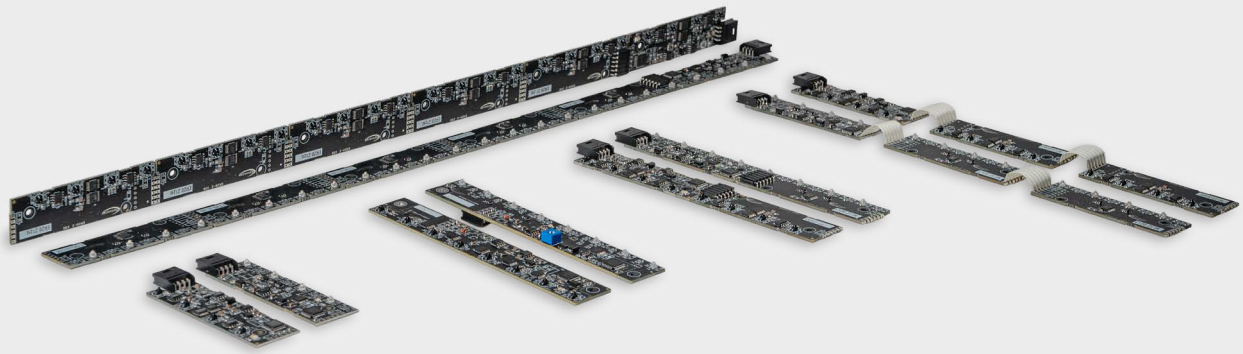
# EOS 140

v1.2

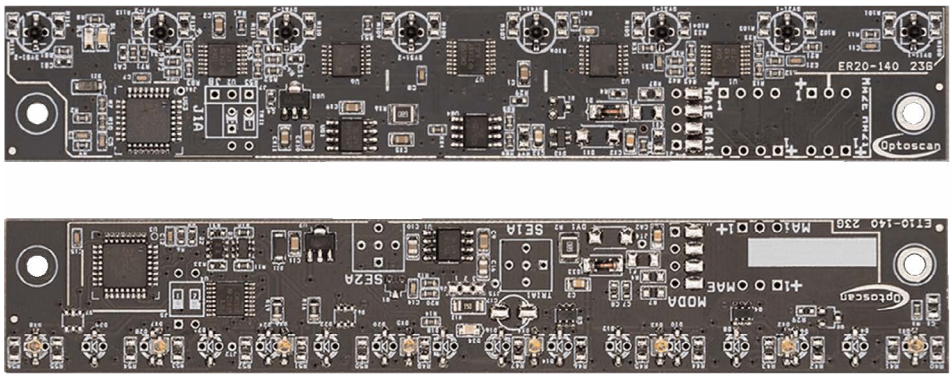


## Datasheet

Barriers for vendig machines

Optoscan

# Index



## Product description

The EOS family is a line of presence photoelectric barriers without housing, characterized by their small size, with a minimum thickness of only 4mm which makes them easy to install in tight spaces.

Resistant to cold and humidity, immune to sunlight and other disturbances of an optical or electrical nature.

EOS barriers are available in various models, with different lengths, resolutions and a wide range of customization options.

| | |
|---|---|
| **Thickness** | from 4mm |
| **Length** | 23mm |
| **Detection height** | 140mm |
| **Resolution** | 4 - 8mm |
| **Installation range** | from 50mm to 8m |
| **Disturbance immunity** | - sunlight: up to 200000 Lux<br>- optical disturbance<br>- electrical disturbance |
| **Working temperature** | -20°C/+50°C |

## Advantages

- Compact size of 4mm x 23mm for easy integration into systems
- Customizable configuration for every need thanks to the wide range of options
- High immunity to sunlight, optical and electrical disturbances
- Suitable for operation in refrigerated environments (Tmin: -20°C) and in the presence of humidity

## Applications

- Vending machines (including refrigerated)
- Pedestrian traffic control
- Mold ejection control
- Part counting on production lines
- Material presence control in plant outputs

## Technical specifications

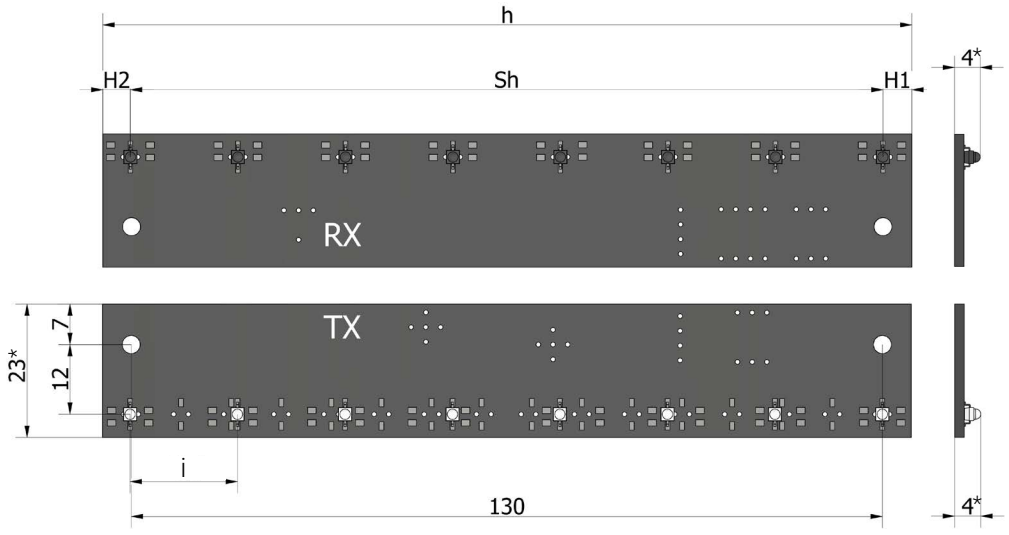
**Resolution:** 4 - 8mm
**Body length:** 140mm
**Sensible height:** 130mm
**Installation range:** from 50mm to 8m
**Outputs:** push/pull, Dark ON oppure Dark OFF, 50mA max, protected from short circuits
**Sunlight immunity:** up to 200˙000 lux
**Mounting holes distance:** 130mm

## Models

| Model | Resolution | Number of Optics | | i | h | Sh | Ph* | H1 | H2 | Maximum response time | Power consumption with heater |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (mm) | RX | TX | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) | (ms) | (mA) |
| EOS 4-140 | 4 | 8 | 16 | 9,3 | 140 | 130 | 146 | 5 | 5 | 1,92 | 720 |
| EOS 8-140 | 8 | 8 | 8 | 18,6 | 140 | 130 | 146 | 5 | 5 | 0,96 | 480 |

*The term "***Ph***" refers to the height of the area where an object with a diameter equal to the resolution can be detected.

## Mechanical dimensions

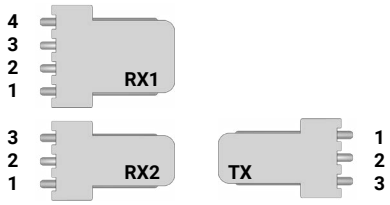



**Legend**
**h** Body length
**Sh** Sensible height
**H1** Distance from outside and fist optic
**H2** Distance from outside and last optic
**i** Optics distance

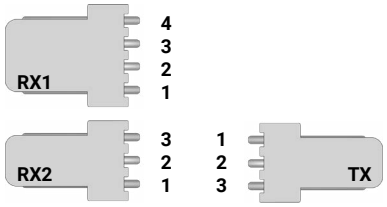
***Can change based on options.***

## Electrical connection scheme whit interconnection and without test input

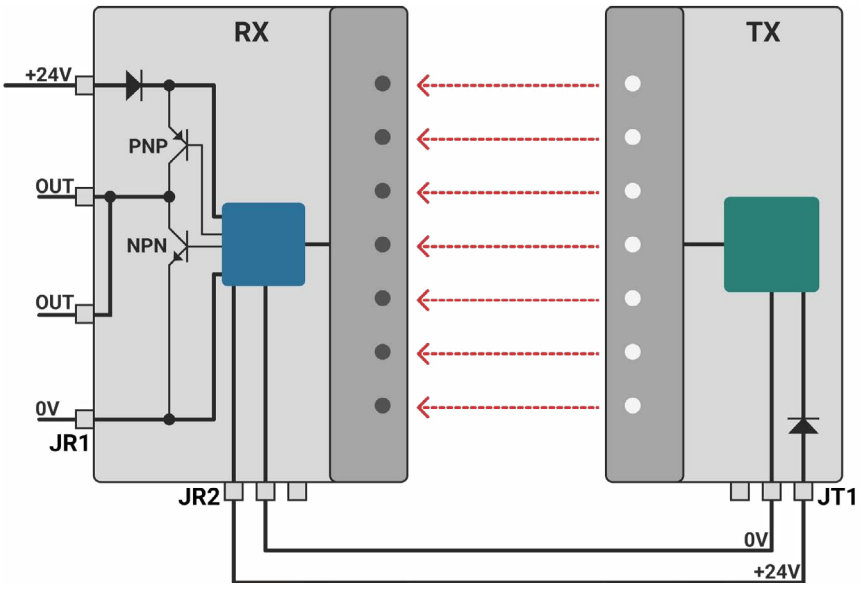
### MMAe - MMAi connection




### MMPe - MMPi connection

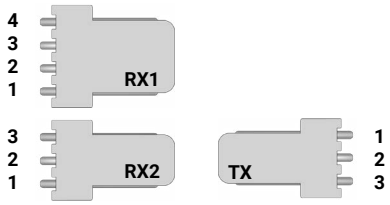



| Pin | RX1 | RX2 | TX |
|---|---|---|---|
| 1 | + 24 Vdc | + 24 Vdc | + 24 Vdc |
| 2 | Out | 0 Vdc | 0 Vdc |
| 3 | Out | | |
| 4 | 0 Vdc | | |

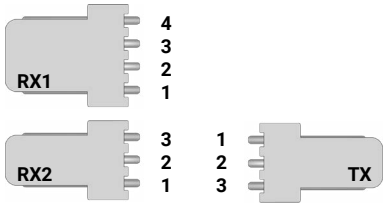



## Electrical connection scheme with interconnection and test input

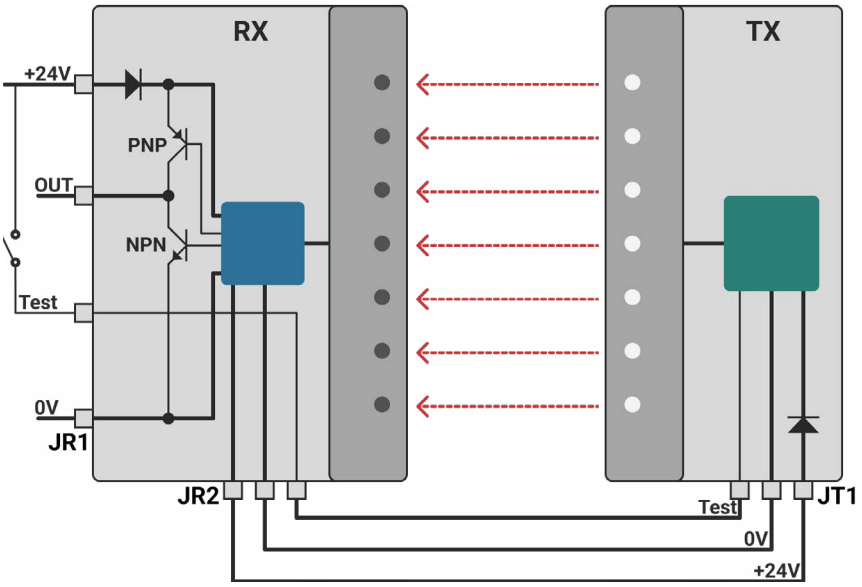
### MMAe - MMAi connection



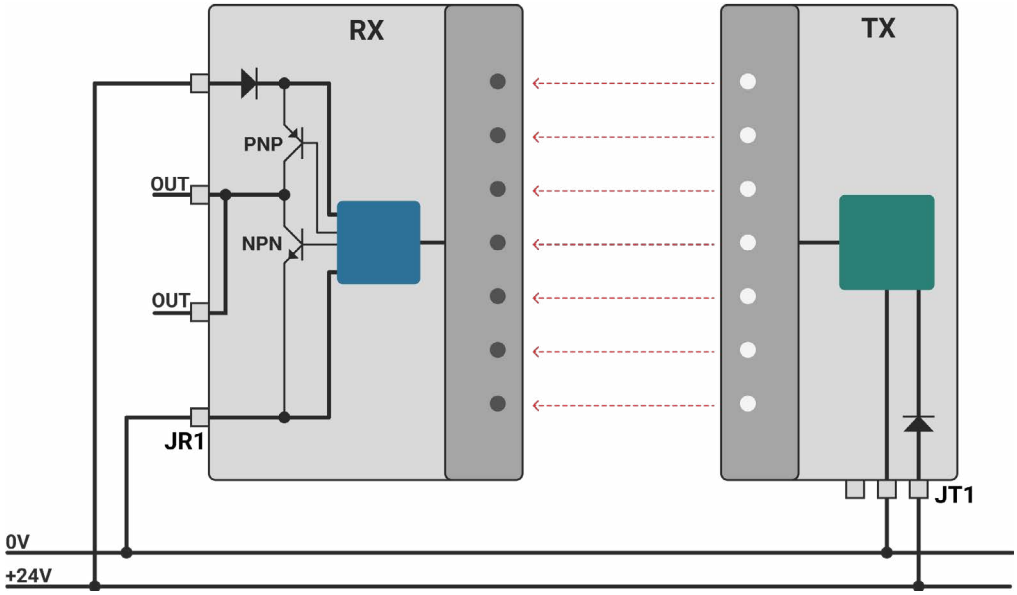

### MMPe - MMPi connection



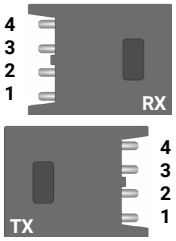

| Pin | RX1 | RX2 | TX |
|---|---|---|---|
| 1 | + 24 Vdc | + 24 Vdc | + 24 Vdc |
| 2 | Out | 0 Vdc | 0 Vdc |
| 3 | Test | Test | Test |
| 4 | 0 Vdc | | |



## Electrical connection scheme without interconnection and without test input

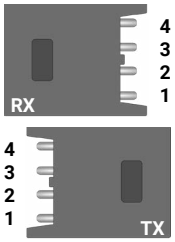



### ModA connection



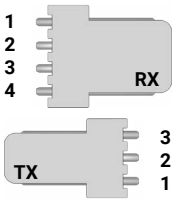

| Pin | RX | TX |
|---|---|---|
| 1 | 0Vdc | 0Vdc |
| 2 | +24Vdc | +24Vdc |
| 3 | Out | |
| 4 | Out | |

### ModP connection



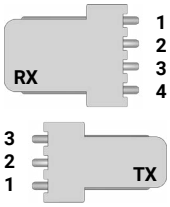

| Pin | RX | TX |
|---|---|---|
| 1 | 0Vdc | 0Vdc |
| 2 | +24Vdc | +24Vdc |
| 3 | Out | |
| 4 | Out | |

### MAe - MAi connection



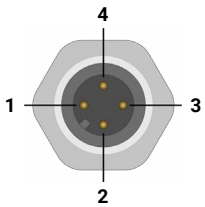

| Pin | RX | TX |
|---|---|---|
| 1 | + 24 Vdc | + 24 Vdc |
| 2 | Out | 0 Vdc |
| 3 | Out | |
| 4 | 0 Vdc | |

### MPe - MPi connection



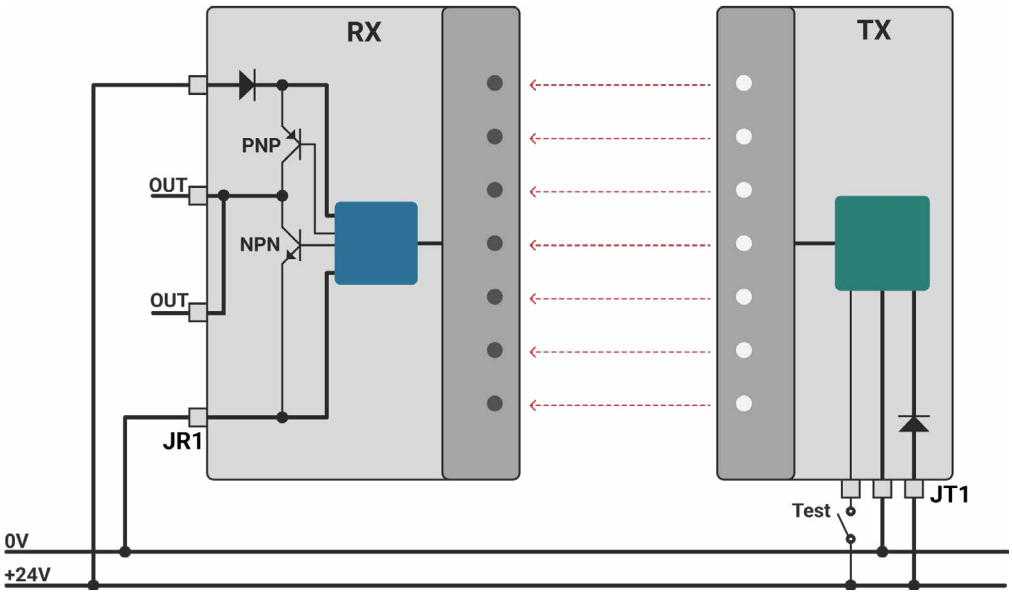

| Pin | RX | TX |
|---|---|---|
| 1 | + 24 Vdc | + 24 Vdc |
| 2 | Out | 0 Vdc |
| 3 | Out | |
| 4 | 0 Vdc | |

### CavM12 - CavM8 connection

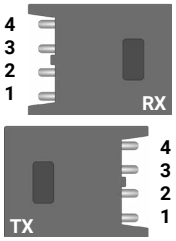



| Pin | RX | TX |
|---|---|---|
| 1 | + 24 Vdc | + 24 Vdc |
| 2 | Out | |
| 3 | 0 Vdc | 0 Vdc |
| 4 | Out | |

## Electrical connection scheme without interconnection and with test input

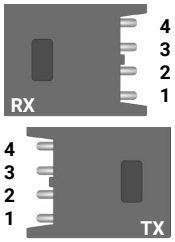



### ModA connection



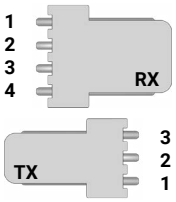

| Pin | RX | TX |
|---|---|---|
| 1 | 0Vdc | 0Vdc |
| 2 | +24Vdc | +24Vdc |
| 3 | Out | Test |
| 4 | Out | |

### ModP connection



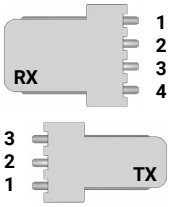

| Pin | RX | TX |
|---|---|---|
| 1 | 0Vdc | 0Vdc |
| 2 | +24Vdc | +24Vdc |
| 3 | Out | Test |
| 4 | Out | |

### MAe - MAi connection



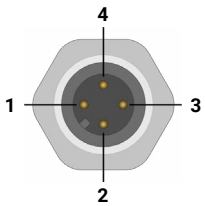

| Pin | RX | TX |
|---|---|---|
| 1 | + 24 Vdc | + 24 Vdc |
| 2 | Out | 0 Vdc |
| 3 | Out | Test |
| 4 | 0 Vdc | |

### MPe - MPi connection




| Pin | RX | TX |
|---|---|---|
| 1 | + 24 Vdc | + 24 Vdc |
| 2 | Out | 0 Vdc |
| 3 | Out | Test |
| 4 | 0 Vdc | |

### CavM12 - CavM8 connection




| Pin | RX | TX |
|---|---|---|
| 1 | + 24 Vdc | + 24 Vdc |
| 2 | Out | Test |
| 3 | 0 Vdc | 0 Vdc |
| 4 | Out | |

## Range
Options

Minimum and maximum installation distance between transmitter and receiver

The standard range is identified by the code ***L1***.

| Code *Lx* | Installation range |
|---|---|
| L03 | from 50 to 300mm |
| L1 | from 200 to 1000mm |
| L4 | from 500 to 4000mm |
| L6 | from 500 to 6000mm |
| L8 | from 500 to 8000mm |

## Features
Options

**LT – Heater**

Option that allows barriers to operate in conditions with temperatures down to -20°C, such as refrigerated vending machines.

**R - Tropicalization**

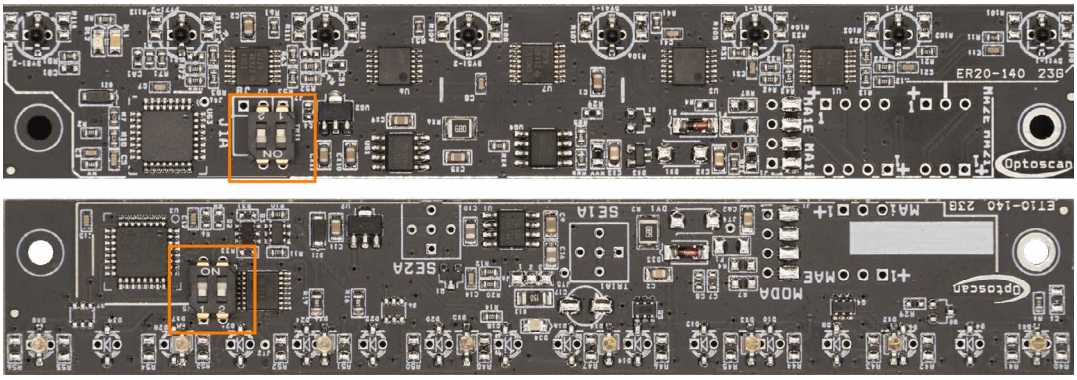
Weatherproofing allows the barriers to operate correctly even in high humidity environments.

**T - Test Input**

Option that simulates the interruption of the beams to allow for the verification of the correct operation of the system. Can be activated from the outside.

**Code – Coding**

Option that allows the communication between the transmitter and receiver to be coded to eliminate interference in the case of multiple adjacent barriers being positioned. The code can be set using an internal selector.

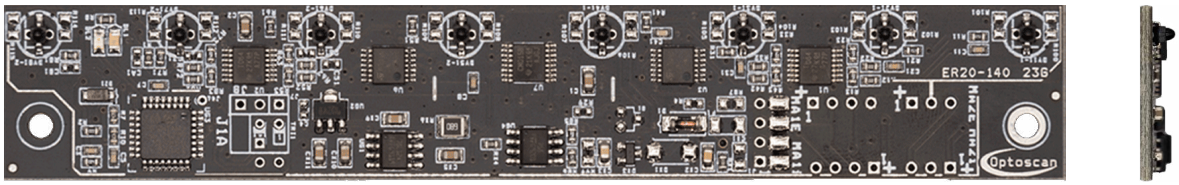


## Optics
Options

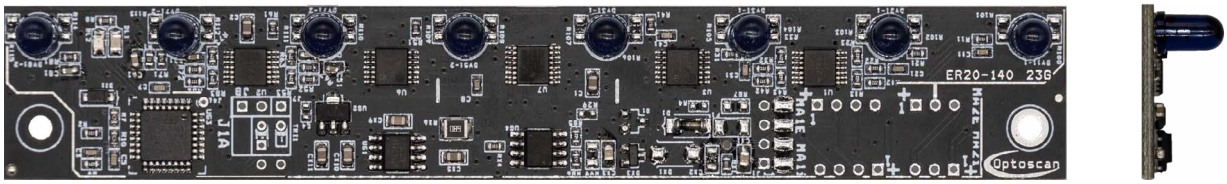
The direction of the photodiodes can be defined according to the application requirements: in line with the holes or perpendicular to the holes. The following are the possible options based on the range.

**F - Front**

Photodiodes positioned parallel to the mounting holes, available up to ***L1***.

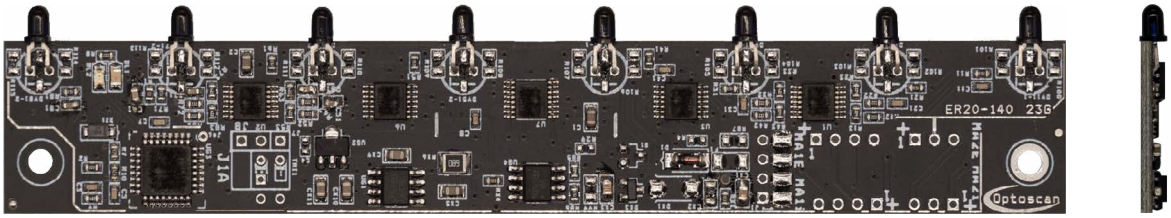



Photodiodes positioned parallel to the mounting holes, available above ***L1***.

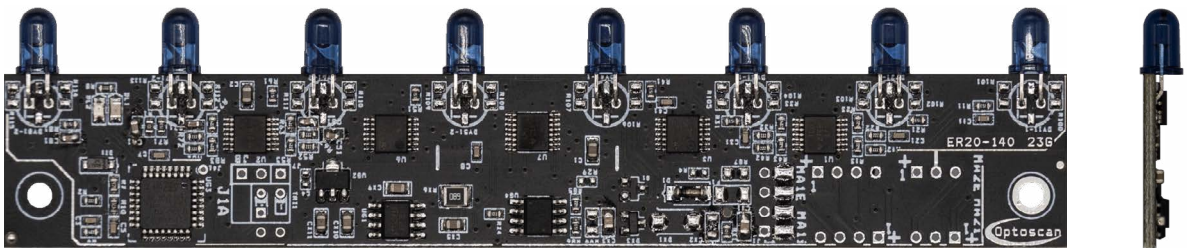



**S - Side**

Photodiodes positioned perpendicular to the mounting holes, available up to ***L1***.




Photodiodes positioned perpendicular to the mounting holes, available above ***L1***.



# Timer
## Options

The timer keeps the ***receiver*** output in the ON state for the set time.

If not specified otherwise, the standard timing is 20 ms.

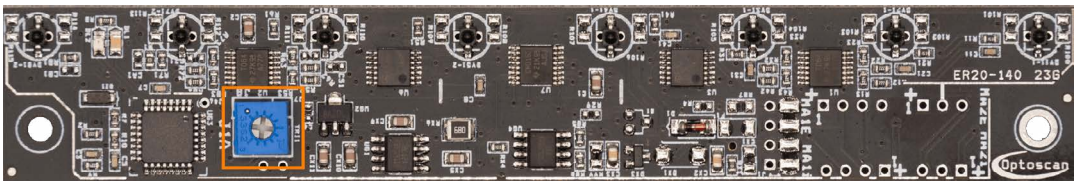
### TF0 – Fixed 1ms Timer

In the case of very close objects passing each other, the standard timing may detect a single object.

With the **TF0** option, there is a fixed output timing of 1ms.

### TR – Adjustable Timer

Variable timer with trimmer. The maximum time must be defined at the time of order:
available 0.5s (TR0.5) or 1s (TR1).



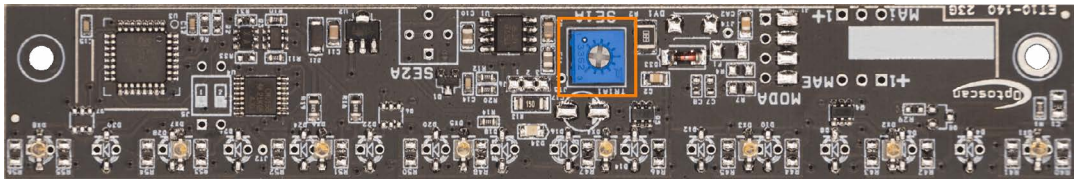
## Sensibility adjustment
Options

Allows to adjust the ***transmitter*** power to prevent reading errors caused by indirect reflection of the beams. Necessary when installing the barriers near metal sheets or other reflective surfaces.

Below are the available positions for the power adjustment trimmer.

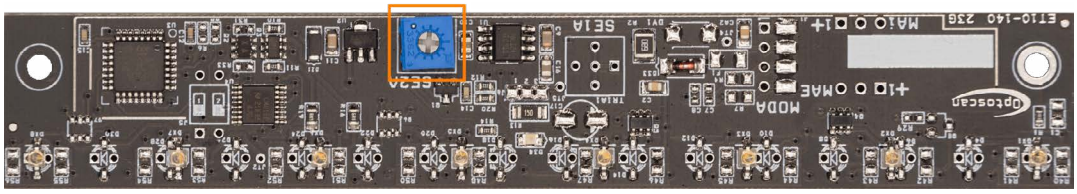
**SE1a**

Front side trimmer position 1 (standard)



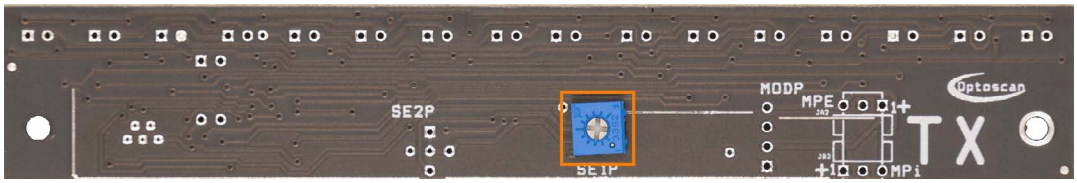
**SE2a**

Front side trimmer position 2.



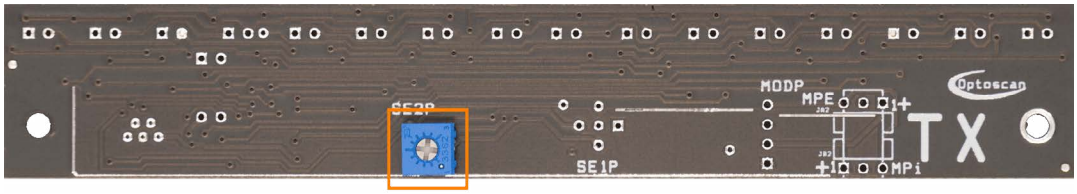
**SE1p**

Back side trimmer position 1




**SE2p**

Back side trimmer position 2




**0**

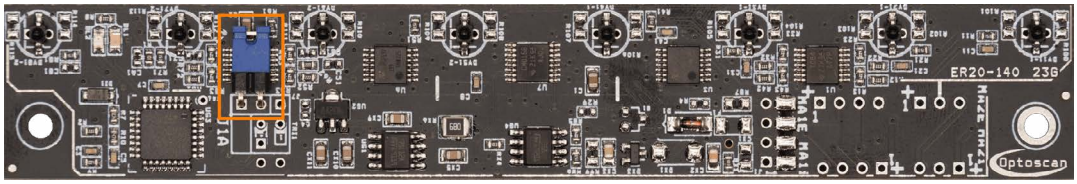
Without trimmer.

## Output mode selection
Options

Option to select the output state 0V or 24V when the beam is interrupted via ***jumper***, ***DIP switch***, ***external cable***.

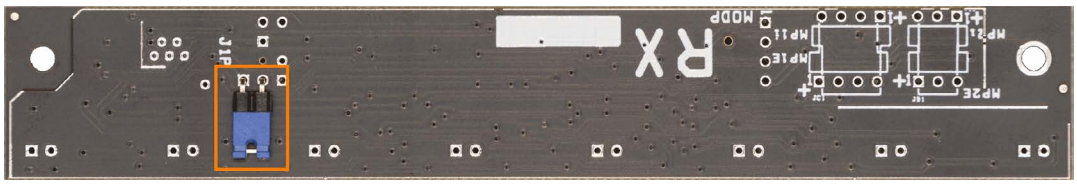
**JAi**

Front side jumper towards photodiodes



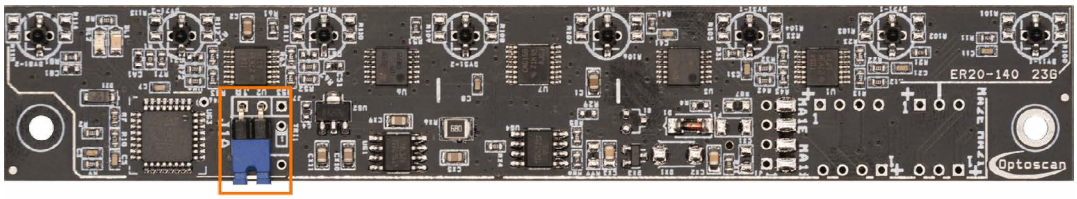

**JPi**

Back side jumper towards photodiodes (standard)



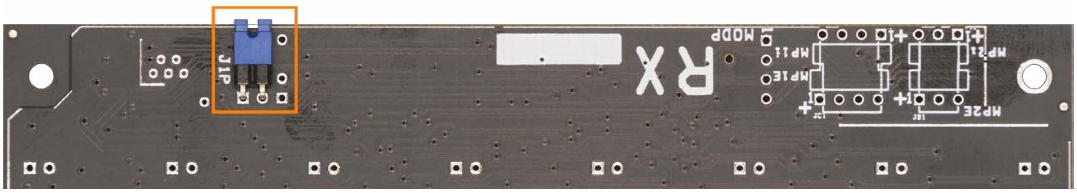

**JAe**

Front side jumper towards outside



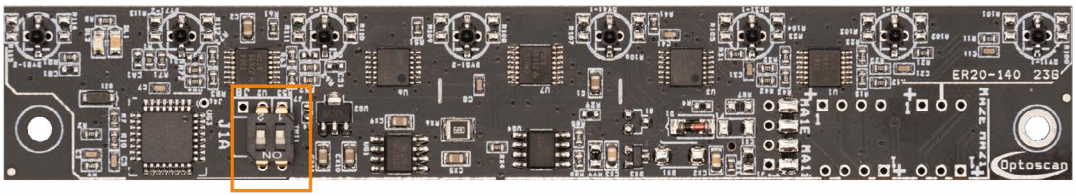

**JPe**

Back side jumper towards outside



**SL**

Front side DIP Switch




**PNSE**

Output mode selection via external cable

**PC**

24V output when beam is interrupted (without selection, to be defined at the time of order)

**PA**

0V output when beam is interrupted (without selection, to be defined at the time of order)

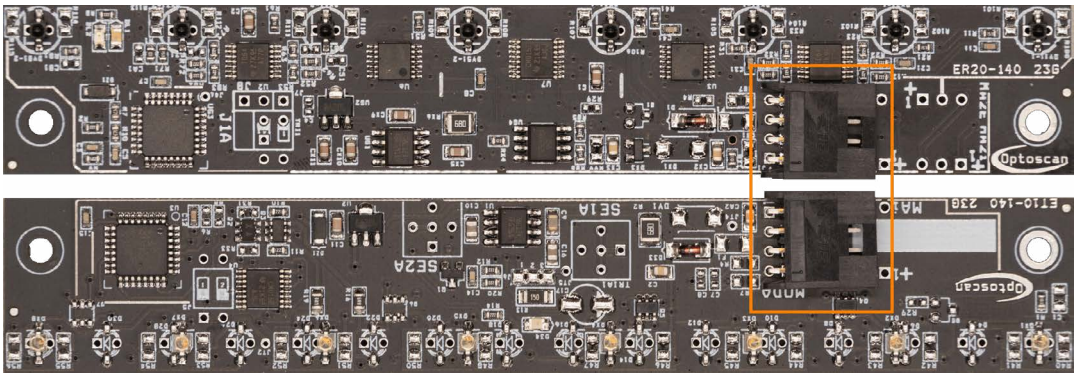
## Connections

### Options

It is possible to chose the desired connection type, available options below.

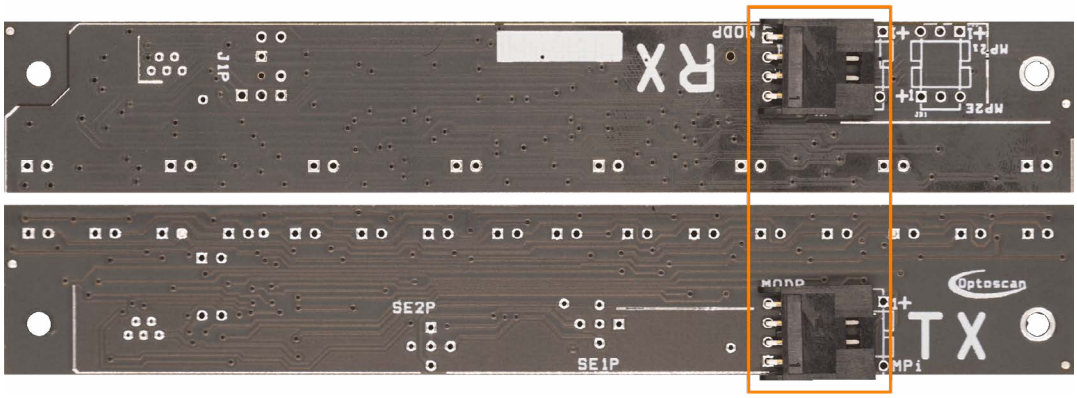
**ModA**

Front side AMPMODU MOD II connector



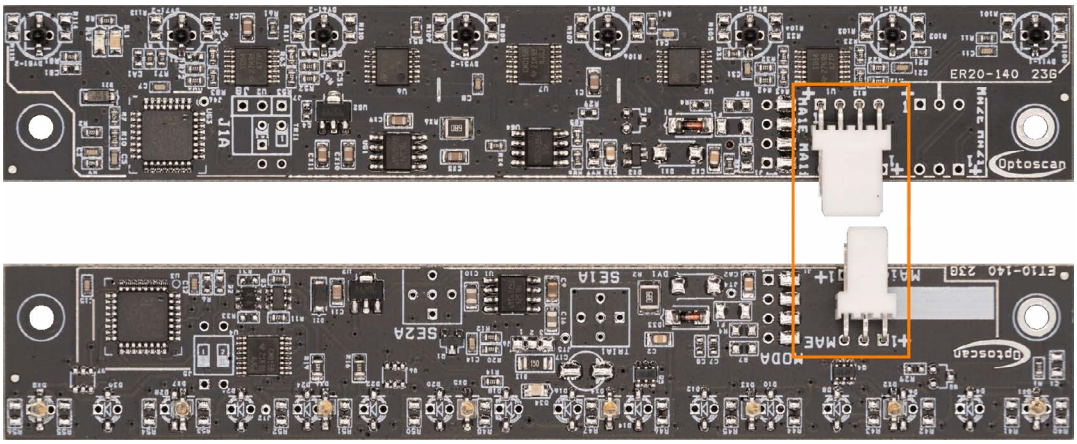
**ModP**

Back side AMPMODU MOD II connector



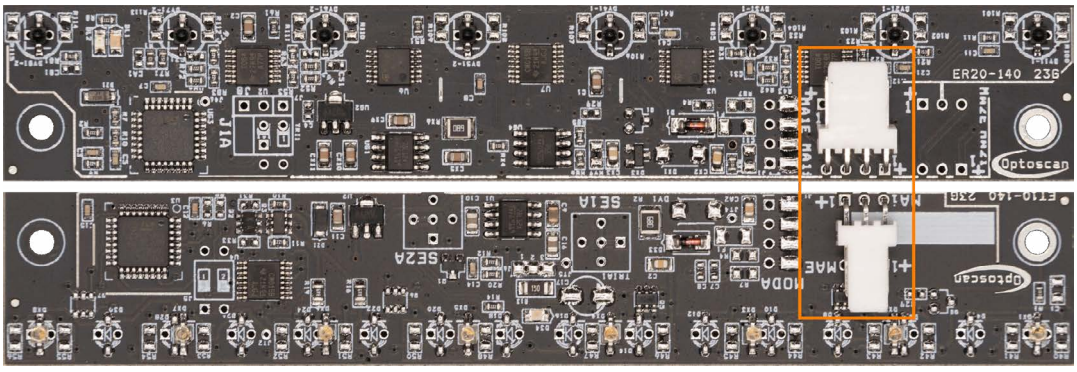

**MAe**

Front side MTA connector placed towards the outside



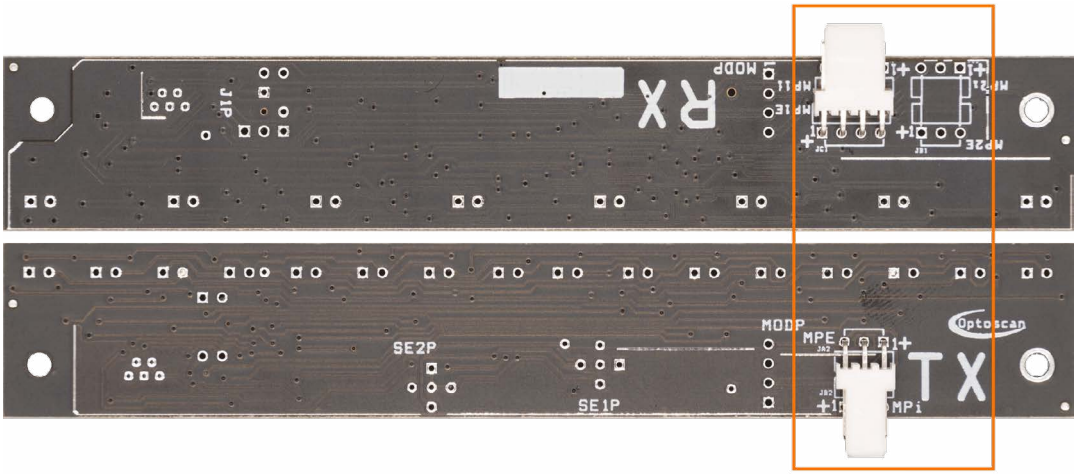

**MAi**

Front side MTA connector placed towards the inside



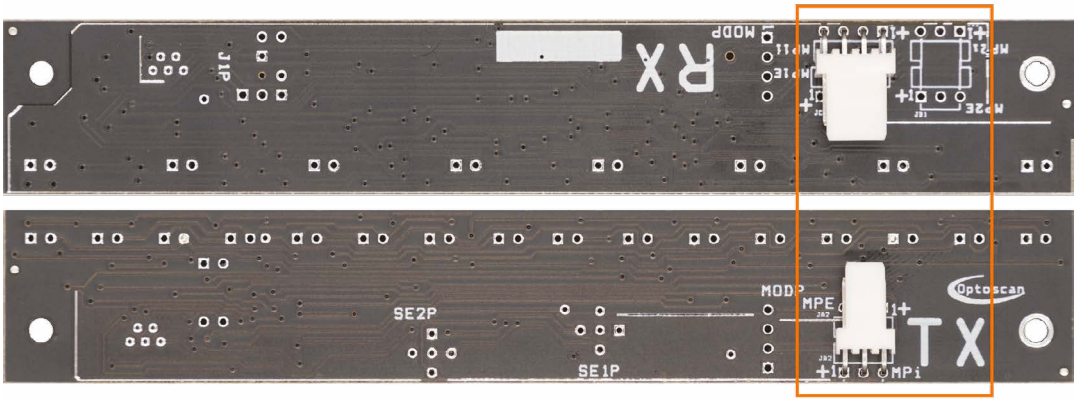
**MPe**

Back side MTA connector placed towards the outside



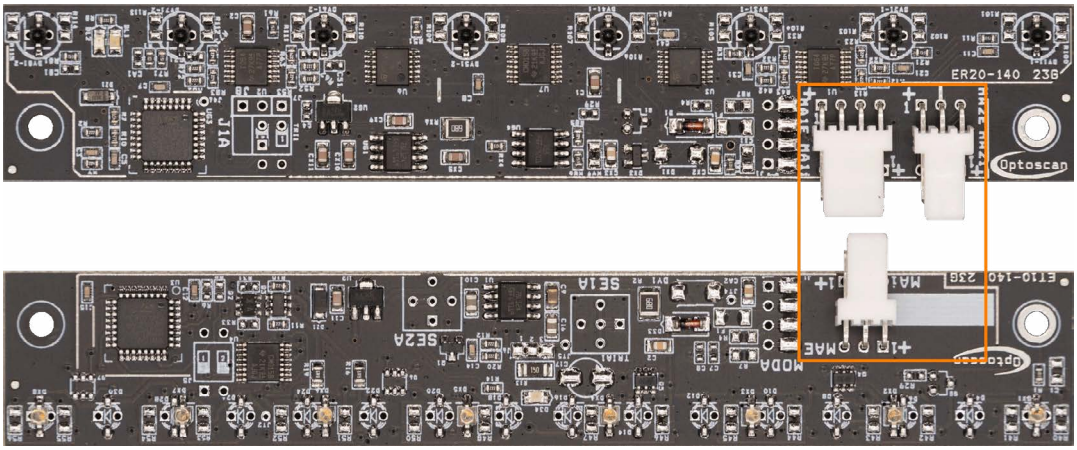

**MPi**

Back side MTA connector placed towards the inside




**MMAe**

Front side connection placed towards the outside

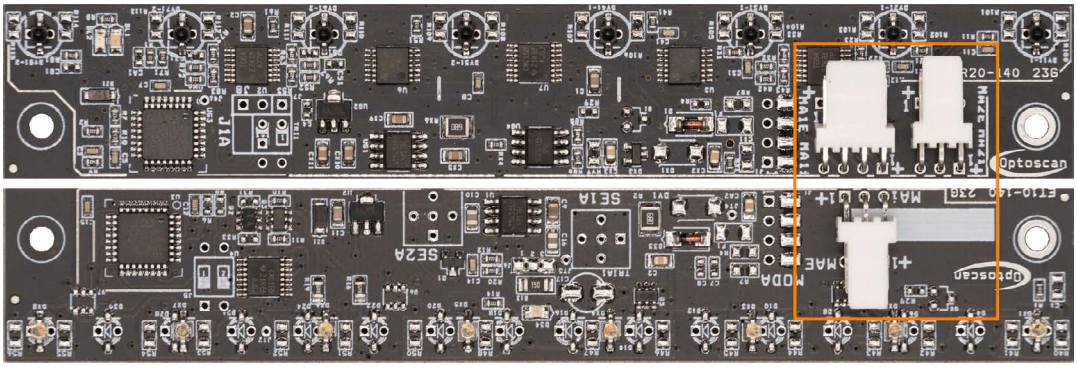



***RX:*** MTA 4 poles + interconnection via MTA 3 poles

***TX:*** MTA 3 poles

### MMAi

Front side connection placed towards the inside

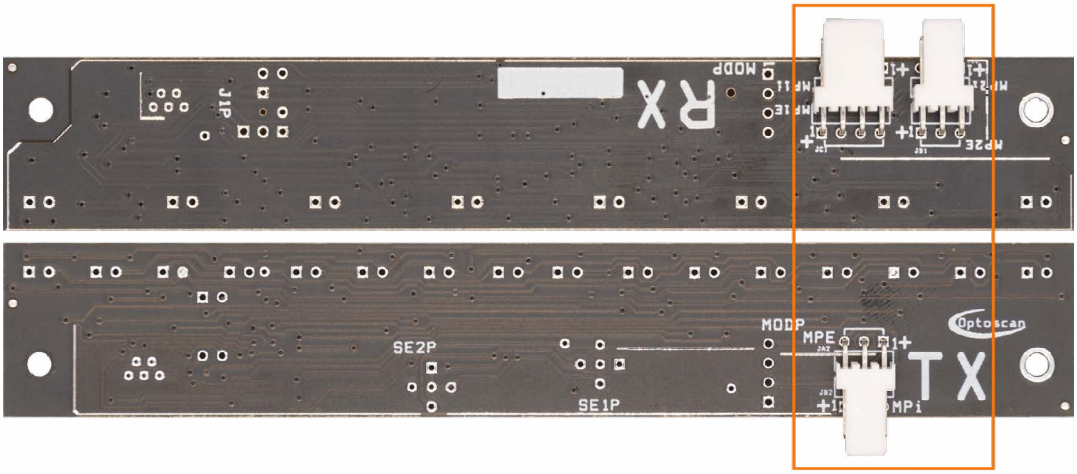


***RX:*** MTA 4 poles + interconnection via MTA 3 poles

***TX:*** MTA 3 poles

### MMPe

Back side connection placed towards the outside

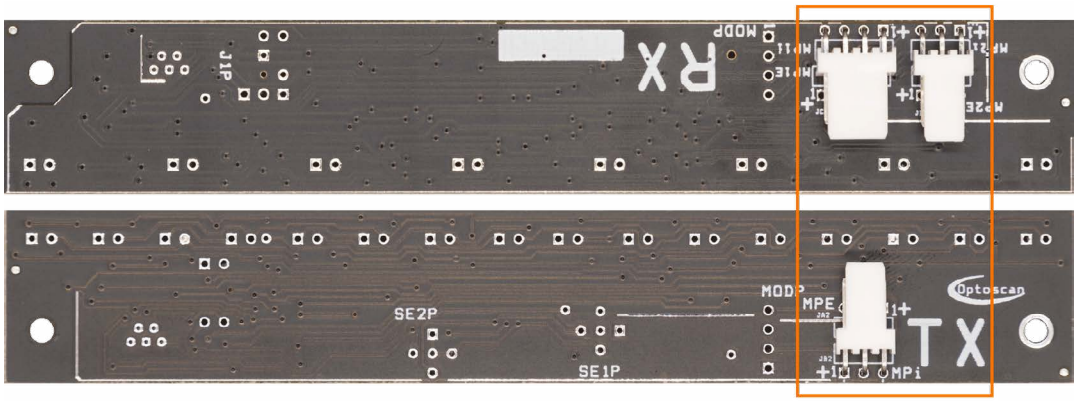



***RX:*** MTA 4 poles + interconnection via MTA 3 poles

***TX:*** MTA 3 poles

### MMPi

Back side connection placed towards the inside.

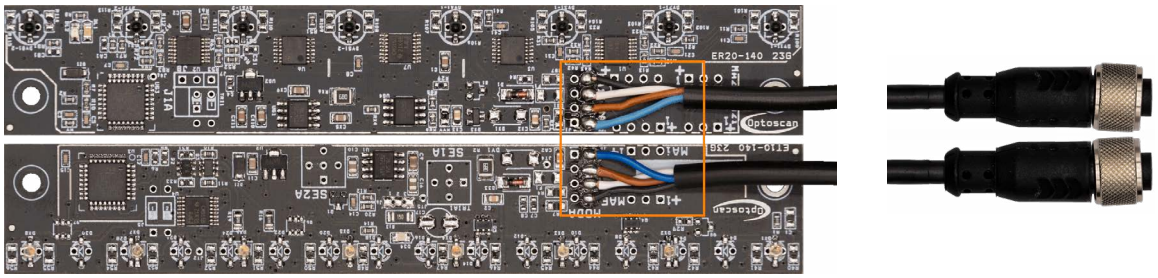



***RX:*** MTA 4 poles + interconnection via MTA 3 poles

***TX:*** MTA 3 poles

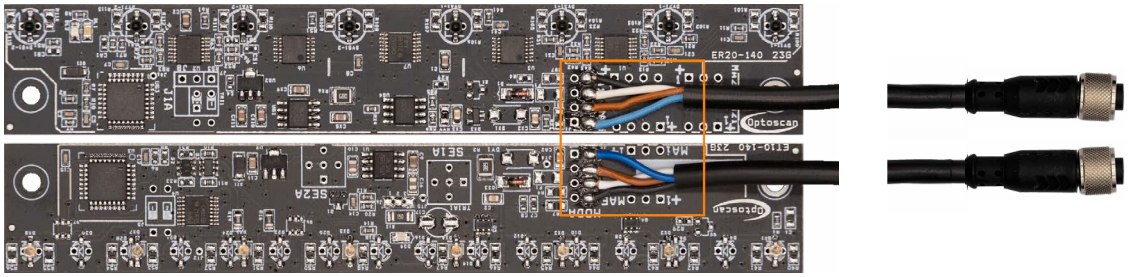
**CAVM12**

M12 male 4 poles cable, standard length of 30cm.



**CAVM8**

M8 male 4 poles cable, standard length of 30cm.



## Order code generation

| EOS 8-140 | L1 | LT | R | F | TF0 | SE1a | JPi | MMPe |
|---|---|---|---|---|---|---|---|---|

**MODEL**

| | |
|---|---|
| *View available Models* | |

**RANGE**

| | |
|---|---|
| *Lx* | |

**FEATURES** *(optional)*

| | |
|---|---|
| *LT* | Heater |
| *R* | Tropicalization |
| *T* | Test Input |
| *CODE* | Coding *(not compatible with TR, JA, JP)* |

**OPTICS**

| | |
|---|---|
| *F* | Front |
| *S* | Side |

**TIMER** *(optional)*

| | |
|---|---|
| *TF0* | Fixed 1ms Timer |
| *TR0.5* | Adjustable 0.5s Timer *(not compatible with TR, JA, JP, SL)* |
| *TR1* | Adjustable 1s Timer *(not compatible with TR, JA, JP, SL)* |

**SENSIBILITY ADJUSTMENT**

| | |
|---|---|
| *SE1a* | Front side trimmer position 1 |
| *SE2a* | Front side trimmer position 2 |
| *SE1p* | Back side trimmer position 1 |
| *SE2p* | Back side trimmer position 2 |
| *0* | Without trimmer |

**OUTPUT MODE SELECTION**

| | |
|---|---|
| *JAi* | Front side jumper towards photodiodes *(not compatible with CODE, TR)* |
| *JPi* | Back side jumper towards photodiodes *(not compatible with CODE, TR)* |
| *JAe* | Front side jumper towards outside *(not compatible with CODE, TR)* |
| *JPe* | Back side jumper towards outside *(not compatible with CODE, TR)* |
| *SL* | Front side DIP Switch *(not compatible with TR)* |
| *PNSE* | Output mode selection via external cable |
| *PC* | 24V output when beam is interrupted |
| *PA* | 0V output when beam is interrupted |

**CONNECTION**

| | | | | |
|---|---|---|---|---|
| *ModA* | Front side AMPMODU MOD II connector | | | |
| *ModP* | Back side AMPMODU MOD II connector | | | |
| *MAe* | RX: MTA 4 poles | TX: MTA 3 poles | front side towards the outside | |
| *MAi* | RX: MTA 4 poles | TX: MTA 3 poles | front side towards the inside | |
| *MPe* | RX: MTA 4 poles | TX: MTA 3 poles | back side towards the outside | |
| *MPi* | RX: MTA 4 poles | TX: MTA 3 poles | back side towards the inside | |
| *MMAe* | RX: MTA 4 poles | TX: MTA 3 poles | interconnection: MTA 3 poles | front - outside |
| *MMAi* | RX: MTA 4 poles | TX: MTA 3 poles | interconnection: MTA 3 poles | front - inside |
| *MMPe* | RX: MTA 4 poles | TX: MTA 3 poles | interconnection: MTA 3 poles | back - outside |
| *MMPi* | RX: MTA 4 poles | TX: MTA 3 poles | interconnection: MTA 3 poles | back - inside |
| *CavM12* | RX: M12 4 poles 30cm cable | | TX: M12 4 poles 30cm cable | |
| *CavM8* | RX: M8 4 poles 30cm cable | | TX: M8 4 poles 30cm cable | |

The 3D file of the main configurations can be downloaded at the following link: ***optoscan.it/en/download***

Alternatively, customized configurations can be requested.


Via Papa Giovanni XXIII, 16
20099
Sesto San Giovanni, Milano
Italia

www.optoscan.it/en

+39 02 43122115

info@optoscan.it