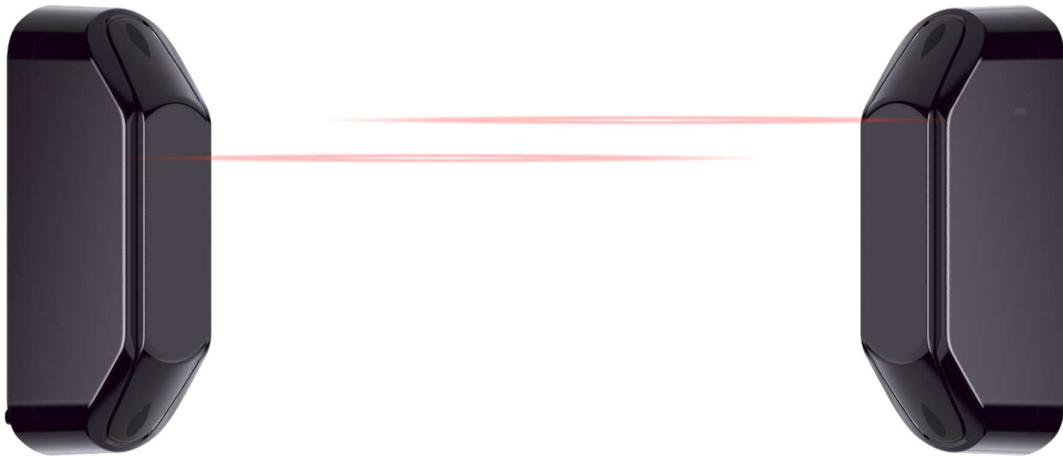


EMFB

SAFETY BEAM SENSOR



 **KONTAL**[®]
ELEKTRONIK

CE

Before operating the device, be sure to read this user manual carefully. Follow the steps described in the installation, electrical connection, and initial startup sections with attention. After completing these steps, the product owner/user must keep this manual in a known and easily accessible location for the entire service life of the product.



- Store the product in a dry environment. Otherwise, malfunctions may occur.
- In battery- or accumulator-powered products, batteries and accumulators are not covered under warranty. Similarly, failures caused by battery discharge or leakage in products that have exceeded their shelf life are not covered under warranty.
- All service and repair operations must be carried out exclusively by Kontal Elektronik technical service. The product must not be tampered with by unauthorized personnel.
- The operating voltage of each product is indicated on the label. Do not supply the device with a voltage different from the specified value.



- ✓ Failure to comply with the above-mentioned conditions may result in fire, serious personal injury, or damage to the product or the structure in which it is installed. In such cases caused by user negligence or misuse, **Kontal Elektronik San. ve Tic. Ltd. Şti.** assumes no responsibility.
- ✓ This symbol will be used to highlight important notes in the following sections.



- ✓ Do not touch the power supply terminals of the device with bare hands.
- ✓ This symbol will be used to indicate warnings related to voltage in the following sections.



- ✓ This symbol on the label indicates that the device operates with a DC supply voltage.



- ✓ This symbol on the label indicates that the device is equipped with reinforced insulation.



- ✓ This symbol on the product or its packaging indicates that the product must not be disposed of as household waste. Instead, it should be delivered to designated collection points for the recycling of electrical and electronic equipment. Improper disposal or destruction of the product may have adverse effects on the environment and human health.



- ✓ This document and its revisions are the legal property and responsibility of **KONTAL ELEKTRONİK SAN. VE TİC. LTD. ŞTİ.** Any unauthorized modification or alteration is strictly prohibited.



- ✓ Ensure that the system is properly grounded for the device to operate reliably.
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1. DEFINITION

The EMFB is an infrared (IR) sensor system developed for safety and control applications. The system consists of two modules: a transmitter (EMFB-V) and a receiver (EMFB-A), which are installed facing each other. The transmitter module emits infrared signals, while the receiver module detects these signals. When an object interrupts the signal path between the transmitter and receiver, the system generates an output signal, thereby triggering the required control or safety mechanism.

1.1 BOX CONTENTS

The contents of the EMFB Safety Photocell box are listed below.

1x EMFB-V: Transmitter Safety Photocell	2x Waterproof gasket
1x EMFB-A: Receiver Safety Photocell	2x Cable protection plugs
	4x Screw plug
	4x 2.9 X 13 YHB Sheet Metal Screw

**For special orders, the box contents may vary depending on the project or customer requirements.*

2. TECHNICAL SPECIFICATIONS

	EMFB-V Transmitter Safety Photocell	EMFB-A Receiver Safety Photocell
Product Code	K099-01	K100-01
Operating Voltage	12/24V DC	12/24V DC
Operating Current	20mA @24V DC	21mA @24V DC
Operating Distance	16 Meter(Max.)	16 Meter(Max.)
Operating Temperature	-20 °C +55 °C	-20 °C +55 °C
Contact Type	-	Dry Contact (NO/NC)
Contact Response Time	-	150ms(Min.)
Contact Capacity	-	30V DC 1A / 125V AC 0.3A (Max.)
Weight	56gr	60gr
Product Dimensions (Width x Length x Depth)	43 x 105 x 36,5mm	43 x 105 x 36,5mm

3. ADJUSTMENT COMPONENTS

A. User Adjustment Components of the EMFB-V Transmitter Safety Photocell

- a. JMP1: You can adjust the operating voltage of your transmitter module using this component. *(See also section 4.1)*
- b. POT 1: You can adjust the operating distance of your system using this component. *(See also section 4.1)*

- c. LED1: You can monitor the signal status of your transmitter module through this component.

B. User Adjustment Components of the EMFB-A Receiver Safety Photocell

- a. JMP1: You can set the operating voltage of your receiver module using this component. (See also section 5.1)
- b. LED1: You can monitor the contact status of your receiver module through this component. (See also section 5.1)

4. TRANSMITTER MODULE CONTROL BOARD

The safety photocell transmitter module control board is shown in Figure 4.1.

4.1 Transmitter Module Control Board Setup and Initial Operation

- a. First, remove the front cover of the transmitter module (See also: *Installation, Figure 6.1*).
- b. Set the operating voltage of the transmitter module using JMP1.

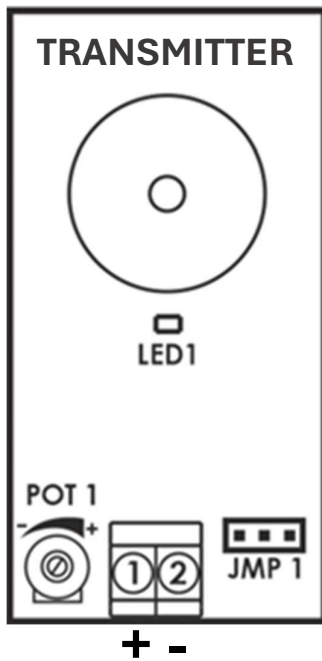


Figure 4.1 EMFB Transmitter Module Control Board



- c. Then, connect the power supply to terminals 1 and 2 (See also: *Wiring Diagram*).



Pay attention to the "+" and "-" polarities when connecting the power supply to the product!



Do not supply power to the product other than the specified operating voltage. Otherwise, the device may be damaged!



Do not touch the connection points after the power supply to the product has been connected!

- d. You can adjust the detection (operating) distance of the product using the POT1 trimpot located on the board. Turning POT1 clockwise increases the detection distance, while turning it counterclockwise decreases it. The system can be used at a maximum distance of 16 meters.

5. RECEIVER MODULE CONTROL BOARD

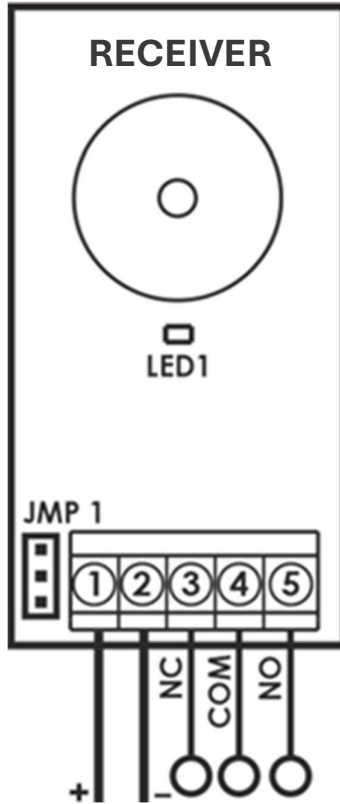


Figure 5.1 EMFB Receiver Module Control Board

The safety photocell receiver module control board is shown in Figure 5.1.

5.1 Receiver Module Control Board Setup and Initial Operation

a. First, remove the front cover of the receiver module (See also: *Installation*, Figure 6.1).

b. Set the operating voltage of the receiver module using JMP1.



c. Then, connect the power supply to terminals 1 and 2 (See also: *Wiring Diagram*).



Pay attention to the "+" and "-" polarities when connecting the power supply to the product!



Do not touch the connection points after the power supply to the product has been connected!



Do not supply power to the product other than the specified operating voltage. Otherwise, the device may be damaged!



In some motor driver circuits, it is recommended to short the negative line of the EMFB-A to the metal surface in order to prevent the system from being affected by noise generated by the driver.

d. The relay output status of the product can be monitored via the LED1 indicator located on the module.

- **If LED1 is on:** The relay is active, and the NO (**Normally Open**) contact is providing output.
- **If LED1 is off:** The relay is inactive, and the NC (**Normally Closed**) contact is providing output.

e. Terminals 3, 4, and 5 on the product are the relay output connection points. (See also: *Wiring Diagram*)

6. INSTALLATION

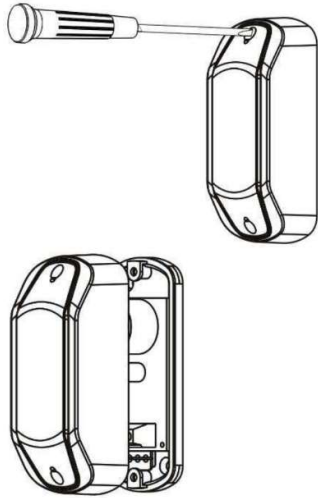


Figure 6.1 – Step 1:
Removing the EMFB front cover.

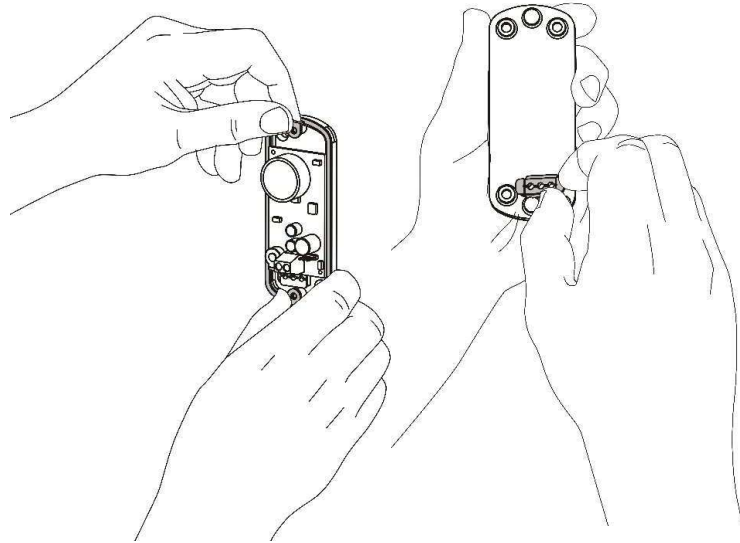


Figure 6.2 – Step 2: Installing the EMFB waterproof and protective gaskets.

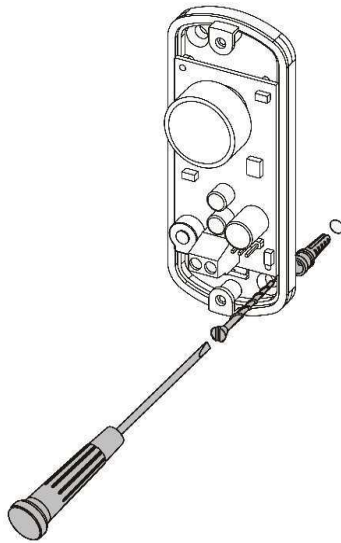


Figure 6.3 – Step 3:
Mounting the EMFB on the wall.

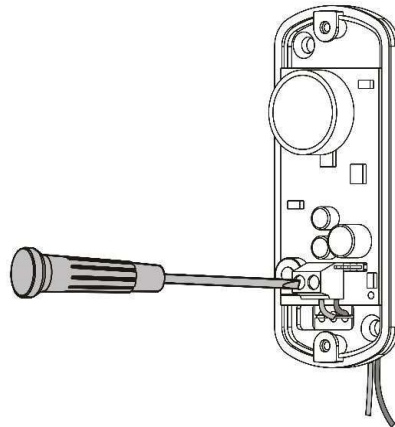


Figure 6.4 – Step 4:
Making the EMFB terminal connections.

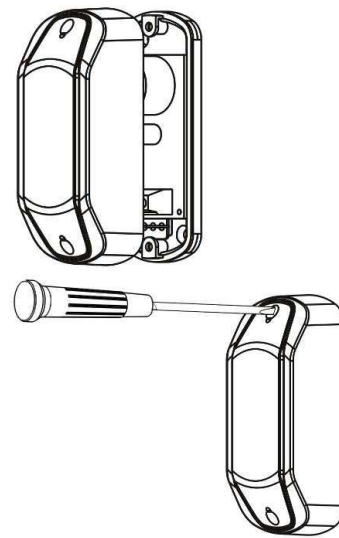


Figure 6.5 – Step 5:
Installing the EMFB front cover.

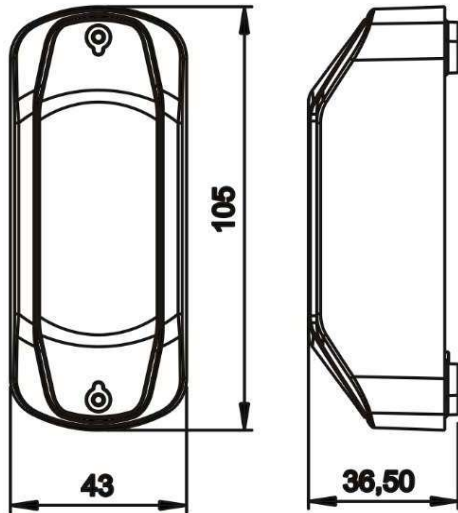


Figure 6.6 – Dimensions (Unit: mm)

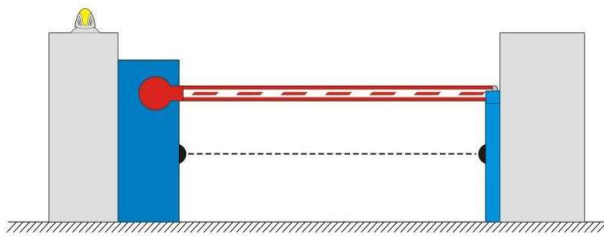


Figure 6.7 Example Installation Illustration 1.

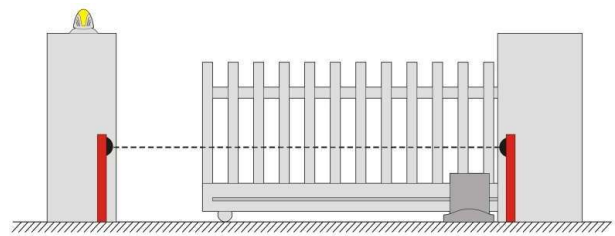


Figure 6.8 Example Installation Illustration 2.



Mount the receiver and transmitter modules in the same alignment so that they face each other directly. This alignment is critical for the correct operation of the system. (See also: **Figures 6.7 & 6.8**)

7. WIRING DIAGRAM

The wiring diagram of the EMFB system is shown below.

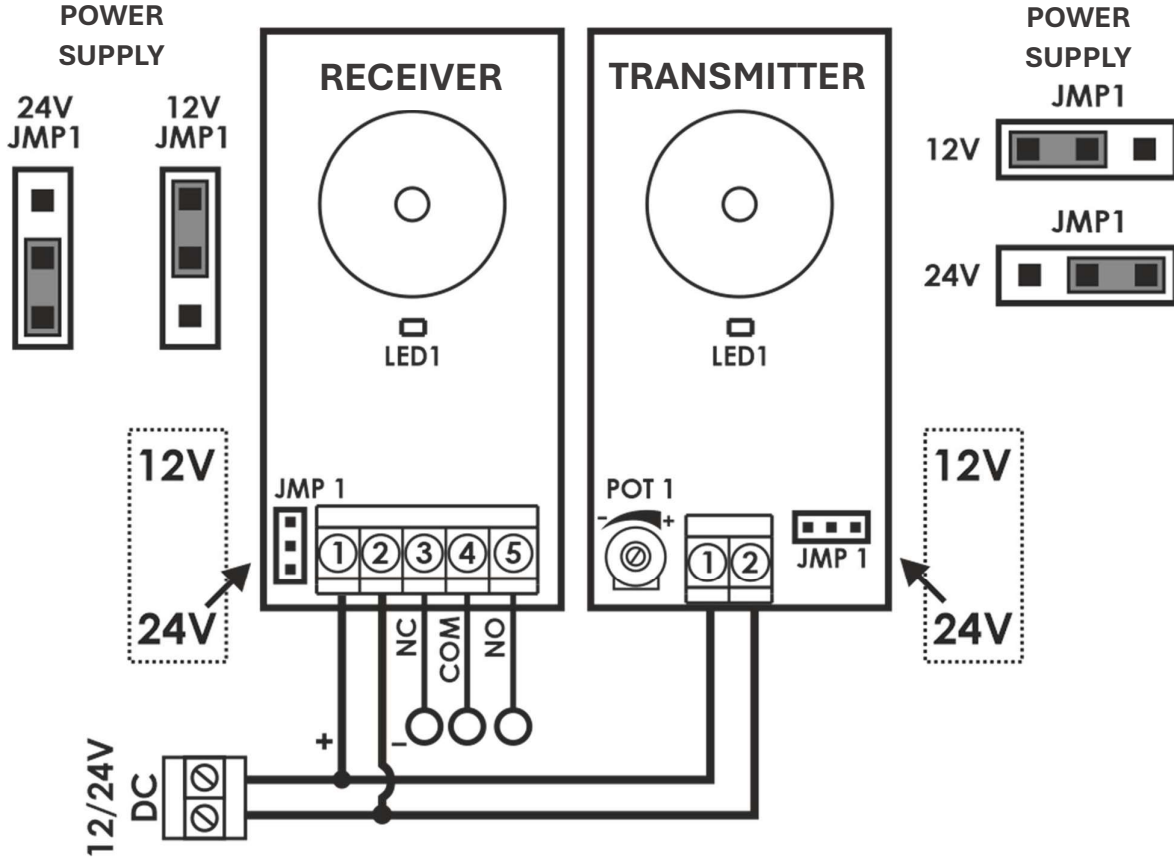


Figure 7.1 EMFB Wiring Diagram



Manufacturer / Authorized Service
Kontal Elektronik San. Ve Tic. Ltd. Şti.
Çorapçılar Sanayi Sitesi A Blok NO: 1-2 İkitelli OSB
İSTANBUL / TÜRKİYE
+90 212 485 61 11
info@kotal.com.tr
www.kotal.com