Optical Distance Sensors
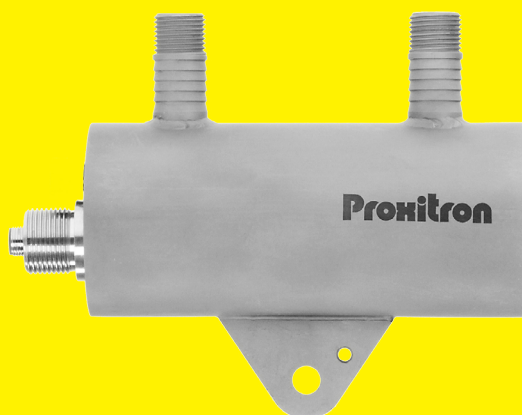
0 - 150 m measuring range
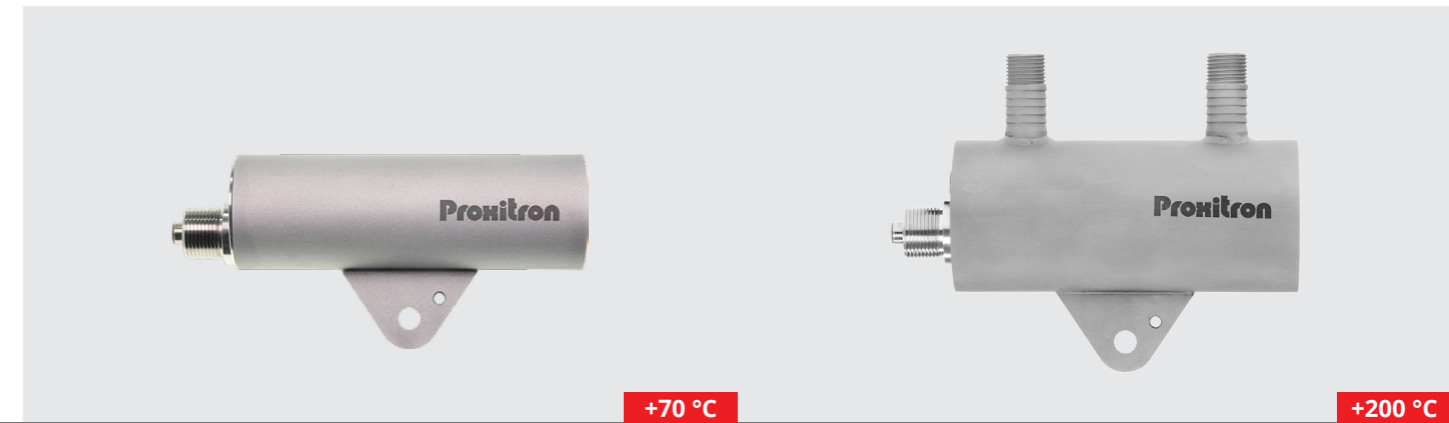
Optical distance measurement of hot and cold objects

Proxitron
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Optical Distance Sensors
Laser

Optical Distance Sensors
Infrared

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	+40 °C	+200 °C	+70 °C	+200 °C
Measuring range max.	**150 m**	**150 m**	**40 m**	**40 m**
Measuring range typically	**0 - 50 m**	**0 - 50 m**	**0 - 10 m**	**0 - 10 m**
Accuracy	+/- 1 mm +/- 3 mm	+/- 1 mm +/- 3 mm	+/- 50 mm	+/- 50 mm
Repeatability	+/- 0,3 mm +/- 0,8 mm	+/- 0,3 mm +/- 0,8 mm	+/- 5 mm	+/- 5 mm
Measuring frequency max.	10 Hz 20 Hz	10 Hz 20 Hz	140 Hz	140 Hz
Type	**LMA 101 LMA 101A**	**LMB 101 LMB 101A**	**LIA 010**	**LIB 010**
Light source	LASER class 2	LASER class 2	infrared	infrared
Parameterization	software	software	software	software
Analog output	0/4-20 mA	0/4-20 mA	0/4 - 20 mA	0/4 - 20 mA
Switching output	3 x PNP n.o. / n.c.	3 x PNP n.o. / n.c.	2 x PNP n.o. / n.c.	2 x PNP n.o. / n.c.
Additional functions	teach; alarm	teach; alarm	teach; alarm	teach; alarm
Digital interface	RS 485 (MODBUS RTU)	RS 485 (MODBUS RTU)	RS 485 (MODBUS RTU)	RS 485 (MODBUS RTU)
Housing [mm]	Ø57 x 170	Ø76 x 170	Ø60 x 170	Ø76 x 170
Housing material	stainless steel	stainless steel	stainless steel	stainless steel
Ambient temperature	40 °C	200 °C, water-cooled	70 °C	200 °C, water-cooled

Accessories for Optical Distance Sensors

Accessories for Optical Distance Sensors

Accessory	**Connection cable**	**Adapter for cable protection**	**Swivel stand**	**Air purge adapter**	**Protection tube**	**Tube**	**Laser pointer**
Function	sensor connection	protection hose fixing	mounting	pollution control	maximize air purge effect, protect against sparks	protection against IR radiation	alignment LIA/B
Material	PUR	stainless steel	stainless steel	stainless steel	stainless steel	stainless steel	stainless steel
Type	**ST S12-5**	**HG 2**	**HM 2**	**OL 34**	**OL 37**	**OL 19**	**DAK 308**
Description	5 m connection cable for LMA/B	for M20 fitting	massive swivel stand	for LMA	length 100 mm	for LMA	Laser
Type	**ST S8-5PUR**		**HM 4**	**OL 43**	**OL 38**	**OL 21**	**OL 26**
Description	5 m connection cable for LIA/B		light mounting bracket	for LIA	length 150 mm	for LMB	adapter for LIA
Type				**OL 35**		**OL 36**	**OL 27**
Description				for LMB and LIB		for air purge	adapter for LIB

Additional connection cables available

Optical Distance Sensors - General Information

Optical distance sensors send out a light signal which is reflected by the surface of an object. They use the time-of-flight principle (TOF) effectively to detect the object and calculate the distance. For this purpose, different light sources according to the different applications are available.

Distance sensors based on LASER source provide high accuracy and can measure over large distances. Alternatively, sensors with infrared light are available, performing fast distance measurement of larger objects even under low visibility conditions, as in the case of vapor, spaying mist, or dense smoke formation. Opposite to LASER, infrared sensors do not require any risk assessment.

Both sensors categories are ideal for the distance measurement of hot and cold objects and can be used also in hot areas, as for example for material positioning in furnaces. Proxitron distance sensors distinguish themselves as robust and maintenance-free. They withstand for years severe working conditions as vibrations, radiated heat as well as very high ambient temperatures. All distance sensors can be parametrized in a teaching mode and with a user-friendly software. They offer the possibility to set different switching outputs, as well as the desired measuring range. An alarm function provides also for warning of overheating. These sensors are equipped with a comfortable software interface to meet the needs of Industry 4.0.

The max measuring range for optical distance sensors always depend on the ability of the object to reflect light. The following table shows some typical objects and the related best possible distance.

- Distance measurement of hot and cold objects
- Sizing of slabs, blocks and billets at continuous casting, torch-cutting and deburring
- Measurement of object dimension at ring rolling
- Material positioning in furnaces
- Level control in melting pots
- Bulk material control in induction melting
- Vehicle positioning in logistics
- Height monitoring for underpasses and bridges
- Material detection over large distances
- Strip detection in processes with spraying mists

- Measurement distance up to 150 m
- Variable adjustable measuring range
- High accuracy (± 1 mm)
- Ambient temperatures up to 200 °C
- Object temperatures up to 1350 °C
- Three freely adjustable digital outputs
- Configurable alarm signaling (e. g. overtemperature)
- Easy parameterization via software
- Time variable trigger function
- RS485 interface
- BUS capable (MODBUS RTU)
- Analog output (0/4 - 20 mA) with 16-bit resolution
- Extremely solid and maintenance-free
- Various accessories

Object	max measuring distance LMA/B	max. measuring distance LIA/B
Reflective foil 3M 3279 special	150 m	40 m
High temperature reflector OR05 (up to 500°C)	125 m	35 m
Grey card 90% reflectivity	120 m	25 m
Grey card 10% reflectivity	35 m	10 m
Steel plate shiny	100 m	15 m
Steel plate slightly oxidized	50 m	13 m
Steel plate heavily oxidized	40 m	10 m
Steel annealed	25 m	10 m

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