



ROGER FOTOCELLULE

R90/F4ES - G90/F4ES

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1 Introduction to the instructions and warnings

This manual is intended only for qualified technical installation personnel.

No information contained herein may be considered of interest to the end user.

This manual refers to synchronizable photocells R90/F4ES and G90/F4ES and should not be used for other products.



WARNING

Read the instructions carefully before installing.

The installation must be performed only by qualified technical personnel in accordance with relevant legislation. Perform connections with cables that are adequate to the current and voltage requirements and comply with the product specifications.

In order not to affect their proper functioning, the photocells must be properly aligned without using reflections and must not interfere with other photocells, whether they be of the same or of different types. It is possible in fact, to encounter interference between pairs of not-synchronized photocells, including more than four pairs of synchronized photocells or other devices that emit infrared light. Take all the necessary precautions in order to eliminate this problem.

To understand the issues related to reflection and interference between unsynchronized pairs see **figure 2**.

CAUTION: If the installation requires a distance between TX and RX of less than 2.5 meters, then the TX and RX lenses must be removed: otherwise their proper functioning cannot be guaranteed. Whatever the case, the minimum distance allowed is 80 centimetres.

WARNING: It is essential to change the configuration of the jumpers when in the absence of voltage since they are only read upon ignition and to prevent damage to components.

ATTENTION: in case of AC power supply, connect all TX and RX with the same polarity.

2 Product description

The synchronized photocells versions **R90/F4ES** and **G90/F4ES** are presence detectors that use infrared technology, which allow for the detection of obstacles in the optical axis between the transmitter and receiver photocells, they can be used for automatic entrances, for courtesy services and monitoring passageways.

Synchronization allows you to connect up to 4 pairs of photocells without worrying that they may interfere with each other. Synchronization is accomplished through an additional wire that connects all the photocells transmitters and receivers.

Synchronization is achieved with a photocell TX, called MASTER, and is transmitted to the receiver coupled to it and to all the other pairs of photocells available (called SLAVE).

For these instructions, the transmitter photocell is called TX photocell, the receiver photocell is called the RX photocell, while one or more pairs of photocells (always composed of an RX and a TX photocell) will be referred to as photocells.

These photocells are intended for installation on mounting surfaces that are flat and parallel to each other, which enable proper centring between the TX and the RX photocells.

Available versions:

- **R90/F4ES**
- **G90/F4ES**

3 Technical Specifications of the Product

TECHNOLOGY	Active infrared, with modulated transmission controlled by a microcontroller
POWER SUPPLY	24Vac 50Hz, 24Vdc
CURRENT CONSUMPTION	TX=18mA, RX=27mA
WAVELENGTH INFRARED EMISSION	950 nm
ANGLE OF DIODE EMISSION	<17°
OPERATIONAL DISTANCE	Standard 10m, option 15m (cutting bridge E from the RX photocell, see figure 10). Minimum operational distance of 0.8m
OUTPUT CONTACT	Double relay with series connections (double safe), normally closed output, 30Vmax 0,5Amax with resistive load
TYPE OF SYNC	digital, wired
RELAY INTERVENTION TIME	<32ms
RELAY RELEASE TIME	<120ms
OPERATIONAL TEMPERATURE	-20°C ... +55°C
PROTECTION RATING	IP 55
PRODUCT DIMENSIONS	R90/F4ES size in mm. 62 x 88 x 27 Weight: 90g G90/F4ES size in mm. 75 x 77 x 29.2 Weight: 141g

4 Terminals and signalling

Terminals for photocell TX (see **figure 1**):

- 1 positive supply 24Vdc, phase A supply 24Vac
- 2 negative supply 24Vdc, phase B supply 24Vac
- 3 **SYNC**, synchronism

LED for photocell TX signalling (see **figure 1**):

- L1** turned on when supply voltage is present, if it is off, this means that the power supply is missing or incorrectly connected

Terminals for photocell RX (see **figure 1**):

- 1 positive supply 24Vdc, phase A supply 24Vac
- 2 negative supply 24Vdc, phase B supply 24Vac
- 3,4 **OUT**, OUTPUT normally closed contact with functioning photocells and without the presence of obstacles between TX and RX
- 5 **SYNC**, synchronism

LED for photocell RX signalling (see **figure 1**):

- L2** normally off; in "alignment" mode it indicates the intensity of the received signal by varying the frequency of flashing
- L3** indicates the status of the output contact **OUT**, it is normally turned on (contact closed), it turns off when there is an obstacle between the photocells (contact open)

5 Installation

CAUTION: Before proceeding with the installation of the photocells, check the compatibility and technical specifications of the control devices to which they will be connected.

If the installation requires a distance between TX and RX that is greater than 10 meters, and up to 15 metres, then the bridge located in the back of the circuit will have to be cut (see **figure 10**). Be sure to execute this as precisely as possible without damaging the circuit.

CAUTION: If the installation requires a distance between TX and RX of less than 2.5 meters, then the TX and RX lenses must be removed: otherwise their proper functioning cannot be guaranteed.

The minimum distance allowed is 80 centimetres.

Remove the lenses carefully, so as not to damage the photodiodes or other components.

5.1 Mounting

Choose the location of the photocells.

Open the photocells, pull-out the electronic circuit cards (see **figure 6, 7**).

Attach the bottom of the shell.

WARNING: the TX and RX lower shells are different from each other, check the embossed writing on the back prior to fixing.

5.2 Wiring

WARNING: connect wires with the power turned off.

Arrange the cables: you will need 3 wires to connect the TX and a maximum of 5 wires to connect an RX (the number depends on how you connect the output of the photocell).

Connect the power supply while ensuring correct polarity. **ATTENTION:** even in case of AC power supply, connect all TX and RX with the same polarity.

Connect all photocells with the synchronization wire (**SYNC**).

If needed, connect the output terminals **OUT**.

Figure 8 depicts a typical set-up of 4 photocell pairs: 2 pairs mounted at different heights on the outside of the gate (PHOTO1 and PHOTO2) and 2 pairs mounted at different heights inside the gate (PHOTO3 and PHOTO4). Input **FT1** of the control unit is connected to the outputs of PHOTO1 and PHOTO2 connected in series. Input **FT2** of the control unit is connected to the outputs of PHOTO3 and PHOTO4 connected in series.

Figure 9 depicts a typical set-up of 2 photocell pairs (PHOTO1 and PHOTO2) a pair on the inside (FOTO1) and another outside the gate (FOTO2). Input **FT1** of the control unit is connected to the output of PHOTO1. Input **FT2** of the control unit is connected to the output of PHOTO2.

5.3 Configuration and alignment

Set-up a pair of photocells as MASTER (jumper **ID1** and **ID2**, see **figure 5**).

WARNING: there must always be a single MASTER pair. Configure the other pairs of photocells as SLAVE (jumper **ID1** and **ID2**, see **figure 5**), all SLAVE pairs must have a different configuration.

WARNING: It is essential to change the position of the jumpers when in the absence of voltage, since their configuration is only detected upon ignition.

CAUTION: When you set the alignment mode with the jumper **SET** (see **figure 4**) the output **OUT** becomes disabled, as its contact is always open. At the end of the alignment procedure, ensure that the jumper **SET** is in the normal operating position (see **figure 3**).

The alignment procedure is performed on one pair of photocells at a time while observing the flashing of LED **L2** (on RX, **figure 1**), which represents the intensity of the received signal: the flashing is faster if the signal is stronger, is slower if it is weaker.

To align the first pair of photocells (MASTER), proceed as follows:

- Set to alignment mode (jumper **SET** see **figure 4**) on the pair of MASTER photocells.
- Turn on the power.

- Move the photocell until you find the location where the flashing of LED **L2** is the fastest.
- Mount the photocell at the location where the signal is best, taking care to maintain that position.
- Cut the power.
- Move the jumper **SET** to the normal operation position on the TX and RX (see **figure 3**).

NOTE: under optimal alignment conditions it is possible that LED **L2** remains solidly lit.

If there are no SLAVE photocells, the procedure is over.

If there are SLAVE photocells present, temporarily configure the pair of MASTER photocells as you would configure any SLAVE (jumper **ID1** and **ID2**, see **figure 5**), it does not matter if there is another SLAVE with the same configuration. This is done so as not to interfere with the next photocells that need alignment.

- Set to alignment mode (jumper **SET**, see **figure 4**) on the first pair of SLAVE photocells.
- Turn on the power.
- Move the photocell until you find the location where the flashing of LED **L2** is the fastest.
- Mount the photocell at the location where the signal is best, taking care to maintain that position.
- Cut the power.
- Move the jumper **SET** to the normal operation position on the TX and RX (see **figure 3**).
- Repeat the procedure with all other pairs of SLAVE photocells.

Once all pairs of photocells are aligned:

- Return the first pair of photocells that had momentarily been configured as SLAVE to the MASTER configuration.
- Make sure the jumper **SET** of all photocells, TX and RX are all in the normal position (see **figure 3**).

5.4 Container Closure

To close the photocell containers proceed as follows:

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- Check that the seal (detail **A**, **figure 6**) is correctly inserted in the upper shell.
- Position the top shell and secure it using the two supplied screws.
- Insert the two caps to cover the screw holes (detail **B**, **figure 6**).

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- Place the gasket (O-ring, detail **C**, **figure 7** in the groove of the upper shell.
- Position the gasket (detail **D**, **figure 7**) and the upper shell and secure with the two supplied screws.
- Gently press the mask (detail **E**, **figure 7**) until it clicks.

6 Testing

Testing allows for the verification of the correct operation of the photocells and of possible interference caused by

other nearby devices that transmit infrared.
Activate the control device to which the photocells are connected.

With a cylindrical object with a diameter of about 50mm, interrupt the beam of infrared light several times right in the middle of the photocells. Repeat the same operation by positioning yourself near the TX photocell, and then near the RX photocell; perform the operation in all phases of operation of the control device.

If the control device correctly detects each interruption at all points, the test is successfully completed.

When installing two or more pairs of photocells, repeat the same procedure, taking care to check for any interference between them.

If when interrupting the beam between the photocells the output contact remains closed (does not switch) but the LED **L3** on the RX switches off too, this signifies that there could be a fault: check that the power supply is sufficient and that the output relays are functioning. If the problem persists, contact technical support.

7 Maintenance

Perform scheduled maintenance every 6 months and verifying the cleanliness and operation of all the photocells. If there is dirt, moisture, insects or anything else, clean the photocell and rerun the test procedure.

If presence of oxidation is detected on the printed circuit, evaluate its replacement.

8 Disposal

The product must always be uninstalled by qualified personnel using the appropriate procedures for the proper removal of the product.

This product is made of various types of materials, some may be recycled others must be disposed of in compliance with local recycling and disposal regulations as they pertain to this category of product.

The disposal of this product as household waste is prohibited. Carry out "separate collection" for disposal in accordance with the methods established by local regulations; or return the product to the retailer when buying an equivalent new product.

Local regulations may provide for heavy penalties for illegal disposal of this product.

Warning: some parts of the product may contain pollutant or hazardous substances, that if dispersed could cause harmful effects to the environment and to human health.



9 Declaration of conformity

The undersigned, representing the following manufacturer

Roger Technology

Via Botticelli 8

31021 Bonisiolo Mogliano V.to (TV)

DECLARES that the equipment described below:

Description: Photocell for automatic opening

Model: R90 and G90

Complies with the legal requirements of the following directives:

- 2004/108/EEC
- 2006/95/EEC
- 2011/65/EEC

And that all the standards and/or technical specifications listed below have been applied:

EN 61000-6-2; EN 61000-6-3

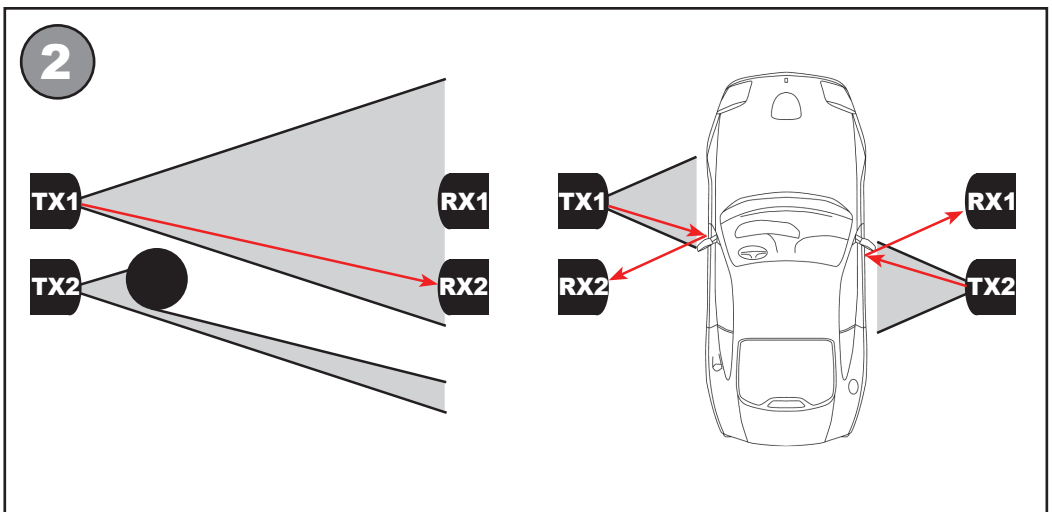
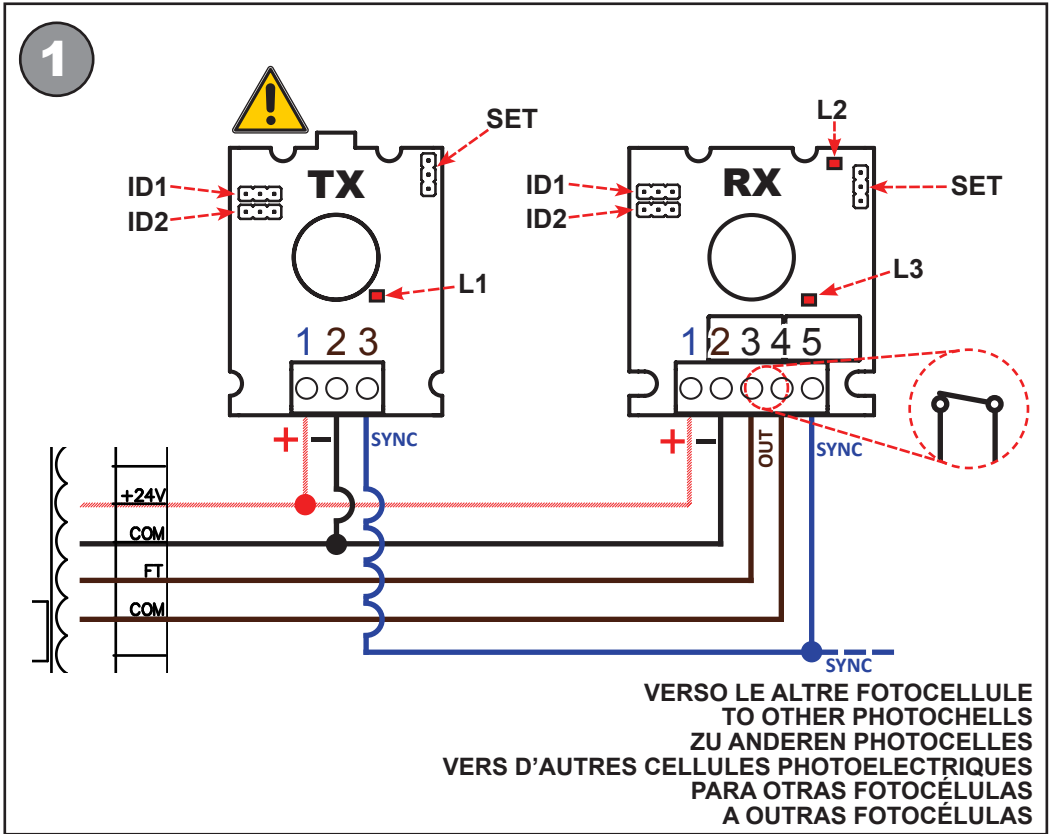
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Location: Mogliano V.to

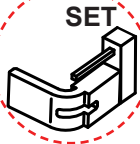
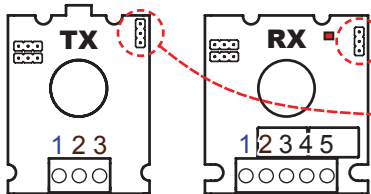
Date: 26-10-2014

Signature



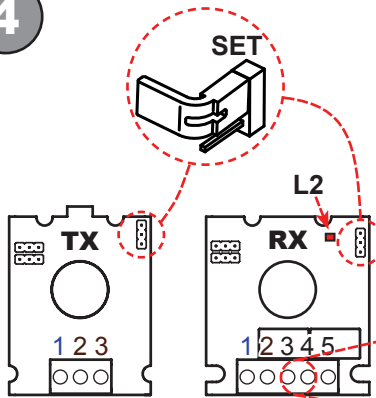


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MODALITA' NORMALE
NORMAL MODE
NORMAL-MODUS
MODALITE' NORMAL
MODALIDAD NORMAL
MODO NORMAL

4



MODO ALLINEAMENTO
L2 MOTRA IL LIVELLO DEL SEGNALE RICEVUTO

ALIGNMENT MODE
L2 SHOWS RECEIVED SIGNAL LEVEL

AUSRICHTUNGSMODUS
L2 ZEIGT DAS LEVEL DES EMPFANGENEN SIGNALS AN

MODE ALIGNEMENT
L2 MONTRE NIVEAU DU SIGNAL RECU

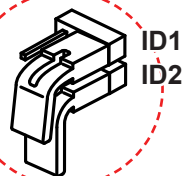
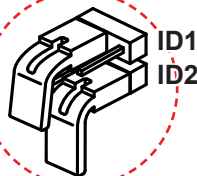
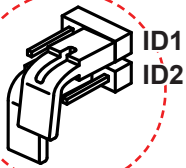
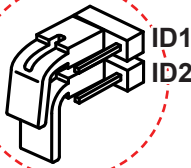
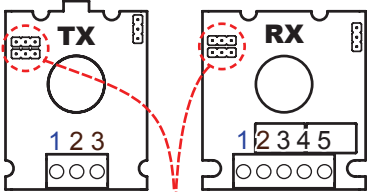
MODO ALINEACIÓN
L2 MUESTRA EL NIVEL DE SEÑAL RECIBIDA

MODO DE ALINHAMENTO
L2 MOSTRA O NIVEL DE SINAL RECEBIDO



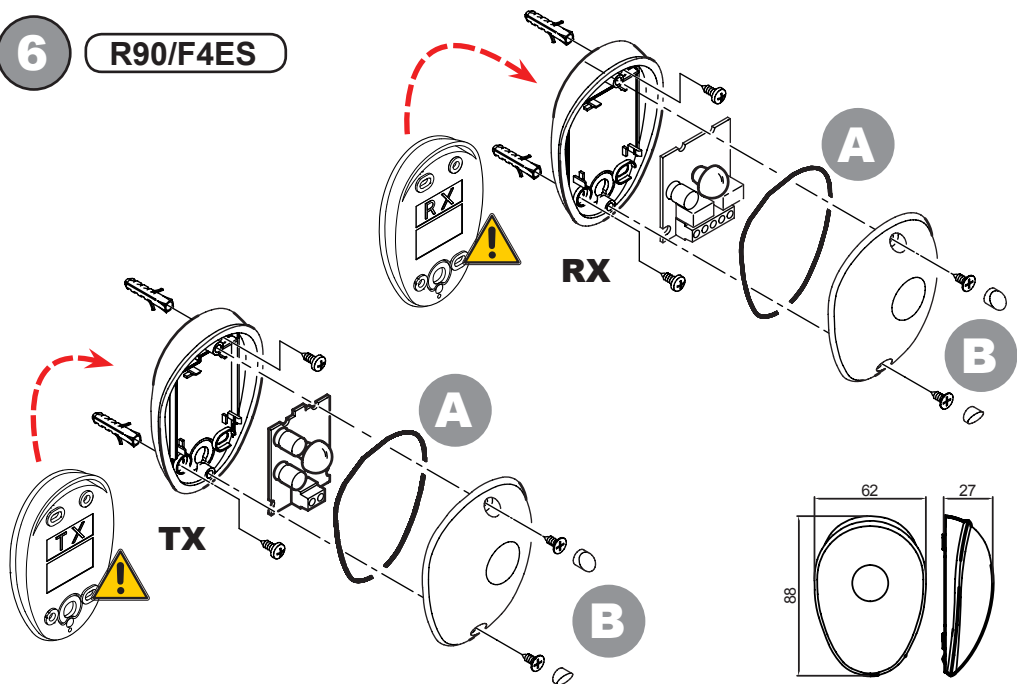
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NO OUTPUT
KEIN OUTPUT
PAS DE SORTIE
NO SALIDA
NENHUMA SAÍDA

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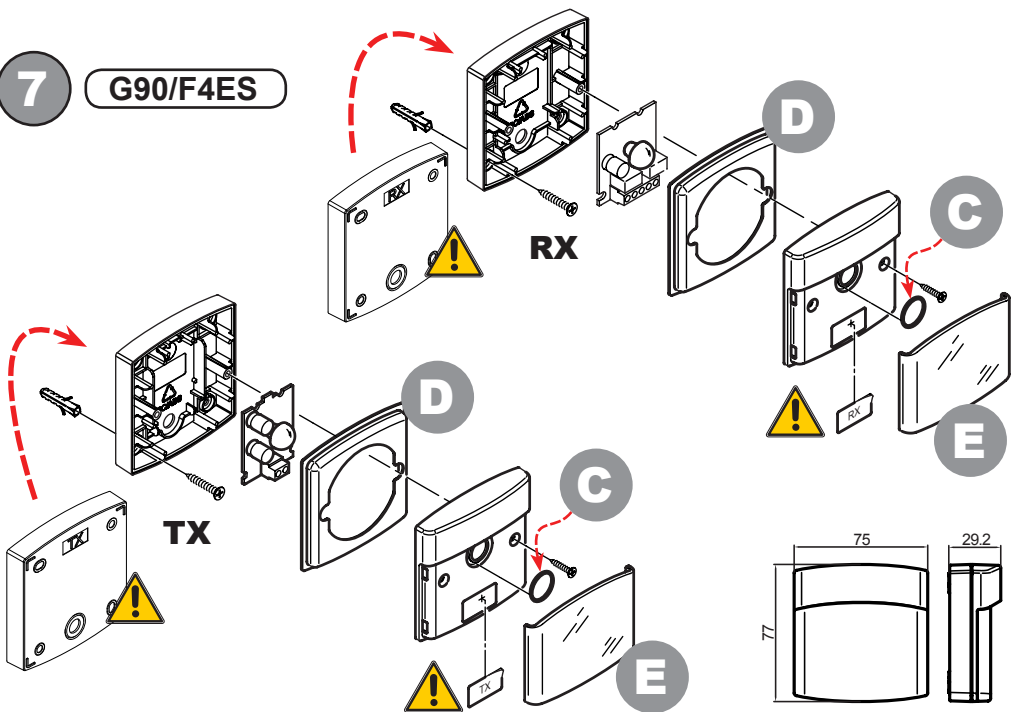
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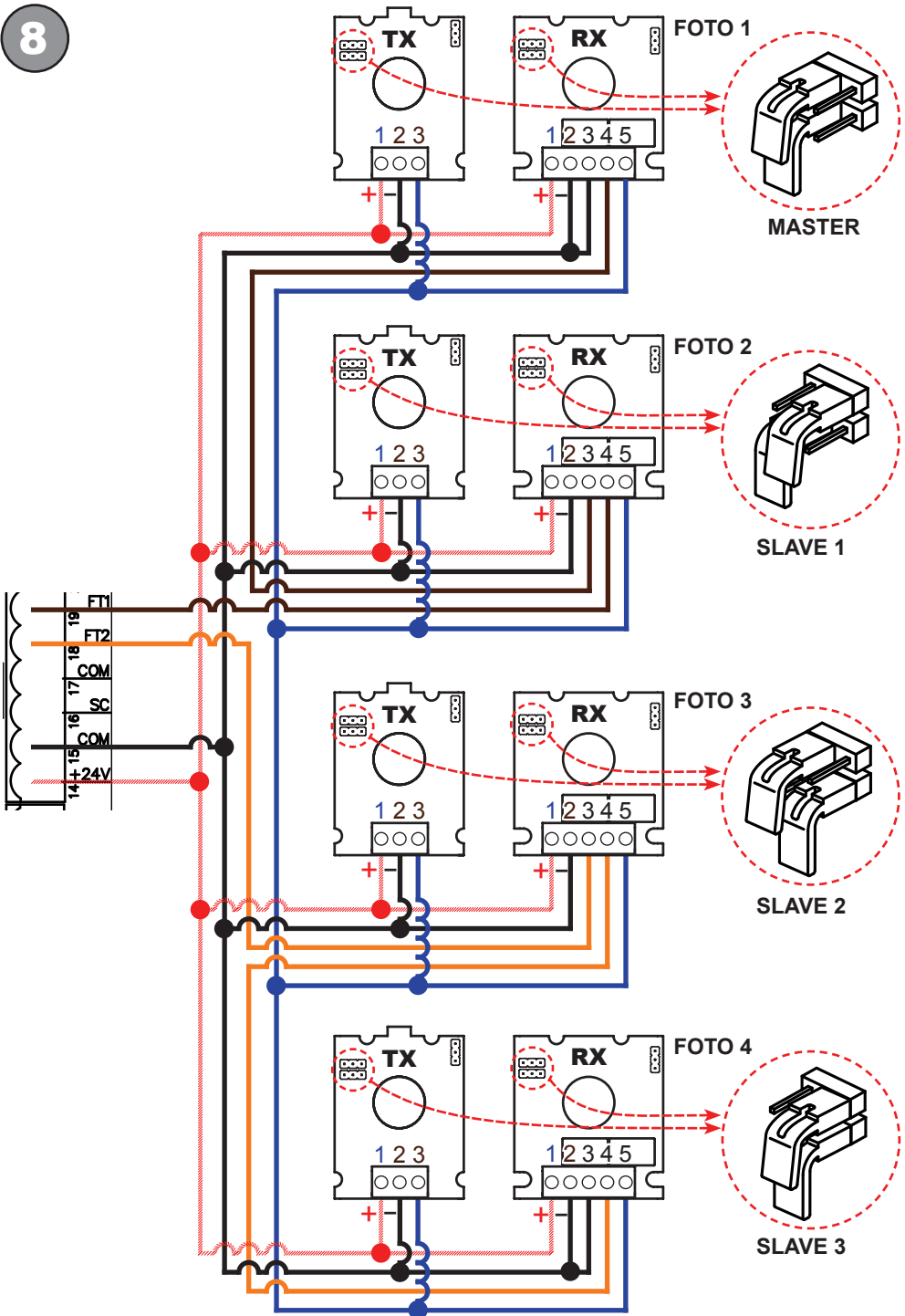
R90/F4ES



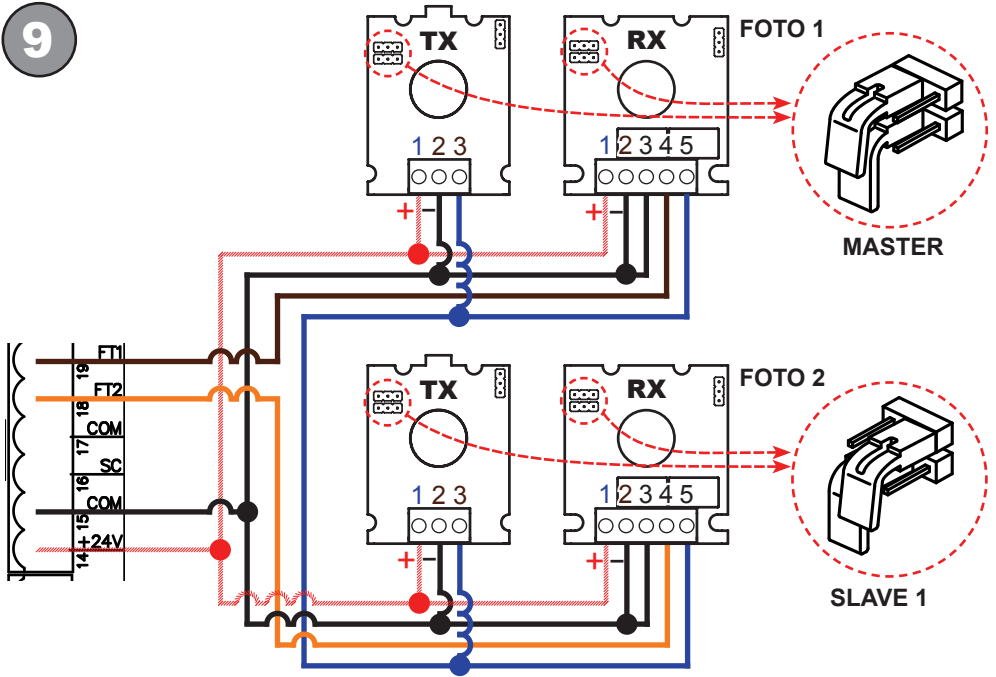
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G90/F4ES

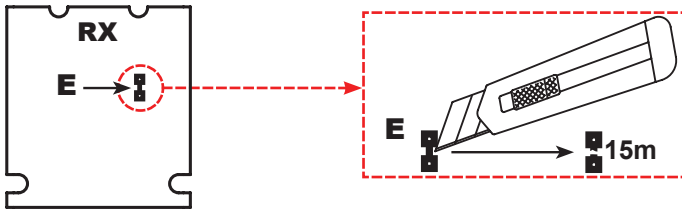




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