

LC 2001 (1 col.) - LC 2004 (4 col.)



- A range of 7 different fibres:
 - Tip from de $\varnothing 1,8$ to $\varnothing 18$ mm
 - Sensing distance from 2 to 60 mm
- Operating voltage: 24 VDC
- Outputs: PNP / NPN
- Response time: 1 ms or 20 ms according to selected mode

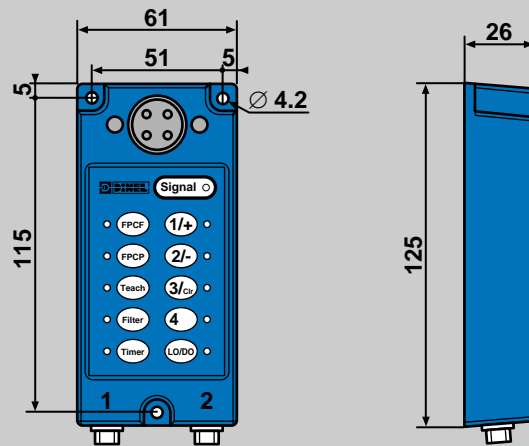
Description :

- Detection of one to four recorded colours
- Fibres: see next page
- Self-teach function: easy and quick adjustment
- External input for self-teach (channel 1)
- 3 sensitivities: fine, medium and low
- Keyboard locking feature
- Programmable timer
- Four NPN/PNP outputs
- Light on / dark on selection
- M12 plug
- IP 65 polycarbonate housing

Applications :

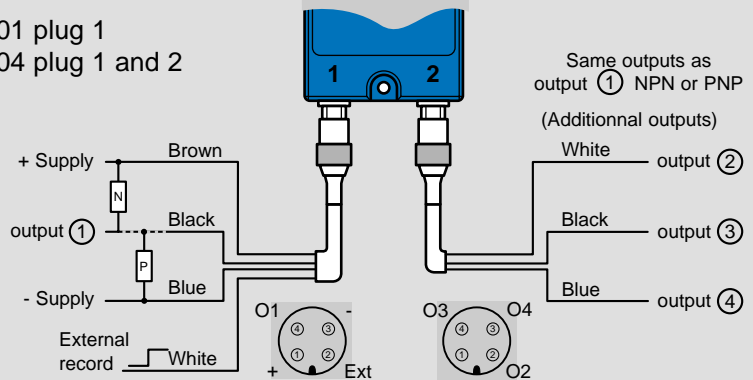
- Detection of marks and coloured tags.
- Quality control:
 - lids colour.
 - presence of labels.
- Detection of coloured wires.
- Detection of coloured liquids.
- Sorting out of colored parts.

Dimensions



Wiring Connections

LC 2001 plug 1
LC 2004 plug 1 and 2

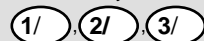


Keyboard and Visualisation

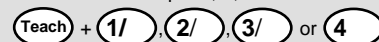
Programming for FPCF type and FPCP type:



To select sensitivity: fine, medium, large:



To record colours on output 1, 2, 3 or 4:



To adjust the timer:



To adjust the filter:



To select light on / dark on:



Next to every key, a LED indicates the status of the function.

Technical Information

| | | |
|--------------------------------|------------------------|--|
| Supply | voltage | 24 VDC \pm 10% ripple < 10% within specified limits |
| | consumption | 120 mA |
| Response time | t_{on} or t_{off} | 1 ms (mode FPCF) - 20 ms (mode FPCP) |
| | switching frequency | 500 Hz (mode FPCF) - 25 Hz (mode FPCP) |
| Outputs | max. nominal intensity | 100 mA per output |
| | voltage drop at 100 mA | < 2,2 V |
| | voltage drop at 10 mA | < 0,5 V at low level |
| Emission | LED | red, green, blue |
| Timer | range | 0 to 5 s |
| | increment duration | first increment : 50 ms, following increments : 250 ms |
| Temperature | operating | 0 to 40 °C |
| | storage | -20 to 60 °C |
| External light immunity | incandescent light | 3 000 lux |
| | sunlight | 5 000 lux |
| Protections | supply | inverse polarity protection |
| | output | permanent short-circuit or over-load protection |
| | degree of protection | IP 65 |
| External record | on | 4 to 24 V, 10 μ s minimum |
| | off | < 1 V |
| Recording | duration | 1 s |

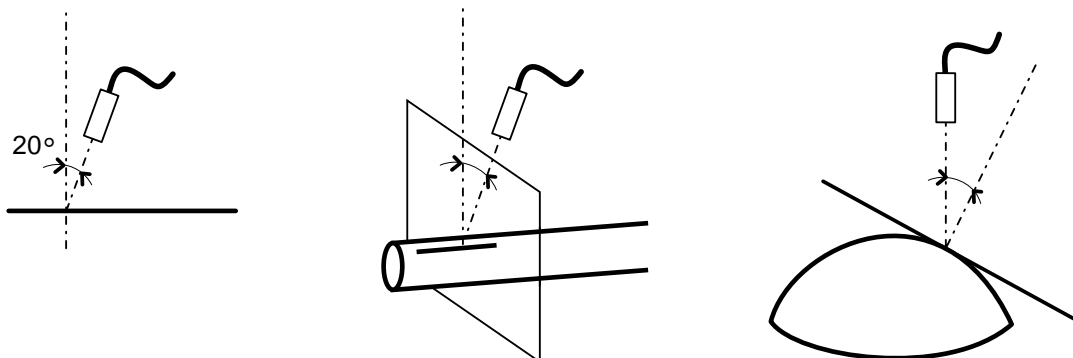
Ordering Codes

| | | |
|------------------|---|----------------------|
| Product | Colour sensor | Colour sensor fibres |
| Reference | LC 2001 - 1 channel LC 2004 - 4 channels 2 m connectors (M12), cable included | see hereby |

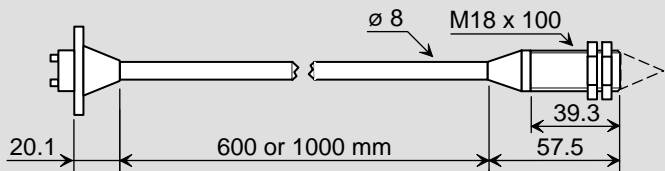
FIBRES FOR COLOUR SENSOR (FPC)

Fibre set-up:

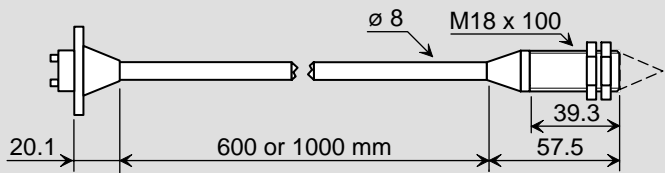
- Comply with advised sensing distance as indicated hereby.
- If the surface is glossy, tilt the tip 20° approximatly from the perpendicular to the surface.
- Plug the fibre polarized adapter in the front side of the sensor and tighten the two M4 screws.



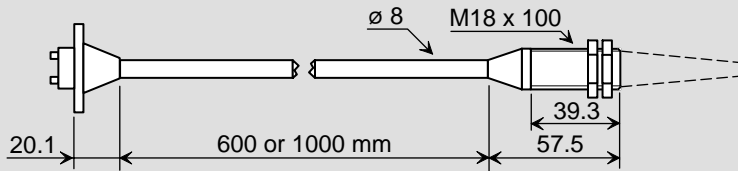
Diffuse Type - P



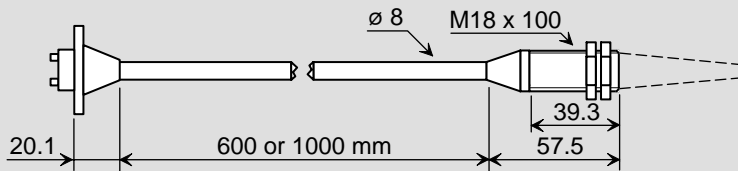
Application : Fine detection with focused spot \varnothing 1.5



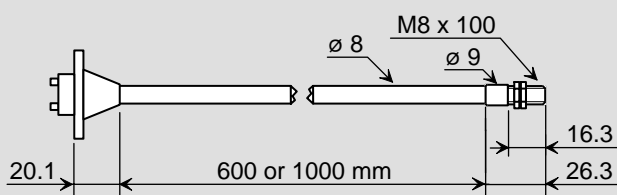
Application : Detection with focused spot \varnothing 1.5 for moving fibre



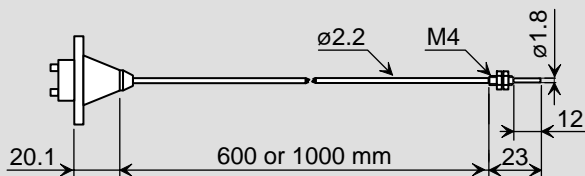
Application : Fine detection at fluctuating distance (spot approx. \varnothing 6)



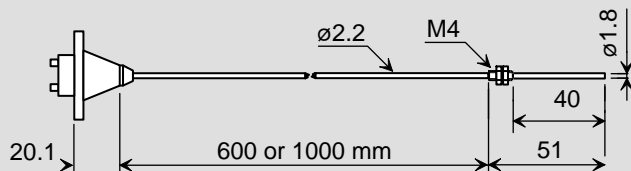
Application : Detection at fluctuating distance for moving fibre (spot approx. \varnothing 6)



Application : Fine detection with small tip dimensions



Application : Fine detection with needle nozzle tip



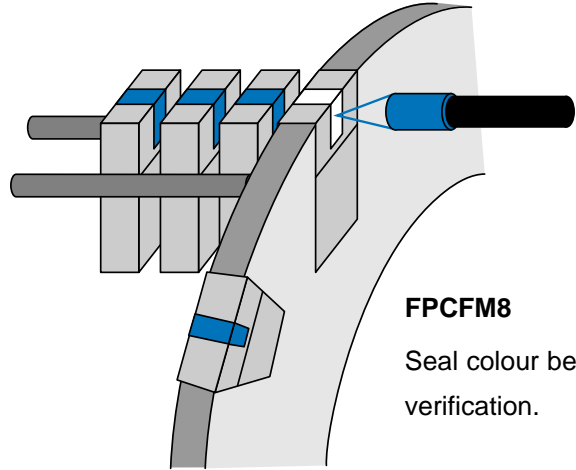
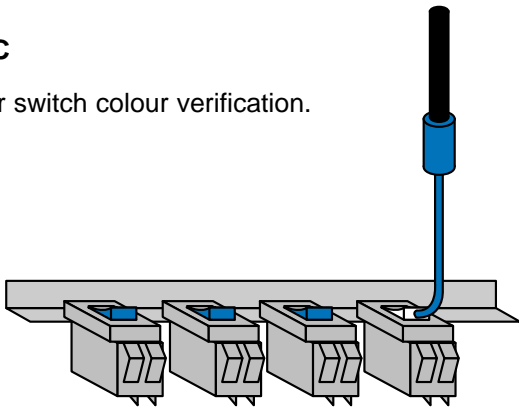
Application : Fine detection with needle nozzle tip and pliable extension

| REFERENCES | LENGTH (MM) | SENSING DISTANCE (MM) | MODE / TR |
|-------------------------|-------------|-----------------------|--------------|
| FPCF 61 FPCF 101 | 600 1000 | 18 | FPCF / 1 ms |
| FPUCF 61 FPUCF 101 | 600 1000 | 18 | FPCF / 1 ms |
| FPCP 61 FPCP 101 | 600 1000 | 40 to 60 | FPCP / 20 ms |
| FPUCP 61 FPUCP 101 | 600 1000 | 40 to 60 | FPCP / 20 ms |
| FPCFM8 61 FPCFM8 101 | 600 1000 | 4 to 6 | FPCF / 1 ms |
| FPCFA 61 FPCFA 101 | 600 1000 | 2 to 3 | FPCF / 1 ms |
| FPCFC 61 FPCFC 101 | 600 1000 | 2 to 3 | FPCF / 1 ms |

TYPES OF APPLICATIONS

FPCFC

Rocker switch colour verification.

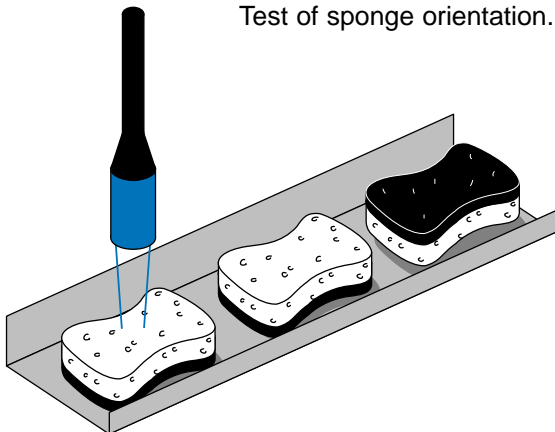


FPCFM8

Seal colour bends verification.

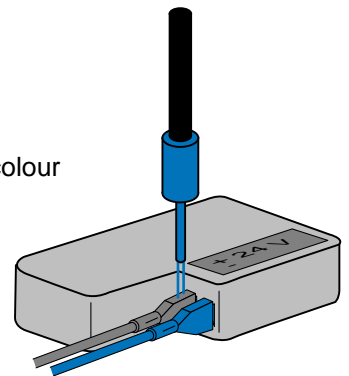
FPCP

Test of sponge orientation.



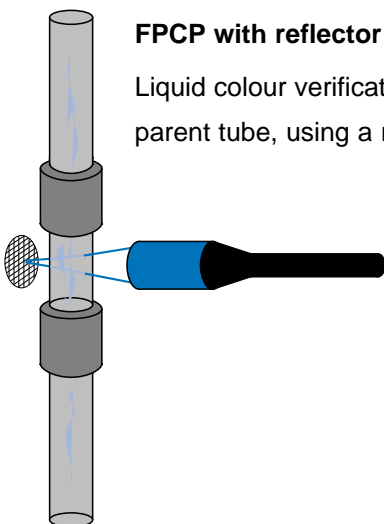
FPCFA

Correct assembly of colour coded plugs.



FPCP with reflector

Liquid colour verification in a transparent tube, using a reflector.



4 x FPCFC

Ribbon cable colour coded conductor verification.

