Product Description

The Colour Sensor is a fibre optic amplifier made specifically for recognition of 1 or 1 to 4 colours. Teaching of the colours is easily performed by means of the “Teach-in” function. Each colour has a separate output which can be delayed up to 5 sec by means of the built-in timer. The output function can also be programmed to be either NO or NC. The colour sensor is used for detection of coloured labels, marks, tags, wires, liquids, etc.

Specifications

- Range: From 2 to 60 mm, fibre dependent
- Teach-In (keyboard or remote setup)
- Keyboard lock
- Detection of 1 or 1 to 4 recorded colours
- Microprocessor controlled and EEPROM parameter storage
- Operational voltage 24 V DC
- Output 100 mA, NPN and PNP
- Light or dark switching selectable
- M12 standard plug
- IP65 protection
- Timer: One shot function 0.05 to 5 s

Type Selection Amplifier

<table>
<thead>
<tr>
<th>Housing W x H x D</th>
<th>Range</th>
<th>Ordering no. 1-channel</th>
<th>Ordering no. 4-channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>61 x 115 x 26 mm</td>
<td>2 to 60 mm</td>
<td>PD12CNC01BPM1T</td>
<td>PD12CNC04BPM1T</td>
</tr>
</tbody>
</table>

Type Selection Fibres

<table>
<thead>
<tr>
<th>Detection distance</th>
<th>Spot</th>
<th>Cable length</th>
<th>Ordering no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 mm</td>
<td>Ø 1.5 mm</td>
<td>1000 mm</td>
<td>FPDC01SCC100</td>
</tr>
<tr>
<td>40 - 60 mm</td>
<td>Ø 6.0 mm</td>
<td>1000 mm</td>
<td>FPDC02SCC100</td>
</tr>
<tr>
<td>4 - 6 mm</td>
<td>Small tip</td>
<td>1000 mm</td>
<td>FPDC03SCC100</td>
</tr>
<tr>
<td>2 - 4 mm</td>
<td>12 mm Needle-nose tip</td>
<td>1000 mm</td>
<td>FPDC04SCC100</td>
</tr>
<tr>
<td>2 - 4 mm</td>
<td>40 mm Needle-nose tip</td>
<td>1000 mm</td>
<td>FPDC05SCC100</td>
</tr>
</tbody>
</table>

Specifications

- Detection distance $(S_n)$: 2 to 60 mm, (fibre-dependent)
- Analysis type: True RGB analysis
- Teach input: Active, Not active
- 4 to 24 VDC @10 µs minimum, ≤ 1 VDC
- Recording time: 1 sec
- Levels of sensitivity: Fine, medium and low
- Temperature drift: ≤ 0.4%/°C
- Rated operational volt. $(U_B)$: 24 VDC ±10% (ripple included)
- Ripple $(U_{pp})$: ≤ 10%
- Output current $(I_o)$:
  - Continuous: 100 mA
  - Short-time $(I_s)$: 100 mA
- No load supply current $(I_l)$: 120 mA
- Voltage drop $(U_d)$:
  - $I_s = 100$ mA: ≤ 2.2 VDC
  - $I_s = 10$ mA: ≤ 0.5 VDC
- Timer:
  - Range programmable
  - First step: 50 ms
  - Following steps: 250 ms
- Protection:
  - Short-circuit, reverse polarity, transients
- Light source:
  - LED, red, green and blue
- Spot diameter: 0.5 mm
- Ambient light:
  - Incandescent light: 3'000 Lux
  - Sunlight: 5'000 Lux

Specifications are subject to change without notice (13.01.2014)
Specifications (cont.)

Switching frequency
- Mode “short distance”  500 Hz
- Mode “long distance”  25 Hz

Response time
- OFF-ON (t\text{ON})  1 ms
- ON-OFF (t\text{OFF})  20 ms

Power ON delay (t\text{v})  ≤ 300 ms

Output function
- NPN and PNP
- Available (Push-pull output)

Indication function
- Signal, Teach-in,
- Output ON

Environment
- Installation category  I (IEC 60664/60664A;60947-1)
- Pollution degree  3 (IEC 60664/60664A;60947-1)
- Degree of protection  IP 65 (IEC 60529; 60947-1)

Temperature
- Operating  0° to +40°C (32° to +104°F)
- Storage  -20° to +60°C (-4° to +140°F)

Vibration
- 10 to 150 Hz, 0.5 mm/7.5 g (IEC60068-2-6)

Shock
- 2 x 1 m & 100 x 0.5 m

Rated insulation voltage
- 50 VAC (rms)

Housing material
- Body  Polycarbonate
- Tip  NPB or anodized aluminium

Tip dimensions
- Ø 1.8 - Ø 18 mm

Sheath
- PVC

Length (for each reference)
- 60 cm and 100 cm

Connection
- Plug  M12

Weight
- 150 g

Approvals
- cUL

Dimensions

Wiring Diagram

Fibers Dimensions and Specifications

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### Programming Functions

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Action</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teach-in</strong></td>
<td>Place the object under the tip of the fibre and press</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light or dark operation</td>
<td>Change the output function</td>
<td>Press</td>
<td>for 4 s</td>
</tr>
<tr>
<td><strong>Timing function</strong></td>
<td>The LED “Timer” flashes</td>
<td>Press</td>
<td></td>
</tr>
<tr>
<td>To clear the Timer</td>
<td>Press</td>
<td>Press</td>
<td></td>
</tr>
<tr>
<td>Increase time</td>
<td>Increase time (50 ms/1st step, following steps: 250 ms/step)</td>
<td>Press</td>
<td></td>
</tr>
<tr>
<td>Decrease time</td>
<td>Decrease time (50 ms/1st step, following steps: 250 ms/step)</td>
<td>Press</td>
<td></td>
</tr>
<tr>
<td>Exit timer setting</td>
<td>Press</td>
<td>Press</td>
<td></td>
</tr>
<tr>
<td>The timer LED remains ON</td>
<td>if the time &gt; 0</td>
<td>Press</td>
<td></td>
</tr>
<tr>
<td><strong>Filter function</strong></td>
<td>The “Filter” LED flashes</td>
<td>Press</td>
<td></td>
</tr>
<tr>
<td>To clear the filter value</td>
<td>Press</td>
<td>Press</td>
<td></td>
</tr>
<tr>
<td>Increase the filter value</td>
<td>Press</td>
<td>Press</td>
<td></td>
</tr>
<tr>
<td>Decrease the filter value</td>
<td>Press</td>
<td>Press</td>
<td></td>
</tr>
<tr>
<td>Exit filter setting</td>
<td>Press</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Record colour</strong></td>
<td>Place the object in position</td>
<td>Press</td>
<td></td>
</tr>
<tr>
<td>Light or dark operation</td>
<td>Select the output by pressing</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>The respective LED flashes</td>
<td>Press</td>
<td></td>
</tr>
<tr>
<td><strong>Sensitivity adjustment</strong></td>
<td>Sensitivity assigned for the selected output</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For fine sensitivity</td>
<td>Press</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For medium sensitivity</td>
<td>Press</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For low sensitivity</td>
<td>Press</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Installation Hints</strong></td>
<td>To get started, unlock the keyboard by pressing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relief of cable strain</td>
<td>A proximity switch should not serve as mechanical stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection of the sensing face</td>
<td>A proximity switch should not serve as mechanical stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switch mounted on mobile carrier</td>
<td>Any repetitive flexing of the cable should be avoided</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Installation Hints

- To avoid interference from inductive voltage/current peaks, separate the prox. switch power cables from any other power cables, e.g. motor, contactor or solenoid cables.
- The cable should not be pulled.
- A proximity switch should not serve as a mechanical stop.
- Any repetitive flexing of the cable should be avoided.

### Delivery Contents

- Photoelectric switch: PD12CNC04
- Installation instruction
- Packaging: Cardboard box

### Accessories

- Plastic fibres type FPDC0.SCC103
- Connector type: CON.1A../CON.14NF.. series

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