INSTALLATION INSTRUCTIONS

Receivers:
R10-01, R10-02

safe   smart   strong

R10

CHAPTER 1: INTRODUCTION

Thank you for purchasing a Tele Radio AB product

⚠ **READ ALL INSTRUCTIONS AND WARNINGS CAREFULLY BEFORE MOUNTING, INSTALLING, CONFIGURING AND OPERATING THE PRODUCTS.**

These Installation instructions have been published by Tele Radio AB and are not subject to any guarantees. The Installation instructions may be withdrawn or revised by Tele Radio AB at any time and without further notice. Corrections and updates will be added to the latest version of the manual. Always download the Installation instructions from our website, www.tele-radio.com, for the latest available version. Keep the safety instructions for future reference.

IMPORTANT! These instructions are intended for installers and authorized service and distribution centers. The instructions containing information about 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 information that is needed to operate the machine correctly by radio remote control may be passed on to the end user.

Tele Radio AB remote controls are often built into wider applications. This documentation is not intended to replace the determination of suitability or reliability of the product for specific user applications and should not be used for this purpose. It is the responsibility of any such users or integrators to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use. Tele Radio AB shall not be responsible or liable for misuse of the information contained herein.

Always refer to the applicable local regulations for installation and safety requirements relating to cranes, hoists, material handling applications, lifting equipment, industrial machinery, and/or mobile hydraulic applications using Tele Radio AB products, e.g.:

- applicable local and industrial standards and requirements,

- applicable occupational health and safety regulations,

- applicable safety rules and procedures for the factory where the equipment is being used,

- user and safety manuals or instructions of the manufacturer of the equipment where Tele Radio AB remote control systems are installed.

Tele Radio AB Installation instructions do not include or address the specific instructions and safety warnings of the end product manufacturer.

Tele Radio AB products are covered by a warranty against material, construction, or manufacturing faults. See "Chapter 10: Warranty, service, repairs, and maintenance".

1.1 About this document

Before installing or operating the product, read the corresponding documentation carefully.

Tele Radio AB's product range is composed of transmitters, receivers, and accessories intended for use together as a system.

These Installation instructions cover general safety issues, main technical specifications, standard installation, configuration and operating instructions, and general troubleshooting. Images shown in this document are for illustrative purposes only.

Please report any error or omission in this document, as well as any improvement or amendment suggestion to td@tele-radio.com.

1.1.1 COPYRIGHT

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1.1.2 TERM AND SYMBOL DEFINITIONS

The capitalized terms and symbol used herein shall have the following meaning:

- WARNING: indicates a hazardous situation which, if not avoided, could result in death or serious injury.

- CAUTION: indicates a hazardous situation which, if not avoided, will result in minor or moderate injury.

- IMPORTANT: is used for information that requires special consideration.

- NOTE: is used to address practices not related to physical injury.

 This symbol is used to call attention to safety messages that would be assigned the signal words "WARNING" or "CAUTION".

1.2 About Tiger TG2 systems

The Tiger TG2 product range is composed of transmitters and receivers intended for use together as a system in complex lifting applications such as cranes, OHT cranes and electric hoists or mobile applications.

1.2.1 ABOUT R10 RECEIVERS

R10 receivers have simplex communication with support for duplex.

R10 receivers are compatible with all T9, T11, T12, T14 and T15 transmitters within the same frequency range.

Overview of available models

- **433 MHz frequency range**

	Main board	Expansion board
	7 relays	Low voltage
R10-01	●	–
R10-02	●	●

● Standard   – Not available

CHAPTER 2: SAFETY

2.1 Warnings & restrictions

> ⚠ **Carefully read through the following safety instructions before proceeding with the installation, configuration, operation, or maintenance of the product. Failure to follow these warnings could result in death or serious injury.**

This product must not be operated without having read and understood the Installation instructions and having received the appropriate training. The purchaser of this product has been instructed how to handle the system safely. The following information is intended for use as a complement to applicable local regulations and standards.

> **IMPORTANT! Tele Radio AB remote controls are often built into wider applications. These systems should be equipped with:**
> - **a wired emergency stop where necessary**
> - **a brake**
> - **an audible or visual warning signal**

2.1.1 INSTALLATION AND COMMISSIONING

> **IMPORTANT! Only licensed or qualified personnel should be permitted to install the product.**

> ⚠ **This radio system must not be used in areas where there is a risk of explosion.**

> ⚠ **Always switch off all electrical power from the equipment before installation procedure.**

> ⚠ **To utilize the safety features of the system, use the stop relays in the safety circuitry of the object/ equipment to be controlled.**

When the equipment controlled by the receiver's standard relays is connected via the stop relays, make sure that the maximum current through the stop relays is still within the specifications. Contact your representative for assistance.

RISK OF UNINTENDED EQUIPMENT OPERATION
Only transmitters that are intended for use should be registered in the receiver.
Failure to follow these instructions could result in death, serious injury, or equipment damage.

RISK OF ELECTRIC SHOCK
The receiver must only be opened by qualified installers or authorized personnel.
Make sure the power supply is switched off before opening the receiver.
Failure to follow these instructions could result in death, serious injury, or equipment damage.

- The receiver must be securely attached and located where it will not be hit by e.g. any moving parts.
- Do not install the product in areas affected by strong vibrations
- Cable glands and vent plugs must face downwards to prevent water ingress.
- Ensure that the power supply is connected to the correct terminals.
- Ensure that flexible cords and cables are not damaged through friction or stress.
- Do not use damaged cables.
- Ensure cables and connectors do not hang loose.

- The receiver is designed to withstand normal weather conditions but should be protected from extreme conditions.
- Mount the receiver in a location where the LEDs are easily visible and the buttons on the receiver accessible.
- Make sure to install available accessories inside or on the receiver before permanently installing the receiver. A permanent installation of the product

must include fuse protection of the equipment and cables against short circuits.

2.1.2 OPERATION

> ⚠ **Only qualified personnel should be permitted to access the transmitter and operate the equipment.**

> ⚠
> - **Make sure that the user satisfies the age requirements in your country for operating the equipment.**
> - **Make sure that the user is not under the influence of drugs, alcohol and medications.**
> - **Make sure that the user knows and follows operating and maintenance instructions as well as all applicable safety procedures and requirements.**

The user should:

> ⚠
> - **Always test the transmitter stop button before operating it.This test should be done on each shift, without a load.**
> - **Never use a transmitter if the stop button is mechanically damaged.Contact your supervisor or representative for service immediately.**
> - **Never leave the transmitter unattended.**
> - **Always switch the transmitter off when not in use. Store in a safe place.**
> - **Keep a clear view of the work area at all times.**

2.1.3 MAINTENANCE

> ⚠ **Before maintenance intervention on any remote controlled equipments:**
> **• always remove all electrical power from the equipment.**
> **• always follow lockout procedures.**

- Keep the safety information for future reference. Always download the Installation instructions from our website, www.tele-radio.com, for the latest available version.

- If error messages are shown, it is very important to find out what caused them. Contact your representative for help.

- The functionality of the stop button should be tested at least after every 200 hours' use.

- If the stop button is mechanically damaged, do not use the transmitter. Contact your supervisor or representative for service immediately.

- Keep contacts and antennas clean.

- Wipe off dust using a clean, slightly damp cloth.

- Never use cleaning solutions.

- Check the encapsulation, foils and cable for damages. If the encapsulation or foil is damaged, moisture can cause serious damage to the electronics.

CHAPTER 3: FUNCTIONAL SAFETY

> **NOTE: The information in this section applies only to the products operating in the 433 MHz and 915 MHz radio frequency ranges.**

433 MHz	915 MHz
R10-01, R10-02	–

Safety functions

STOP FUNCTION

The safety-related stop function in the radio system complies with EN 61508 SIL3 and EN ISO 13849 PLe. The stop relays on the receiver unit are controlled by the stop button on the transmitter unit. When the stop button is pressed, the stop relays interrupt the power to the safety-related application. The complete end user system, including the radio system, enters a safe state. The maximum response time for the stop function is 500 ms.

Installation

The two stop relays on the receiver unit shall be correctly installed to the end-user system requirements.

> NOTE: The safety level of the stop function on the complete end-user system depends on other subsystem(s) and needs to be calculated by the manufacturer of the complete system.

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

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

CHAPTER 4: TECHNICAL DATA

> NOTE: The information below may differ in customized systems, please refer to the corresponding technical documentation provided with each system.

4.1 Receiver specifications

	R10-01	R10-02
Input power	48–230 V AC, 50–60 Hz, max. 0.5 A	12–24 V AC/DC, max. 0.5 A
Number of stop relays	2 (potential free*, 10 A)	
Number of relays	7 (potential free*, 10 A)[1]	
Relay functionality		
Number of digital inputs	2	
Number of transistor outputs	1	
Bus system	–	
Connector		
Radio communication	Simplex (default), support for duplex	
Radio frequency band	433.075–434.775 MHz	
Number of channels	69 (channels 1–69)	
Max. number of registered transmitters	15	
Radio frequency output power	EIRP[2]: < 10 dBm (10 mW)	
IP code	IP66	
Safety level	EN 61508 SIL3 and EN ISO 13849 PLe (Stop function, see "Chapter 3: Functional safety")	
Dimensions	152 x 137 x 58 mm / 6 x 5.4 x 2.3 in	
Weight (typical)	650 g / 1.4 lbs	
Operating temperature	-20…+55 °C / -4…+130 °F	
Antenna	Internal antenna	

[1]Maximum load is indicated for resistive load only.

[2]Equivalent isotropic radiated power

* Potential free means that a supply voltage is needed to get voltage out of a relay (e.g. via the included connection comb).

4.2 Current consumption

Input power	R10-01		R10-02	
	Min.*	Max.**	Min.*	Max.**
12 V AC	–	–	0.05 A	0.3 A
24 V AC	–	–	0.03 A	0.2 A
48 V AC	0.02 A	0.09 A	–	–
115 V AC	0.01 A	0.04 A	–	–
230 V AC	0.01 A	0.03 A	–	–
12 V DC	–	–	0.06 A	0.4 A
24 V DC	–	–	0.03 A	0.2 A

*Minimum current consumption = Receiver powered, no active relays, no radio session established.
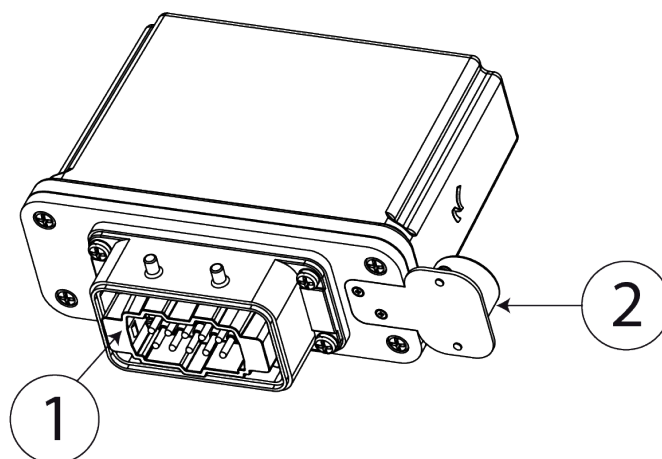
**Maximum current consumption = Receiver powered, all relays on the receiver active, radio session established.

CHAPTER 5: PRODUCT GENERAL DESCRIPTION

The pictures shown in this chapter are for illustrative purposes only.
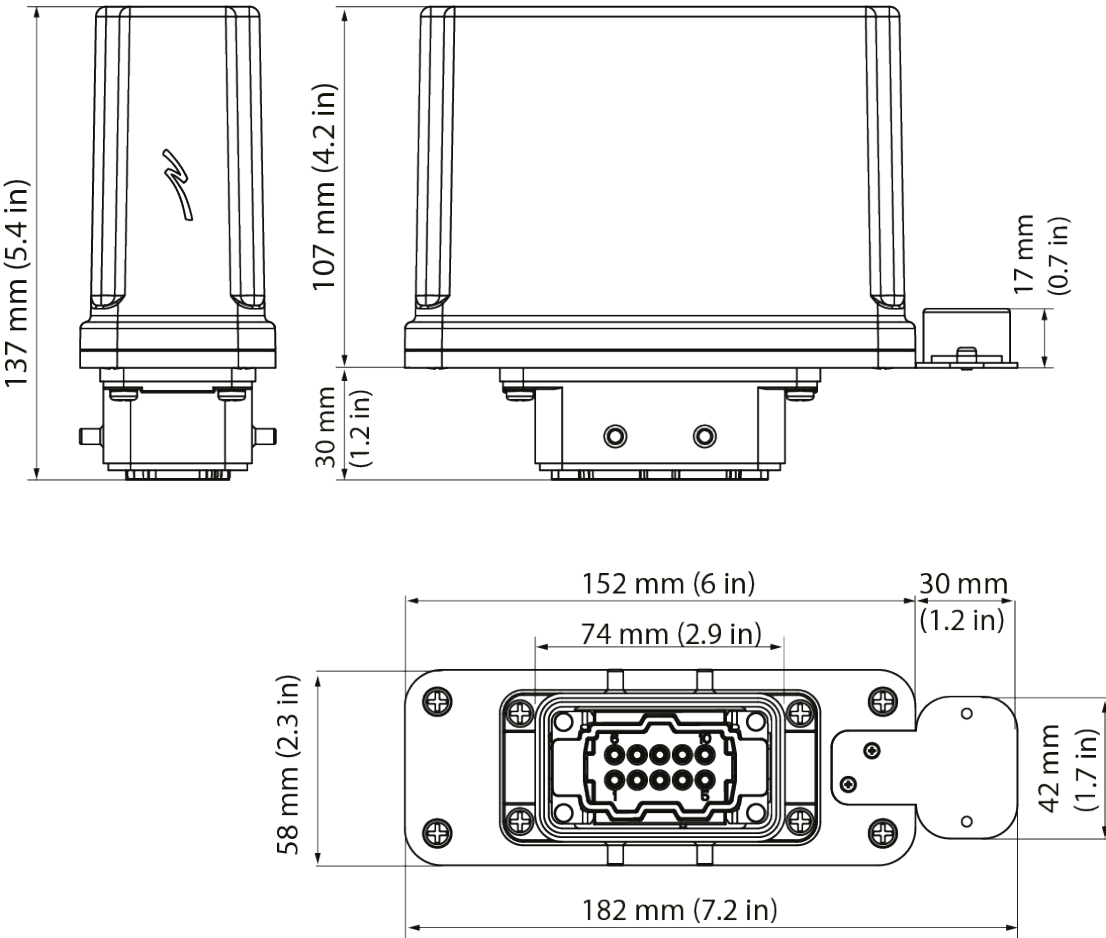
5.1 Receiver description

5.1.1 R10-01, R10-02

1. 10-pin connector   2. External buzzer

5.2 Mechanical installation

5.2.1 INSTALLATION PRECAUTIONS

> ⚠ **RISK OF ELECTRIC SHOCK**
> **The receiver must only be opened by qualified installers or authorized personnel.**
> **Make sure the power supply is switched off before opening the receiver. Failure to follow these instructions could result in death, serious injury, or equipment damage.**

IMPORTANT! Only authorized personnel should install the product.

Only correct installation complies with the safety levels for the product.

- A permanent installation of the receiver must include fuses in order to protect the equipment and cables from short circuit.

- The receiver must be installed vertically, on a flat and rigid surface, with the cable at the bottom.

- Mount the receiver in a location where the LEDs are easily visible and the buttons on the receiver accessible.

- Consider the wiring limitation and the radio communication limitation to choose the receiver location.

- Ensure no obstacle is impairing the radio communication performance between the receiver and the transmitter.

- The receiver must not be installed inside closed metal containers.

- Make sure any accessories inside or on the receiver are installed before permanently installing the receiver.

- Test the equipment before installing the receiver permanently.

CHAPTER 6: BOARD DESCRIPTION

NOTE: The pictures shown in this chapter are for illustrative purposes only.

RISK OF ELECTRIC SHOCK
**The receiver must only be opened by qualified installers or authorized personnel.**
Make sure the power supply is switched off before opening the receiver. Failure to follow these instructions could result in death, serious injury, or equipment damage.

IMPORTANT! Only experienced electronic technicians should add and map expansion boards and inputs/outputs.

6.1 Base board

NOTE: This base board is integrated in all R10 models.
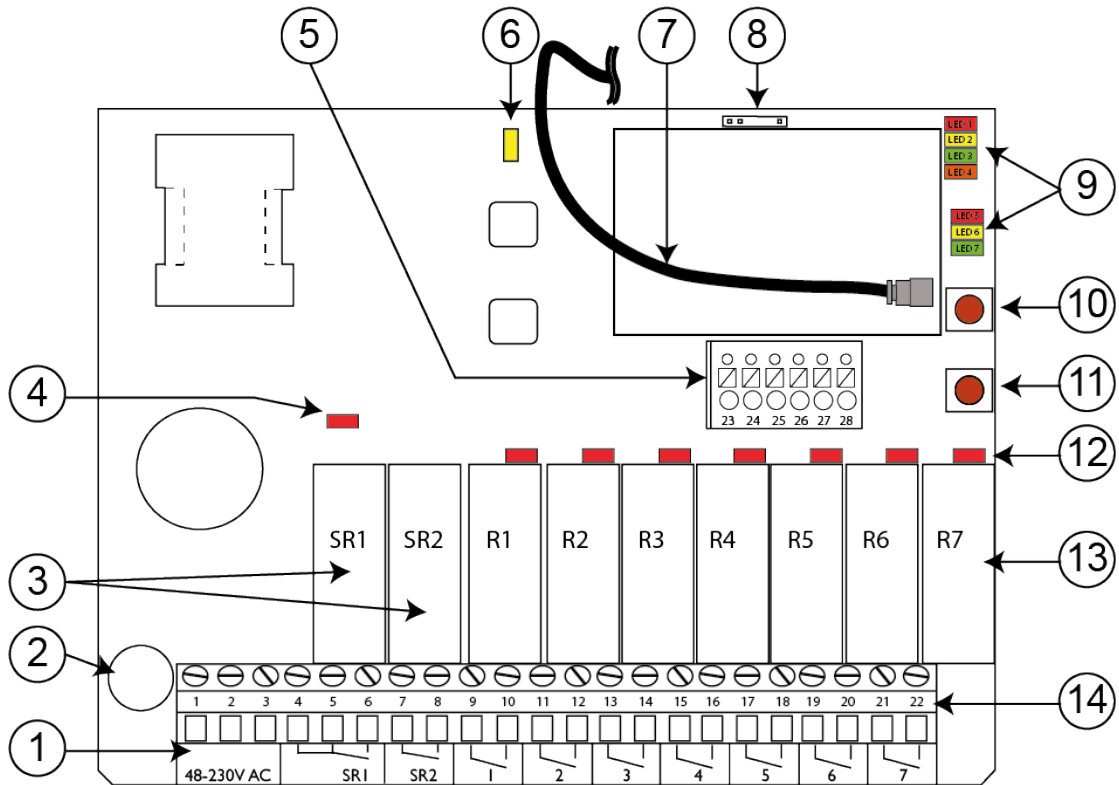
1. Terminal block for input power

    ⚠ **Risk for electric shock**

2. Obligatory fuse 2A (slow)

3. Stop relays SR1–2

4. LED indicator for stop relays SR1–2 (red)

5. Terminal block for digital I/O and buzzer

6. Power LED (yellow)

7. Cable to the internal antenna

8. TRABUS contact

9. Function LEDs (1=red, 2=yellow, 3=green, 4=orange, 5 = red, 6 = yellow, 7 = green)

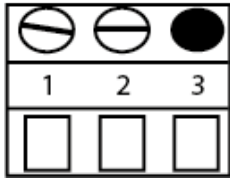10. **Function** button (Cancel)

11. **Select** button (OK)

12. Relay LEDs (red)

13. Function relays R1–7 (NO)

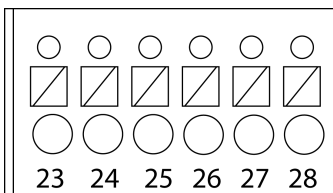14. Terminal block for function relays R1–7

6.1.1 TERMINAL BLOCK FOR INPUT POWER ON THE BASE BOARD

> ⚠ **Risk for electric shock. Do not touch the terminal block when the receiver is powered up.**

1. 48–230 V AC
2. 48–230 V AC
3. Not used
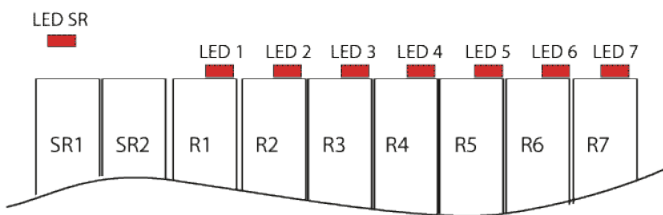
6.1.2 TERMINAL BLOCK FOR MIXED I/O

23. +12 V DC	26. GND
24. Transistor output	27. DI 2
25. DI 1	28. GND

6.1.3 LED INDICATORS ON THE BASE BOARD

> NOTE: These LEDs are found in all R10 receiver models.

The base board has 8 LEDs for relay status indication. The LEDs light when the corresponding relays on the base board are activated.

|	
LED SR = stop relays 1–2	LED 5 = relay 4
LED 2 = relay 1	LED 6 = relay 5
LED 3 = relay 2	LED 7 = relay 6
LED 4 = relay 3	LED 8 = relay 7

6.2 Expansion boards

Expansion boards can be used to increase the number of inputs/outputs and communication options. There are currently two expansion boards available for the R10 receivers.

| EXPANSION BOARDS	Available slots on the base board
Low voltage expansion board	1

6.2.1 LOW VOLTAGE EXPANSION BOARD

NOTE: This expansion board is integrated in the following receiver model: **R10-02**

⚠ **Do not connect power supply to the base board when this expansion board is used.**
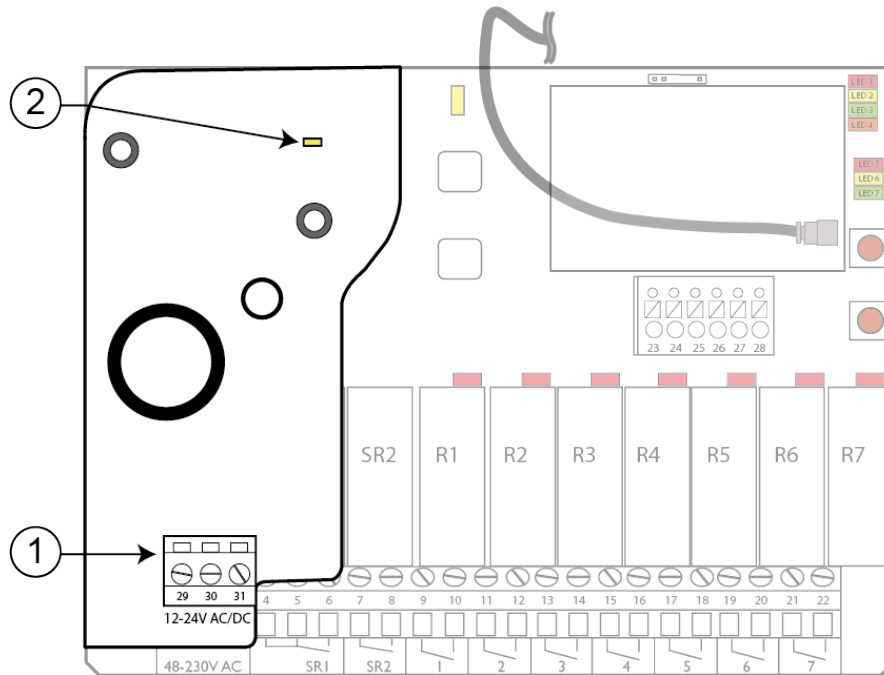
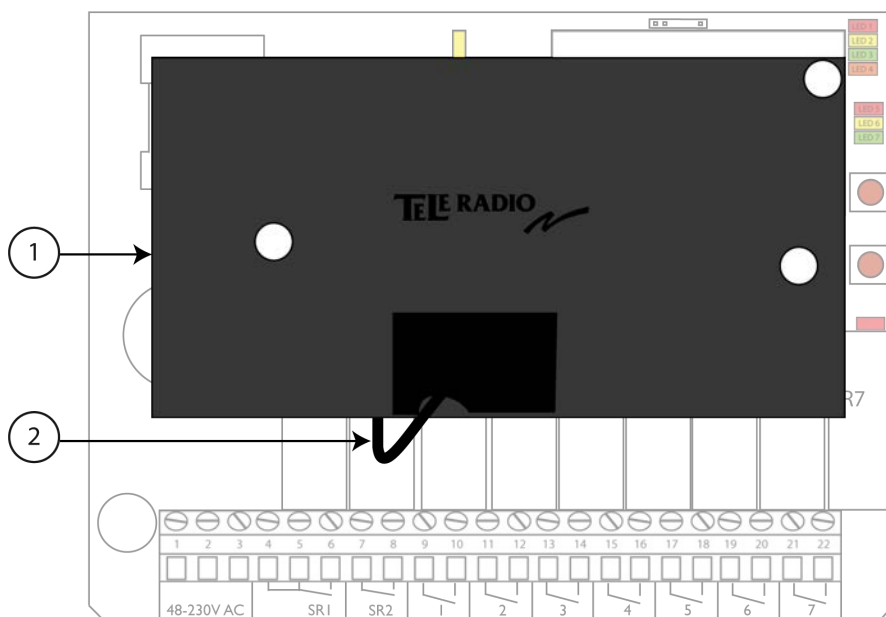1. Terminal block for input power   2. Power LED (yellow)

Terminal block for input power on expansion board
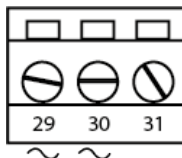
29. ~ 12–24 V AC/DC

30. ~ 12–24 V AC/DC
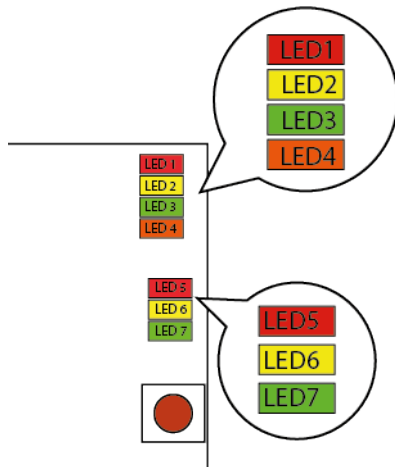
31. Negative terminal, DC voltage

6.3 Internal antenna

NOTE: This internal antenna is integrated in all R10 models.

1. Internal antenna   2. Connection cable for the internal antenna

CHAPTER 7: STATUS AND ERROR INDICATIONS

7.1 Function LEDs indication in normal operation

LED	Color	Off	On	Flashing	Indicates
1	Red	○			No transmitter is registered.
			●		One or more transmitters are registered.
2	Yellow	○			No transmitter is logged in.
			●		One transmitter is logged in.
3	Green		●		Receiving valid RS485 data.
4	Orange	○			SIL conformity (settings in the safety CPUs are conform with SIL3).
			●		SIL error (settings in the safety CPUs are not conform with SIL3).
5	Red	○			Automatic frequency control processing. Signal is not locked on the transmitter.
			●		Automatic frequency control fine-tuned. Signal is locked on the transmitter.
				●	The receiver is scanning frequency
6	Yellow		●		Receiving valid sync word.
7	Green		●		Receiving valid radio packet.

7.2 Fatal error indications and error code messages

Fatal errors are indicated by function LEDs 1–7, which are all flashing at the same time. Each fatal error is identified by a code indicated by relay LEDs 1–5. Contact your representative for assistance.

●: LED is lit. ○: LED is off.

Relay LED					Description
Relay LED1 (red)	Relay LED2 (red)	Relay LED3 (red)	Relay LED4 (red)	Relay LED5 (red)	
●	○	○	○	○	Invalid/ missing production data in the CPUs
○	●	○	○	○	Incompatible software in the CPUs
●	●	○	○	○	Bad settings data
○	○	●	○	○	No reply from CPU1 or CPU2
●	○	●	○	○	Receiver in test mode (no error)
○	●	●	○	○	Initialization of the radio module failed
●	●	●	○	○	Incompatible expansion board*
○	○	○	●	○	No CAN expansion board found**
●	○	○	●	○	SIL error reported from CPU1 or CPU2
○	●	○	●	○	Incompatible radio module
●	●	○	●	○	LML fatal error
○	○	●	●	○	Missing or bad binDat
●	○	●	●	○	No binDat ID in binDat
○	●	●	●	○	Wrong target software ID in binDat
●	●	●	●	○	Wrong target software version in binDat
○	○	○	○	●	Wrong cclml version in binDat
●	○	○	○	●	Buffer is full

* R10-02 only

** N/A

7.3 Show digital input status on the transmitter

NOTE: This function requires duplex communication to be activated. Contact your representative for assistance.

NOTE: Only with push button transmitters (T9, T11, T14, T15).

The status of the receiver's digital inputs can be indicated by the LEDs on the transmitter. Up to eight of the receiver's digital inputs can be mapped to transmitter LEDs 3–10, and depending on the transmitter, the number of digital inputs displayed can vary from two to eight.
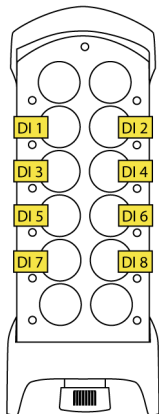
7.3.1 SUITABLE TRANSMITTERS

NOTE: The digital inputs displayed on the transmitter always correspond to those of the first receiver that has been logged in to. For other settings of the digital inputs indication on the transmitter, contact your representative for assistance.
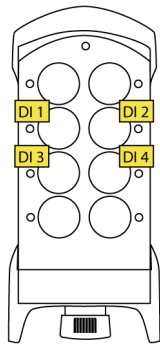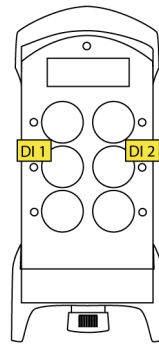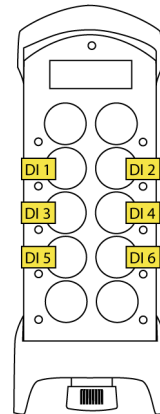
T9-01, T9-11 **T11-05, T11-15** **T9-02, T9-12** **T11-01, T11-14**

7.3.2 MAP DIGITAL INPUTS TO TRANSMITTER LEDS

To map a digital input to a LED on the transmitter, connect the digital input to GND (see). The corresponding LED will light when the digital input is activated.

NOTE: $LED_{number} = DI_{number} + 2$

CHAPTER 8: OPERATION

8.1 General information

To control a receiver, the transmitter must be registered and logged in to the receiver. If another transmitter is already logged in to the receiver, it must be logged out before a different transmitter can be logged in.

More than one transmitter can be registered in the receiver, but only one transmitter can be logged in at a time.

8.2 Relay functions

The receiver is set to momentary relay function by default. The relay remains active while a button is pressed on the transmitter. When the button is released the relay deactivates. Setting a relay to latching means that the relay becomes active when a button is pressed and remains active until the button is pressed again.

CHAPTER 9: CONFIGURATION MENU

All configuration settings require access to the receiver circuit board(s).

> **RISK OF ELECTRIC SHOCK**
> **The receiver must only be opened by qualified installers or authorized personnel.**
> **Make sure the power supply is switched off before opening the receiver. Failure to follow these instructions could result in death, serious injury, or equipment damage.**

1. Remove the front cover of the receiver. Use a screwdriver to remove the screws.
2. Power the receiver up.
3. The power LED lights (yellow).
4. Proceed with the configuration instructions of your choice.

9.1 Menu mode

The different menus are identified by function LEDs 1–5 (see"6.1 Base board ").

To select the different menus, press the **Function** button a predefined number of times according to the following table. Press the **Select** button to enter.

●: LED is lit. ○: LED is off.

Menu	To select the menu, press the Function button…	Function LEDs light				
		LED 1 (red)	LED 2 (yellow)	LED 3 (green)	LED 4 (orange)	LED 5 (red)
Register/ erase transmitters	once	●	○	○	○	○
Show settings	2 times	○	●	○	○	○
Not used	–	○	○	●	○	○
Show/ change **Operating mode***	4 times	○	○	○	●	○
Show/Change latching/ momentary functions	5 times	○	○	○	○	●

9.2 Register a transmitter

> ⚠ **RISK OF UNINTENDED EQUIPMENT OPERATION**
> **Only transmitters that are intended for use should be registered in the receiver.**
> **Failure to follow these instructions could result in death, serious injury, or equipment damage.**

> ⚠ **RISK OF UNINTENDED EQUIPMENT OPERATION**
> **Do not perform this action when the receiver is in a session with another transmitter. The radio communication may be interrupted or broken.**
> **Failure to follow these instructions could result in death, serious injury, or equipment damage.**

NOTE: For the registration procedure to be successful, the receiver must be powered up.

1. Set the transmitter in registration mode (see relevant transmitter installation instructions).

2. Press the **Function** button.
   Function LED 1 flashes (red). Red lit relay LEDs 1–7 show the number of transmitters already registered in the receiver[1].

3. Press the **Select** button.
   All relay LEDs light red. The receiver will remain in registration mode for 1 minute.
   Once the receiver has found the transmitter, Function LED 1 and all the receiver relay LEDs will flash.

4. Press the **Select** button again.
   Function LEDs 1–7 flash 3 times (multicolor). All relay LEDs go off. All function LEDs light for approximately 1 second.
   The transmitter is now registered in the receiver.
   The transmitter turns off.

If not successfully completed, the top LED lights red and the buzzer emits a beep. The transmitter turns off. Go back to step 1 and try again.

---

[1]Example: relay LED 1 = 1 registered transmitter, relay LED 2 = 2 registered transmittes, etc.

9.3 Show settings

1. Press the receiver **Function** button twice.
   Function LED 2 lights (yellow).

2. Press the **Select** button.
   Function LED 2 flashes (yellow). Relay LEDs 1–7 indicate the current settings according to the following table:

Relay LED	Color	Off	On	Indicates
Relay LED 1	red	○		Frequency scan off (fixed frequency)
			●	Frequency scanning on
Relay LED 2	red	○		Standard xApp
			●	Non standard xApp
Relay LED 3	red	○		Configuration ID not enabled
			●	Configuration ID enabled
Relay LED 4	red	○		Default settings in safety CPUs (conform with SIL3)
			●	Non-default settings in safety CPUs (not conform with SIL3)
Relay LED 5	red	○		Enabled for changes via SM
			●	Locked for changes via SM
Relay LED 6	red	○		Software has been officially released
			●	Preliminary software

After approximately 10 seconds, the receiver will automatically exit "Show Settings" mode and return to normal operation.

9.4   Operating modes

NOTE: **Operating modes** 0 and 255 are reserved for specific customer applications. Contact your representative for assistance.

Operating modes are designed for the base board and the relay expansion board only. The **Operating mode** is indicated by the relay LEDs 1–7.

NOTE: The following **Operating modes** are the same for both R10 and R4 models but some are more suitable for models with more relays than R10-01 and R10-02.

9.4.1 SELECT AN OPERATING MODE

⚠ **RISK OF UNINTENDED EQUIPMENT OPERATION**
Do not perform this action when the receiver is in a session with another transmitter. The radio communication may be interrupted or broken. Failure to follow these instructions could result in death, serious injury, or equipment damage.

⚠ **Ensure that the stop relays are deactivated before proceeding with the following instructions; LED SR/ LED 9 must be Off.**

1. Press the **Function** button 4 times.
   Function LED 4 flashes fast (orange). Relay LEDs 1–7 indicate the selected **Operating mode** *according to the following table.*

Relay LED 1	Relay LED 2	Relay LED 3	Relay LED 4	Relay LED 5	Relay LED 6	Relay LED 7	Operating mode
○	○	○	○	○	○	○	0[1]
●	○	○	○	○	○	○	1 (default)
○	●	○	○	○	○	○	2
●	●	○	○	○	○	○	3
○	○	●	○	○	○	○	4

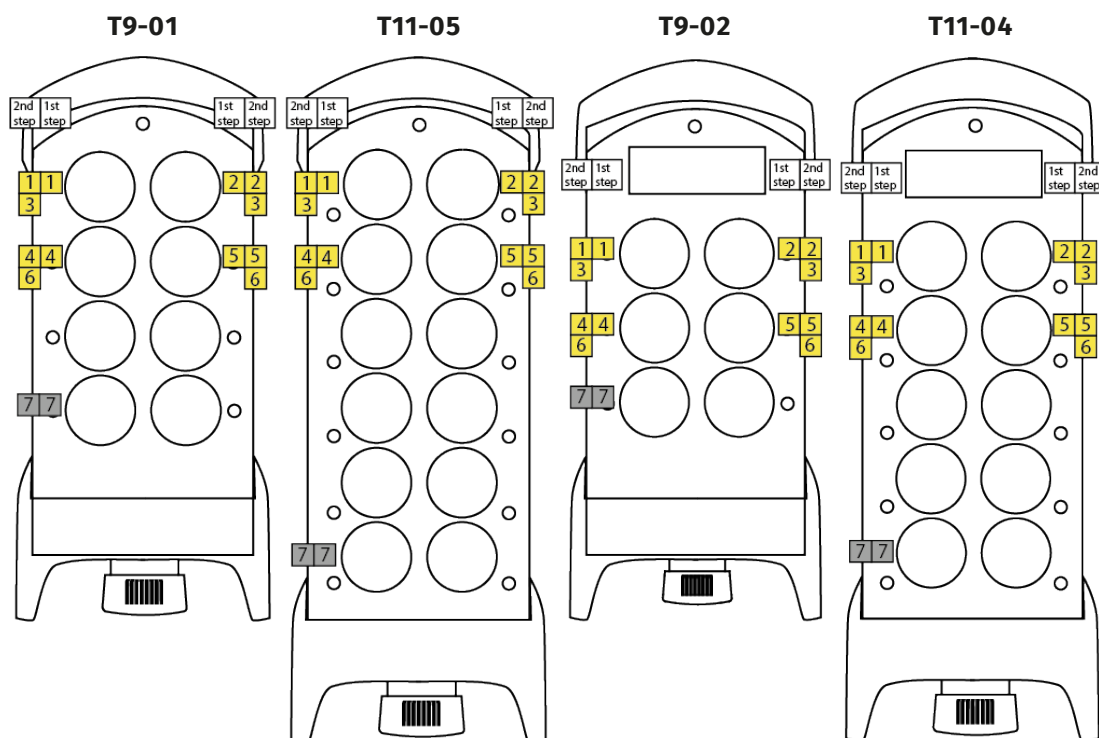[1]Operating mode reserved for specific customer applications. Contact your representative for assistance.

Relay LED 1	Relay LED 2	Relay LED 3	Relay LED 4	Relay LED 5	Relay LED 6	Relay LED 7	Operating mode
●	○	●	○	○	○	○	5
○	●	●	○	○	○	○	6
●	●	●	○	○	○	○	7
●	●	●	●	●	●	●	255[1]

2. Press the **Select** button to enter setting mode.
   Function LED 4 flashes slow (orange).

3. Press the **Function** button once to move to the next **Operating mode** (repeat until the LED combination corresponds to the desired **Operating mode**).

4. Press the **Select** button to confirm the new **Operating mode**.
   All function LEDs light briefly.
   The receiver returns to normal operation.

*Example: relay LED 2 is lit, which means **Operating mode** 2 is selected. Pressing the **Function** button once will change to **Operating mode** 3, LED 1+2 light. To go to Operating mode 4, press the **Function** button one more time, LED 1+2 go off and LED 3 lights.*

---

[1]Operating mode reserved for specific customer applications only. Contact your representative for assistance.
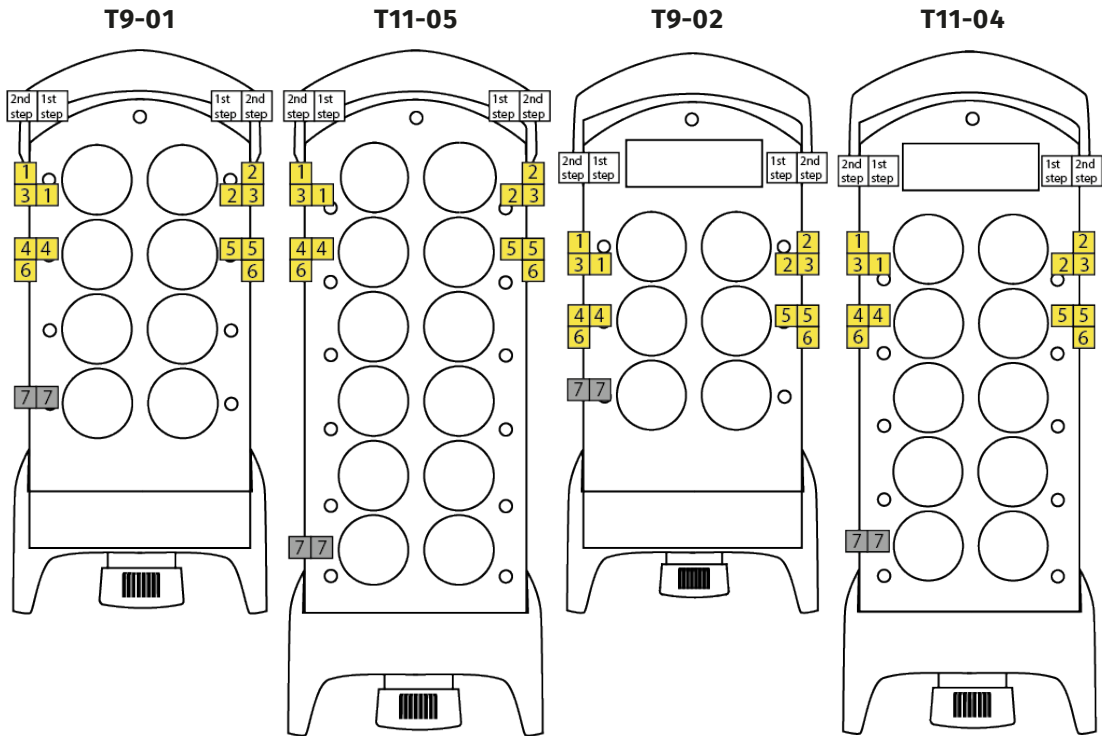
9.4.2 OPERATING MODE 1

2	Relay number on the receiver
	Button functions
	Direction functions

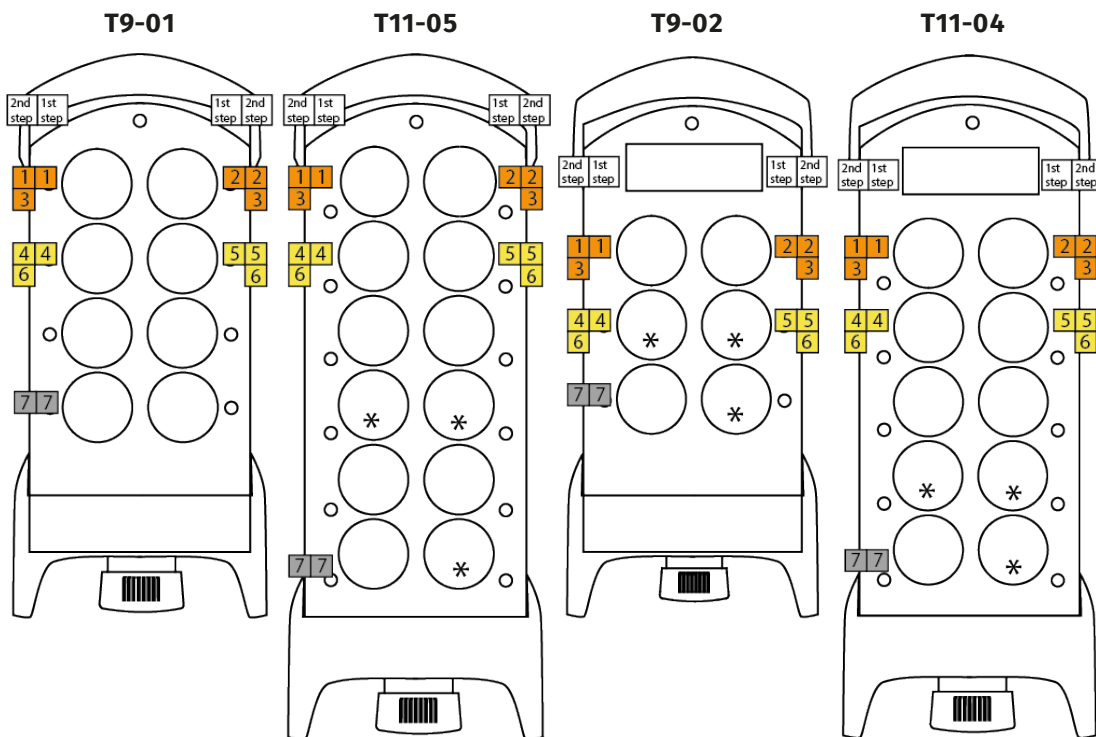| Transistor output (buzzer)	Transistor output activates together with relay 7
Load select relays	–
Programmable relay functions	Relay 7 can be set to latching
Interlocking	Button transmitters – interlocking between direction functions horizontally aligned
Zero position check	Active for all functions

9.4.3 OPERATING MODE 2

2	Relay number on the receiver
	Button functions
	Direction functions

Transistor output (buzzer)	Transistor output activates together with relay 7
Load select relays	–
Programmable relay functions	Relay 7 can be set to latching
Interlocking	Button transmitters – interlocking between direction functions horizontally aligned
Zero position check	Active for all functions

9.4.4 OPERATING MODE 3

NOTE: This Operating mode supports **Load select mode**. See transmitter installation instructions for available **Load select modes**.
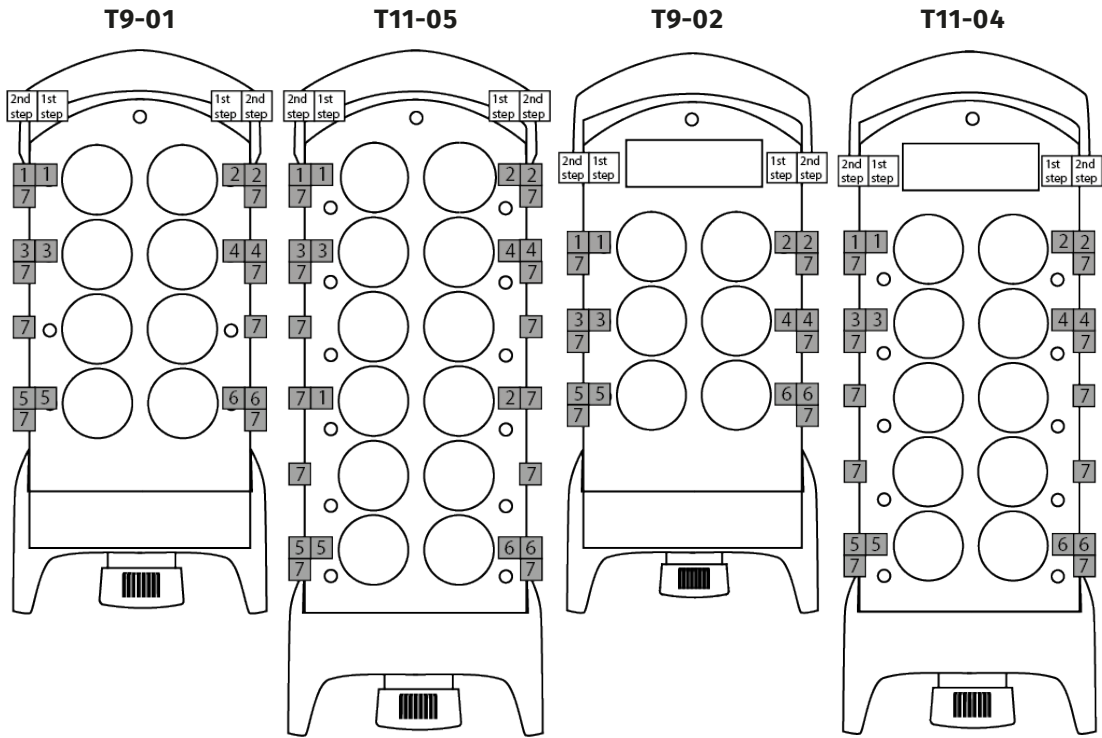

2	Relay number on the receiver
(grey)	Button functions
(yellow)	Direction functions
(orange)	Load select A + direction functions
*	Depending on the Load select mode selected on the transmitter

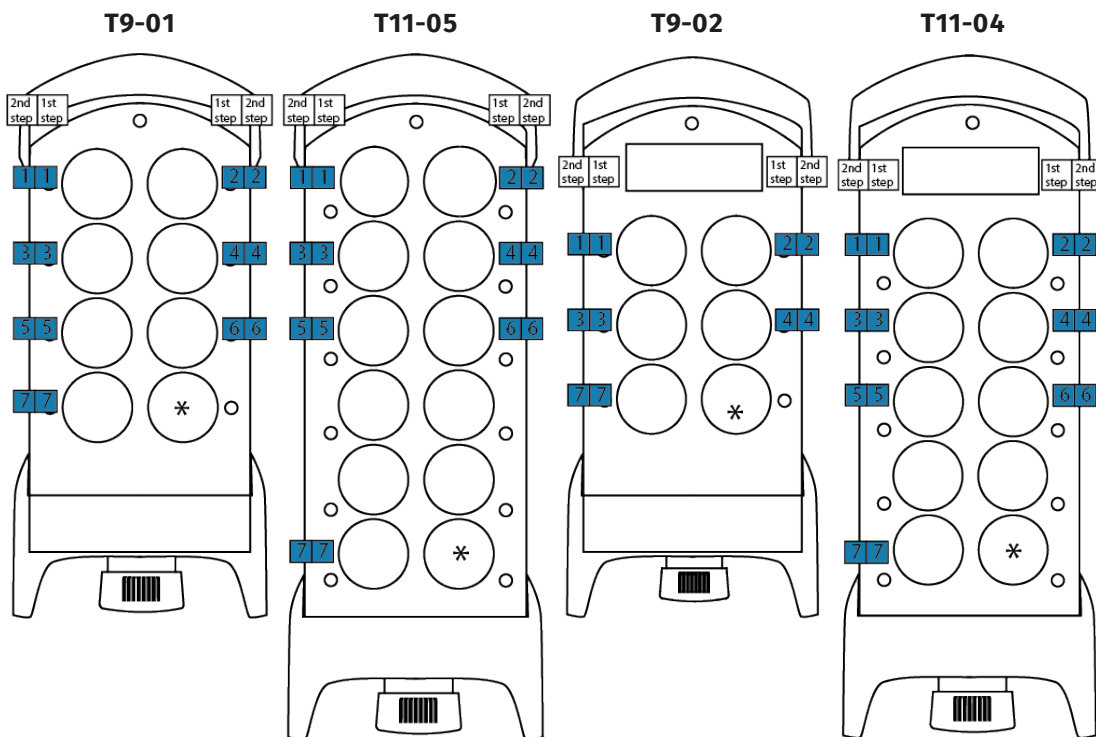| Transistor output (buzzer)	Transistor output activates together with relay 7
Load select relays	–
Programmable relay functions	Relay 7 can be set to latching
Interlocking	Button transmitters – interlocking between direction functions horizontally aligned
Zero position check	Active for all functions

9.4.5 OPERATING MODE 4

2   Relay number on the receiver

          Button functions

Transistor output (buzzer)	–
Load select relays	–
Programmable relay functions	Relay 1–7 can be set to latching
Interlocking	–
Zero position check	Active for all functions

9.4.6 OPERATING MODE 5

NOTE: This Operating mode supports **Load select mode**. See transmitter installation instructions for available **Load select modes**.
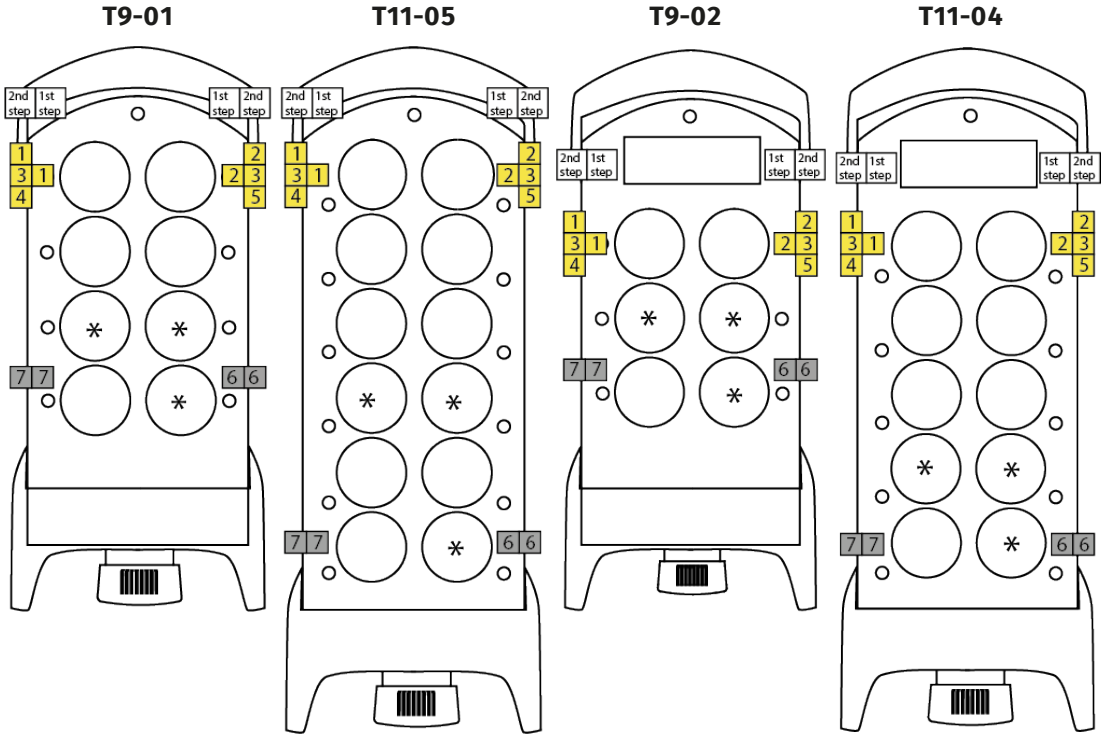

T9-01 **T11-05** **T9-02** **T11-04**

Button function – Load select A

*   Depending on the Load select mode selected on the transmitter

Transistor output (buzzer)	–
Load select relays	–
Programmable relay functions	Relay 1–7 can be set to latching
Interlocking	–
Zero position check	Active for all functions

9.4.7 OPERATING MODE 6

> NOTE: This Operating mode supports **Load select mode**. See transmitter
> installation instructions for available **Load select modes**.
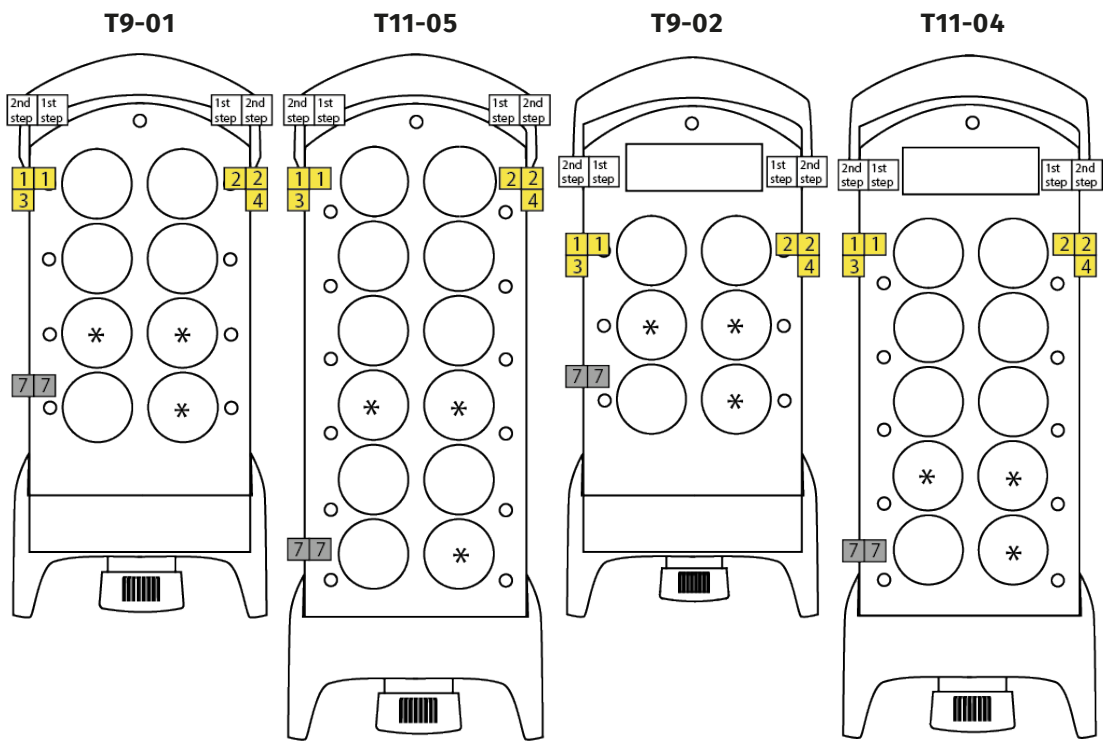

2	Relay number on the receiver
	Button functions
	Direction functions

*   Depending on the Load select mode selected on the transmitter

Transistor output (buzzer)	Transistor output activates together with relay 7
Load select relays	–
Programmable relay functions	Relay 6–7 can be set to latching
Interlocking	Button transmitters – interlocking between direction functions horizontally aligned
Zero position check	Active for all functions

9.4.8 OPERATING MODE 7

> NOTE: This Operating mode supports **Load select mode**. See transmitter installation instructions for available **Load select modes**.

T9-01   **T11-05**   **T9-02**   **T11-04**

| 2 | Relay number on the receiver |

| | Button functions |

| | Direction functions |

*   Depending on the Load select mode selected on the transmitter

Transistor output (buzzer)	Transistor output activates together with relay 7
Load select relays	Load select A: relay 5 Load select B: relay 6
Programmable relay functions	Relay 7 can be set to latching
Interlocking	Button transmitters – interlocking between direction functions horizontally aligned
Zero position check	Active for all functions

9.5 Set momentary or latching relays functions

The setting options depend on the selected **Operating mode**. Relay functions can only be changed for relays assigned to a button function. Relays assigned to a direction function are not available for changes.

> NOTE: If Operating mode 0 has been selected, the menu "Show/change momentary/latching functions" will not be available. Contact your representative for assistance.

> ⚠ **RISK OF UNINTENDED EQUIPMENT OPERATION**
> **Do not perform this action when the receiver is in a session with another transmitter. The radio communication may be interrupted or broken. Failure to follow these instructions could result in death, serious injury, or equipment damage.**

> ⚠ **Ensure that the stop relays are deactivated before proceeding with the following instructions; LED SR/ LED 9 must be Off.**

1. Press the **Function** button five times.
   Function LED 5 flashes (red). Relay LEDs 1–7 indicate the current setting, momentary or latching, according to the following table.
   ●: LED is lit. ○: LED is off.

Relay LEDs	Relay functionality
●	Latching relay
○	Momentary relay

2. Press the **Select** button to enter the setting mode.
   Function LED 5 goes off. The LED for the first available relay to be changed flashes.[1]

3. Press the **Function** button to change the setting.
   Function LED 5 changes status.

4. Press the **Select** button to confirm and move to the next available relay.

5. Repeat steps 3–4 for all available relays.

---

[1]If the relay is momentary, Function LED 5 remains off. If the relay is latching, Function LED 5 lights (red).

After the last change, all function LEDs light briefly. The receiver returns to normal operation.

9.6 Log a transmitter out

NOTE: This logout option should be used when a lost or damaged transmitter must be logged out from the receiver.

NOTE: If a transmitter has been lost or seriously damaged, use the replace procedure on the transmitter whenever possible.

⚠️ **RISK OF UNINTENDED EQUIPMENT OPERATION**
Do not perform this action when the receiver is in a session with another transmitter. The radio communication may be interrupted or broken. Failure to follow these instructions could result in death, serious injury, or equipment damage.

⚠️ **Ensure that the stop relays are deactivated before proceeding with the following instructions; LED SR/ LED 9 must be Off.**

Function LED1 (red) and 2 (yellow) are lit (one or more transmitter are registered in the receiver and one transmitter is logged in).

1. Press the **Select** button for approx. 5 seconds.
    Function LED 2 flashes fast (yellow).

2. Release the **Select** button.
    Function LED 2 goes off. All function LEDs light briefly.

The logged in transmitter has been logged out. The receiver returns to normal operation. Any registered transmitter can now log in.

9.7 Erase all registered transmitters

NOTE: An erased transmitter cannot be logged in to the receiver until it has been registered in the receiver again.

NOTE: If a transmitter has been lost or seriously damaged, use the replace procedure on the transmitter whenever possible.

IMPORTANT! The following instructions will erase all registered transmitter(s) from the receiver but the transmitter(s) can still have the receiver registered in. To insure that both the transmitter and the receiver have been erased from each other, use the erase procedure on the transmitter (see relevant transmitter installation instructions).

RISK OF UNINTENDED EQUIPMENT OPERATION
Do not perform this action when the receiver is in a session with another transmitter. The radio communication may be interrupted or broken. Failure to follow these instructions could result in death, serious injury, or equipment damage.

Ensure that the stop relays are deactivated before proceeding with the following instructions; LED SR/ LED 9 must be Off.

Function LED 1 should be lit (one or more transmitters are registered in the receiver).

1. Press the **Function** button once.
   Function LED 1 flashes fast (red). Relay LEDs 1–7 light to indicate the location number of the registered transmitters.

2. Press and hold the **Select** button for 10 s or until all function LEDs light briefly.
   Function LED 1 flashes slow (red). Relay LEDs 1–7 light (red).

3. Release the **Select** button.
   Relay LEDs 1–7 go off. All function LEDs light briefly.
   All registered transmitters have been erased. The receiver returns to normal operation.

9.8 Master reset of the receiver

This procedure will erase all settings and all relay mapping from the receiver and restore factory defaults. This is not recommended if the receiver's TRS files are missing or when there is no programming possibilities.

> ⚠ **RISK OF UNINTENDED EQUIPMENT OPERATION**
> **Do not perform this action when the receiver is in a session with another transmitter. The radio communication may be interrupted or broken. Failure to follow these instructions could result in death, serious injury, or equipment damage.**

> ⚠ **Ensure that the stop relays are deactivated before proceeding with the following instructions; LED SR/ LED 9 must be Off.**

1. Press both the **Select** and the **Function** buttons for approx. 20 s or until all function LEDs go off.

2. Release both buttons.
   All function LEDs light. All relay LEDs flash fast.

3. Press the **Select** button.
   All function LEDs and relay LEDs go off. All function LEDs light briefly. The receiver has been reset. The receiver returns to normal operation.

CHAPTER 10: WARRANTY, SERVICE, REPAIRS, AND MAINTENANCE

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

The following are **not** covered by the 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 performed by qualified personnel

Only use spare parts from Tele Radio AB

Contact your representative for service or any other assistance

Keep the product in a clean, dry place

Keep contacts and antennas clean

Wipe off dust using a slightly damp, clean cloth

NOTE: Never use cleaning solutions or high-pressure washer.

CHAPTER 11: REGULATORY INFORMATION

NOTE: Models including additional naming conventions:

Model	Article names	Additional naming conventions
R10	R10-01	R00010-01, R10-1, TG-R10-1, TG-R10-01
	R10-02	R00010-02, R10-2, TG-R10-2, TG-R10-02

11.1 Europe

Applies to:

- **R10-01, R10-02**

11.1.1 CE MARKING

Hereby, Tele Radio AB, declares that the radio equipment type(s) listed above is/are in compliance with the Radio Equipment Directive 2014/53/EU.

The latest version of the complete EU Declaration of Conformity is available on the Tele Radio AB website, www.tele-radio.com.

11.1.2 WEEE DIRECTIVE

This symbol means that inoperative electrical and electronic products must not be mixed with household waste. The European Union has implemented a collection and recycling system for which producers are responsible. For proper treatment, recovery and recycling, please take this product to a designated collection point.

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.

11.2 AEC

Applies to:

- **R10-01, R10-02**

11.2.1 AEC STATEMENT (ДЕКЛАРАЦИЯ ЕАС)

This product is declared as compliant within Eurasian Economic Union (EAC). EAC declaration is available on request.

ANNEX A: GLOSSARY

DC

Diagnostic Coverage

FIT

Failures in time (1 FIT = 1 failure per 10^9 hours)

HFT

Hardware Fault Tolerance

MTTF

Mean Time To Failure

PFH

Probability of Failure per Hour

PL

Performance level

SFF

Safety Failure Fraction

SIL

Safety Integrity Level

ANNEX B: INDEX

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safe   smart   strong
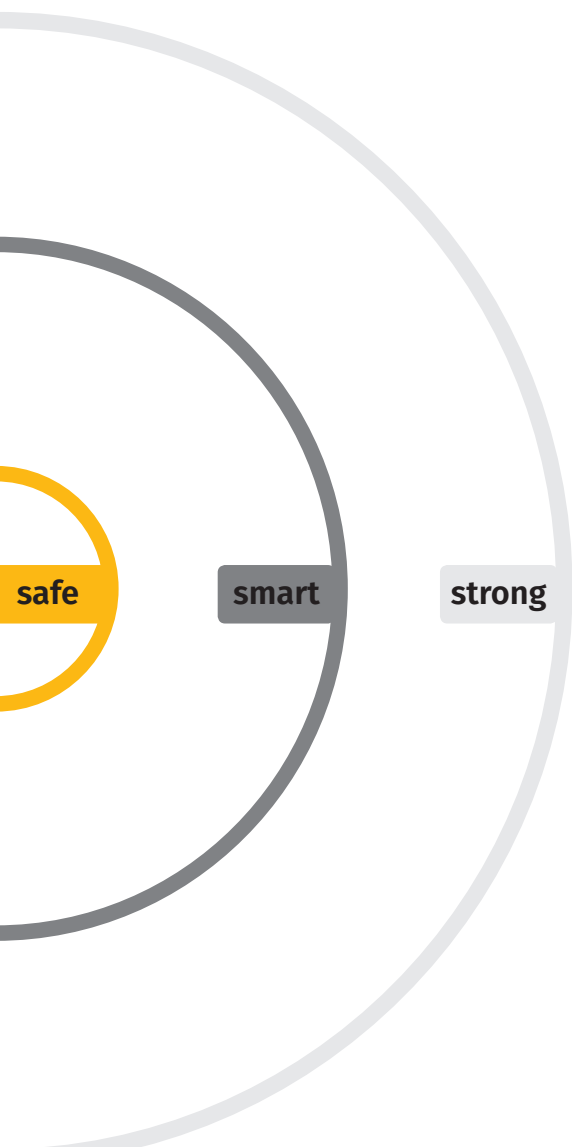
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wireless solutions