μP BASED SENSORS WITH LED EMISSION

CONTRAST SENSORS

- *'Teach-in', 'Remote' setting and models with 'Auto-Set'*
- *Red/green or white LED emission*
- *Various interchangeable lenses and fibre-optic versions*
- *Metal housing with orientable optics and connector*

TLμ SERIES

The **TLμ** series offers the most reliable and innovative solutions for all detection applications of register marks and other neutral or coloured references.

The microprocessor-based setting can be either 'Teach-in' using two push-buttons or 'Remote' by cable with the possibility of rapidly memorising and recalling 4 different formats. The setting can also be dynamic and completely automatic in the models with the 'Auto-Set' function.

The LED emission can be red/green with automatic selection, or white offering the possibility of operating on all contrasts, also amongst same-coloured objects and backgrounds, presenting different surface treatments or workings.
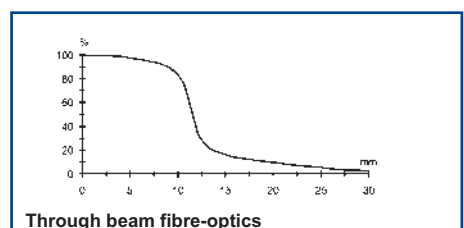
Models with interchangeable 9 mm or 18 mm lenses are available; 22, 28 and 50 mm lenses are supplied as accessories. Moreover many different fibre-optic models are available. The output is NPN or PNP according to the model, but is always selectable by means of an internal switch; an analog output proportional to the received light is also present.

DATASENSOR
value through detection

TECHNICAL DATA

Power supply: .... 10 **...** 30 Vdc, reverse polarity protection

Consumption: .... 80 mA max.

Light emission: .... red 630 nm / green 526 nm LED

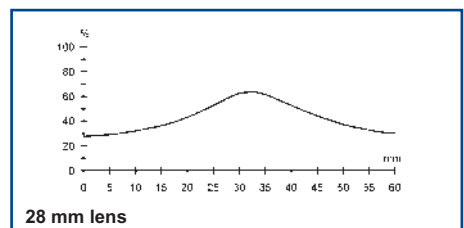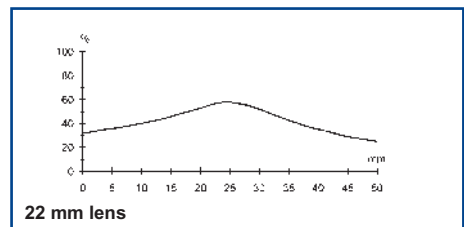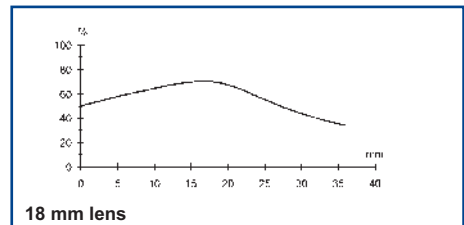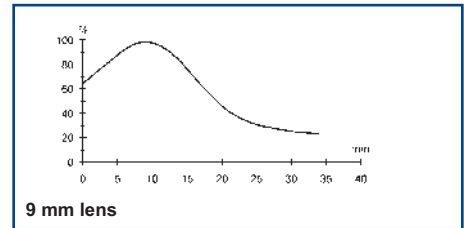white LED (TLµ-4/5xx vers.)

Spot dimension: .... 1.5 x 5 mm (9 mm lens)

Ø 3 mm (9 lens - circular)

2 x 7 mm (18 mm lens)

Operating distance: .... 6 **...** 12 mm (9 mm lens)

14 **...** 22 mm (18 mm lens)

22 **...** 34 mm (28 mm lens)

40 **...** 60 mm (50 mm lens)

Operating distance with fibre-optics: .... 0 **...** 3 mm proximity

0 **...** 10 mm through beam

Depth of field: .... ±3 mm (9 mm lens)

±4 mm (18 mm lens)

±6 mm (28 mm lens)

±10 mm (50 mm lens)

Setting: .... Teach-in with 2 push-buttons

Remote with 2 wires

dynamic Auto-Set (vers.TLµ-417/517)

Indicators: .... red OUTPUT LED

green POWER LED (vers.TLµ-417/517)

green READY LED

Output type: .... NPN or PNP, Rpull-down/up 10 kΩ

Saturation voltage: .... 1 V max. (NPN vers.)

2 V max. (PNP vers.)

Output current: .... 200 mA max., short-circuit protection

Response time: .... 50 µs max., 25 µs max. (TLµ-4/5xx vers.)

Switching frequency: .... 10 kHz max., 20 kHz max. (TLµ-4/5xx vers.)

Operating mode: .... automatic dark/light selection

Analog output range: .... 0 **...** 5.5 Vdc (2 Vdc on white 90%)

2.2 kΩ output resistance

Timing function: .... 20 ms minimum output ON

Connection: .... M12 4-pole connector

3m Ø 6.1 mm shielded cable

Electrical protection: .... class 1

Mechanical protection: IP67

Housing material: .... ZAMA

Lens material: .... glass

Fibre-optic material: .... fibre in glass / sheath in metal

fibre in PMMA / sheath in PE (OF-30)

Weight: .... 310 g max. (connector vers.)

450 g max. (cable vers.)

Operating temperature: .... -10 **...** +55°C

Storage temperature: .... -25 **...** +70°C

Fibre operating temperature: .... -30 **...** +150°C (glass OF vers.)

-30 **...** +60°C (OF-30)

Reference standard: .... EN 60947-5-2

Certifications: .... CE ⟨Ex⟩ II3D

The operating distances indicate the typical detection distance.

DETECTION DIAGRAMS

9 mm lens

18 mm lens

22 mm lens

28 mm lens

50 mm lens

Proximity fibre-optics

Through beam fibre-optics
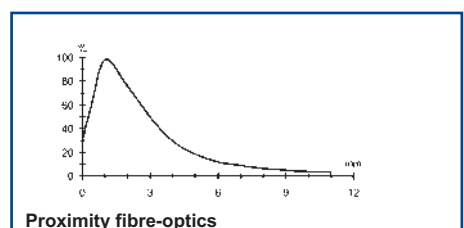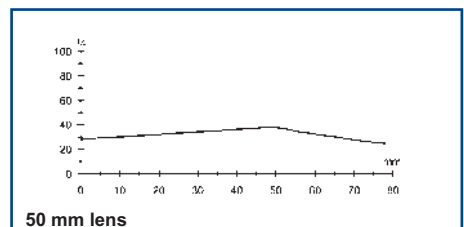
The detection diagrams indicate the typical operating distance.

CONNECTIONS

BROWN — + 10 ... 30 Vdc	**M12 CONNECTOR**
RED — REMOTE INPUT A	
ORANGE — REMOTE INPUT B	ANALOG OUTPUT* (WHITE) 2 1 + 10 ... 30 Vdc (BROWN)
GRAY — ANALOG OUTPUT	3 4
WHITE — NPN/PNP OUTPUT	0 V - (BLUE) NPN/PNP OUTPUT (BLACK)
BLUE — 0 V	
— SHIELD	*Dark/light mode selection input for Auto-Set models*

DIMENSIONS

Ø 25
7.5
18 mm lens

81.2
n°4 M5x6
n°4 M5x0.24
4.3
31
Ø 25
21
9 mm lens
14.1   27.5   28

M12 CONNECTOR

15
M12x1
20.9

READY LED   OUTPUT LED
MARK PUSH-BUTTON   BKGD PUSH-BUTTON

36.6   28
n°4 M5x6
n°4 M5x0.24
58   42.2
Ø 6.1
24
39.8
CAP
5.9

OPTIC FIBRES

Ø 3
M4
2.5
12.5   35   12.5   27.5   3.4
500
OF-30

M6
Ø 8
35   12.5   Ø 2.5
1000
OF-31

1000
35   12.5
3
1
M6   Ø 8
OF-32

1000
35   12.5
Ø 1.6
M6   Ø 8
OF-33

1000
35   12.5
8   1
3
OF-34

1000
35   12.5
3
8   1
OF-35

LENSES

15
Ø 25   M20x0.75
11.5
HI-RES lens

Ø 25   20   M20x0.75
9.2
4
18 mm lens

31.5
Ø 28   M20x0.75
28
22 mm lens

6   42
M20x0.75   Ø 33
44
28 mm lens

50
Ø 48.5   M20x0.75
46
50 mm lens

mm

![DATASENSOR logo]

MODELS

MODEL	EMISSION	SPOT	OPTICS	CONNECTION	OUTPUT	CODE N°
TLµ-011	red/green	vertical	9 mm	cable	NPN	964401000
TLµ-011L	red/green	horizontal	9 mm	cable	NPN	964401010
TLµ-015	red/green	vertical	9 mm	M12 connector	NPN	964401020
TLµ-015L	red/green	horizontal	9 mm	M12 connector	NPN	964401030
TLµ-061	red/green	vertical	18 mm	cable	NPN	964401040
TLµ-065	red/green	vertical	18 mm	M12 connector	NPN	964401060
TLµ-111	red/green	vertical	9 mm	cable	PNP	964401080
TLµ-111L	red/green	horizontal	9 mm	cable	PNP	964401090
TLµ-115	red/green	vertical	9 mm	M12 connector	PNP	964401100
TLµ-115L	red/green	horizontal	9 mm	M12 connector	PNP	964401110
TLµ-161	red/green	vertical	18 mm	cable	PNP	964401120
TLµ-165	red/green	vertical	18 mm	M12 connector	PNP	964401140
TLµ-415C	white	circular	9 mm	M12 connector	NPN	954151330
TLµ-417C (*)	white	circular	9 mm	M12 connector	NPN	954151340
TLµ-445	white	refer to fibres	fibre-optic	M12 connector	NPN	954151350
TLµ-515C	white	circular	9 mm	M12 connector	PNP	954151360
TLµ-517C (*)	white	circular	9 mm	M12 connector	PNP	954151370
TLµ-545	white	refer to fibres	fibre-optic	M12 connector	PNP	954151380

*   *Automatic dynamic setting with 'Auto-Set' function*

ACCESSORIES

MODEL	DESCRIPTION	CODE N°
Lens Hi-Res	lens with 9 mm focus (*)	95ACC1050
Lens No.18	lens with 18 mm focus	95ACC1030
Lens No.22	lens with 22 mm focus	95ACC1100
Lens No.28	lens with 28 mm focus	890000194
Lens No.50	lens with 50 mm focus	S73030511
OF-30-5	plastic fibre-optic L 50 cm - point-shaped spot proximity	96B001070
OF-31-10	glass fibre-optic L 100 cm - point-shaped spot proximity	96B201000
OF-32-10	glass fibre-optic L 100 cm - rectangular spot proximity	96B211000
OF-33-10	glass fibre-optic L 100 cm - through beam	96B221000
OF-34-10	glass fibre-optic L 100 cm - horizontal spot 90° proximity	96B231000
OF-35-10	glass fibre-optic L 100 cm - vertical spot 90° proximity	96B241000

* focalising lens to screw between the sensor and the normal 9 mm lens

*Please refer also to **Sensor Accessories***

Distributed by: