TARSO

Industrial remote controls

User's manual

TR800 series

Index

Safety warning

This user manual is given for safety reasons and the necessary information for the right use, installation and maintenance of the product.

The installer will be responsible of keeping all the safety rules and maintenance, and of having the necessary training to handle the equipment. Please, notice the symbols above and their respective explanations, as they will be used throughout this manual to identify the safety instructions.

Danger
This symbol warns you of an imminent danger. The fact of not following the instructions could cause serious injuries

Caution
This symbol advises you of a potentially dangerous situation. The fact of not following the instructions could cause slight/moderate injuries and material damages.

Advise
This symbol indicates useful information and advices in order to do the work easier. These advices do not affect safety.
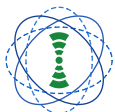
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1. Product description

Industrial and versatile

The series TARSO TR800 (Nova, Falcon, Titan or Zenit) is made up of a receiver and a remote control that will allow you to control via radio any device or machinery that needs to be controlled by an electrical signal. The TR800 has been designed and tested to be used in the automotive sector.

Multifrequency smart system

The TR800 receiver and transmitter have an advanced multifrequency smart system of communication via radio, as the frequency changes automatically avoiding interferences in simultaneous transmissions of several equipment working at the same time and place. If the remote wouldn't be able to find the optimal frequency automatically due to external interferences, the system changes the frequency each time the buttons are pressed.

Durable, waterproof and reliable

The TR800 has been developed and manufactured searching to obtain a waterproof resistant product, shockproof and resistant to other conditions that remotes are exposed in industrial environments. All the materials and its assembly have been carefully chosen to adapt to the industrial sector. It is for that reason that pieces have been produced in a plastic polymeter alloy that allow to have a great durability and hardness at the same time.

Secure

The multifrequency system is completed with a secure system of codification through which the signal is codified and encrypted by the transmitter and this transmission is captured, decoded and decrypted by the receiver. The system ensures on one hand that the remote activates only the receiver with which it is paired and on the other hand that the transmission is safe, as it would not be altered by any other radio system.

2. Technical specifications

Packing
1 x red or blue transmitter
1 x red or blue receiver
2 x AA batteries (already installed in the transmitter)
2 x fixing screws for the receiver
1 x user manual

Technical specifications of the transmitter
Dimensions: 108x60x27mm.
Weight (batteries included): 154 gr.
Stainless steel screws.
Operating temperature: -40° a +85°.
Power supply: 2 AA batteries.
Operation band: 2FSK.
Energy consumption: 0,4µA≈ (standby) y 20mA≈ (transmission).
Battery life: 150 hours (RF transmission).
Multifrequency system with automatic change.
Maximum operating distance: 100 meters.
Waterproof rating: IP67.
Mechanical impact protection rating: IK10.
Durability of the pushbuttons: 5 million cycles.
Screen-printed and protected rubber pushbuttons.
Protective cover against wear and tear.
Emergency stop acting directly on the receiver.
Radiofrequency transmission LED indicator.
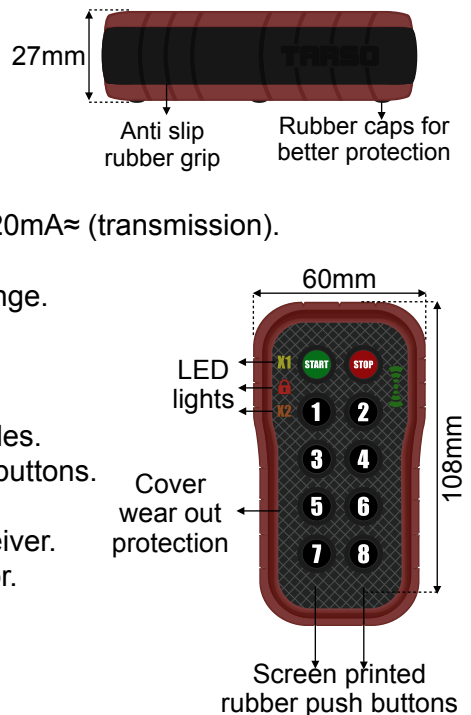Low battery LED indicator.
LED safety lock indicator.
Status confirmation indicated by LED.
Secure transmission encryption system.
Secure auto off after 4,5 minutes of inactivity.
Secure delayed switch on of 2 seconds.

27mm

Anti slip rubber grip

Rubber caps for better protection

60mm

108mm

LED lights

Cover wear out protection

Screen printed rubber push buttons

Technical specifications of the receiver

Number of functions	Dimensions	Weight
Up to 3 functions	112x85x48mm	280 gr
Up to 6 functions	142x85x48mm	350 gr
Up to 14 functions	204x85x48mm	615 gr

Stainless steel screws.
Operating temperature: -40º a +85º.
Power supply: 6VDC to 32VDC.
Standby consumption: 20mA≈ (12V) y 17mA≈ (24V).
Energy consumption of each output: 35mA (12V) y 20mA (24V)
Operation band: 2FSK.
Multifrequency system with automatic change.
General protection fuse: 10A.
Maximum working load at 12V: 10A.
Maximum working load at 24V: 7A.
Waterproof rating: IP67.
Mechanical impact protection rating: IK09.
Durability of the relays: 10 million cycles.
Internal security relay.
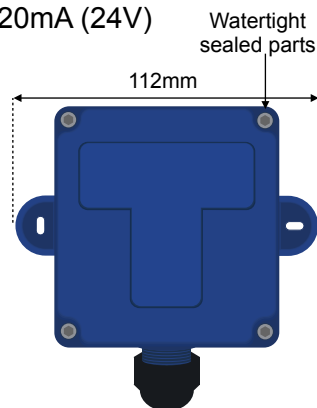Pairing button pushbutton (LINK).
Signal reception white LED indicator.
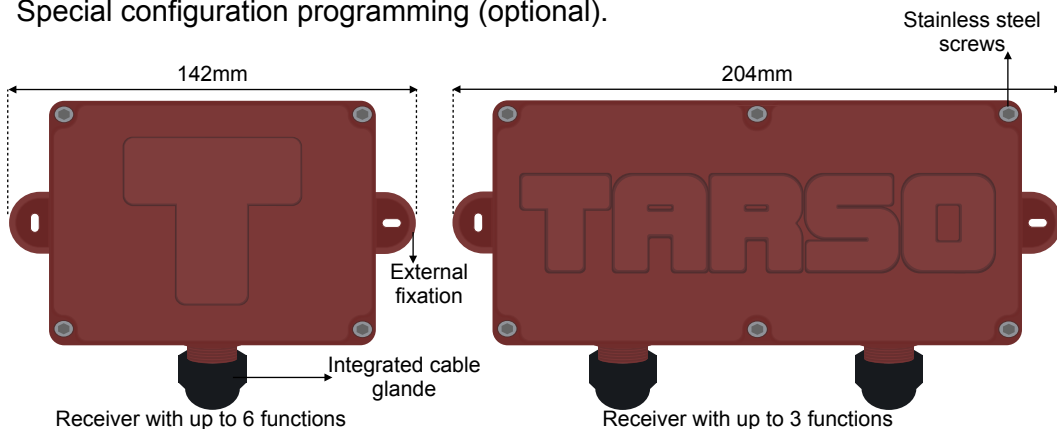Pairing and operations blue LED indicator.
Hose: power supply and signal outputs.
Standard wiring length: 1000mm.
Special configuration programming (optional).

Watertight sealed parts

112mm

Receiver with up to 3 functions

Stainless steel screws

142mm

204mm

External fixation

Integrated cable glande

Receiver with up to 6 functions

Receiver with up to 3 functions

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3. Operating description

3.1. The remote

Transmitter pushbuttons

The START pushbutton allows the user a secure start of the transmitter. It must be pressed during 2 seconds to unlock the function pushbuttons. In the remotes with function splitting, it also allows switching between X1 and X2 split function.

The STOP pushbutton allows an emergency stop and stop of any function with an instantaneous push. The STOP prevails over any other function, it transmits a stop signal to the receiver and turns off the remote. For safety reasons, the remote will transmit the stop signal to the receiver even if it is switched off.

The rest of keypad pushbuttons perform different functions. Each pushbutton will transmit a different signal to the receiver so that the receiver activates this signal in its wire output. For safety reasons, the simultaneous push has been blocked, except for those applications that require it.

Reset the transmitter

If any anomaly is found during the operating, the transmitter can be reset. In order to reset the remote, batteries must be removed during 5 seconds. If the red LED lights up fixed during 3 seconds when the batteries are inserted, the transmitter is indicating that there is an error in the radiofrequency system or that the batteries are not new. In order to avoid possible failures and operating errors, we always advise to replace both batteries (page 13).

Inherent safety of the transmitter

- The remote has a stop pushbutton that stops any operation activated by mistake. In the event of a malfunction, press the STOP button to stop any operation, then reset the transmitter. If the problem remains then we advice that you send transmitter and receiver to our headquarters.
- For safety reasons, after 4,5 minutes without using the transmitter, it will switch to a STOP state to avoid unintentional actions if you have forgotten to turn off the remote.

Doubling of functions X1 and X2

Doubling functions allows the user to activate 14 functions in the receiver with a remote of only 8 function pushbuttons. This function only applies for equipments of 10, 12 and 14 independent outputs.

X1 The first 8 outputs will be activated with pushbuttons from 1 to 8, this is stage X1.

X2 The remaining 6 outputs are doubled, they are stage X2. After doubling, pushbuttons 1 to 6 are used as follows: pushbutton 1 activates output 6, pushbutton 2 activates output 10, pushbutton 3 activates output 11, pushbutton 4 activates output 12, pushbutton 5 activates output 13 and pushbutton 6 activates output 14.

Changing between state X1 and X2:

While the transmitter is on, press the START pushbutton 2 seconds and it will alternate state X1 and X2. A short press will indicate the current status.

How to avoid possible interferences?

Interferences may be environmental or other radio signals. They can be avoided by releasing a pushbutton and pressing it again, so that the transmitter will automatically change its frequency range.

Transmitter light indicators

	Slow flashing	An operation is transmitting
	Quick flashing	The transmitter is switching on
	Fixed light	The transmitter is on. Confirmation
	Slow flashing	The transmitter is off
	Fixed light	The transmitter battery is empty
X1	Slow flashing	The transmitter is operating in X1 state
	Quick flashing	The transmitter is alternating X1-X2 states
X2	Slow flashing	The transmitter is operating in X2 state
	Quick flashing	The transmitter is alternating X1-X2 states

Remark: LEDs green and red light up simultaneously while START is pressed when the battery is low and the transmitter will stop working soon.

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3.2. The receiver

It works automatically, the user does not act on the receiver. When it is powered, the receiver goes into a "listening" state, waiting to receive a signal from the transmitter. The receiver can be supplied in 3 different sizes, depending on the number of functions. The hose contains the power supply and the outputs, each one controlled by an internal relay.

Reset the receiver

If there are malfunctions the receiver should be reset and the supplied power should be measured. In order to reset the receiver, the power supply must be removed for 10 seconds.

Inherent safety on the receiver

The operator must never act on the circuit. If he manipulates the receiver may suffer personal injury and damage. If any anomaly is found the receiver and transmitter must be reset.

3.3. Pairing LINK

Spare parts are sold with a different code different from the original one, so it is necessary to pair the spare part with the original transmitter/receiver. The pairing is not necessary if you buy a new kit of receiver and transmitter because it is already paired before shipment.

Pairing procedure

1. Remove the power supply and the screws with a Hex 2,5 wrench.
2. Supply power to receiver, for safety reasons after supplying power you will have 1 minute to pair; then this function will be disabled.
3. Press the black pushbutton on the receiver.
4. When the finger is lift, the blue LED will start flashing.
5. Wait for the blue LED to turn off.
6. Press the black pushbutton on the receiver again.
7. When the finger is lift, the white LED will start flashing.
8. Press the STOP pushbutton on the transmitter 3 times.
9. Wait for the white LED to turn off and the pairing will have finished.

Caution: the pairing process must done when there is no other transmitter operating nearby, as during the process the nearby transmitters could be paired too. It is necessary to guarantee that the batteries are new.

4. Installation manual

Safety warnings

- The installation will be carried out by qualified operator.
- Use insulating protective equipment (PPE).
- Carry out first start-up without load.
- Switch off the machine/vehicle during installation.
- It is recommended to power supply the equipment through a safety system as an emergency key.
- A wrong connection of the receiver outputs causes unexpected movements of the machine when activating the transmitter.
- The outputs of the receiver are positive voltage, a contact with ground would cause a short circuit.

Assembly procedure and first use

1. For safety before performing any operation, the operator must ensure that the power supply of the circuit, machinery or vehicle is disconnected to avoid human and/or material damage.
2. We recommend to screw the receiver with the wiring downwards, protected from direct exposure to water and mud. This will allow to lengthen the lifetime of the receiver and prevents possible malfunctions.
3. The receiver should be installed as far away as possible from a large metal ground and must not be screwed into a metal box, as this may provoke interferences and the working distance will decrease considerably. It is also recommended to install it away from engines as these caused electromagnetic fields.
4. Tables (p.10, 11, 12 and annexes) indicate which wire color is activated for each pushbutton on the transmitter. Depending on the equipment purchased, it can activate several wires at the same time.
5. If the receiver has 8 or more functions, it will have two wire outputs, otherwise it will have one. Outputs 9 to 14 are activated doubling (p.7).
6. Connect the outputs of the receiver   to the element to be controlled (circuit, solenoid valve, relay, motor, etc.).
7. Connect the power supply of the receiver (red/black).
8. Supply voltage to the receiver and operate from the transmitter.

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Relay / Push Button	Button 1	Button 2	Button 3	Button 4	Button 5	Button 6	Button 7	Button 8
Common	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘
Relay 1	⊘							
Relay 2		⊘						
Relay 3			⊘					
Relay 4				⊘				
Relay 5					⊘			
Relay 6						⊘		
Relay 7							⊘	
Relay 8								⊘
Relay 9	⊘							
Relay 10		⊘						
Relay 11			⊘					
Relay 12				⊘				
Relay 13					⊘			
Relay 14						⊘		

Receivers colour outputs

Output 1: power supply + output cables 1

Output 2: output cables 2

Red cable from output 1: VCC

Black cable from output 1: Ground

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Ver. 2.1

NOVA-E

Push Button	Relay 1	Relay 2	Relay 3	Relay 4
Button 1	✓			
Button 2	⊘			
Button 3		✓		
Button 4		⊘		
Button 5			✓	
Button 6			⊘	
Button 7				✓
Button 8				⊘

FALCON Zepro

Push Button	Relay 1 Letter B	Relay 2 Letter C	Relay 3 Letter E
Button 1	✓		
Button 2	✓	✓	
Button 3			✓
Button 4		✓	✓

FALCON

Push Button	Relay 1 Letter R	Relay 2 Letter H	Relay 3 Letter D
Button 1	✓	✓	
Button 2		✓	✓

FALCON

Push Button	Relay 1 Letter H	Relay 2 Letter R	Relay 3 Letter D	Relay 4 Letter S	Relay 5 Letter O
Button 1	✓	⊘			
Button 2		⊘		✓	
Button 3	✓		✓		
Button 4				✓	✓

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FALCON

MBB / Anteo / BAR Dautel / Benalu

Push Button \ Relay	Relay 1 (brown)	Relay 2 (white)	Relay 3 (blue)	Relay 4 (yellow)
Button 1	✓			
Button 2		⊘		
Button 3			✓	
Button 4				✓

Receivers colour outputs

FALCON

Push Button \ Relay	Relay 1 (brown)	Relay 2 (white)	Relay 3 (blue)	Relay 4 (yellow)
Button 1	✓		✓	
Button 2	✓			✓
Button 3		⊘	✓	
Button 4		⊘		✓

Receivers colour outputs

FALCON

Push Button \ Relay	Relay 1 (brown)	Relay 2 (green)	Relay 3 (blue)	Relay 4 (yellow)	Relay 5 (grey)	Relay 6 (orange)
Button 1	✓				✓	
Button 2		✓				
Button 3			✓			
Button 4				✓		✓

Receivers colour outputs

5. Maintenance manual

Maintenance ensures a correct operation and guarantees a good external condition, extends the useful life of the equipment and decreases the number of repairs.

Replacing the AA batteries in the transmitter

The fixed transmitter lock LED (red) is switched on when the remote does not have battery enough to work.

The batteries will need to be replaced:

1. Remove the 6 screws under the rubber caps with a HEX 2.5 wrench.
2. Remove the rear cover and the inner circuit.
3. Remove the batteries, recycle them and use new AA alkaline batteries.
4. **WARNING**. First insert the circuit into the 3 small brackets of the rear casing, otherwise you could misplaced the circuit. Check that the batteries fit correctly and are separated by the central plastic line, if not the battery holders could bend.
5. Insert the assembly (rear cover + circuit) into the rubber. In this step it is important to pay attention that the edges of the rubber fit together correctly and do not bend over themselves, since if they bend the rubber will be damaged and the transmitter will cease to be hermetic.
6. Before tightening the screws and closing the transmitter completely, check that if a button is pressed any LED lights up. Retighten the 6 screws to hermetically seal the transmitter.
7. Insert the rubber caps for a better protection of the remote.

Physical appearance

If the transmitter/receiver is damaged externally (cracks or tears), do not continue using the product as it may cause electrical damage in the machine, in the electronics and repairing might not be possible.

Product cleaning

Remove dirt and grease from the outside of the transmitter/receiver. Do not use solvents or aggressive products, nor **high-pressure water** since it will deteriorate plastics and rubbers and the warranty will be voided.

Treatment of rubbers

In order to guarantee waterproof rating, you must maintain the rubbers of transmitter and receiver. Use silicone grease or petroleum jelly to restore their properties.

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6. Warranty

1. The products manufactured by Tarso-man S.L.U. which are intended to be integrated in the production process of the buyer or the final customer   will have a warranty period of **ONE YEAR** from the date of purchase.
2. Warranty exclusions:
    - Damage due to negligence, handling or misuse of the equipment by the user, as well as the repairs performed by unauthorized operator.
    - Breakdowns due to fortuitous causes, force majeure and incidents outside the equipment.
    - Faults due to incorrect installation without following the specifications, lack of maintenance, application of chemicals products and accumulation of waste and water.
    - Incorrect receiver location.
    - Wear or deterioration due to normal use of the equipment, either for aesthetic or mechanical damage such as pushbuttons, relays and rubbers.
    - The equipment that has undergone physical changes and these alter their technical characteristics.
    - The installation and use of equipment that does not meet the technical specifications detailed in this document.
    - Compensation for the costs and damages arising from the handling, assembly and disassembly of equipment.
    - The losses caused by lost profits.
    - Expenses incurred by the warranty claim.
3. The service of installation, repair, labor costs or maintenance shall be borne exclusively by the purchaser.
4. The warranty only covers defects in materials and labor force necessary to deliver in operating conditions the product sold by Tarso-man S.L.U.
5. Shipping costs for the return and replacement of defective products will be charged to the buyer; shipping costs will not be paid back.

6. Declaration of conformity

$$C\,E$$

The manufacturer: Tarso-man S.L.U.

Address: Polígono Industrial Fuente del Rey,
Carretera Isla Menor, Km 0,200, Nave F
41703 Dos Hermanas, Sevilla (España)

As manufacturer and legal entity issuing this declaration of conformity, declares that the Tarso TR800 (Nova, Falcon, Titan y Zenit) wireless remote and receiver with serial number:

TR8

It conforms to the essential requirements set out in harmonization legislation and harmonised standards:
- Electromagnetic Compatibility Directive 2014/53/UE (RED)
  - ETSI EN 301 489-1 Ver. 2.1.1.
  - ETSI EN 301 489-3 Ver. 2.1.1.
- Radio Frequency Directive 2014/53/UE (RED)
  - EN 300 220-1 Ver. 3.1.1.
  - EN 300 220-2 Ver. 3.1.1.
- Human Exposure to Radio Frequency EN 62479:2011
- Electrical Safety UNE-EN 62368-1: 2014 + AC:2017-03 + A11:2017
- Electromagnetic Compatibility 10.5: UN regulation 10 revision 5 + Am 1
- IP Degrees of Protection of Enclosures UNE-EN 60529:2018
- IK Degrees of Protection of Enclosures UNE-EN 50102:1996

Francisco F. Mayoralas
The assembly staff   CEO

TARSO

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