Proper Environment
- Projection class: IP 64, when plugged in or with protective cap on Ethernet socket.
- Range: +5 ... +50 °C.
- Humidity: 5 - 95% RH (non-condensing).
- Altitude: 0 - 2000 m.
- Ambient pressure: Atmospheric pressure up to 1013 hPa.
- The protection class is limited to water (no penetrating liquids, detergent or similarly aggressive media). Use a protective housing if there is constant exposure to water. Optical windows are excluded from the protection class. Contamination of the windows causes impairment of or failure of the function.

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 system.
- Protect the cable against damage. Never bend the cable more tightly than the bending radius.
- Failure of the measuring device, damage to and destruction of the cable.
- Avoid shocks and impacts to the light source and receiver.
- Damage to or destruction of the system.

Laser Class
- The laser light of the optoCONTROL 2520 series works with a 670 nm wavelength (red/brown) semi-conductor laser with max. 2 mW optical output power. The laser will work only when the laser class 1M label is visible.
- The laser warning labels for Germany are already attached to the sensor housing (front and back).
- Warning signs for the EU and US are included and must be attached for the appropriate region by the user prior to initial operation.

Assembly Instructions
- 19 (.75)
- Equipment bonding RS422/Sync, if there is.
- Temperature range: 0 ... 10 V not electrically separated, 24V logic (HTL, I< 2.5 V (output - operating voltage) not electrically separated, 24V logic (HTL), I< 2.5 V (output - GND), saturation voltage at I< 0.1 A: U< 30 V.
- Load: C< 22 nF, R< approx. 50 Ohm, I< 0.1 A: max. 30 V. Internal pull-up resistor, open input is detected as High.
- Power Supply: 10 V ... 30 VDC, I< 0.1 A. U< 30 V.
- Operating voltage ground: Reference ground for Power, Out, In, Sync, RS422.
- Failures or limits, not electrically separated, 24V logic (HTL), I< 0.1 A: U< 30 V.

Fig. 1 Dimensional drawing of light source and receiver, dimensions in mm, not to scale
1) These pins can be used only for the operating instructions for a dimensional drawing of light source and receiver, model optoCONTROL 2520-46/56.

Fig. 2 Dimensional drawing of light source and receiver with mounting rail, dimensions in mm, not to scale

Table 1: Notes for different versions of optoCONTROL 2520
<table>
<thead>
<tr>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage output</td>
<td>Internal pull-up resistor, open input is detected as High.</td>
</tr>
<tr>
<td>Analog I/O</td>
<td>Not electrically separated, 24V logic (HTL), I&lt; 2.5 V (output - operating voltage) not electrically separated, 24V logic (HTL), I&lt; 2.5 V (output - GND), saturation voltage at I&lt; 0.1 A: U&lt; 30 V. Internal pull-up resistor, open input is detected as High.</td>
</tr>
<tr>
<td>Analog Out</td>
<td>Not electrically separated, 24V logic (HTL), I&lt; 2.5 V (output - operating voltage) not electrically separated, 24V logic (HTL), I&lt; 2.5 V (output - GND), saturation voltage at I&lt; 0.1 A: U&lt; 30 V. Internal pull-up resistor, open input is detected as High.</td>
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</tr>
</tbody>
</table>

Table 2: Protection class and size
<table>
<thead>
<tr>
<th>Protection class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP 64</td>
<td>Ingress protection against water (when plugged in or with protective cap on Ethernet socket).</td>
</tr>
<tr>
<td>IP 67</td>
<td>Ingress protection against water (when plugged in or with protective cap on Ethernet socket).</td>
</tr>
</tbody>
</table>

Fig. 3 Light Control: view of solder side
- 14-pin cable plug, view of solder side
- 4-pin cable plug, view of connector side
- Ethernet/EtherCAT socket

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

Fig. 5 Ethernet/EtherCAT socket

Table 3: Supply Voltage (Power)
<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
<th>Notes</th>
<th>Color on PC</th>
</tr>
</thead>
<tbody>
<tr>
<td>+24 V DC</td>
<td>Operating voltage</td>
<td>11 to 30 VDC, I&lt; 0.1 A: U&lt; 200 mA at +24 VDC.</td>
<td>red</td>
</tr>
<tr>
<td>GND</td>
<td>Operating ground</td>
<td>Reference ground for Power, Out, In, Sync, RS422.</td>
<td>black</td>
</tr>
<tr>
<td>OUT 1</td>
<td>Switching output 1</td>
<td>Either or limits, not electrically separated, 24V logic (HTL), I&lt; 0.1 A. U&lt; 30 V.</td>
<td>blue</td>
</tr>
<tr>
<td>OUT 2</td>
<td>Switching output 2</td>
<td>Not electrically separated, 24V logic (HTL), I&lt; 2.5 V (output - operating voltage) not electrically separated, 24V logic (HTL), I&lt; 2.5 V (output - GND), saturation voltage at I&lt; 0.1 A: U&lt; 30 V. Internal pull-up resistor, open input is detected as High.</td>
<td>gray/pink</td>
</tr>
</tbody>
</table>

Table 4: Supply Voltage (Power)
<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
<th>Notes</th>
<th>Color on PC</th>
</tr>
</thead>
<tbody>
<tr>
<td>+24 V DC</td>
<td>Operating voltage</td>
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<td>red</td>
</tr>
<tr>
<td>GND</td>
<td>Operating ground</td>
<td>Reference ground for Power, Out, In, Sync, RS422.</td>
<td>black</td>
</tr>
<tr>
<td>OUT 1</td>
<td>Switching output 1</td>
<td>Either or limits, not electrically separated, 24V logic (HTL), I&lt; 0.1 A. U&lt; 30 V.</td>
<td>blue</td>
</tr>
<tr>
<td>OUT 2</td>
<td>Switching output 2</td>
<td>Not electrically separated, 24V logic (HTL), I&lt; 2.5 V (output - operating voltage) not electrically separated, 24V logic (HTL), I&lt; 2.5 V (output - GND), saturation voltage at I&lt; 0.1 A: U&lt; 30 V. Internal pull-up resistor, open input is detected as High.</td>
<td>gray/pink</td>
</tr>
</tbody>
</table>
Structure of the Components

- **Light source**
  - Receiver
- **Power supply**
  - Laptop/PC
- **Operating voltage on Power supply**
  - PS 2020
- **Meaning of LEDs on Receiver**
  - **Power on**
  - **Link/activity**
    - **Speed**
      - **Yellow**
        - if link inactive
        - if synchronization error
        - if baud rate 100 Mb
      - **Green**
        - if network activity
      - **Flashing red**
        - if Ethernet, error
- **Connecting cables shown**
  - Using the 14-pin socket EDU190
  - To light source
  - Power/signals
  - 1
- **Possible in the center of the measuring range.**
- **Linearity error**
  - If the edge to be measured is very thick in parallel to the laser beam, a relatively large linearity error may occur.
- **Object is to be measured**
  - You can increase the detection threshold, if necessary. However, this can affect linearity.
- **Detecting the Gap**
  - If the edge to be measured is very thick, it must be aligned exactly parallel to the laser beam.
- **Checking the Video Signal**
  - If the light band on the receiver at the correct distance. If necessary, loosen the light source for
- **Positioning the Target**
  - The start screen of the sensor software should now be displayed in the web browser.
- **Quick Guide**
  - The measuring system is shipped with four IP addresses: 192.168.168.1, 192.168.168.150.
  - You can query the IP addresses of the sensors that are connected to a PC or network by using the sensorFinder.exe program.
  - Set the sensorFinder VI.x program and click the **Settings** button.
  - Select the correct sensor from the list.
  - Click the **Apply** button to connect the sensor to your browser.

- **Selecting Measuring Distance**
  - Go to the **Settings > Measuring distance** menu.
  - Select the **Sensor**.<x> procedure to be performed.<x>
  - 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.

- **Selecting Measuring Program**
  - Go to the **Settings > Measuring program** menu.

- **Positioning Light Referring**
  - 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.
  - 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.

- **Choosing the Video Signal**
  - If the edge to be measured is very thick, it must be aligned exactly parallel to the laser beam.

- **Viewing the Video Signal**
  - If the edge to be measured is very thick, it must be aligned exactly parallel to the laser beam.

- **Saving the Settings**
  - Save the current settings in the receiver using a **Set**. You can select additional data for display, e.g., individual edges or center axes, in the measuring programs **Sensor**, **Gap** and **Segment.**

- **Adding additional installation notes with and without mounting rail in Chapter 5.2 of the operating instructions.**

- **Please observe additional installation notes with and without mounting rail in Chapter 5.2 of the operating instructions.**

- **Do not forget to save!**

You can download a PDF of detailed operating instructions from our website: http://www.micro-ep.com/download/manuals/man--optoCONTROL-2520--en.pdf