Warnings

Connect the power supply and the display/output device according to the safety regulations for electrical equipment.
> Risk of injury, damage to or destruction of the controller and/or the sensor

Avoid shocks and impacts to the sensor and controller.
> Damage to or destruction of the controller and/or the sensor

The supply voltage must not exceed the specified limits.
> Damage to or destruction of the controller and/or the sensor

Protect the sensor cable against damage.
> Destruction of the sensor, failure of the measuring device

Wiring or plugging only when power supply is switched off.
> Damage to or destruction of the controller

Notes on Product Marking

The product meets the requirements of CE and UKCA. All specifications and safety instructions described in the operating instructions must be observed.

Proper Environment

- Temperature range:
  - Storage: -40 ... +85 °C (-40 ... +185 °F)
  - Operation: -40 ... +85 °C (-40 ... +185 °F)
- Humidity: 5 ... 95 % RH (non-condensing)
- Ambient pressure: Atmospheric pressure
- Protection class: IP67
- Vibration/Shock: EN 60068-2

Unpacking/Included in Delivery

1 Controller

1 Setup Guide

You can find more information about the sensor in the operating instructions. They are available online at: https://www.micro-epsilon.com/download-file// man--induSENSOR-MSC7xxx--en.pdf

Installation

➡ Fasten the controller of series MSC7802 by means of two M4 screws.

The position of the mounting holes is shown in the drawing below. The tightening torque for the cover screws is 0.9 Nm. The maximum tightening torque for the SW15 (M12) cable gland is 1.5 Nm and for the SW19 (M16) cable gland is 3 Nm.

Please note that less torque should be applied for cable glands with various cable sheath materials.
> Damage to the cable sheath
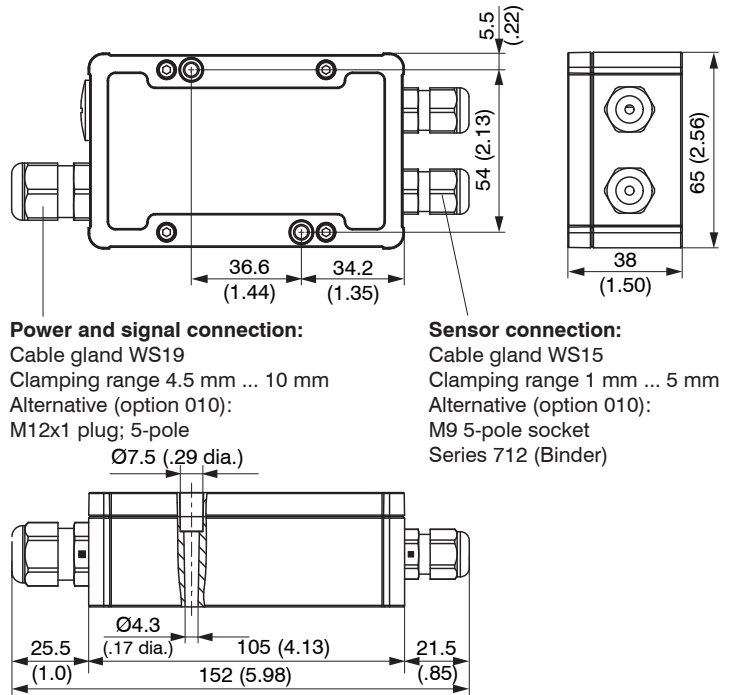
Power and signal connection:
Cable gland WS19
Clamping range 4.5 mm ... 10 mm
Alternative (option 010):
M12x1 plug; 5-pole

Sensor connection:
Cable gland WS15
Clamping range 1 mm ... 5 mm
Alternative (option 010):
M9 5-pole socket
Series 712 (Binder)

Dimensions of MSC7802 [1] controller, dimensions in mm

1) Option MSC7802(010) has different dimensions.

Control and Display Elements
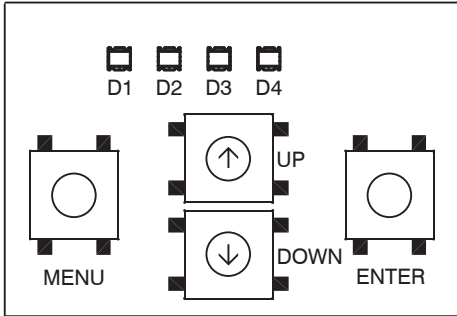
Partial view of controller interior

| Button/LED	Function	Description
Menu button	Enter the menu level	-
Enter button	Confirmation	-
↑ and ↓ buttons	Parameter selection	-
D1 LED	Channel display	The Channel LED indicates the current channel. Channel 1: green, channel 2: red. It flashes in corresponding color, if the channel is not parameterized.
D2 LED	E1 menu level display	The E1 and E2 LEDs show the current position in the menu or the corresponding settings.
D3 LED	E2 menu level display	
D4 LED	Value display	The Value LED indicates the current value of the selected parameters.

Setting

The controller can be easily set using buttons, LEDs or a software (see operating instructions, Chap. A3).

Sensor model	Measuring range	Sensor type	Supply frequency	Excitation voltage
DTA-1x	±1 mm	LVDT	5 kHz	550 mV
DTA-3x	±3 mm		5 kHz	
DTA-5x	±5 mm		5 kHz	
DTA-10x	±10 mm		2 kHz	
DTA-15x	±15 mm		1 kHz	
DTA-25x	±25 mm		1 kHz	
LDR-10	10 mm	LDR	21 kHz	
LDR-25	25 mm		13 kHz	
LDR-50	50 mm		9 kHz	
LVP-3	3 mm		18 kHz	
LDR-14	14 mm		23 kHz	
LVP-25	25 mm		16 kHz	

Sensor models and sensor parameters

CE UKCA X9771377.01-A022065HDR

Power Supply, Sensor and Signal Output

The minimum bending radius of the PC7400-6/4 and PC5/5-IWT power supply and output cables (available as accessories) is ten times the cable diameter. All of the connections for the power supply/sensors/signal output are on the controller.

Connections

- Power supply/output side:
  - Cable gland: SW19; clamping range 4.5 mm ... 10 mm
    Screw terminal connection; AWG 16 up to AWG 24; up to AWG 28 with ferrule
  - alternatively: Connector M12x1, 5-pole, A-coded
- Sensor side:
  - Cable gland: SW15; clamping range 1 mm ... 5 mm
    Screw terminal connection; AWG 16 up to AWG 24; up to AWG 28 with ferrule
  - alternatively: female connector M9; 5-pole, series 712, Co. Binder

Wiring

The housing must be open to connect the sensors and wire the output and power supply cable.
➡ Loosen the screws.
➡ Pass the sensor and signal cables through the cable glands.
➡ Connect the cables to the terminals according to the pin assignments.

Terminal block X2-x	Pin	Cable [1] DTA-xD-Cx-x C701-x	Braid [1] DTA-x-LA-x	Cable [1] DTA-xG8-x DTA-xDX-x
Sensor cable shield	1	Shield	-	Shield
Secondary center tap	2	Gray	Gray	Gray
Secondary +	3	White	White	Black
Secondary -	4	Brown	Black	White
Primary +	5	Green	Green	Blue
Primary -	6	Yellow	Yellow	Brown

Table of the pin assignment for the sensor at terminal block X2, full bridge

1) The colors and pins listed refer to the sensors from Micro-Epsilon.

Terminal block X2-x	Pin	Cable [1] LDR-x-CA LVP-25-20-x	Connector LDR-x-SA	Sensor cable [1] C7210-x
Sensor cable shield	1	-	-	-
Secondary center tap	2	Green	4	Black
Secondary +	3	White	1	Brown
Secondary -	4	Brown	3	Blue
Primary +	5	-	-	-
Primary -	6	-	-	-

Table of the pin assignment for the sensor at terminal block X2, half bridge

1) The colors and pins listed refer to the sensors from Micro-Epsilon.

The pin assignment for the terminal blocks can also be found in the following table.

More information and graphics can be found in the operating instructions, Chap. 4.4.

Instructions on operation can be found in the operating instructions starting at Chap. 5.3.

Pin	Terminal block X2-x: Sensor connection	Terminal block X3: Digital interface RS485	Terminal block X1: Supply and signal
1	Sensor cable shield	RS485 A	Analog output for channel 1
2	Secondary center tap	RS485 B	Analog output for channel 2
3	Secondary +	-	Supply voltage
4	Secondary -	-	GND supply/signal ground
5	Primary +	-	-
6	Primary -	-	Housing/shield

Pin assignment for terminal blocks

Pin assignment for power supply and signal (Cable: PC5/5-IWT)

Pin	Color	Description
1	Brown	Supply voltage
2	White	Analog output for channel 2
3	Blue	GND supply/signal ground
4	Black	Analog output for channel 1
5	Gray	-
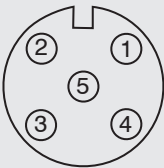
View on pin side

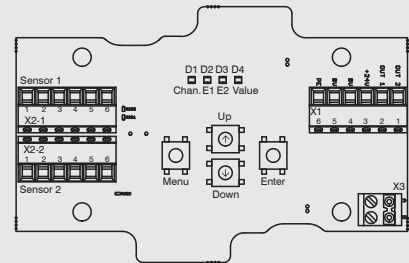*Pin assignment for power supply and signal, 5-pin housing connector M12x1 (A-coded)*

Sensor pin assignment

Pin	Description
1	Secondary +
2	Secondary -
3	Primary +
4	Primary -
5	Secondary center tap
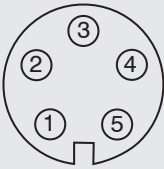
View on pin side

Pin assignment for sensor, 5-pin housing socket M9 (Binder series 712)

Initial Operation

View of controller interior

➡ Connect the sensor before starting the controller.
➡ Ensure that the wiring of the sensor connections, signal cable and power supply connections are correct before connecting the controller to the power supply and turning it on.
➡ Then switch on the power supply.
➡ Set the controller to its basic setting.

Assembly Instructions
induSENSOR
MSC7802

Menu Structure for the MSC7802 Controller

D1: Channel	D2: E1		D3: E2		D4: Value		Next menu
			R 2-point adjustment		⇒ Go to the adjustment modes `2-point adjustment` or `Zero-point search` see tables on the right.	ENTER	⇒ E1 level
	G Adjustment	ENTER ↑ ↓	G Factory settings	ENTER			
			O Zero-Point Search				
MENU (3 sec.)	↕						
	R Automatic sensor recognition	ENTER	G Successful		G Successful		⇒ E1 level
			R Failed		R Failed		⇒ Sensor parameter
			G Manually set		☐ Manually set		Display only
	↓						

Signal

	D2: E1					Voltage / Current		D4: Value		
G	O Signal	ENTER ↑ ↓	G Automatic			O Voltage		ENTER	⇒ E1 level	
↑ ↓			O Voltage	ENTER	Voltage ↑ ↓	☐ 0 ... 10 V				
R						O 2 ... 10 V				
						☐ 0 ... 5 V				
						R(flashing) 0.5 ... 4.5 V				
			R Current		Current ↑ ↓	☐ 4 ... 20 mA				
						O 0 ... 20 mA				
						☐ 0 ... 10 mA				

Sensor parameter

	↓					DTA	LDR
	R(flashing) Sensor parameter	ENTER	R Sensor type	↑ ↓	G DTA (LVDT)		
					R LDR		

Frequency

ENTER			DTA	LDR
	G Frequency	↑ ↓	☐ 1 kHz	9 kHz
			O 2 kHz	13 kHz
			R 5 kHz	16 kHz
			R(flashing) 10 kHz	21 kHz
			O(flashing) 13 kHz	23 kHz

Amplitude

ENTER

				D4: Value
O Amplitude	↑ ↓	☐ 550 mV	ENTER	⇒ E1 level
		O 350 mV		
		R 150 mV		
		R(flashing) 75 mV		

Menu Structure for the MSC7802 Controller, Adjustment Mode: 2-point Adjustment

D1: Channel	D2: E1		D3: E2		D4: Value
G R	G(flashing)		R		
	⇒ Move the measuring object to position X1, and change the output signal U1 with ↑ ↓				G(orange flashing) Flashes orange when the measuring object is in the electrical center of the sensor.
			ENTER		
	G		R(flashing)		G(orange flashing) Flashes orange when the measuring object is in the electrical center of the sensor.
	⇒ Move the measuring object to position X2 1) and change the output signal U2 with ↑ ↓				

Menu structure for the MSC7802 controller, adjustment mode: 2-point adjustment

1) Position X2 must be > 10% of the measuring range away from X1.

Menu Structure for the MSC7802 Controller, Adjustment Mode: Zero-point Search

D1: Channel	D2: E1		D3: E2		D4: Value
G R	G(flashing)		O		☐ LED off
	⇒ Set the output signal U0. ↑ ↓				
	6 VDC or 12 mA is preset.				
			ENTER		
	G(flashing)		O		O Lights orange when the measuring object is in the electrical center of the sensor.
	⇒ Move the measuring object to position X0 until the output has reached U0.			The LED flashes and color changes depending on the output signal (green = too low, red = too high).	
			ENTER		
	G		G(flashing)		G(orange flashing) Flashes orange when the measuring object is in the electrical center of the sensor.
	⇒ Move the measuring object to position X2 1) and change the output signal U2 with ↑ ↓		The LED color changes depending on the position of the measuring object.		

Menu structure for the MSC7802 controller, adjustment mode: Zero-point search

1) Position X_2 must be > 10 % of the measuring range away from X_1.