MR 90 CONTRAST SENSOR

- **Teach-in**
- **Red/Green LED emission**
- **Vertical or horizontal spot**
- **Remote setting**
- **Models with auto-set**
- **Long operation life**
- **Metal housing with orientable optics and connector**

Power supply	10-30 VDC (reverse polarity protected)
Current draw	80 mA max.
Light emission	Red 635nm / Green 565 nm LED
Spot dimensions	1.5 mm x 5 mm (9mm lens)
Operation distance (indicates typical detection distance)	6-12 mm (9mm lens)
Depth of field	± 3mm (9mm lens)
Programming	Teach-in with 2 push buttons
Indicators	Red Output LED / Green ready light
Output type	NPN or PNP, R pull-down/up 10K ohm
Saturation voltage	1 V max. (NPN ver.) / 2 V max.(PNP ver.)
Output current	200 mA max. short circuit protection
Response time	50 ms max.
Switching frequency	10 kHz max.
Operating mode	Automatic dark / light selection
Analog output range	0–5.5 VDC (2 VDC on white 90%) 2.2K Ohm out.Resistance
Timing function	20 ms minimum output on
Connection	M12 4 pole connector
Electrical protection	Class 1
Environmental protection	IP67
Housing material	ZAMA
Lens material	Glass
Weight	310 g max. (connector ver.)
Dimensions	L= 81.2mm x W= 31mm x H= 58mm
Operating temperature	-10 - +55˚ C
Storage temperature	-25 - + 70˚ C

CONTROLS

OUTPUT LED — The Red LED indicates the detection output status

READY LED — During operation, the Green LED permanently ON indicates a normal operating condition; fast blinking indicates an output overload condition. See “SETTING” for setup procedures.

MARK / BKGD PUSH BUTTON — The push buttons activate the setup procedure.

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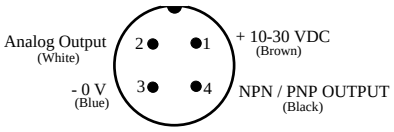
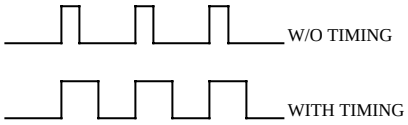
CONNECTIONS



INSTALLATION

Operating distance is rated from the lens front face. Beam direction may be changed by swapping the cap and the lens. The M12 connector or cable exit may be rotated in three positions by loosening the locking screw. The locking screw must be tightened when finished.

TIMING FUNCTION

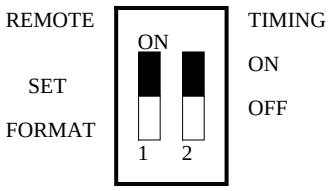


When ON is selected (configuration selector 2) a delay timer function is enabled which extends the output time to 20 ms. Factory default is OFF (timer disable)

SETTING

A two-step setup procedure adjusts the switching threshold LIGHT/DARK mode. Using the procedure given below, the output is on when a mark is detected.

CONFIGURATION



The configuration selector switch is available by removing the sensor side cover. Slide 1 enables the remote input mode or the pushbuttons. Slide 2 enables or disables the output timing function. The switch also allows the selection of output mode NPN or PNP.

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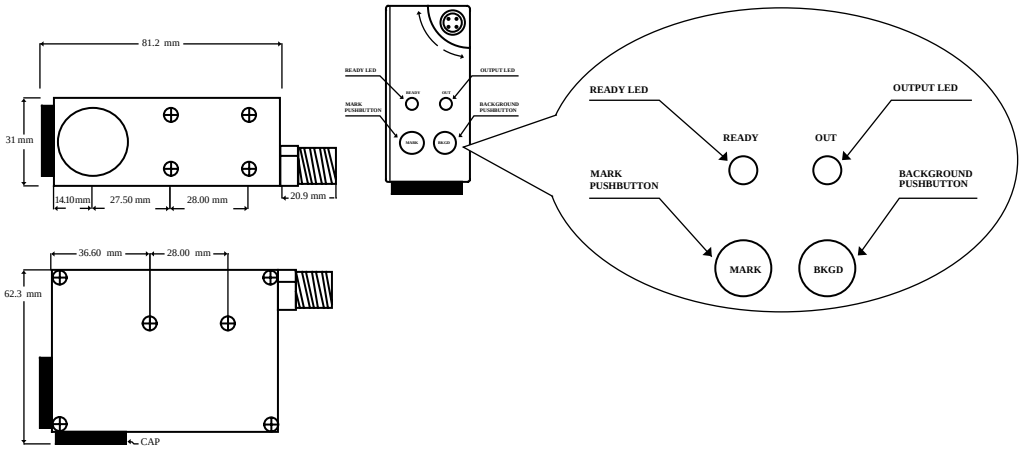
1. Output ON state acquisition MARK
Place the target mark into the emission spot and press the MARK pushbutton until the green LED turns off. The sensor acquires by switching the Red and Green emission (don't move the mark during this phase).

2. Output OFF state acquisition BKGD
Place the background into the emission spot and press BKGD pushbutton. The Green Led will blink once. The sensor acquires by switching the Red and Green emission (don't move background during this phase).
If the green Led light is permanently ON, a proper operation has been obtained. If it flashes slowly the setup procedure failed due to insufficient contrast: repeat the procedure from the beginning.

NOTE: Detecting marks on reflective surfaces is improved by adjusting the beam 5˚ – 20˚ from surface axis.



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