

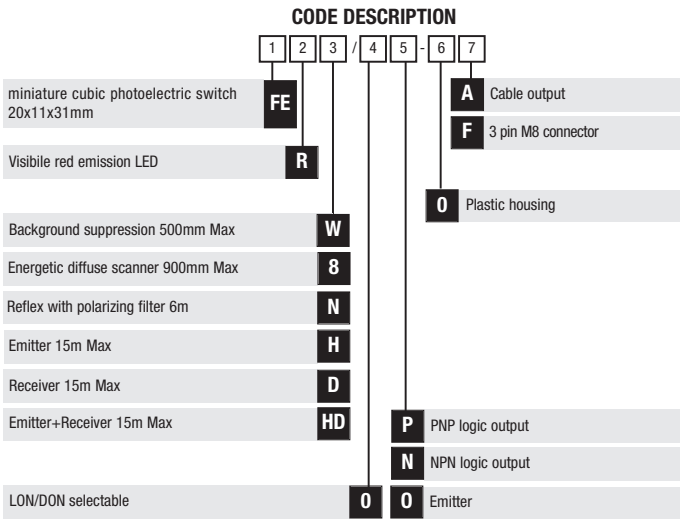
FE SERIES

INSTALLATION MANUAL

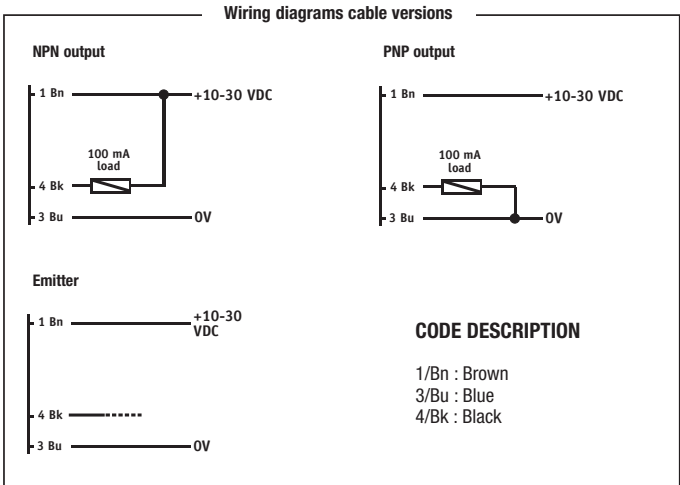


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Declaration of conformity
M.D. Micro Detectors S.p.A. con Unico Socio
Declare under our sole responsibility that these products are in conformity with the following EEC directive: 2004/108/EC and subsequent amendments.

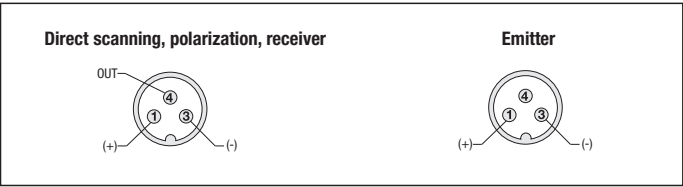


ELECTRIC DIAGRAMS OF THE CONNECTIONS



WARNING These products are NOT safety sensors and are NOT suitable for use in personal safety application

Wiring diagrams M8 plug versions



TECHNICAL SPECIFICATIONS

Models	FERW/0*-0*	FER8/0*-0*	FERN/0*-0*	FERD/0*-0*	FERH/00-0*
Type	Background supp.	Energetic scan.	Reflex polariz	Receiver	Emitter
Sensing distance	15 ÷ 500 mm(1)	800 mm (1)	5 m (2)	12 m	12 m
Blind zone	2 mm	0	10 mm	0	0
Hysteresis	-	20% max	-	-	-
Scanning distance-sensitivity adjustment	Potentiometer 270				
Light source	Red visible LED				
Spot diameter	50mm @ 300mm	250mm @ 2,5m	-	-	1600mm @ 12m
Ligtht on-Dark on select.	Turning commutator				
Supply voltage	10 ± 30 VDC Max				
Ripple	≤10% Included				
No load supply current	30 mA max	30 mA max	30 mA max	20 mA max	15 mA max
Load current max	100 mA				
Output voltage drop	1,8 V max. @ 100 mA				
Output type	PNP or NPN open collector				
Switching frequency	1000 HZ With light/dark ratio 1:1				
Response time	≤0,5 ms With resistive load				
Time delay before availability	100 ms max				
Supply electrical protections	Overvoltage pulses and polarity reversal				
Output electrical protections	Short circuit, overcurrent, overvoltage				
Operation temperature range	-25 ÷ +55 °C				
Storage temperature	-40 ÷ +70 °C				
Temperature drift	±15% of scanning distance				
Ambient light immunity	10 000 Lux minimum sunlight 3000 Lux minimum HF lamp				
Enclosure rating	IP 67				
LED indicators	Yellow: output status; Green: operative reserve> 1,1				
Housing material	PBT housing; PC Optics				
Cable PVC 2m	3x0,18 ø 4mm				
Weight	53 g cable version; 9 g Plug version				

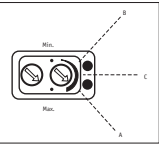
(1) White target 90% 100x100 mm
(2) With RL110 reflector

CONNECTIONS AND INSTALLATION

- Make sure that the supply voltage is correctly settled with a ripple corresponding to the values indicated on the catalogue.
- In case the noise produced by the power lines exceed the values foreseen by the CE norm (interference immunity), separate the sensor cables from both the power and high tension lines, and insert it in a grounding metal raceway. Moreover, it is advisable to connect the sensor directly to the supply source and not to other devices.
- To extend the supply and output cables, it is necessary to use a cable having conductors with a minimum size of 1 mm². The maximum length of extension is 100m (this value is referred to a minimum tension and power supply at a load of 100mA).
- Avoid the deposit of dust, water, moisture, etc. on the optic surface; this kind of deposits could compromise the reading features of the device.
- Protect the optic against organic solvents.
- Avoid direct exposure of the receiver to intense light sources or sun light.
- Clean the optic with a wet cloth and then dry it.

Alignment and adjustment

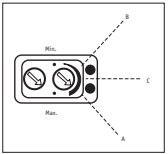
Direct proximity scanner with background suppression
Mount the unit using the suitable brackets (supplied), connect and align the sensor following the connection diagrams.
Select operating mode:
L: Light-switching; if light is received, output switches.
D: dark-switching, if light is interrupted, output switches.
Place the object to be detected at the required reading distance, checking that the optic axis is perpendicular to the object surface.
NOTE: In case of reflecting or flat objects, it could be convenient to recline the sensor of some degrees with respect to the perpendicular.
Adjust the light reception:
LED grn(=green): light reception with function reserve >1.1
LED ora(=orange): switching output active. Set the >SENS.< control knob to max., place the object and determine switch-on and switch-off points of the orange LED by moving the orange LED by moving the light beam horizontally and vertically. Select middle position. At optimum reception, the green LED lights up. If the orange LED does not go out when an object is present, the light reception is too low (e.g. object too small, object transparent).



Setting object detection: remove the object; the orange LED (output) must change (position A=Max.). If not, turn the >SENS.< control knob (range 5 rotations) in the direction of Min. until the orange LED (output) changes (e.g. position A). Set the knob to Min. Position the object and turn the knob to Max. until the green LED lights up (e.g. position B). If position B<position A, select middle position (e.g. position C). Check overall function. If function is o.k. the setting procedure is over. If the setting is not o.k. check the operating conditions and re-adjust.
If position A ≤ position B, background influence is too great. Check the operating conditions and re-adjust.

Direct proximity scanner models

Mount the unit using the suggested brackets (supplied) and connect and align the sensor following the connection diagrams.
Select operating mode:
L: Light-switching; if light received, output switches.
D: dark-switching, if light interrupted, output switches
Place the object to be detected at the required reading distance, checking that the optic axis is perpendicular to the object surface.
NOTE: In case of reflecting or flat objects, it could be convenient to recline the sensor of some degrees with respect to the perpendicular.
Adjust the light reception:
LED grn(=green): light reception with function reserve >1.1
LED ora(=orange): switching output active. Set the >SENS.< control knob to max., place the object and determine switch-on and switch-off points of the orange LED by moving the light beam horizontally and vertically. Select middle position. At optimum reception, the green LED lights up. If the orange LED does not change, too little or no light at all is being received. In this case, re-adjust or clean the light sensor.
Setting object detection: remove the object; the orange LED (output) must change (position A=Max.). If not, turn the >SENS.< control knob (range 5 rotations) in the direction of Min. until the orange LED (output) changes (e.g. position A). Set the knob to Min. Position the object and set the knob in direction Max. until the green LED lights up (e.g. position B). If position B<position A, select middle position (e.g. position C). Check overall function. If function is o.k. the setting procedure is over. If the setting is not o.k. check the operating conditions and re-adjust.
If position A ≤ position B, background influence too great. Check the operating conditions and re-adjust.



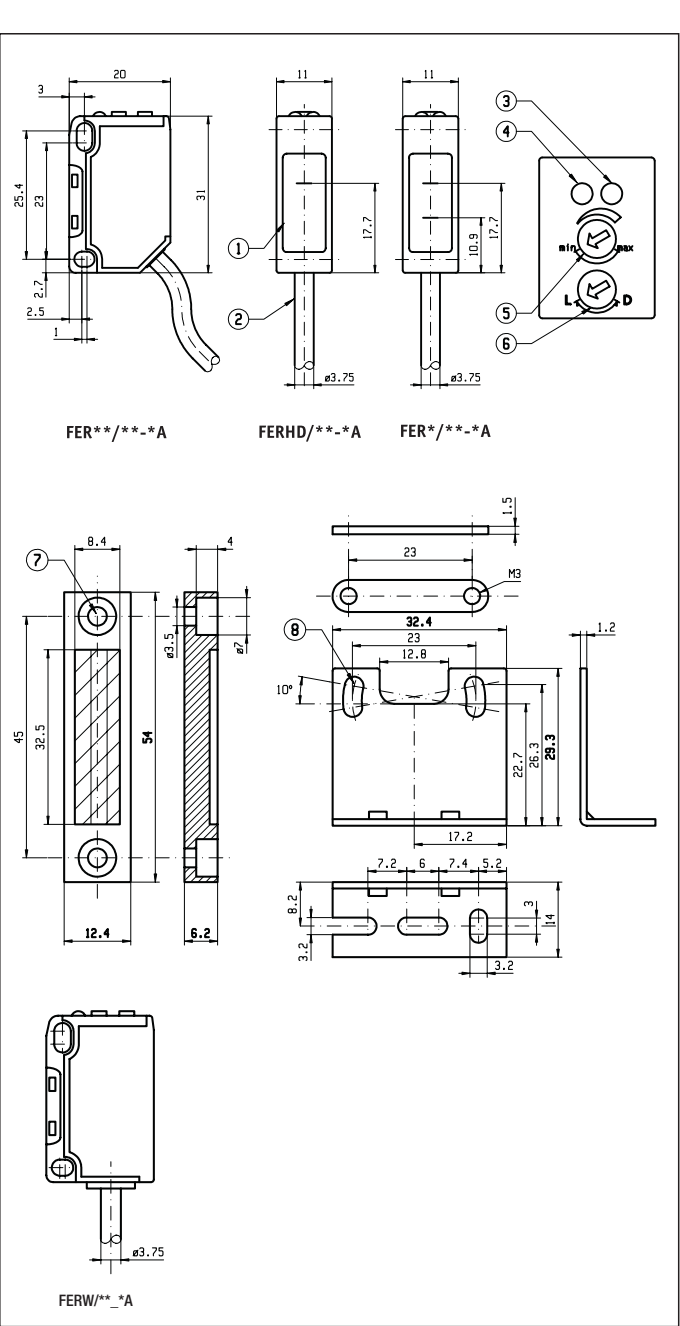
Photoelectric reflex switch, with reflector models

Mount the reflector so that its surface is perpendicular to the optic axis. Check that the distance between the sensor and the reflector does not exceed the values specified for the reflector itself. Fix the sensor safely but not permanently and select the output type. For a perfect alignment, follow the procedure below.
Adjust te light reception:
LED grn(=green): light reception with function reserve >1.1
LED ora(=orange): switching output active. Set the >SENS.< control knob to max., determine switch-on and switch-off points of the orange LED by moving the light beam horizontally and vertically. Select middle position so as the red light beam strikes the center of the reflector. At optimum reception, the green LED lights up. If the orange LED does not change, too little or no light at all is being received. In this case, re-adjust photoelectric switch and reflector and, eventually, clean them.

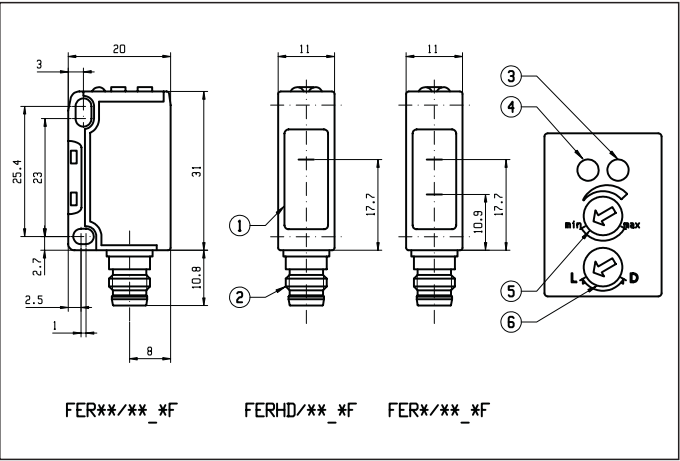
Emitter – Receiver models

Select operating mode:
L: Light-switching; if light received, output switches.
D: dark-switching, if light interrupted, output switches
Mount Emitter and Reciver using the fixing holes to the holder (supplied) opposite to the reflector and align roughly. Keep into consideration the reception capability of the light beam. Power the device. The emission led of the emitter lights up.
Adjust te light reception:
LED grn(=green): light reception with function reserve >1.1
LED ora(=orange): switching output active. Set the >SENS.< control knob to max., determine switch-on and switch-off points of the orange LED of the receiver by moving the light beam horizontally and vertically. Select middle position so as the red light beam strikes the receiver. At optimum reception, the green LED lights up. If the orange LED does not change, too little or no light at all is being received. In this case, re-adjust emitter and receiver and, eventually, clean them.
Setting object detection:
Place object in light beam. The orange LED must change. If not, reduce the sensitivity using the >SENS.< control knob until the orange LED changes. When the object is removed, the green LED must light up again. If this is not the case, adjust the sensitivity until the switching threshold is correctly set. If the green LED does not go out when an object is present, the light reception is too low (e.g. object too small, object transparent).

MECHANICAL DRAWINGS



- ① Sensitivity area
- ② MBx1 connector output
- ③ Output satus led
- ④ Signal limit led
- ⑤ Sensitivity adjustment trimmer
- ⑥ Output status selectable trimmer
- ⑦ RL122 (FE polarizing filter)
- ⑧ STFE 00 (FE bracket)



- ① Sensitivity area
- ② MBx1connector output
- ③ Output satus led
- ④ Signal limit led
- ⑤ Sensitivity adjustment trimmer
- ⑥ Output status selectable trimmer