

MCS-638-3 and MCS-638-4 Series

P-241-135
819-0468

Installation & Operating Instructions

MCS-638-3 Part Number 7135-448-011
MCS-638-4 Part Number 7135-448-012



Print Registration/Color Mark/Contrast Sensors

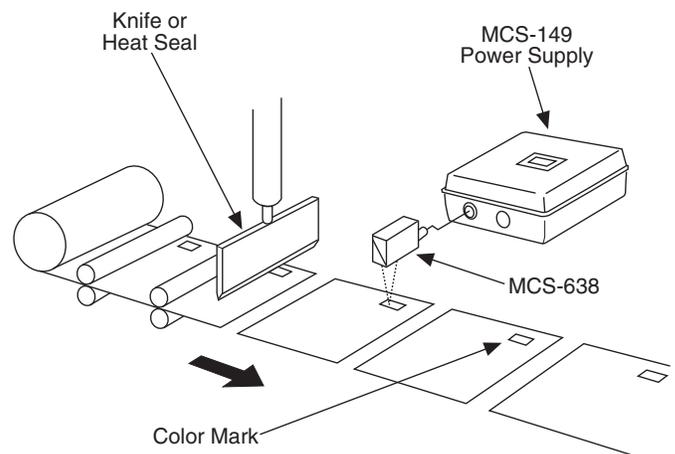
The MCS-638 sensor evaluates the brightness difference between a target color and a background color. Sometimes the color difference can be very slight, in these cases the MCS-638 with its variable color LED light source is beneficial. The color of the light source is important, and the appropriate choice of color for the light source, or using the MCS-638 with its automatic light source color selection allows the detection of very slight contrasts. For example, a green color LED light source is more likely to detect a contrast between red and blue than a contrast between green and blue.

A common application for contrast sensors is a converting operation. A web of printed media may need to be cut into individual sheets, and registration marks are printed in certain locations to signal the machine controller to cut the media. For example, a continuous sheet of margarine wrappers is cut into individual wrappers with the printing centered on each individual sheet. Another common application is on bag making machinery where the sensor detects the registration mark and signals the machine to stop and cut or heat seal a bag.

Features:

- Static mode teach allows one automatic teach step for the target and one automatic teach mode for the background.
- Remote teach input allows setup to be programmed remotely.
- Dual lens position
- Automatic selection of best color light source (Green, Red, Blue).
- Light Operate (Normally Off) / Dark Operate (Normally On) Operate Modes.
- Quick Disconnect (2 Meter Cable included with Sensor).
- LED indication of Output status.
- Output - Push-Pull (NPN/PNP)

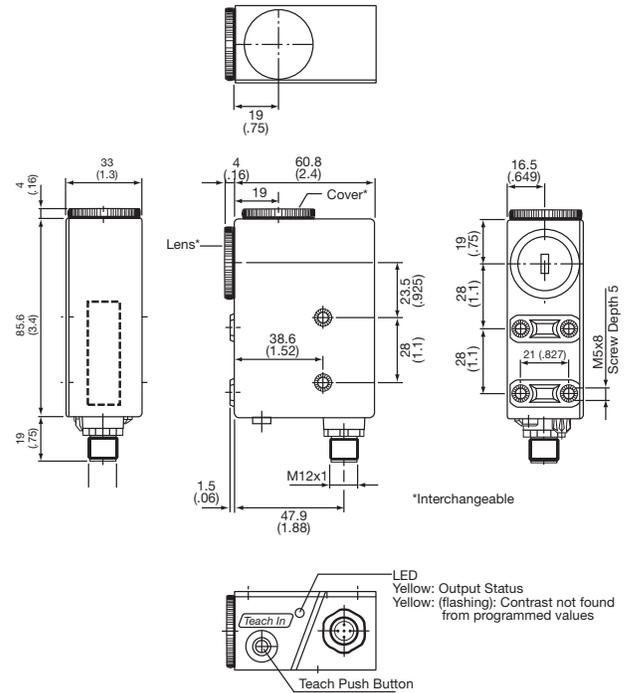
Typical Application



Specifications Electrical

Model Number	MCS-638-3	MCS-638-4
Part Number	7135-448-011	7135-448-012
Sensing Range	9.5 mm ± 3 mm	25 mm ± 6 mm
Sensitivity Adj.	Yes (Push-Button Teach)	
Output	1 Push-Pull (NPN/PNP)	
Load Current	200 mA Max	
Voltage Drop	≤ 2.5VDC	
Short Circuit and Overload Protection	YES	
Reverse Polarity Protection	YES	
Supply Voltage	10-30 VDC	
Voltage Ripple	10%	
LED Indicator	YES	
Current Consumption	≤ 70 mA	
Operating Mode	Light on/Dark on	
Response Time	30 μs	
Switching Frequency	16.5 kHz	
Protection(IEC)	IP 67	
Light Spot Size and Orientation	1 mm x 4 mm	2 mm x 8.5 mm
Light Source	Green, Red, or Blue LED	
Temperature Range	-4°F to +140°F (-20°C to + 60°C)	
Approvals	CE	

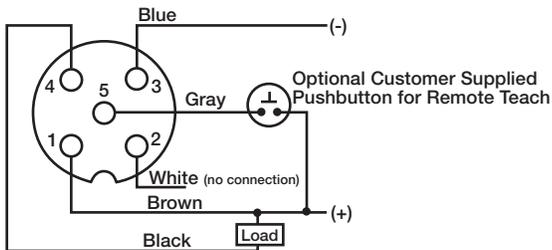
Mechanical Data



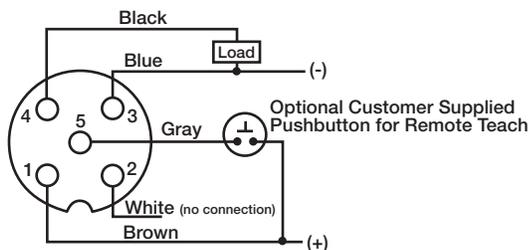
Housing Material	Makrolon
Lens Material	Glass
Weight	7.1 oz
Connection	Quick Disconnect (2 Meter Cable Included)

Wiring

NPN OUTPUT WIRING Male Receptacle End View



PNP OUTPUT WIRING Male Receptacle End View



Programming

1. Connect the supply voltage to the wires noted in the wiring diagram.
2. Aim the light spot at the target mark. For glossy or reflective surfaces, the sensor should be angled at 10° to 15° off the perpendicular axis from the target.
3. Press the Teach push button on the sensor or apply V+ to the Teach Input for a minimum of 50 milliseconds. The LED should flash slowly (at a rate of approximately 1 Hz).
4. Aim the light spot at the background.
5. Press the Teach push button on the sensor or apply V+ to the Teach Input for a minimum of 50 milliseconds. The LED will now turn on when the target mark is present and off when it is absent after a successful teach. If the teach was not successful or the contrast was not sufficient, the LED flashes quickly (at a rate of approximately 4 Hz). Programming the MCS-638 as indicated above sets the switching threshold exactly in the middle of the target and background values. The above procedure is for Light Operate mode. For Dark Operate mode, reverse steps 2 and 4.



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