

5. Laser Safety

The scanCONTROL 2700 sensors operate with a semiconductor laser having a wave-length of 658 nm (visible/red). The laser operation is indicated visually by the LED on the sensor.

Laser Class 2M

scanCONTROL 2700 sensors with a maximum laser power up to 10 mW are classified in Laser Class 2M (IIM). The following information labels are fitted to the sensor housing (front and rear side). If both information labels are hidden in the installed state, the user must ensure that additional labels are fitted at the point of installation.



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

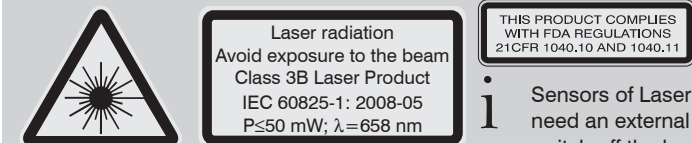
Lasers of Class 2M are not subject to notification and a laser protection officer is not required. Mark the laser area recognizable and everlasting.

Laser Class 3B

scanCONTROL 2700 sensors with a maximum laser power up to 20 mW are classified in Laser Class 3B (IIIB).

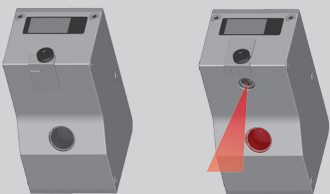
CAUTION Injury to the eye or the skin via laser radiation! Consciously close your eyes or turn away if the laser radiation impinges on the eye or the skin.

Class 3B (IIIB) laser sensors are notifiable and a laser protection officer is required either. During operation the laser area has to be restricted and marked. The following information label should be fitted to the sensor housing (front and rear side):

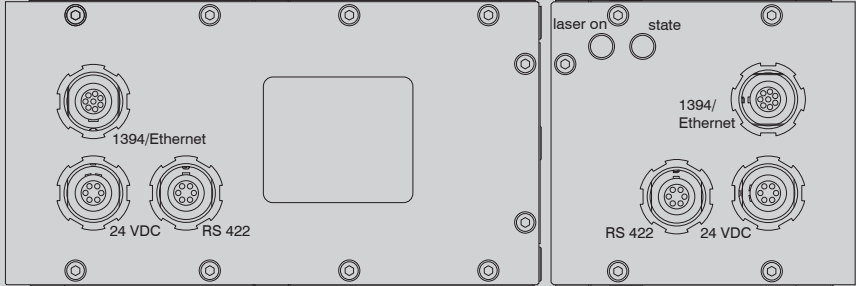


Beam attenuator

The beam attenuator prevents access to all laser and collateral radiation. The figures show the sensor with closed and open beam attenuator. The beam attenuator must be open during measurement.



6. Connections, LED Displays



LLT2700-x, top side

LLT2700-x(001), rear side

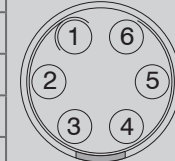
The sensors are available in two versions: Sockets on the top side or on the rear side.

LED displays

LED „laser on“	Green: Laser on	Note: The “status” LED flashes green; long during active data transmission and short for controller accesses.
LED „state“: Two-color LED (red / green)	Green: Measurement Green flashing: Data transmission Red flashing: Error code	

The state LED indicates different error conditions by flashing. If no flashing occurs for several seconds, no error has occurred.

Power supply (Power)

PIN No.	Assignment connector „24 VDC“				Range: 11 V – 30 V (Rated value 24 V) DC; maximum current 500 mA
	Standard Color PC2700		Options 002, 003, 004, 005 Color PC2700(002)		
1	24 V+	red	24 V+	pink	
2	n.c.	n.c.	LH+	grey	
3	n.c.	n.c.	Laser off+	yellow	
4	n.c.	n.c.	Laser off-	green	
5	n.c.	n.c.	LH-	brown	
6	24 V GND	black or blue	24 V GND	white	

View on solder pin side,
male cable con-ector,
counting direction anti-
clockwise

The power supply is also possible using the FireWire connection cable, if the power supply needed is present in the PC with sufficient current intensity. When both voltages (1394 and power) are present, the higher voltage always takes over the supply of the sensor.

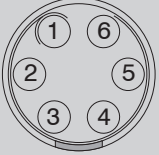
External laser switching

Series LLT2700-x(002), LLT2700-x(003), LLT2700-x(004) and LLT2700-x(005) sensors offer this function.

i Sensors of Laser Class 3B (IIIB) need an external key switch to switch off the laser.

➡ 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. 5.2.4.

RS422, Synchronization


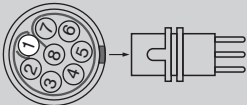
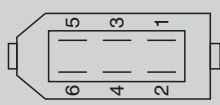
PIN No.	Assignment connector „RS422“				The PIN numbers refer to the scanCONTROL 2700 unit.
	RS422	General	9-pin Sub-D ¹		
1	RX1	CH1	2	View on solder pin side, male cable connector	Micro-Epsilon recommends the use of the interface cable SC2700-4.5 RS422 from the optional accessories.
2	/RX1	/CH1	3		
5	GND1		5		
3	TX2	CH2	9		
4	/TX2	/CH2	1		
6	GND2		5		

The RS422 port can be used with either of the following configurations:

- RS422: Loading of programs and transmitting of measurement results.
- Synchronization/Triggering: Synchronization resp. triggering using switching signals.

1) Optional RS422 interface cable (SC2700-4,5RS422) from Micro-Epsilon, compatible to the RS422 to USB converter. All outputs or inputs are designed symmetrically. Internal terminating resistors 120 Ohm.

FireWire connection (1394), Standard link to PC

8-pin connector, ODU		6-pin connector, FireWire		Connector „1394“
Pin No.	Assignment	Pin No.	Assignment	
1	GND_FireWire	2	GND_FireWire	The PIN numbers refer to the scanCONTROL 2700 unit.
2	TPA+	4	TPB+	
3	TPA-	3	TPB-	Micro-Epsilon recommends using the FireWire connection cable SC2700-4.5 FireWire from the recommended accessories.
4	Screen	2	GND_FireWire	
5	TPB-	5	TPA-	
6	TPB+	6	TPA+	
7	Screen	2	GND_FireWire	
8	+24 V_FireWire	1	+24 V_FireWire	
 View on solder pin side		 View on solder pin side		

The scanCONTROL 2700 sensor can also be supplied with operating voltage from the PC on the 1394 connection socket. If its capacity is not sufficient, an appropriate voltage must be connected to the 24 VDC socket.

➡ Use the recommended FireWire connection cable.

A power supply via free cores in the FireWire connection cable is possible if these wires are connected in the PC (Pin 1 to +8 ... 30 V DC, typically 12 V DC; Pin 2 to ground on the FireWire connector).

7. System Requirements scanCONTROL Software

- Windows XP SP2 (32 bit) / Windows Vista (32 bit) / Windows 7 (32 bit and 64 bit)
- Pentium III ≥ 800 MHz / 512 MB RAM
- Screen resolution: 1024 x 768

8. Quick Start: Commissioning, Software

➡ Install the software.



Please insert the scanCONTROL Demo CD in the CD-ROM device. Follow the dialog through the installation process.

- A. Reading of installation help
- B. Installation of software
- C. Further informations in the online documentation

- ➡** Mount the sensor according to the installation instructions.
- ➡** Connect the sensor and the PC to the FireWire cable.
- ➡** Connect the sensor to display or monitoring units.
- ➡** Connect the sensor to the power supply.

The connectors for the operating voltage, switching signals and FireWire are fitted with push-pull locking. Pull apart at the grip to release the connection.

➡ Connect the shield of the power supply cable to the PE protective earth conductor of the main power supply. Close plug-in connections not needed with the supplied protective caps for ODU sockets. Switch on the power supply.

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.

➡ Install the drivers for the measuring system according to the instructions on the supplied CD-ROM ([CD]:\\Documentation\\english\\Installation\\index.html).

9. Driver Installation for Windows XP

➡ Finish the installation of the Configuration Tools software completely. This procedure is described in section 8. Connect the sensor to the PC using the 1394 FireWire cable. Switch on the power supply.

If the installation doesn't start automatically, search for scanCONTROL in the device manager (Start > Control Panel > System > Device Manager). scanCONTROL is classified as camera device and is either located under "Imaging Devices" or "Other Devices". Right-click the camera device and choose "Update Driver".



The "Hardware Update Wizard" will appear.

➡ Mark "No, not this time" and click on "Next".

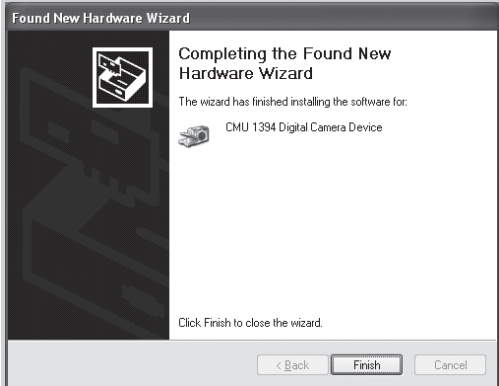


➡ Click on "Next" to confirm this dialog.

Now the operating system installs the driver for scanCONTROL. The "Hardware installation" dialog will appear.



➡ Click on "Continue anyway" to confirm this dialog.



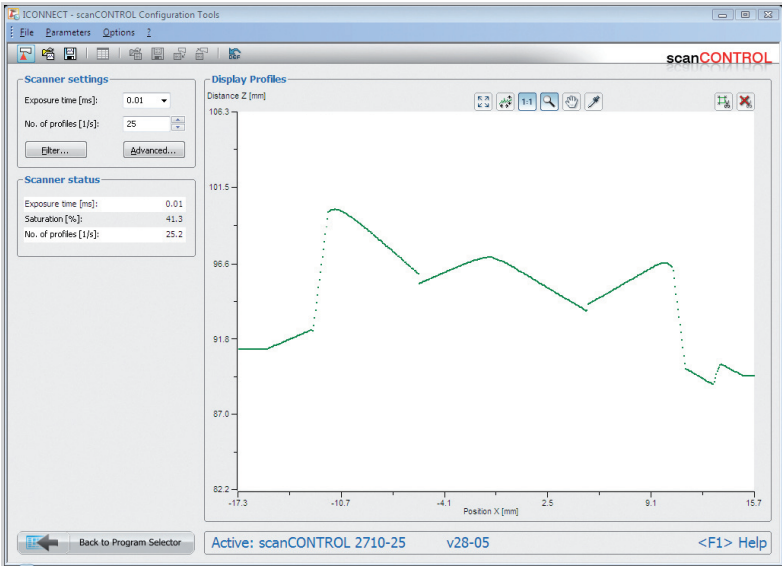
➡ Click on "Finish" to end the driver installation.

If you want to install the driver at a later date or in case of an incorrect installation of the driver, you have to install the driver manually.

10. 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 installed driver in the device manager (Start > Control Panel > System > Device Manager).



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.

11. How to Access Profile Data

Profile data of scanCONTROL can be accessed via:

- DCAM standard v.1.30 for digital cameras via IEEE 1394 FireWire interface
- SDK for fast application integration (C, C++ and others)

For details refer to the enclosed online manuals.

12. 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 or on the provided CD.

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X9771182-A061082MSC



Assembly Instructions scanCONTROL 2700



1. Warnings

Connect the power supply and the display/output device in accordance with the safety regulations for electrical equipment. The power supply may not exceed the specified limits.

> Danger of injury, damage or destruction of the sensor

Avoid shock and vibration to the sensor. Avoid continuous exposure to dust and spray on the sensor. Avoid exposure to aggressive materials (e. g. washing agent, penetrating liquids or similar) on the sensor.

> Damage to or destruction of the sensor

Read the detailed instruction manual before operation of the sensor. You will find this online or on the provided CD.

2. Notes on CE Identification

The following applies to the scanCONTROL 2700: EU Regulation 2004/108/EG

The sensor fulfills the specifications according to the following standards:

- DIN EN 55011/ 11.2007 / Industrial scientific and medical (ISM) equipment / Electro-magnetic disturbance characteristics
- DIN EN 61 000-6-2/ 03.2006 / Electromagnetic Compatibility (EMC) / Immunity to interference / industrial area
- DIN EN 61326/ 10.2006 / Electrical equipment

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 +50 °C (+32 to +122 °F), by free circulation of air
- Storage temperature: -20 to +70 °C (-4 to +158 °F)
- Humidity: 5 - 95 % (non condensing)
- Vibration: DIN EN 60068-2-6 (sine shaped)
- Mechanical shock: DIN EN 60068-2-29

4. Standard Equipment scanCONTROL 2700

- 1 Sensor LLT2700 with integrated controller
- 1 Power supply cable PC2700-4.5, length 4.5 m; ODU round connector and free cable ends
- 1 scanCONTROL Demo-CD with drivers, programs and documentation
- 1 Sensor inspection log / assembly instructions
- 1 Bag of accessories with one ODU male connector 6-pin (RS422), S31BQC-P06M-FG0-6000, and two protective caps for ODU female connector (6- or 8-pin)