

**Intended Use**

The optoCONTROL CLS1000-AU/-AI system is designed for use in industrial environments and domestic areas. It is used for optical and non-contact detection of a diameter, an edge, a gap, the presence of a part in position detection of small parts, for position and assembly control in automatic assembly machines and feeding systems, presence control and for length and diameter inspection. The system must only be operated within the limits specified in the technical data, see Operating Instructions, Chap 2. The system must be used in such a way that no persons are endangered or machines and other material goods are damaged in the event of malfunction or total failure of the system. Take additional precautions for safety and damage prevention in case of safety-related applications.

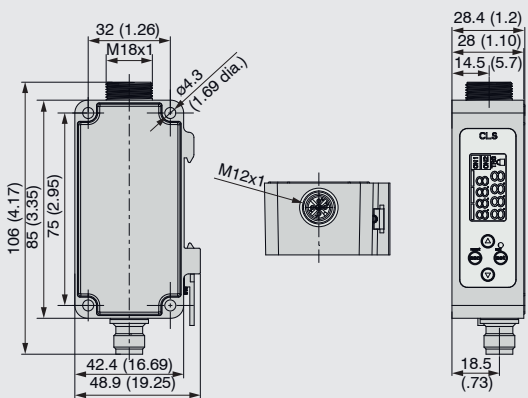
**Warnings**

Connect the power supply according to the safety regulations for electrical equipment. The supply voltage must not exceed the specified limits.  
 > Risk of injury, damage to or destruction of the sensor and/or the optical fiber

Avoid shocks and impacts to the controller and the sensor (optical fiber). Protect the sensor against damage. Never fold the optical fiber. Never fold the optical fiber in tight radii. Protect the ends of the sensor (optical fiber) against contamination (use protective caps).  
 > Damage to or destruction of the optical fiber, failure of the sensor

**Controller Mounting, Dimensional Drawing**

- Ensure careful handling during installation and operation.
- Mount the controller only to the existing through-bores of the housing on a flat surface or a DIN rail. Any type of clamping is not permitted.



Dimensional drawing of optoCONTROL CLS1000, dimensions in mm (inches)

**Proper Environment**

- Protection class: IP67
- Temperature range:
  - Operation: -5 ... +55 °C (+23 ... +131 °F)
  - Storage: -10 ... +70 °C (+14 ... +158 °F)
- Humidity: 5 ... 95 % (non-condensing)
- Ambient pressure: Atmospheric pressure

In addition, the following applies to all models: When used in environments with particularly strong high-frequency influences, deviations from the specified accuracy tolerances may occur at individual frequencies.

**Unpacking/Included in Delivery**

- 1 Controller
- 1 Assembly instruction
- Optional accessories (not included but required to connect the controller):

- 1 Signal / supply cable PC1000-5; with straight connector (or open ends), unshielded <sup>1</sup>
- 1 Signal / supply cable PC1000-2-T for CLS1000 with trigger function, 5-pin, M12, straight connector, 2m, open ends <sup>2</sup>

Various suitable signal / supply cables and optical fibers can be found under Optional Accessories, see Operating Instructions.

- 1) Alternatively PC1000/90-5 with 90° angled connector (or open ends), unshielded, see Optional Accessories, Operating Instructions.
- 2) Only for controller with trigger function

No sharp or heavy objects should be allowed to affect the cables and optical fiber. Avoid folding the cables and the optical fiber  
 > Damage to or destruction of the cable / optical fiber failure of the controller and / or optical fiber

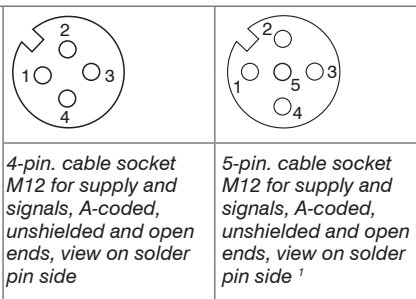
You can find more information about the sensor in the operating instructions. You will find this online at: [www.micro-epsilon.com/download/manuals/man--opto-CONTROL-CLS1000--en.pdf](http://www.micro-epsilon.com/download/manuals/man--opto-CONTROL-CLS1000--en.pdf)

or with the QR code at right.



**Pin Assignment / Supply Voltage 4-Pin or 5-Pin (only with Trigger Function)**

| Pin            | Signal/Assignment | Description               | Comments, circuitry   | Cable color (Cable: PC1000) |
|----------------|-------------------|---------------------------|---|-----------------------------|
| 1              | V <sub>+</sub>    | Supply Voltage            | 12 ... 30 VDC<br><i>I</i> <sub>max</sub> < 50 mA  | Brown                       |
| 2              | OUT2              | Analog output             | 0 ... 10 VDC<br><i>R</i> <sub>a</sub> > 10 kOhm<br>0 ... 20 mA / 4 ... 20 mA switchable ≤ <i>R</i> <sub>L</sub> max 500 Ohm                                       | White                       |
| 3              | GND               | Ground                    | Ground for supply, switching output Q, analog output and trigger (IN) <sup>1</sup>  | Blue                        |
| 4              | OUT1              | Switching output Q1       | <i>V</i> <sub>+</sub> max. 12 ... 30 VDC, <i>I</i> <sub>max</sub> = 100 mA, signal level depends on supply voltage; switching behavior programmable: NPN, PNP, PP | Black                       |
| 5 <sup>1</sup> | TRG <sup>1</sup>  | Trigger (IN) <sup>1</sup> | Max. 30 VDC; input current <i>I</i> <sub>max</sub> = < 1 mA   | Gray <sup>1</sup>           |



**Analog Output Versions and Characteristics**

| CLS1000-AU     |  | CLS1000-AI                             |  |
|----------------|--|--|--|
| NPN, PNP, PP   |  |  |  |
| Voltage output |  | Current output                         |  |
| 0 ... 10 V     |  | 0 ... 20 mA or 4 ... 20 mA; switchable |  |

**NOTICE**

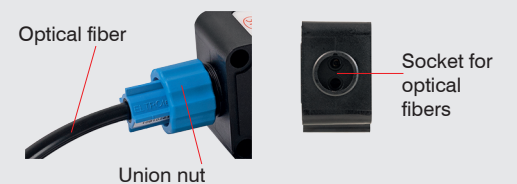
Make sure that cable ends are not exposed. This could cause short circuits.  
 > Connecting input signals to outputs can damage the sensor.

- 1) The controller is optionally available with trigger input (5-pin cable socket for supply and signals) or without trigger input (4-pin cable socket).

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**Initial Operation**

- ▶ Connect the controller according to the pin assignment.
- ▶ Connect the optical fiber to the controller and lock it using a union nut.



Various suitable optical fibers can be found under Optional Accessories, see Operating Instructions.

- ▶ Connect the PC1000-5 signal-/connection cable or the PC1000-2-T for CLS1000 with trigger function <sup>1</sup> to the controller.
- ▶ Switch on the power supply.

After switching on the power supply, the green LED lights up.

- ▶ Move the optical fiber sensors to the required position relative to the object.
- Take background reflections into account here.

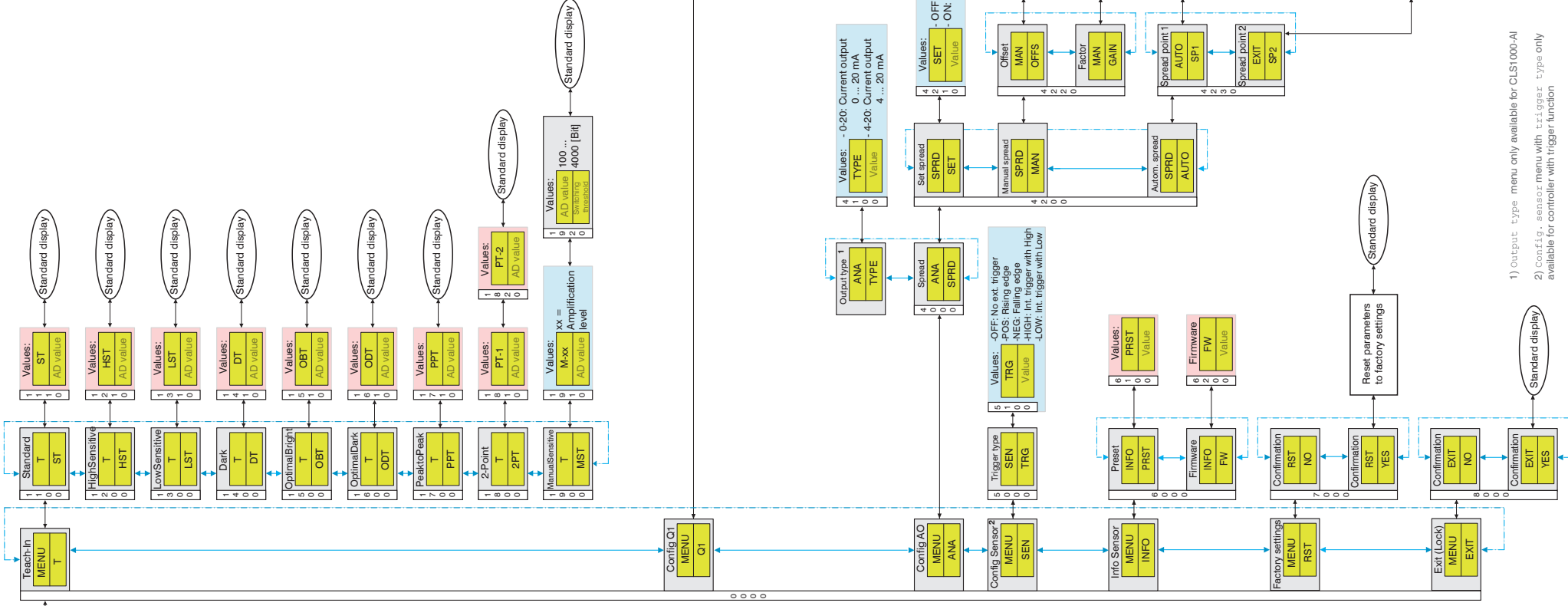
- 1) Alternatively, angled PC1000/90-5 signal / supply cable with 90° angled connector (or open ends) unshielded, see Optional Accessories, Operating Instructions.



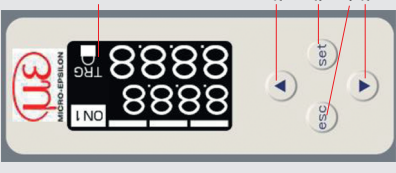
Assembly Instructions  
**optoCONTROL**  
 CLS1000-AU  
 CLS1000-AI

X9771 442-A02024HDR

## Operating Menu



## Operating and Display Elements



- 1 Display field**  
 Illuminated, Q1 = enabled  
 ON1  
 Disabled  
 ON2  
 TRG  
 Illuminated, Lock = enabled
- 2**  
 Small numerical display / switching value / current menu item  
 Large numerical display / Measurement value / value selection  
 Bar:  
 Off = completed teaching process  
 Flashing = ongoing teaching process
- 3**  
 Buttons to go through the menu items and to change values
- 4**  
 Button, to select/confirm menu item/value.  
 Deactivation of key lock by pressing for 2 seconds.  
 Button to undo the menu selection or to go back to a menu level; to cancel or to discard

## Legend Menu Structure

- Menu structure  
 0 Teach-In MENU T
- Value selection  
 5 Values: OFF ... HIGH ...  
 TRG Value  
 0 Value
- Set / apply value  
 1 Values: PT-2  
 2 AD value
- Set high values  
 4 Values: 0 ... 4095 [ms]  
 1 Value

1) Output type: menu only available for CLS1000-AI  
 2) Config. sensor menu with trigger type only available for controller with trigger function