

MSE-XT220 Laser Distance Measurement Sensor



- Visible Red Class II Laser for precise distance measurement
- Measure off Natural Surfaces up to 30m (98ft), off a white target at 100m (328ft) and off a special reflector target at 150m (492)
- Measuring rate as low as 20ms off a white surface or off a special reflector target
- Provides +/- 2mm to +/- 5mm accuracy
- RS232 or optional RS422/RS485 Serial Interface
- Programmable 4-20 mA Analog Output
- Programmable Zero and Distance Offset
- Programmable Digital Output & Offset
- Programmable Digital Output and External Trigger Input
- Robust Cast Aluminum Housing Rated Watertight: P66, and NEMA 4X; Explosion Proof: Class I, Groups B, C, D; Class II, Groups E, F,G; Class III, NEMA 7BCD, and NEMA 9EFG.

General Description

The MSE-XT220 Laser Distance Sensor is provided pre-mounted within an Explosion Proof Housing incorporating two compartments with internal glanding and terminal block connection to enable its implementation in hazardous areas. Typical usage would be for crane control, automated storage system and position of mobile equipment as well as for collision avoidance.

These Laser Distance Meters operate over a substantial range off static or passing product in difficult areas and harsh environments over a range of up to 30 M off natural surfaces, up to 100 M off white surfaces and up to 150M off special reflective target. For automated positioning control of material handling and transport systems, these are the ideal low cost solution.

These Lasers are especially suited for precise detection and measurement off cold/hot product. Straight-forward alignment is easily accomplished via the visible red laser measuring beam.

Accuracy of $\pm 3\text{mm}$ to $\pm 5\text{mm}$ according to ambient temperature and surface reflectivity. Repeatability is $\pm 0.5\text{mm}$ and the user scalable resolution is 0.1mm.

The zero and distance offset as well as the span of the 4-20mA analog output are both user programmable. This user can define a zero point independent of the analog output zero offset. Provided with a user programmable digital switching output which is triggered by exceeding in the positive or negative direction of a programmable distance threshold. The hysteresis of the digital switching output is also programmable and an external trigger is provided.

These Laser Distance Meters provide a highly accurate measurement reading and are ideal for length and width determination as well as controlling the position of product or equipment.

Supplied as standard with either RS232 or RS422/RS485 serial interface with a 2400 to 38,400 Baud Rate and a programmable 4-20mA 16 BIT analog output.

Certifications

Laser Unit pre-mounted in IP66/NEMA 4X Double Compartment, copper free cast aluminum explosion proof housing.

The Explosion proof housing has the following classifications:

Exd 11C | EExd11C Class I Groups B, C & D | Class II Groups E, F and G | Class III, NEMA 7B,C & D, and NEMA 9E,F & G.

The user is responsible for connecting and implementing this Laser Device within the installation parameter guidelines for the intended location.

Typical Applications

Product Material	Measure length, width, level and position of product.
Material Handling	Automated Storage/Retrieval Systems and positioning of mobile equipment.
Metals Industry	Measure/Position slab, billet, bloom or bar. Diameter measurement of coils.
Crane Control	Positioning of cranes, crane trolleys & collision avoidance
Collision Avoidance	Distance alarm between vehicles using reflective target.

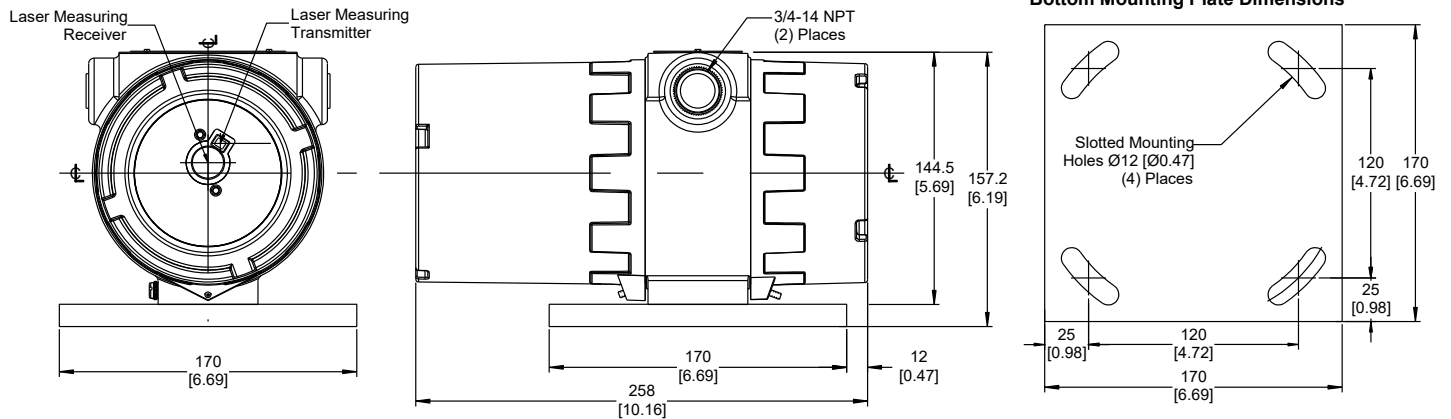
Housing Specifications

Housing: Material: Sand Cast Copper Free Aluminum, Finish: Corrosion Resistance Safety Blue Paint, Hardware: Stainless Steel
Bottom Mounting Plate: Material: 6061 T6 Aluminum Thickness: 0.500", Finish: Blue anodized
Housing Rating: Watertight IEC IP66, NEMA 4X
 Explosion Proof: Class I, Groups B, C, D; Class II, Groups E, F, G; Class III, NEMA 7BCD, and NEMA 9EFG
Weight: 5.8 Kg (12.8 LBS)
Electrical Connection: 12 Point terminal Block.

Part Number Specifications

Example: MSE-XT220-2-H (with Options)
 (RS422/RS485 Serial Interface, Air Cooled/Purged, & with Heater)
Serial Interface
 -1 RS232 (Standard)
 -2 RS422/RS485 (Optional)
Heating: (Optional)
 -H Internal 24VDC Heater for operation down to -40°C (-40°F)
 No suffix is required when heater option is not supplied.

Dimensions



General Specifications

Operating range ¹⁾ (Type of surface)	Natural Surface: 0.2m (7.8in) to 30m (98ft)	Supply Voltage	10 - 30 VDC
	White Surface: 0.2m (7.8in) to >100m (328ft)	Power Consumption	1.5 Watt Operating, 0.4 Watt in Standby
Accuracy (according to surface reflectivity)	± 2 mm (0.079in) for 15°C (59°F) to 30°C (86°F) ^{4) 5)}	Operating Temperature	-10°C (-14°F) to +50°C (122°F) no cooling
	± 5 mm (0.197in) over full operating temperature range		-40°C (-40°F) with optional internal heater
Resolution	0.1 mm user (programmable & scalable)	Storage Temperature	-40°C (-40°F) to +70°C (158°F)
Repeatability	±0.5 mm (0.0197in)	Target Temp. Limit	Standard 600°C (1112°F)
Measuring Time ²⁾ (According to surface reflectivity)	Natural Surface: 240ms to 6s. (typically 200 ms) ³⁾	Trigger Input	Adjustable with delay & hi/lo adjustment
	White Surface: 100ms (in DW Measuring Mode) ⁴⁾	Serial Interface	RS232, 2400 - 38,400 baud, ASCII, 8N1
	White Surface: 20ms (in DX Measuring Mode) ⁴⁾	Optional Interface	RS422/RS485, 2400 - 38,400 baud, ASCII, 8N1
Laser Wavelength	650nm, Visible Red	Communication Protocol	Half Duplex via ASCII codes.
Laser Classification	Safety Class 2 (DIN EN 60825-1:2001-11), Class II	Programming	via Hyper-terminal and Supplied Software
Laser Power	≤ 1 mW	Auto Distance Tracking	Can be programmed to start at power on
Laser Divergence	0.6 mrad	Digital Output	High value output with adjustable threshold, logic & hysteresis. 0.5 A limit
Laser Spot Diameter	6mm(0.236in) at 10m (32.8ft), 60mm (2.36in) at 100m (328ft)	Analog Output	Programmable 4-20mA, 16 BIT (0.15%) with 500 ohm Load Resistance. Programmable Zero & Span. Temperature drift of < 50ppm/°C.
Laser Angle Tolerance	Better than ± 1° to the ground plane		
MTTF	30,000 hrs, 24hr/7day, operation temp. +25°C (77°F)		
Scale (programmable)	Output can be m, cm, mm, yard, feet, inch		

1). Ranges shown are for DT, DW & DM measuring mode.

4). With white surface, or with white target.

2). Measuring Time can also be preset in intervals of 240 msec to 6 seconds in DT measuring mode.
 3). In DT measuring mode

5). ± 3 mm (0.118in) for 15°C (59°F) to 30°C (86°F) off Natural Surface

Optional Accessories are available including: Internal 24 VDC Heater, Junction Box, AC to DC Power Supply, Field Bus connections for Profibus, ProfiNet, Modbus, DeviceNet, Ethernet TCP/IP, Ethernet/IP; Remote Digital Display, Remote HMI for programming and display of distance measurement, length, width, thickness or position. Please contact your local Moduloc sales representative for additional information.

The MSE-XT220 can be used as a direct replacement for the Model No. LT2000-XT and the LT2020-XT previously manufactured by Moduloc Control Systems Ltd of the United Kingdom. Please contact MSE for additional questions on other replacement model numbers .

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Your Local Sales Contact:

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