MICRO-EPSILON

More Precision.

optoCONTROL CLS-K

Fibre optic sensors for gap, diameter, edge and presence

optoCONTROL **CLS-K**

Fibre optic sensor for automation

- **Response time ≤ 120µs**
- **Switching frequency ≤ 4kHz**
- **Fibre optic adaption**
- **Analogue output 0.1 - 5VDC**

The basic sensor for automation tasks

Features:

- Scanning distance up to 200mm*
- Range of up to 2m*

* Depending on the Fibre bundle diameter

- Switching output: NPN, PNP, optocoupler, relay (depending on the version)
- Drop-out delay 5-100ms adjustable (optional)
- Stable long-term behaviour by monitoring and regulating the emission of the transmitter diode

Applications:

- Test & measurement tasks
- Position recognition of small parts
- Position and assembly monitoring on automatic assembly machines and conveyor systems
- Detecting presence of parts
- Checking of length and diameter
- Option: UV version for glass recognition

Benefits:

- Precise and reliable object detection
- Low drift via transmission monitoring, making it particularly suitable for measuring tasks
- High switching frequency and short response time
- Sensor monitoring via analogue signal

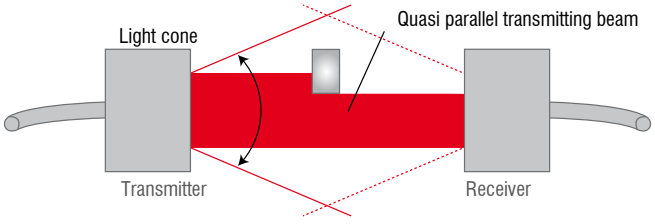
Range / sensor:

one way*3			sensor	
Fibre bundle ø mm	range mm (typ.)*1	min. object size typ.	Fibre bundle ø mm	range mm (typ.)*1 *2
0.6	90	≤ 0.05	0.6	≤ 10
1.0	200	≤ 0.1	1.0	≤ 30
1.5	500	≤ 0.1	1.5	≤ 80
2.5	1,700	≤ 0.2	2.5	≤ 165
3.0	2,000	≤ 0.3	3.0	≤ 180

*1: with 90° angular sensor mechanisms reduced range
*2: related to Kodak white 90%
*3: See page 10 ff.

Resolution (Example):

Cross-section converter Typ Q2 (10 mm Fibre gap) with Fibre optic type FAD; 80% can be used with CLS-K achieving a resolution of 50 - 80 points
For edge or gap detection a resolution of 0.1mm can be achieved (related to 8mm).



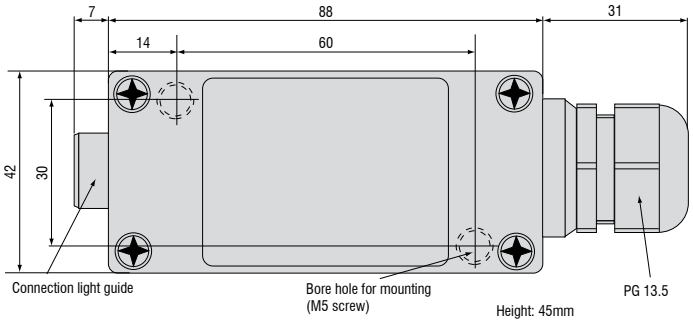
opto CONTROL CLS-K:

Measuring and test amplifiers with fibre optics as recording component for intensity measurement between two fibre optic cross-section converters - the advantageous kind of edge measurement on tracks from >0.1mm resolution with up to 8kHz.

Type CLS-K	10	11	20	30	31	40	50	51
Order No.	10010023	10010024	10040025	10040027	10020028	10040029	10040030	10040031
Operating voltage VDC	10-30	10-30	24	10-30	10-30	24	10-30	10-30
Residual ripple	≤10%							
Current consumption	~ 50mA							
Switching delay	≤ 500ms							
Response time	≤ 120µs							
Temperature drift	≤ 0.5% /K							
Reproducibility	≤ 1% bei $\Delta\vartheta$ = 2K							
Switching state	LED display red and green							
Operating mode	Light and dark switch output		Light/dark switching switchable					
Sensitivity	Adjustable with 10-turn potentiometer P1							
Range switching	1:100 (Short range : Long range)							
Hysteresis	≤ 10%							
Protection class	With mounted fibre optic							
Ambient temperature range	0 to +50°C							
Storage temperature range	-25°C to +70°C							
Housing material	Macrolon 8030/UL94V1, tranparent cover, blue lower part							
Weight, Dimensions	approx. 215g/135g, 125x42x45mm							
Switching output (*short-circuit protected)	Transistor* 2x NPN O.C.		Relays 1x changeover contact	Optocoupler	PNP*	Relays 1x changeover contact	Optocoupler*	PNP*
Switching voltage	30VDC		0.01-250VAC 0.01-220VDC	30VDC	30VDC	0.01-250VAC 0.01-220VDC	30VDC	30VDC
Switching current	5-100mA		50µA-2A	5-100mA	5-100mA	50µA-2 A	5-100mA	5-100mA
Switching power			5 µW-60W 125VA			5 µW-60W 125VA		
Switching frequency max.	4kHz		60Hz	4kHz	4kHz	60Hz	4kHz	4kHz
Saturation voltage	≤ 2.0V			≤ 2.0V	≤ 2.0V		≤ 2.0V	≤ 2.0V
Pulse stretching 5-100ms						Adjustable with potentiometer P2		
Analogue output	0.1-5 VDC, Output resistance 1kOhm							
Type of connection	Line 2m		Screw connectors 1.5mm² ((plug-in version upon request))					

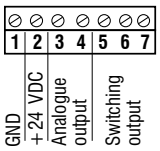
Dimensions:

Dimensions in mm, not to scale



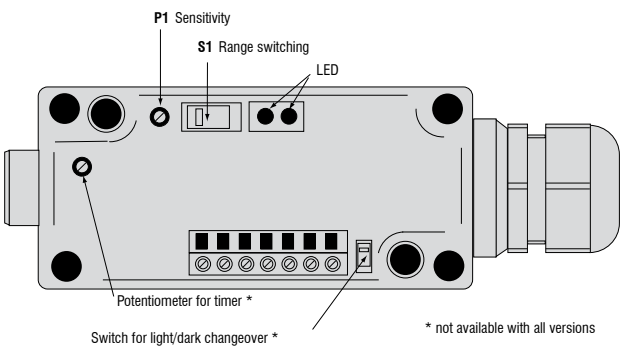
Connections:

Terminal block



Output:
CLS-K-11: NPN O.C.
CLS-K-20/40: Relay
CLS-K-30/50: Optocoupler O.C. / O.E
CLS-K-31/51: PNP
All light/dark switches versions

Control and display interface



Connection cable

brown — GND
pink — +24 VDC
green — Analogue output +
yellow — Analogue GND output
grey — NPN-Switching output *1
white — NPN-Switching output *2

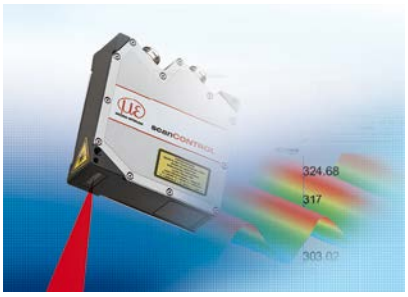
Output:
CLS-K-10: NPN O.C.

*1 dark switching
*2 light switching

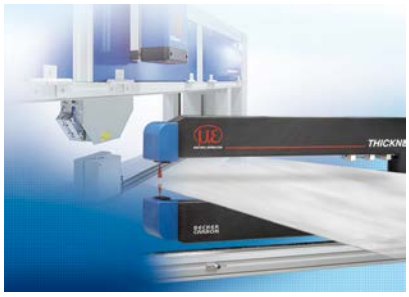
High performance sensors made by Micro-Epsilon

Sensors and systems for displacement and position

Sensors and measurement devices for non-contact temperature measurement



2D/3D profile sensors (laser scanner)



Measurement and inspection systems for quality assurance

Optical micrometers, fibre optic sensors and fibre optics

Colour recognition sensors, LED analyzers and colour online spectrometer

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