Assembly Instructions
optoCONTROL 2520-95 (270)

Proper Environment
- Protection class: IP64; when plugged in or with protective cap on Ethernet socket
- Temperature: 0 °C ... +50 °C (+32 °F ... +122 °F)
- Storage: 30 °C ... +100 °C (+86 °F ... +212 °F)
- Humidity: 3% ... 95% (non-condensing)
- Ambient pressure: Atmospheric pressure

The pressure class is limited to water (no penetrating liquids, detergents or similarly aggressive media). Use a protective housing if constant water exposure is expected.

Optical window: The optical window is protected by a plastic cover. To avoid impairment or failure of the function.

1) For operation without Ethernet / EtherCAT cable, the protective cap for the M12 connector must be plugged to achieve the IP degree of protection!

**Warnings**

Connect the power supply according to the safety regulations for electrical equipment. Supply voltage must not exceed the limits listed.

- Risk of injury, damage or injury to the system.
- Avoid shock to the cable or damage to the system.
- Risk of electric current, damage to and destruction of the cable.
- Avoid damage to the system or receiver

**Laser Safety**

The laser light must hit the receiver's inlet window exactly in the center. The following applies here:

1) Installation possible as freestanding installation or on optional mounting rail, see also "Structure of the Components" chapter and "Optional Accessories" chapter in the operating instructions.

**Pin assignments for 14-pin round plug (power/signals)**

- **RX-422**
  - Interface RS422, symmetric, 100 Ohm-terminating resistor (120 Ohm) and direction may be switched using software, not electrically separated
  - Internal pull-up resistor, open input is detected
  - High level ≥ 10 V (max 30 V), Low < 2.5 V

- **TX-422**
  - Interface RS422, asymmetric, 100 Ohm-terminating resistor (120 Ohm), max. 480 kΩ, full duplex, not electrically separated
  - High < 3 V, Low < 2.5 V

- **GND**
  - Not electrically separated, 24V logic (HTL), I max = 0.1 A
  - Open input is detected as on

- **Vin**
  - 0 to 10 V, not electrically separated, 24V logic (HTL), I max = 0.1 A
  - Low < 2.5 V (output - operating voltage)
  - Not electrically separated, 24V logic (HTL), I max = 0.1 A
  - Open input is detected as on

- **Out**
  - 0 to 10 V, not electrically separated
  - High level ≥ 10 V (max 30 V), Low level ≤ 2.5 V
  - Not electrically separated, 24V logic (HTL), I max = 0.1 A (output - GND) = 0.1 A
  - Open input is detected as on

- **Out 2**
  - Using the pin assignment for the 14-pin plug (power/signals)

- **Ethernet/EtherCAT socket**
  - Electrically isolated M12x1 socket to connect to PE of system
  - Reference ground for Power, Out, In, Sync, Switching output 2

- **Ethernet/EtherCAT cable**
  - Electrically isolated M12x1 socket to connect to PC/SC2520-3

**Protection measures. Lasers of Class 1M are not subject to notification**

- **For operation without Ethernet / EtherCAT cable, the protective cap for the M12 connector must be plugged to achieve the IP degree of protection!**

**Dimensions and Drawings**

**Electrical connections**

You can download a PDF of detailed operating instructions from our website:

**Supply Voltage (Power)**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
<th>Notes</th>
<th>Color on PC/SC2520-3 cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>+12V DC</td>
<td>Operating voltage</td>
<td>11 to 36 VDC, I max = 200 mA at +12V DC</td>
<td>Red</td>
</tr>
<tr>
<td>GND</td>
<td>Operating voltage ground</td>
<td>Reference ground for Power, Out, In, Syn, RX-422</td>
<td>White</td>
</tr>
<tr>
<td>Out 1</td>
<td>Switching output 1</td>
<td>Errors or limits, not electrically separated, 24V logic (HTL)</td>
<td>Blue</td>
</tr>
<tr>
<td>Out 2</td>
<td>Switching output 2</td>
<td>Separation voltage at I max = 0.1 A</td>
<td>Blue</td>
</tr>
<tr>
<td>In</td>
<td>Zeroing/measuring or re-setting to factory defaults</td>
<td>Not electrically separated, 24V logic (HTL), I max = 10 V (max 30 V), internal pull-up resistor, open input is detected as on</td>
<td>Grey/pink</td>
</tr>
</tbody>
</table>

**Fig. 1** Dimensional drawing of light source and receiver with mounting tab and "dimensions in mm, not to scale".

1) Installation possible as freestanding installation or on optional mounting rail, see also "Structure of the Components" chapter and "Optional Accessories" chapter in the operating instructions.

- The laser light must hit the receiver's inlet window exactly in the center.
- The greater the distance between light source and receiver, the more exact an alignment is required!

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**Fig. 3** 4-pin cable socket, view of solder side

**Fig. 4** 4-pin built-in socket, view of connector side

- **1 pin** 4-pin plug, view of solder side

**Fig. 5**

- **Pin Signal**
  - TX +
  - TX -
  - RX +
  - RX -
  - GND
  - Power source
  - Ground connection
  - Control of WE system

1) Internal coaxial cable for cable output voltage in PC/SC2520-3

- **Connect the power supply and turn on.**
- **3** Insert an Ethernet connection, now adjust the alignment between light source and receiver
- **The laser light must hit the receiver's inlet window exactly in the center.**
- The following applies here:
  - The greater the distance between light source and receiver, the more exact an alignment is required!
Taking LEDs on Receiver ODC 2520-05707 as an example, see Fig. 1

1) The various peripherals and connecting cables are available as accessories, see also operating instructions, Chapter A 1.

Positioning the Target

- Position the measured object of the selected measuring distance to the receiver, as much as possible in the center of the measuring range.
- If the measuring distance changes during the measurement or the edge to be measured is very thick in parallel to the laser beam, a relatively large linearity error may occur.
- Checking the Video Signal

Go to the Video signal menu and check the signal.

The edges to be measured must intersect the detection threshold. If a transparent measured object is to be measured, you can increase the detection threshold; if necessary. However, this can affect linearity.

Checking the Measurement

Go to the Measurement menu and check the measured value-time diagram. You can select additional data for display, e.g., individual edges or center axes, in the measuring program.}

Setting the Signal string: the settings will be lost when the receiver is turned off.

Interrupting the Measurement

Selecting Measuring Distance

Go to the Preferences > Measuring distance menu.

Select a calibrated measuring distance from the list, confirm with ‘Submit’.

If the measuring distance changes during the measurement or the edge to be measured is very thin in parallel to the laser beam, a relatively large linearity error may occur.

Selecting Measurement Program

Go to the Preferences > Measurement program > Measurement task menu.

Select, e.g., edge low-high as the measurement to be performed.

Performing Light Referencing

This referencing must be performed at least once after installation and a warm-up period of about 30 min., but can also be repeated very frequently if great accuracy is required.

- When performing a light referencing using the menu Video signal, press the Start light source reference button.
- Press ‘Stop’ once and ‘Start’ once, if the diagram does not reset automatically.

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