



Assembly Instructions

gapCONTROL 2611/2661/2911/2961

1. Warnings

Connect the power supply and the display-/output device in accordance with the safety regulations for electrical equipment. The power supply must 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 operating the sensor. You will find this manual on the provided CD or online at www.micro-epsilon.com.

2. Notes on CE Identification

The following applies to the gapCONTROL 26xx/29xx:

- 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 gapCONTROL 26xx/29xx

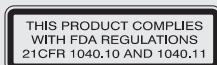
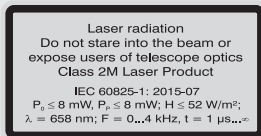
- 1 Sensor gapCONTROL 26xx/29xx with integrated controller
- 1 Multifunction cable PC2600/2900-5, length 5 m; for power supply, trigger and RS422; Escha screw connector and free cable ends
- Sensor acceptance report / assembly instructions
- 2 protective caps
- CD gapCONTROL Setup Software with documentation

5. Laser Safety

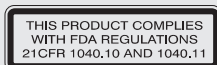
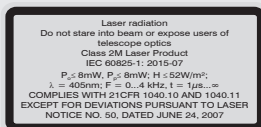
The gapCONTROL 26xx/29xx sensors operate with a semiconductor laser having a wavelength of 658 nm (visible/red) or with the option /BL with 405 nm (visible/blue). The laser operation is indicated visually by the LED on the sensor.

Laser Class 2M

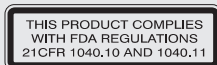
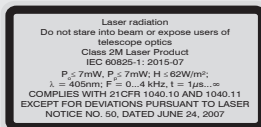
gapCONTROL 26xx/29xx sensors with a maximum laser power up to 8 mW (gapCONTROL 29xx-10/BL up to 7 mW) are classified in Laser Class 2M (IIM). The following information labels are fitted to the sensor housing (front and rear side). If both information labels are hidden in the installed state, the user must ensure that additional labels are fitted at the point of installation.



Laser label gapCONTROL 26xx/29xx



Laser label gapCONTROL 29xx-25/BL, 29xx-50/BL, 29xx-100/BL



Laser label gapCONTROL 29xx-10/BL



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.

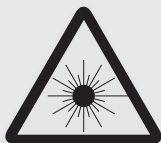
Laser Class 3B

scanCONTROL 26xx/29xx sensors with a maximum laser power up to 50 mW are classified in Laser Class 3B (IIIB).

CAUTION

When using lasers of 3B class appropriate protective glasses are necessarily! Injury of the eyes and the skin by laser radiation!

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):



Warning- Laser radiation
Avoid exposure to beam
Class 3B Laser Product

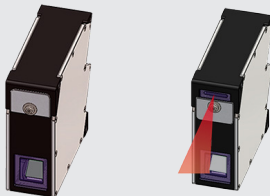
IEC 60825-1: 2015-07
 $P_e \leq 50\text{mW}$, $P_r \leq 50\text{mW}$;
 $\lambda = 658\text{nm}$; $F = 0 \dots 4\text{kHz}$, $t = 1\mu\text{s} \dots \infty$

THIS PRODUCT COMPLIES
WITH FDA REGULATIONS
21CFR 1040.10 AND 1040.11

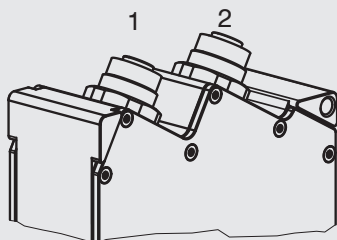
i Sensors of Laser Class 3B (IIIB) need an external key switch to switch off the laser, see Chap. "Laser switching".

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



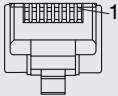
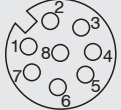
- 1 Ethernet port
- 2 Multifunction port (Power supply, IO)

RS422, Synchronisation

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 and sensor control.
- Synchronization/trigging: Synchronization respectively trigging using switching signals.

Ethernet Connection, Standard Connection to PC

RJ45 connector		8-pin screw connector (sensor side)		
Pin no.	Color stranded hook-up wire SC2600/2900-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 screw connector</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 gapCONTROL 26xx/29xx 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" delivered on the CD, to make the above-described sensor settings.

Trigger, Encoder, Mode Switching

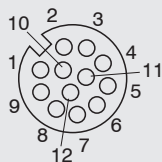
The switching inputs of the multifunction port can either be used for encoder input, for trigger input or for loading previously stored user modes.

The signal levels are switchable for all switching inputs between LLL (low-voltage-, TTL logic) and HLL (high-voltage-, HTL logic):

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

Multifunction Port

Designation	Sensor connector Pin	Cable color PC2600/2900-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	optional
-Laser on/off	1	brown	
RS422	12	red-blue	RS422, input respectively output
/RS422	11	gray-pink	
In1	6	yellow	Digital Input 1
GND-In1	4	green	Ground In 1
In2	5	pink	Digital Input 2
GND-In2	8	gray	Ground In 2
In3	10	purple	Digital Input 3
GND-In3	7	black	Ground In 3



12-pin screw connector, view on solder pin side
 GND: galvanically isolated from 1, 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

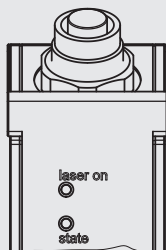
External Laser Switching

The sensors of the gapCONTROL 26xx/SI, gapCONTROL 29xx/SI series offer this function.

➡ 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.

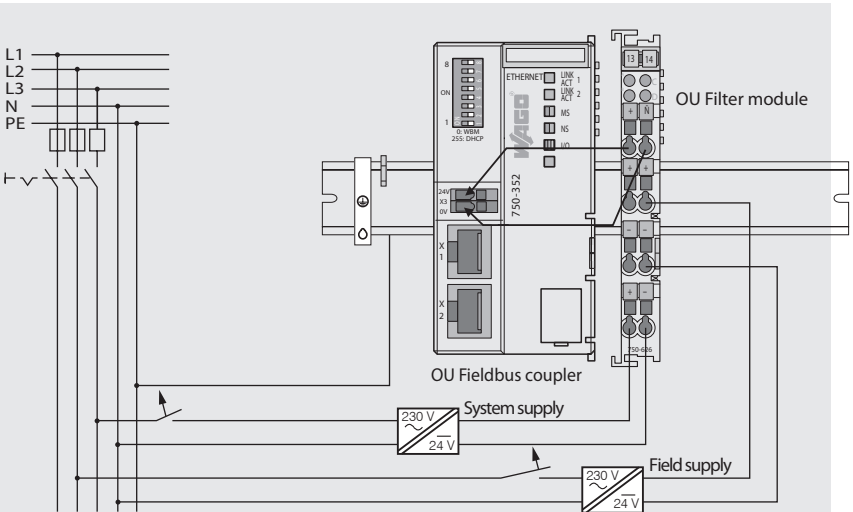
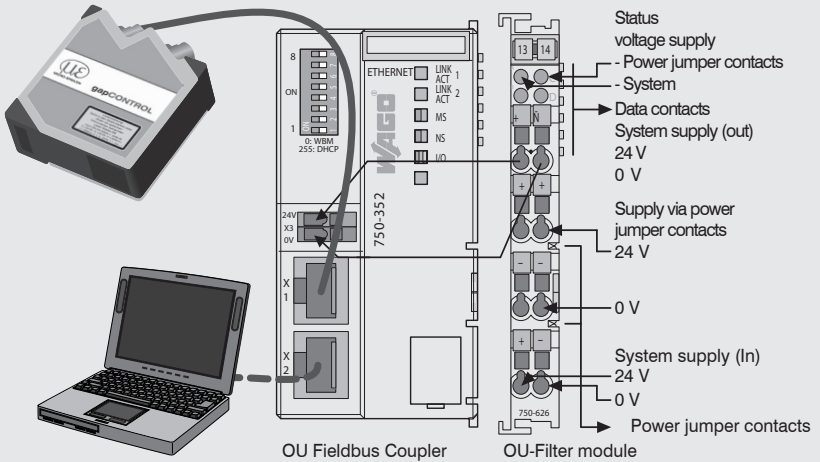
LED Displays



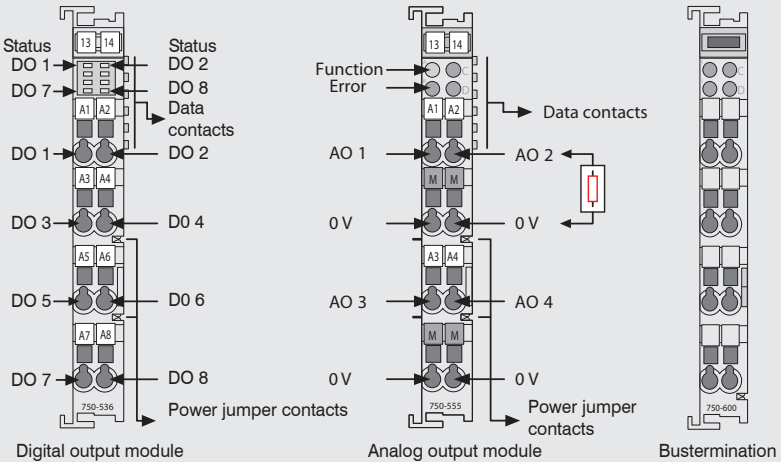
LED "laser on"	Green: Laser on	Note: The "state" LED flashes green, long during active data transmission and short for controller accesses.
LED "state": Two-color LED (red / green)	Green: Measure- ment Green flashing: Data transmission Red flashing: Error code	

The "state" LED indicates different error conditions by flashing. If no flashing occurs for several seconds, no error has occurred. For a detailed description of the error codes, please refer to the instruction manual, Chap. 11.

7. gapCONTROL 26xx/29xx with gapCONTROL Output Unit



for Connections to a PLC



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.

9. Transmitting Measurement Results

gapCONTROL 26xx/29xx offers the following options for transmitting measurement results:

- Ethernet interface
 - Modbus TCP protocol
 - UDP protocol
 - With output unit: Analog values and digital switching signals
 - With gateway: Profinet, EtherNet/IP, EtherCAT
- RS422 interface
 - Modbus RTU protocol
 - Measurement value transmission in ASCII format

10. System Requirements gapCONTROL Setup Software

- Windows 7 (32/64 Bit), Windows 8 oder 8.1 (32/64 Bit), Windows 10 (32/64 Bit)
- 1 GHz or faster (32 bit and 64 bit) processor / 1 GB RAM
- Screen resolution: 1024 x 768

11. Quick Start: Commissioning, Software

➡ Install the software.



Please insert the gapCONTROL Setup Software 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 to the PC via the Ethernet cable.

➡ Connect the sensor to display or monitoring units.

➡ Connect the sensor to the power supply.

The connectors for Ethernet and the multifunction port are fitted with an Escha 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 gapCONTROL device is recognized by the PC.

This may take a few seconds.

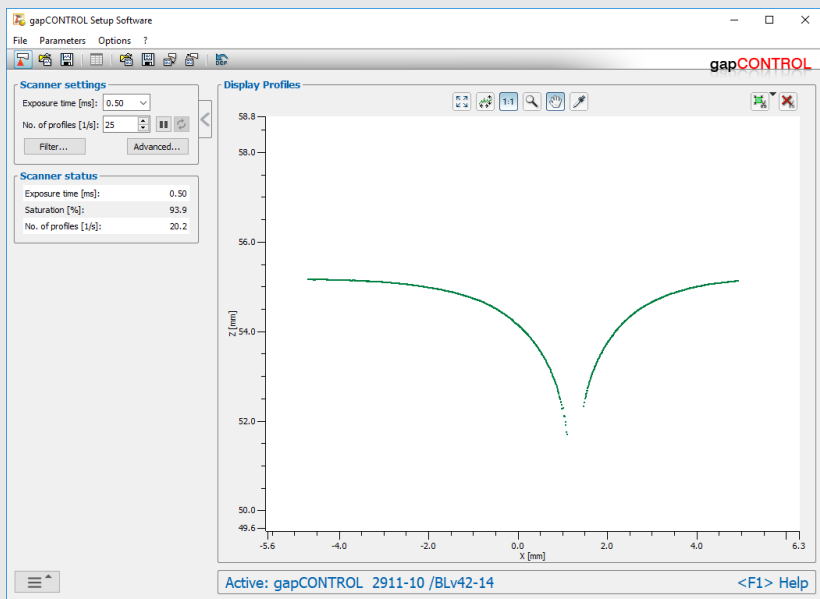
Now you can operate the gapCONTROL measurement system with gapCONTROL Setup Software.

i Operating a gapCONTROL 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.

12. First Profile

➔ Now start the gapCONTROL Setup Software. Click on “Display Profiles” in the main window.

If the software shows the error message “No gapCONTROL found” in the status line, please check the Ethernet connection between gapCONTROL 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.

13. Further Information

Please refer to

- the enclosed online manual,
- the section "Status and Error Messages" and "Notes" in the gapCONTROL Setup Software 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.

www.micro-epsilon.com

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