










# More Precision

**optoCONTROL CLS1000** // Fiber optic sensor for industrial applications



# Controller

## optoCONTROL CLS1000

-  Large detection and operating ranges
-  Numerous teach-in modes for fast sensor adjustment
-  Detection of the finest structures
-  Extremely high resistance to ambient light up to 50,000 lx
-  LCD display for quick and easy configuration
-  Extremely robust and compact
-  Switchable NPN; PNP; PP



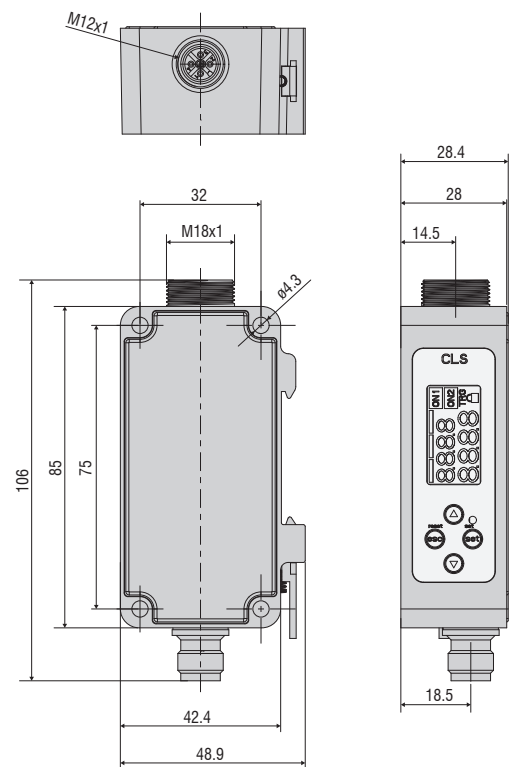
### Reliable presence detection and position control

The fiber optic sensor comprises a CFS sensor and a CLS1000 controller. The wide detection and operating ranges of up to 2000 mm make the fiber optic sensor ideal for the detection of components even at great distances.

The optoCONTROL CLS1000 optoelectronic fiber optic sensor is suitable for use in automation thanks to its variable switching outputs. The fiber optic sensor is used, for example, in position control and for position and presence detection.

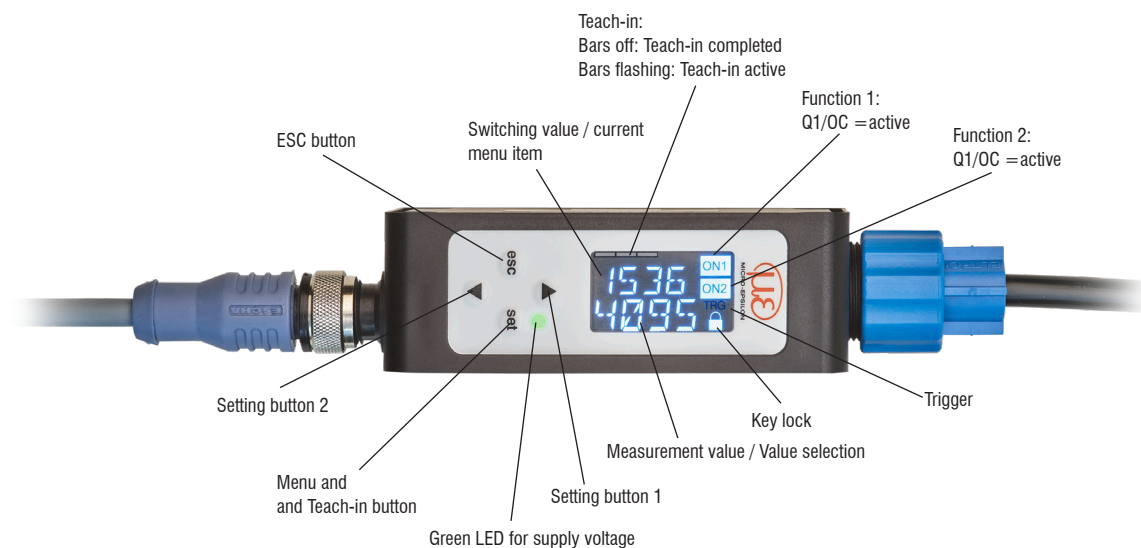
The CLS1000 controller is available in five different versions: CLS1000-QN with antivalence function (normally open/normally closed), CLS1000-2Q with two switching outputs, CLS1000-OC with optocoupler, CLS1000-AU with voltage output and CLS1000-AI with current output. Each model is available in NPN, PNP or push-pull versions, each with or without trigger.

Due to the high resistance to ambient light and the possibility to adapt the controller in OEM applications, the CLS1000 can be used in almost all environments, regardless of high temperatures or confined installation spaces.



(dimensions in mm, not to scale)

## LCD Display / Control Panel



## Controller variants

### Controller with two switching outputs **optoCONTROL CLS1000-2Q**

- Two independently adjustable switching outputs
- Two individual switching thresholds

### Controller with optocoupler **optoCONTROL CLS1000-OC**

- Optocoupler output for potential-free switching
- Galvanic isolation of the output circuitry

### Controller with voltage output **optoCONTROL CLS1000-AU**

- Freely scalable analog output  
Voltage from 0 ... 10 V
- Analog output as intensity output
- Analog output and switching output

### Controller with antivalence function **optoCONTROL CLS1000-QN**

- Two antivalent switching outputs: Q and QN
- Wire breakage protection thanks to antivalent switching output

### Controller with current output **optoCONTROL CLS1000-AI**

- Freely scalable analog output  
Current from 0 ... 20 mA or 4 ... 20 mA
- Analog output as intensity output
- Analog output and switching output



# Controller with antivalence function

## opto**CONTROL** CLS1000-QN

Two antivalent switching outputs  
Q and QN

Switchable NPN; PNP; PP

Safe operation in case of wire breakage  
due to antivalent switching output



| Model                           | CLS1000-QN-NPN  | CLS1000-QN-PNP   | CLS1000-QN-PP  | CLS1000-QN-NPN-T   | CLS1000-QN-PNP-T  | CLS1000-QN-PP-T  |   |
|---------------------------------|---|--|--|--|---|--|---|
| Article number                  | 10085101  | 10085102   | 10085103   | 10085104   | 10085105  | 10085106   |   |
| Operating range                 | max. 2000 mm (depending on transmission sensor)   |  |  |  |   |  |   |
| Detection range                 | max. 1200 mm (depending on reflex sensor)   |  |  |  |   |  |   |
| Response time                   | 100 μs  |  |  |  |   |  |   |
| Switching frequency             | 2.5 kHz (depending on pulse/pause ratio)  |  |  |  |   |  |   |
| Temperature stability           | ≤ 0.1 % FSO / K   |  |  |  |   |  |   |
| Light source                    | infrared LED 870 nm   |  |  |  |   |  |   |
| Permissible ambient light       | 50,000 lx   |  |  |  |   |  |   |
| Supply voltage <sup>1)</sup>    | 12 ... 30 VDC   |  |  |  |   |  |   |
| Max. current consumption        | 50 mA   |  |  |  |   |  |   |
| Switching output                | switchable<br>NPN; PNP; PP  | 2x NPN<br>normally open/<br>normally closed<br>(Q/QN; NO/NC)                                   | 2x PNP<br>normally open/<br>normally closed<br>(Q/QN; NO/NC) | 2x PP<br>normally open/<br>normally closed<br>(Q/QN; NO/NC)  | 2x NPN<br>normally open/<br>normally closed<br>(Q/QN; NO/NC)                        | 2x PNP<br>normally open/<br>normally closed<br>(Q/QN; NO/NC) | 2x PP<br>normally open/<br>normally closed<br>(Q/QN; NO/NC) |
| Switching type                  | light/dark switching (switchable)   |  |  |  |   |  |   |
| Signal input                    | -   |  |  | Trigger In   |   |  |   |
| Connection                      | Optical   | FA socket M18x1 for screwable optical fiber (length 0.3 m ... 15 m, min. bending radius 18 mm) |  |  |   |  |   |
|                                 | Electrical  | 4-pin M12 socket for power supply and signals<br>(connection cable see accessories)            |  |  | 5-pin M12 socket for power supply and signals<br>(connection cable see accessories) |  |   |
| Mounting                        | DIN rail mounting, mounting adapter, (see accessories), mounting holes  |  |  |  |   |  |   |
| Temperature range               | Storage   | -10 ... +70 °C   |  |  |   |  |   |
|                                 | Operation   | -5 ... +55 °C  |  |  |   |  |   |
| Shock (DIN EN 60068-2-27)       | 20 g / 11 ms in 3 axes, two directions and 1000 shocks each   |  |  |  |   |  |   |
| Vibration (DIN EN 60068-2-6)    | 15 g / 10 ... 1000 Hz in 3 axes, 10 cycles each   |  |  |  |   |  |   |
| Protection class (DIN EN 60529) | IP67  |  |  |  |   |  |   |
| Material                        | Plastic housing (polycarbonate)   |  |  |  |   |  |   |
| Weight                          | 200 g   |  |  |  |   |  |   |
| Compatibility                   | with all CFS sensors (FAR, FAD, FAZ and FAS)  |  |  |  |   |  |   |
| Control and indicator elements  | Parameterization/operation via membrane keypad and LCD display on controller;<br>LED for power on   |  |  |  |   |  |   |
| Special features                | up to 7 teach-in modes;<br>adjustable switching output functions<br>on-delayed and off-delayed as well as pulse output;<br>adjustable hysteresis 2 ... 25 % |  |  | up to 7 teach-in modes; adjustable switching output functions<br>on-delay and off-delay as well as pulse output; adjustable hysteresis 2 ... 25%; variety of trigger types |   |  |   |

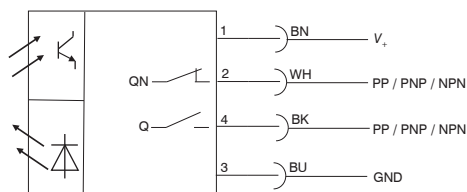
FSO = Full Scale Output

The specified data apply for a consistent room temperature of 22 °C, sensor is continuously in operation, open signal outputs.

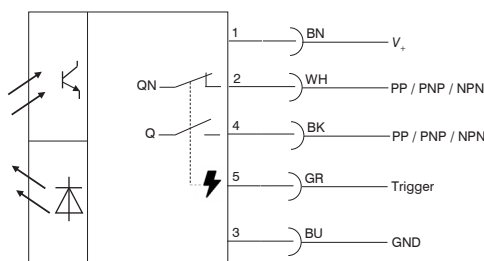
<sup>1)</sup> Residual ripple ≤ 10%

### Connection diagram

CLS1000-QN-xx



CLS1000-QN-xx-T



# Connection options & Accessories

## optoCONTROL CLS1000

CLS1000-AU / CLS1000-AI

CLS1000-OC / CLS1000-2Q / CLS1000-QN

Controller



| Connection possibilities and accessories  |  |
|---|--|
| <b>Supply voltage connection</b><br>PS2020 / PS2031                             |  |
| <b>Interface module for Ethernet connection</b><br>IF1032/ETH                   |  |
| <b>Control / machine</b><br>Analog output (current/voltage)<br>Switching output |  |

| Connection possibilities and accessories  |  |
|---|--|
| <b>Supply voltage connection</b><br>PS2020 / PS2031   |  |
| <b>Interface module for Ethernet connection</b><br>IF1032/ETH                                       |  |
| <b>Control / machine</b><br>Switching output<br>(antivalent, optocoupler, or two switching outputs) |  |

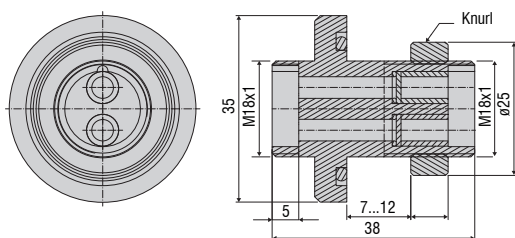
### Connection cables & Accessories

| Art. no. | Model       | Description  |
|----------|-------------|--|
| 11245302 | PC1000-2    | Signal / supply cable, 2 m, 4-pin unshielded             |
| 11245303 | PC1000-5    | Signal / supply cable, 5 m, 4-pin unshielded             |
| 11245304 | PC1000-10   | Signal / supply cable, 10 m, 4-pin unshielded            |
| 11245551 | PC1000-2-T  | Signal / supply cable, 2 m, 5-pin unshielded             |
| 11245300 | PC1000-5-T  | Signal / supply cable, 5 m, 5-pin unshielded             |
| 11245301 | PC1000-10-T | Signal / supply cable, 10 m, 5-pin unshielded            |
| 11245305 | PC1000/90-2 | Signal / supply cable, 2 m, 4-pin unshielded, 90° outlet |
| 11245306 | PC1000/90-5 | Signal / supply cable, 5 m, 4-pin unshielded, 90° outlet |
| 2420096  | PS2031      | Power supply unit universal 100 ... 240 V / 24 V / 1 A   |
| 2420062  | PS2020      | PS2020 Power supply 24 V                                 |
| 2420066  | IF1032/ETH  | Interface module for Ethernet connection                 |

10811916 Pressure-tight feedthrough for vacuum 7-12 mm

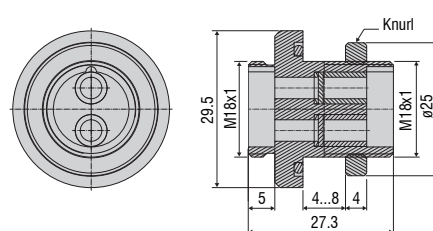
10812254

Pressure-tight feedthrough for vacuum 4-8 mm



Aluminum (anodized black)

Tested up to a pressure difference of 10 bar



Aluminum (anodized black)

Tested up to a pressure difference of 10 bar



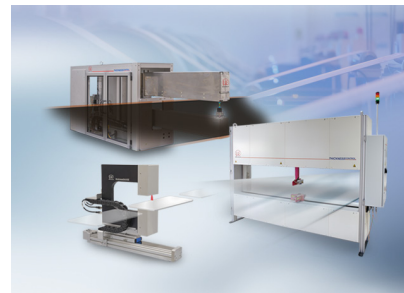
## Sensors and Systems from Micro-Epsilon



Sensors and systems for displacement, distance and position



Sensors and measurement devices for non-contact temperature measurement



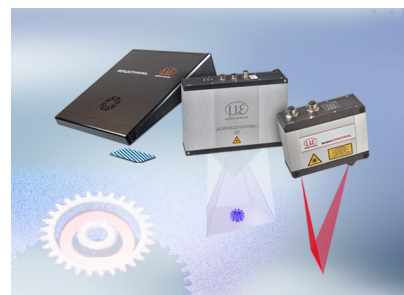
Measuring and inspection systems for metal strips, plastics and rubber



Optical micrometers and fiber optics, measuring and test amplifiers



Color recognition sensors, LED analyzers and inline color spectrometers



3D measurement technology for dimensional testing and surface inspection