Liability for Material Defects

All components of the device have been checked and tested for functionality at the factory. However, if defects occur despite our careful quality control, MICRO-EPSILON or your dealer must be notified immediately.

The liability for material defects is 12 months from delivery. Within this period, defective parts, except for wearing parts, will be repaired or replaced free of charge, if the device is returned to MICRO-EPSILON with shipping costs prepaid. Any damage that is caused by improper handling, the use of force or by repairs or modifications by third parties is not covered by the liability for material defects. Repairs are carried out exclusively by MICRO-EPSILON.

Further claims can not be made. Claims arising from the purchase contract remain unaffected. In particular, MICRO-EPSILON shall not be liable for any consequential, special, indirect or incidental damage. In the interest of further development, MICRO-EPSILON reserves the right to make design changes without notification. For translations into other languages, the German version shall prevail.

You can download a PDF of detailed controller operating instructions from our website:

http://www.micro-epsilon.de/download/manuals/man--induSENSOR-MSC7xxx--en.pdf

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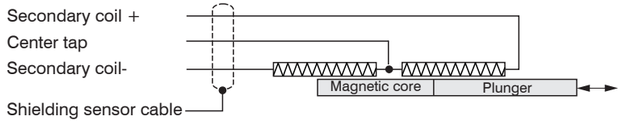
X9771405-A032110HDR

Pin Assignment

i Connect the shields of the signal and supply cables, if available, to the housing /shield connection of the controller.

	Cable [1] LDR-x-CA	Connector [1] LDR-x-SA	Sensor cable [1] C7210-x
Secondary coil +	white	1	brown
Secondary coil -	brown	3	blue
Center tap	green	4	black
Shielding	shield	housing	----

1) The colors and pins listed refer to the sensors from MICRO-EPSILON GmbH.



Sensor pin assignment

i The maximum cable length of a user made cable is 10 m (32 ft) to keep the EMC regulations.

Technical Data

Model		LDR-10	LDR-25	LDR-50
Series		SA, CA	SA, CA	SA, CA
Measuring range		10 mm	25 mm	50 mm
Linearity	Typ.	≤ ±30 µm	≤ ±88 µm	≤ ±250 µm
	Max.	≤ ±50 µm	≤ ±125 µm	≤ ±375 µm
Temperature stability	Zero	≤ 30 ppm FSO / K		≤ 80 ppm FSO / K
	Max. temp. error	≤ 100 ppm FSO / K		≤ 150 ppm FSO / K
Sensitivity		51 mV / mm/V	21 mV / mm/V	5.5 mV / mm/V
Excitation frequency		21 kHz	13 kHz	9 kHz
Excitation voltage		550 mV		
Connection	CA	Integrated cable 2 m with open ends; axial cable path; cable diameter 1.8 mm; min. bending radius 10 mm (fixed installation)		
	SA	3-pin connector; axial output (see accessories for connection cable)		
Temperature range	Storage	SA: -40 … +80 °C; CA: -40 … +160 °C (SA: -40 ... +176 °F; CA: -40 ...+320 °F)		
	Operation	SA: -40 … +80 °C; CA: -40 … +160 °C (SA: -40 ... +176 °F; CA: -40 ...+320 °F)		
Pressure resistance		Atmospheric pressure		
Shock (DIN-EN 60068-2-29)		40 g / 6 ms in 3 axes, 1000 shocks each 100 g / 6 ms in 3 axes, 3 shocks each		
Vibration (DIN-EN 60068-2-6)		±1.5 mm / 10 … 58 Hz in 2 axes, 10 cycles each ±20 g / 58 … 500 Hz in 2 axes, 10 cycles each		
Protection class (DIN-EN 60529)		IP67 (plugged)		
Material		Stainless steel (housing)		
Weight	Sensor	Approx. 9 g (SA); Approx. 24 g (CA)	Approx. 14 g (SA); Approx. 28 g (CA)	Approx. 23 g (SA); Approx. 37 g (CA)
	Plunger	Approx. 1.5 g	Approx. 2.2 g	Approx. 3.5 g
Compatibility		MSC7401, MSC7802, MSC7602		

FSO = Full Scale Output

1) Determined according to box method (-40 ... +80 °C / -40 ... +176 °F)

MICRO-EPSILON

Assembly Instructions
induSENSOR
LDR series

Warnings

Avoid shocks and impacts to the sensor.

> Damage to or destruction of the controller and/or the plunger

Excitation voltage and excitation frequency must comply with the requirements for the sensor.

> Damage to or destruction of the sensor

i Please use a suitable controller MSC7401, MSC7802, MSC7602 with corresponding excitation voltage and excitation frequency to operate the sensor.

Protect the sensor cable against damage.

> Destruction of the sensor

> Failure of the measuring device

Do not carry the sensor on the plunger.

> Damage to the plunger

Notes on CE Marking

Inductive displacement sensors based on the LDR principle are devices (components) which cannot be operated autonomously. Neither an EU Declaration of Conformity nor a CE marking are thus required according to the EMC law. Sources: EMVG (Electromagnetic Compatibility Act), Guidelines on the application of directive 2014/30/EU. The sensors were EMC tested together with the MSC7401, MSC7802 and MSC7602 controllers

Proper Environment

- Protection class: IP67
- Temperature range:
  - Operation
    - Displacement sensor SA: -15 ... +80 °C (+5 ... +176 °F)
    - Displacement sensor CA: -40 ... +160 °C (-40 ... +320 °F)
  - Storage:
    - Displacement sensor SA: -40 ... +80 °C (-40 ... +176 °F)
    - Displacement sensor CA: -40 ... +160 °C (-40 ... +320 °F)
- Humidity: 5 - 95 % (non-condensing)
- Ambient pressure: Atmospheric pressure

Installation and Assembly

Precautions

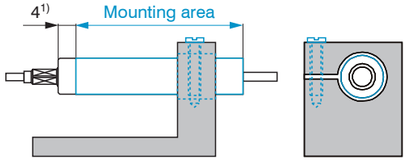
Do not drop the free moving plunger of the inductive displacement sensor. Protect the cable sheath of the sensor cable from sharp edges and pointed and heavy objects. Do not bend more tightly than the bending radius of the sensor cable. Avoid folding the cables.

➡ Check the plug-in connections for firm seating.

Peripheral Clamping

➡ Use a peripheral clamping on the sensor housing to mount the sensor.

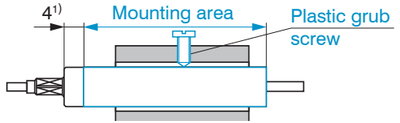
This offers the highest reliability because the sensor is clamped over a board area by its cylindrical housing.



Mounting of displacement sensors with peripheral clamping

Radial Point Clamping

➡ Mount the sensor using radial point clamping with set screws at installation locations where there are no forces and vibrations.



Plastic set screws must be used so that the sensor housing is not damaged or deformed.

Mounting of displacement sensors with radial point clamping

1) 10 mm for LDR-x-SA

Mounting the Plunger on the Measurement Object

➡ Screw the plunger of the displacement sensor to the measurement object using the thread.

The screw joint must either be secured with a screw locking compound (e.g. Loctite) or counter-screwed with the lock-nut supplied.

i When mounting, ensure that the plunger remains freely movable in the sensor and that tilting is avoided.

Connecting the Sensor to the Controller

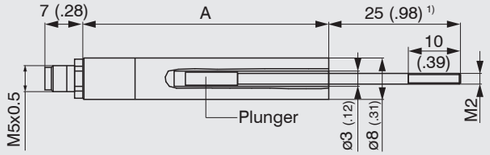
➡ Connect the sensor to the controller by connectors or by wire terminals depending on the version used (pin assignment).

➡ Readjust the controlller when replacing the sensor!

➡ If required, use the suitable ferrule.

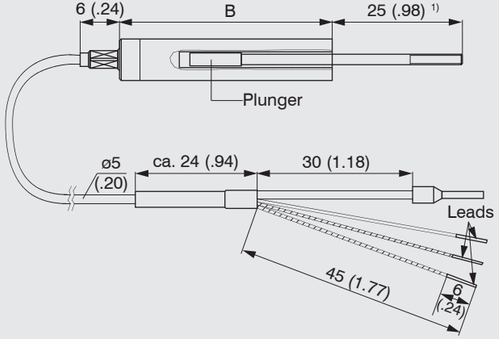
Ready-made connecting leads are available for sensors with plug connector.

Dimensional Drawings



Displacement sensor type SA with integrated cable

	Length A	Bending radius Sensor cable C7210-x for LDR-x-SA: 8 mm (fixed installation) 15 mm (in motion)	*Bending radius*
LDR-10-SA	47		
LDR-25-SA	73		
LDR-50-SA	127		



Displacement sensor type CA with axial plug-in connection

	Length A	Bending radius Sensor cable LDR-x-CA: 10 mm (fixed installation) 30 mm (in motion)	Dimensions in mm, not to scale [1)] Plunger position at the end of the measuring range
LDR-10-CA	41		
LDR-25-CA	67		
LDR-50-CA	121		