DF12 Series
Color Sensors

- Diffuse mode sensor for recording colored print marks on backgrounds with different colors
- Color detection by means of the active three-range method
- TEACH-IN procedure for automatic threshold value setting
- 3 independent channels
- 3 tolerance steps per channel
- 3 push-pull outputs

DF12 Color Sensor

Technical Specifications

Function input
Static TEACH-IN
Sensor range 11 mm ± 2 mm
Light source 3 LEDs (R,G,B)
Light type Visible green/red/blue, modulated light
Operating display LED green, statically lit Power on , Undervoltage indicator: Green LED, pulsing (approx. 0.8 Hz) , short-circuit : LED green flashing (approx. 4 Hz)
Function display 2 LEDs yellow, light up in case of detection
Controls 2 TEACH-IN rotary switch for Teach-In channel and Teach-In tolerance .
Operating voltage 10 ... 30 V DC
No-load supply current ≤ 40 mA
Function input Ext. Teach-In input (ET)
Ext. blanking-input (AT)
Signal output 3 Push-pull outputs, short-circuit proof, reverse polarity protection
Switching current max. 100 mA
Response time 1 ms
Ambient temperature -20 ... 60 °C (-4 ... 140 °F)
Protection degree IP67
Connection 8-pin, M12 metal connector, 90° convertible
Housing Frame: nickel plated, die cast zinc,
Laterals: glass-fiber reinforced plastic PC
Optical face Plastic pane
Standards EN 60947-5-2
Approvals CE, cULus
**Photoelectric Sensors**

**Photoelectric Color Sensors**

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**Dimensions (mm)**

![Dimensions Diagram](image)

**Sensing Characteristics**

**Relative received light strength**

<table>
<thead>
<tr>
<th>Distance X [mm]</th>
<th>Relative received light strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>120%</td>
</tr>
<tr>
<td>5</td>
<td>100%</td>
</tr>
<tr>
<td>10</td>
<td>80%</td>
</tr>
<tr>
<td>20</td>
<td>60%</td>
</tr>
<tr>
<td>30</td>
<td>40%</td>
</tr>
<tr>
<td>40</td>
<td>20%</td>
</tr>
<tr>
<td>50</td>
<td>0%</td>
</tr>
<tr>
<td>60</td>
<td>0%</td>
</tr>
</tbody>
</table>

- **LED red**
- **LED blue**
- **LED green**

**Wiring Diagrams**

**DC**

**Quick Disconnect**

Note: Wiring diagrams show quick disconnect pin numbers.

V17 Type

- **Option**
  - AT
  - +UB
  - QA
  - OB
  - ET
  - QC
  - 0V
  - n.c.

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- **Option**
  - AT
  - +UB
  - QA
  - OB
  - ET
  - QC
  - 0V
  - n.c.

○ = Background  
● = Mark

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**Accessories**

*(Dimensions in mm)*

**Mounting Bracket Model OMH-MLV12-HWG**
Short right-angle mounting bracket for DF12 Series sensors.

**Mounting Bracket Model OMH-MLV12-HWK**
Short right-angle mounting bracket for DF12 Series sensors.

**Mounting Bracket Model OMH-DK**
Flat mounting bracket for DF20 Series sensors.

**Mounting Bracket Model OMH-DK-1**
Flat mounting bracket for DF20 Series sensors.

**Mounting Bracket Model OMH-06**
for DF12 Series sensors.

**Dovetail Mounting Clamp Model OMH-K01**
for DF12 Series sensors.

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Material: Nickel-plated steel

Material: Zinc-plated aluminum

Material: Nickel-plated steel

Material: 303 Stainless Steel

Material: 303 Stainless Steel

Material: Anodized Aluminum

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**Dovetail Mounting Clamp Model OMH-K01**
for DF12 Series sensors.
## Accessories

(Dimensions in mm)

**Electrical Mating Cordsets for DF12 and VCS110 Sensors**
(one of each needed per one VCS110 sensor)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Description</th>
<th>For use with</th>
</tr>
</thead>
<tbody>
<tr>
<td>V17-G-2M-PUR</td>
<td>2 meter, 8 conductor PUR jacketed cable, #22AWG (for Connector 1)</td>
<td>VCS110, DF12</td>
</tr>
<tr>
<td>V15-G-2M-PUR</td>
<td>2 meter, 5 conductor PUR jacketed cable, #22AWG (for Connector 2)</td>
<td>VCS110, DF20</td>
</tr>
</tbody>
</table>

**Fiber Optic Cables**
(one fiber optic cable needed per one VCS110 sensor)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Head Style</th>
<th>Sheathing Material</th>
<th>Cable Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMR05-4.0/3*2.3-0.5-Z1</td>
<td>ø10mm non-threaded</td>
<td>stainless steel</td>
<td>0.5 meters</td>
</tr>
<tr>
<td>LMR05-4.0/2.3-1.0-Z1</td>
<td>ø10mm non-threaded</td>
<td>stainless steel</td>
<td>1.0 meters</td>
</tr>
<tr>
<td>LMR05-4.0/2.3-2.0-Z1</td>
<td>ø10mm non-threaded</td>
<td>stainless steel</td>
<td>2.0 meters</td>
</tr>
<tr>
<td>LLR05-22-0.5-Z1 (M4)</td>
<td>M4 threaded</td>
<td>silicone</td>
<td>0.5 meters</td>
</tr>
<tr>
<td>LLR05-22-1.0-Z1 (M4)</td>
<td>M4 threaded</td>
<td>silicone</td>
<td>1.0 meters</td>
</tr>
</tbody>
</table>

See pages 1009-1076 for cordsets
See pages 1105-1128 for accessories