range Devices (SRD): Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW: Part 1: Technical characteristics and test methods- Part 2: Supplementary parameters not intended for conformity purposes	RADIO
EN 62061[2]	Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems	
EN 60204-1/-32[2]	Safety of machinery - Electrical equipment of machines- Part 1: Part 1: General requirements. Part 32: Requirements for hoisting machines- Cranes - Controls and control stations	
EN 50581	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances	
EN ISO 13849-1	Safety of machinery- Safety-related parts of control systems- Part 1: General principles for design	PL e (Performance Level)
Other standards:		
IEC 61508	Functional safety of electrical/electronic/programmable electronic safety-related systems	SIL3 (Safety Integrity Level)

1) According to Annex IV, paragraph 21 and article 12 (3), option (a).
2) The products fulfill the relevant parts for cableless controls and electrical equipment when mounted and installed correctly.

Authorized to compile technical file:
NAME: Jesper Ribbe
ADDRESS: Same as manufacturer
Askim May 27th, 2014

Jesper Ribbe
Research & Development Manager, Tele Radio AB

CER-TG2-EC004-A04

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TELE RADIO®
REMOTE CONTROL

www.teleradio.com

TELE RADIO SVERIGE
Sweden

TELE RADIO GmbH
Germany

TELE RADIO ASIA
China

TELE RADIO TURKEY
Turkey

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England

TELE RADIO LLC
North & South America

TELE RADIO BV
Benelux

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