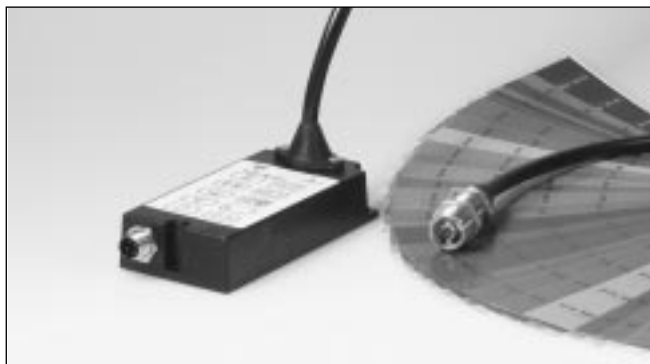# Photoelectrics, Fibre Optic Sensor
Colour Sensor
Type PD12CNC0.BPM1T

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- **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 proctection**
- **Timer: ON-delay or OFF-delay**
- **cUL and CE approved**

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 pro-grammed to be either NO or NC.

The colour sensor is used for detection of coloured labels, marks, tags, wires, liquids, etc.

Ordering Key   PD12CNC04BPM1T

Type
Housing style
Housing size
Housing material
Not used
Colour sensor
Number of channels
Output type
Output configuration
Connection type
Teach-In mode

Type Selection Amplifier

Housing W x H x D	Range	Ordering no. 1-channel	Ordering no. 4-channel
61 x 115 x 26 mm	2 to 60 mm	**PD12CNC01BPM1T**	**PD12CNC04BPM1T**

Type Selection Fibres

Detection distance	Spot	Cable length	Ordering no.
18 mm	Ø 1.5 mm	1000 mm	**FPDC01SCC100**
40 - 60 mm	Ø 6.0 mm	1000 mm	**FPDC02SCC100**
4 - 6 mm	Small tip	1000 mm	**FPDC03SCC100**
2 - 6 mm	Needle-nose tip	1000 mm	**FPDC04SCC100**

Specifications

Detection distance (S_n)	2 to 60 mm, (fibre-dependent)	**No load supply current** (I_o)	120 mA
Analysis type	True RGB analysis	**Voltage drop** (U_d)	
Teach input Active	4 to 24 VDC @10 µs minimum	I_L = 100 mA	≤ 2.2 VDC
Not active	≤ 1 VDC	I_L = 10 mA	≤ 0.5 VDC
Recording time	1 sec	**Timer**	
Levels of sensitivity	Fine, medium and low	Range programmable	0 to 5 s
Temperature drift	< 0,4%/C°	First step	50 ms
Rated operational volt. (U_B)	24 VDC ±10% (ripple included)	Following steps	250 ms
		Protection	Short-circuit, reverse polarity, transients
Ripple (U_{rpp})	≤ 10%		
Output current		**Light source**	LED, red, green and blue
Continuous (I_e)	100 mA	**Spot diameter**	0.5 mm
Short-time (I)	100 mA	**Ambient light**	
		Incandescent light	3'000 Lux
		Sunlight	5'000 Lux

Specifications (cont.)

Switching frequency	
Mode "short distance"	500 Hz
Mode "long distance"	25 Hz
Response time	
OFF-ON (t_{ON})	1 ms
ON-OFF (t_{OFF})	20 ms
Power ON delay (t_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 (IEC 60068-2-6, 60068-2-32)

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
CE-marking	Yes

Wiring Diagram

1-channel type: plug 1
4-channel type: plugs 1 and 2

Dimensions

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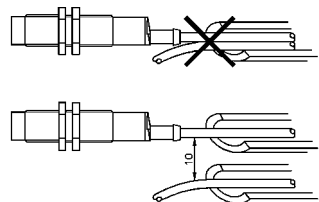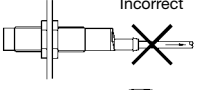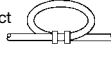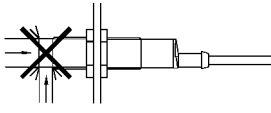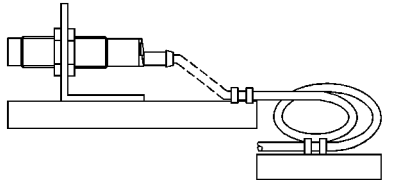
Programming Functions

Teach-in[*)]	Place the object under the tip of the fibre and press	**Light or dark operation** Change the output function	Press [☼ ☾] for 4 s
	[🌷] for short distance or	**Timing function**	
	[🌷🌷] for long distance		Press [🕐]
	The Teach LED flashes		The LED "Timer" flashes
Output	Select the output by pressing	To clear the Timer	Press [3⋮🗑]
	[1⋮⇧] [2⋮⇩] [3⋮🗑] or [4]	Increase time (50 ms/1st step, following steps: 250 ms/step)	Press [1⋮⇧]
		Decrease time (50 ms/1st step, following steps: 250 ms/step)	Press [2⋮⇩]
Sensitivity adjustment	Sensitivity assigned for the selected output	Exit timer setting	Press [🕐]
For fine sensitivity	Press [1⋮⇧]		The timer LED remains ON if the time > 0
For medium sensitivity	Press [2⋮⇩]	**Filter function**	Press [🍸]
For low sensitivity	Press [3⋮🗑]		The "Filter" LED flashes
Record colour	Place the object in position	To clear the filter value	Press [3⋮🗑]
	Press [🎓]	Increase the filter value	Press [1⋮⇧]
	Select the output by pressing	Decrease the filter value	Press [2⋮⇩]
	[1⋮⇧] [2⋮⇩] [3⋮🗑] or [4]	Exit filter setting	Press [🍸]
	The colour is recognized, and the corresponding LED goes ON	[*)]To get started, unlock the keyboard by pressing [1⋮⇧] and [3⋮🗑] To lock the keyboard, press the same two keys.	

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

Relief of cable strain

Incorrect

Correct

The cable should not be pulled

Protection of the sensing face

A proximity switch should not serve as mechanical stop

Switch mounted on mobile carrier

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