



Assembly Instructions

scanCONTROL 2500 / 2510

1. Warnings

Avoid unnecessary laser radiation to be exposed to the human body.

Connect the power supply and the display-/output device according to the safety regulations for electrical equipment. The power supply must not exceed the specified limits.

> Risk of injury, damage to or destruction of the sensor

Avoid shocks and impacts to the sensor. Avoid exposure of sensor to aggressive materials (detergents, cooling emulsions).

> Damage to or destruction of the sensor

Avoid constant exposure of the sensor to dust or splashes of water by appropriate methods such as blowing or using a protective housing.

> Damage to or destruction of the sensor

Read the detailed instruction manual before operating the sensor. You will find this manual online at www.micro-epsilon.com.

2. Notes on CE Identification

The following applies to the scanCONTROL 25xx:

- EU Directive 2014/30/EU
- EU Directive 2011/65/EU, "RoHS" category 9

The sensor is designed for use in industry and satisfies the requirements. The sensor fulfills the specifications of the EMC requirements, if the instructions in the manual are followed.

3. Proper Environment

- Protection class: IP 65
- Operating temperature: 0 to +45 °C (+32 to +113 °F), by free circulation of air
- Storage temperature: -20 to +70 °C (-4 to +158 °F)
- Humidity: 5 - 95 % (non condensing)

4. Scope of Delivery of scanCONTROL 25xx

- 1 Sensor scanCONTROL 25xx with integrated controller
- 1 Multifunction cable PCR3000-5, length 5 m; for power supply, trigger and RS422; M12x1 screw connector and free cable ends
- Calibration final inspection / assembly instructions / 2 protective caps

5. Laser Safety

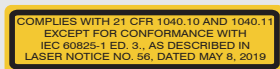
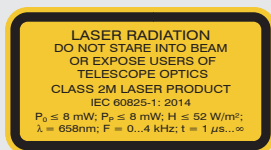
The scanCONTROL 25xx sensors operate with a semiconductor laser having a wavelength of 658 nm (visible/red). The laser operation is indicated visually by the LED on the sensor.

When operating the scanCONTROL 25xx sensors, the relevant regulations according to IEC 60825, Part 1 of 05/2014 and the applicable accident prevention regulations must be followed.

Attach the following warning labels to the cover (front side) of the sensor housing. The laser warning labels for Germany have already been applied. Those for other non German-speaking countries an IEC standard label is included in delivery and the versions applicable to the user's country must be applied before the equipment is used for the first time.

i If the information labels are hidden in the installed state, the user must ensure that additional labels are fitted at the point of installation.

scanCONTROL 25xx sensors with a maximum laser power up to 8 mW are classified in Laser Class 2M (IIM). Attach the following warning labels to the cover (front side) of the sensor housing.



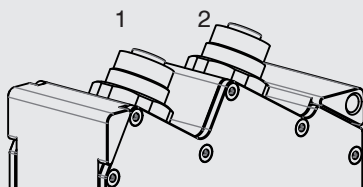
Only for USA



Hazard to the eye via laser radiation! Consciously close your eyes or turn away if the laser radiation impinges on the eye.

i Laser areas must be marked durably and clearly, if the laser beam runs through a work or traffic area.

6. Connections, LED Displays

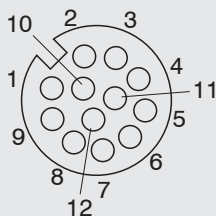


1 Ethernet socket

2 Multifunction socket
(Power supply, IO)

Multifunction Port

Designation	Sensor connector Pin	Cable color PCR3000-x	Notes
+Ub	9	red	+ 11 V - 30 V DC (rated value 24 V); max. 500 mA
GND	2	blue	0 V
+Laser on/off	3	white	available with SI option
-Laser on/off	1	brown	
RS422	12	red-blue	RS422 input respectively output
/RS422	11	gray-pink	
In1	6	yellow	Switching input In1
GND-In1	4	green	Ground connection In1
In2	5	pink	Switching input In2
GND-In2	8	grey	Ground connection In2
In3	10	purple	Switching input In3
GND-In3	7	black	Ground connection In3
Screen	Housing	black	Not electrically connected to GND



GND: galvanically isolated from IN1, 2, 3, RS422, Laser on/off

Laser on/off: Input galvanically isolated from GND, IN1...3, RS422

IN1, IN2, IN3, RS422: Inputs galvanically isolated from GND and Laser on/off

12-pin screw connector, view on solder pin side (cable)

RS422, Synchronization

The RS422 connection (Pin 11 and 12 of the multifunction port) can be used with either of the following configurations:

- RS422 (half-duplex): Load user modes, sensor control and transmit measurement results (Modbus RTU or ASCII-Format).
- Synchronization/triggering: Synchronization respectively triggering using switching signals.

Trigger, Encoder, Mode Switching

The switching inputs of the multifunction port can either be used for encoder-, trigger input or for loading previously stored user modes.

The signal levels are switchable for all switching inputs between LLL (TTL logic) and HLL (HTL logic):

- LLL level: Low 0 V ... 0.8 V, high 2.4 V ... 5 V, internal pull-up resistor 10 k Ω to 5V
- HLL level: Low 0 V ... 3 V, high 11 V ... 24 V (permitted to 30 V), internal pull-up resistor 10 k Ω to 24 V
- Pulse duration: $\geq 5 \mu\text{s}$

External Laser Switching, optional

The external laser switching-off is implemented as a hardware solution and is a top priority. The laser can be switched off, in addition, also by software

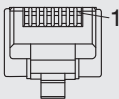
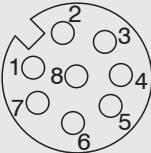


Use a serial key switch inside the control circuit to switch off the laser.

You will find details for the wiring in the instruction manual, Chap. 5.2.6.

With standard sensors, connecting the supply voltage activates the laser light source in the sensor.

Ethernet Connection, Standard Connection to PC

RJ45 connector		8-pin. screw connector (sensor side)		
Pin no.	Color stranded hook-up wire SCR3000A-x	Pin no.	10BaseT, 100BaseTX	1000BaseT
1	white (orange)	5	Tx+	D1+
2	orange	6	Tx-	D1-
3	white (green)	8	Rx+	D2+
4	blue	1		D3+
5	white (blue)	2		D3-
6	green	7	Rx-	D2-
7	white (brown)	3		D4+
8	brown	4		D4-
 <p>View on pin side male cable connector</p>		 <p>View on solder pin side (cable) screw connector (A-coded)</p>		

- The sensor supports an automatically, sensor-adapted IP address in the link-local-net (169.254.x.x). No collision detection is implemented. This is also the default setting.
- The sensor supports DHCP. This setting is activated by default and has priority over the retrieval in the link-local-net.
- The sensor scanCONTROL 25xx supports Power over Ethernet.

NOTICE

If the sensor is connected to a network adapter/switch that is capable of POE and if you also use the power supply of the multifunction port, these two power supplies have to be galvanically isolated.

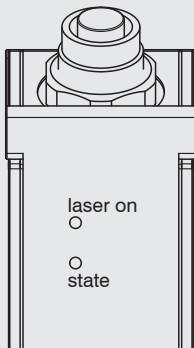
> Damage of the sensor and/or the Ethernet card!

- A fixed IP address can be assigned.

➡ Use the program `sensorFINDER` to make the above-described sensor settings. The program is available online on www.micro-epsilon.com/download/software/SensorFinder.zip.

LED Displays

LED laser on	Meaning
Green	Laser is on
LED state	Meaning
Green	Measurement is active
Green, flashes long	Data transmission is active
Green, flashes short	Controller accesses
Red, flashes	Error code



laser on
○

○
state

7. System Requirements

scanCONTROL Configuration Tools

The following minimum system specification is necessary:

- Windows 7 (32 bit and 64 bit), Windows 10 (32 bit and 64 bit)
- 800-MHz or faster (32 bit and 64 bit) processor / 512 MB RAM
- Screen resolution: 1024 x 768

scanCONTROL 3D-View

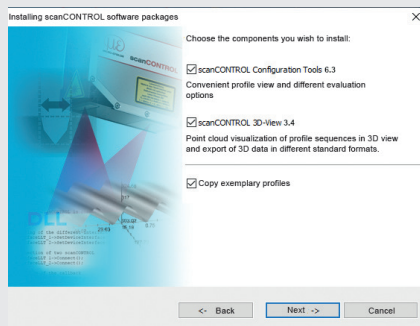
The following minimum system specification is necessary:

- Windows 7 (32 bit and 64 bit), Windows 10 (32 bit and 64 bit)
- 800-MHz or faster (32 bit and 64 bit) processor / 512 MB RAM
- Screen resolution: 1024 x 768
- Graphic card / GPU with OpenGL 3.1 or higher

8. Quick Start: Commissioning, Software

➡ Mount the sensor according to the installation instructions.

➡ Install the software.



You will find the software online on the product website of the sensor or in the download area: https://www.micro-epsilon.com/2D_3D/laser-scanner/Software/downloads/

Follow the dialog through the installation process.

A. Reading of installation help

B. Installation of software

C. Further information in the online documentation

➡ Connect the sensor to the PC via the optional available SCR3000A-x Ethernet cable.

➡ Connect the sensor to display or monitoring units.

➡ Switch on the power supply.

The connectors for Ethernet and the multifunction port are fitted with a screw connector.

➡ Loosen the screws before you remove the connector from the socket.

➡ Connect the shield of the power supply cable to the PE protective earth conductor of the main power supply. Close unused connection plugs with the provided protective caps. Switch on the power supply (24 VDC).

i Only connect the sensor to the peripheral equipment, if it is disconnected from the power supply, i.e. only when the operating voltage is switched off. The sensor needs a warm-up time of typically 20 minutes for high precision measurements.

➡ Please wait until the scanCONTROL device is recognized by the PC.

This may take a few seconds.

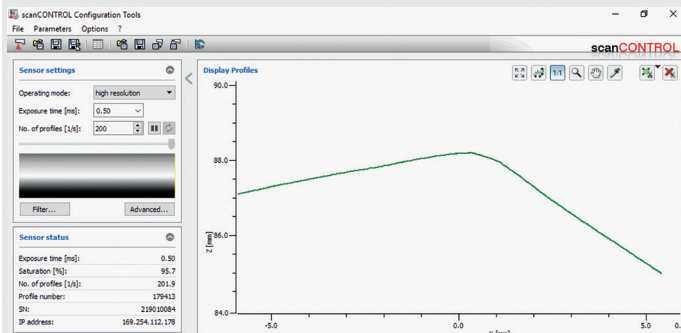
Now you can operate the scanCONTROL measurement system with the scanCONTROL software packages.

i Operating a scanCONTROL sensor via Ethernet may require a modification of the IP settings of the PC/sensor or a modification of the firewall settings, see Chap. 5.2.5 of instruction manual.

9. First Profile

➡ Now start the scanCONTROL Configuration Tools software. Click on **Display Profiles** in the main window.

If the software shows the error message **No scanCONTROL found** in the status line, please check the Ethernet connection between scanCONTROL and PC.



On the left side you can adjust the settings for your measurement task, the right side shows the profile data and information about the measurement.

10. How to Access Profile Data

Profile data of scanCONTROL can be accessed via:

- GigEVision and GenICam for digital cameras via Ethernet interface
- SDK for fast application integration (C, C++, C# and others)

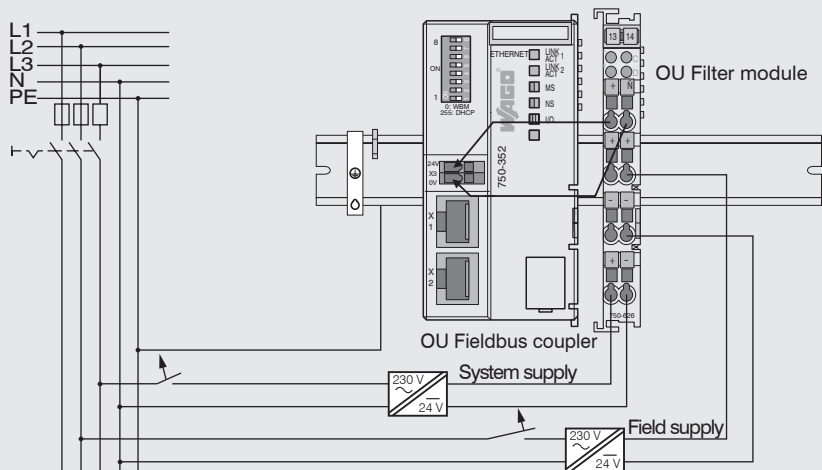
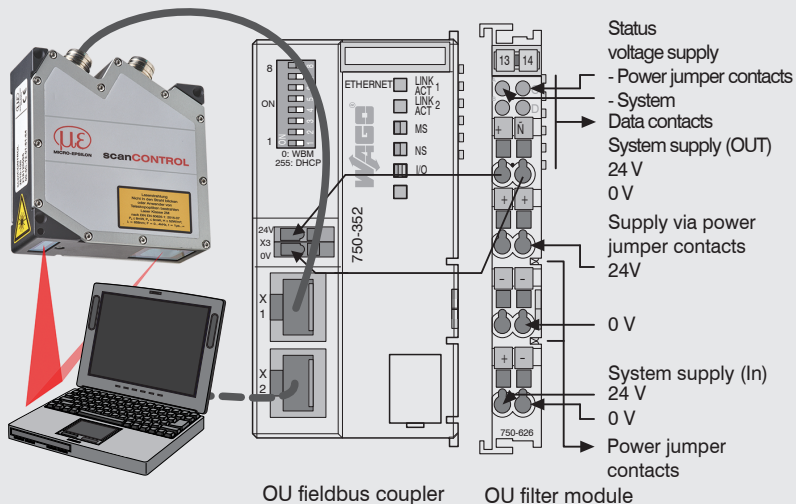
For details how to access profile data refer to the enclosed online manual.

11. Transmitting Measurement Results

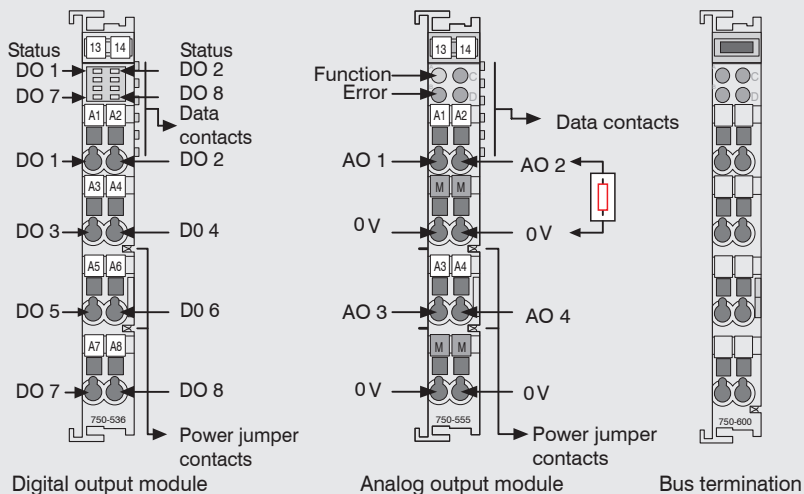
scanCONTROL 2510 offers the following options for transmitting measurement results:

- Ethernet interface
 - Modbus TCP protocol
 - UDP protocol
 - Analog output of measurement values (via optional Output Unit)
 - Digital output of switching signals (via optional Output Unit)
 - Fieldbus connection Profinet, Ethernet/IP, EtherCat (via optional Gateway)
- RS422 interface
 - Modbus RTU protocol
 - Measurement value transmission in ASCII format

13. scanCONTROL 2510 with scanCONTROL Output Unit for Con



Connection to an SPS



Connect the supply voltage

Digital output modules need a field supply of 5 VDC or 24 VDC depending on the module type.

After mounting of the modules install the required wiring.

- ➡ Connect the “System supply (out)” terminals of the OU-Filter module to the “System supply (in)” terminals of the OU-Fieldbus Coupler (0 V and 24 V).
- ➡ Connect the system supply (in) of the OU-Filter module to the power supply (0 V and 24 V).
- ➡ Connect the field supply (in) of the OU-Filter module to the power supply (0 V and 24 V resp. 0 V and 5 V).

i The system supply and field supply should be separated to ensure the bus operation and electrical isolation in case of a short-circuit of an actor.

14. Further Information

Please refer to

- the enclosed online manual
- the section `Status and Error Messages and Notes` in the scanCONTROL Configuration Tools manual.

You will find details to the separate programs in the respective instruction manuals or in the instruction manual of this sensor, Chap. 6.2. You will find the instruction manuals online on www.micro-epsilon.com

www.micro-epsilon.com

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