Laser

Laser distance measurement sensors provide accurate non-contact measuring and monitoring of targets with varying color, shape and temperature.

Series	Description	Max Sensing Range	Dimensions H x W x D	Resolution	Housing Material	Power Supply
	**LTF** High-performance LTF Series Sensors detect targets regardless of color, material or sheen from up to 12 m away, straight-on or at an angle page 204	12 m	77 x 26 x 56 mm	0.3 to 3 mm	Die-cast zinc	12 to 30 V dc
	**LE** A laser sensor with a range of 100 up to 1000 mm right out of the box with 2-line LCD display easy adjustment, setup and use. page 206	1 m	60 x 26 x 56 mm	0.02 to 1.0 mm	Die-cast zinc	12 to 30 V dc
	**LH** High-precision laser measurement page 208	200 mm	80 x 33 x 65 mm	0.001 to 0.01 mm	Aluminum	18 to 30 V dc
	**LG** High-precision short-range laser measurement page 210	125 mm	55.3 x 20.2 x 82.3 mm	0.003 to 0.01 mm	Zinc alloy die-cast, plated and painted finish	12 to 30 V dc
	**LT3** Time-of-flight laser distance-gauging page 212	**Diffuse:** 5 m **Retro:** 50 m	68.5 x 35.3 x 87 mm	1.0 to 1.25 mm	ABS	12 to 24 V dc
	**LT7** Time-of-flight laser distance-gauging page 214	**Diffuse:** 10 m **Retro:** 250 m	93 x 42 x 95 mm	4.0 to 8.0 mm	ABS	18 to 30 V dc

OTHER AVAILABLE MODELS

Q4X page 34

Q50 Website Only

LTF Series

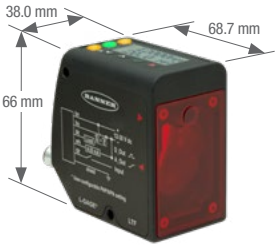
High-Preformance Laser Time of Flight

- Best in class combination of range, repeatability and accuracy enable highly reliable target detection and precise distance measurement
- Two-line, eight-character display and push-button programming for easy setup, troubleshooting and real-time distance measuring
- Durable IP67 housing, high ambient light immunity and stable performance across temperatures provide reliable performance in challenging environments
- Advanced options, including delay timers, advanced triggered measurement modes and cross-talk avoidance

LTF

Example Model Number: LTF12IC2LDQ

Family	Range (m)	Output	Laser Class	Sensing Mode	Connector
LTF	**12**	**I**	**C2**	**LD**	**Q**
	12 = 12 **24** = 24	**I** = 4 to 20 mA analog and (1) NPN/PNP discrete **U** = 0 to 10 V analog and (1) NPN/PNP discrete **K** = Dual Discrete with IO-Link NOTE: Discrete NPN/PNP is user configurable	**C2** = Class 2	**LD** = Laser diffuse	**Blank** = 2 m Integral Cable **Q** = Rotatable M12 Euro QD **QP** = PVC M12 Euro Plgtail QD **W/30** = 9 m intergal cable



Connection Option: A model with a QD requires a mating cordset.

	5-Pin
M12/Euro-Style with Shield Straight connector models listed; for right-angle, add **RA** to the end of the model number (example, **MQDEC2-506RA**)	**MQDEC2-506** 2 m (6.5') **MQDEC2-515** 5 m (15') **MQDEC2-530** 9 m (30')

Additional cordset information is available
See page 758

SMBLTFL

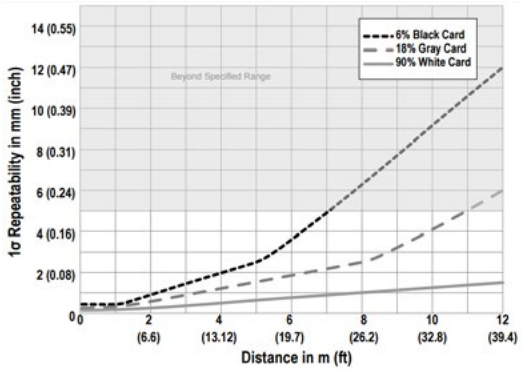
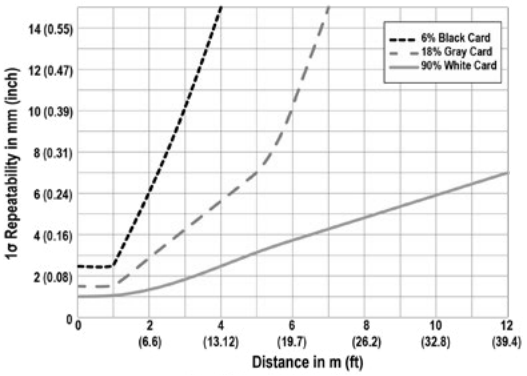
SMBLTFU

SMBAMSSLTFP

Additional bracket information is available
See page 724

SMBLTFFA
includes 3/8" bolt for mounting
SMBLTFFAM10
includes 10 mm bolt for mounting
SMBLTFFAM12
clamps directly onto industry standard bracket systems of 1/2" or 12 mm rods

LTF Specifications

Supply Voltage and Current	12 to 30 V dc
Normal Run Mode:	< 2.1 W. Current consumption < 85 mA at 24 V dc
Sensing Beam	Visible red laser; class 2
Beam Spot Size	**Distance (mm)** / **Size** 50 / 6.5 m 7500 / 10 mm 12000 / 12.5 mm
Response Time	**Fast:** 1.5 ms **Standard:** 8 ms **Medium:** 32 ms **Slow:** 256 ms
Range and Linearity / Accuracy	**Accuracy** **Reflectance** / **±10 mm** / **±20 mm** 6% Black Card / 5 m / 7 m 18% Gray Card / 8 m / 11 m 90% White Card / 12 m / –
Repeatability Slow 256 ms shown (for more info see datasheet)	 Slow: 256 ms  Fast: 1.5 ms
Resolution	< 0.3 to 3 mm*
Construction	Die-cast zinc housing; acrylic window
Environmental Rating	IEC IP67; NEMA 6
Connections	5-Pin Threaded M12/Euro-Style Cordsets—with Shield
Operating Conditions	**Temperature**: –20 to +55 °C **Humidity**: 90% at +55 °C maximum relative humidity (non-condensing)
Certifications	CE cULus LISTED

*Resolution measured as twice repeatability with white target at slow response speed at 20 °C. See repeatability curves for more detail.

LE Series

Laser Sensor

- The LE laser sensors are ready to measure right out of the box with easy adjustment, setup and use.
- Easy adjustment with a two-line, eight-character intuitive display
- Repeatability and accuracy for challenging targets, from metal to black rubber
- Visible class 2 laser for small spot size and simple alignment

LE

Example Model Number: LE550IQ

Family	Range	Output	Laser Class	Connector
LE	550	I		Q
	550 =100-1000 mm **250** =100-400 mm	**I** = 4 to 20 mA analog and (1) NPN/PNP discrete **U** = 0 to 10 V analog and (1) NPN/PNP discrete **D** = (2) NPN/PNP discrete **K** = Dual Discrete with IO-Link	**Blank** = Class 2 **C1** = Class1	**Blank** = 2 m Integral Cable **Q** = Rotatable M12 Euro QD **QP** = PVC M12 Euro Pigtail QD **W/30** = 9 m Integral Cable

NOTE: Discrete NPN/PNP is user configurable

Connection Option: A model with a QD requires a mating cordset.

M12/Euro-Style with Shield
Straight connector models listed; for right-angle, add **RA** to the end of the model number (example, **MQDEC2-506RA**)

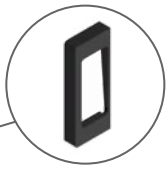
5-Pin
MQDEC2-506
2 m (6.5')
MQDEC2-515
5 m (15')
MQDEC2-530
9 m (30')

Additional cordset information is available
See page 758

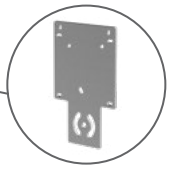
SMBLEU **SMBLEL** **SMBLEFA**

Additional bracket information is available
See page 724

SMBAMSLEIP
full assembly with plate and two protective windows

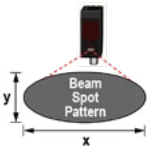


RWAMSLE
replacement windows



SMBAMSLTFP
mounting plate

LE Specifications

Sensing Beam	Visible red Class 2 laser, 650 nm
Supply Voltage and Current	12 to 30 V dc **Normal Run Mode:** 1.7 W, Current consumption less than 70 mA at 24 V dc
Supply Protection Circuitry	Protected against reverse polarity and transient over voltages
Spot Size	

LE550 Models

	Distance		
	100 mm	550 mm	1000 mm
X	8.4 mm	10.5 mm	12.1 mm
Y	3.5 mm	4.2 mm	4.9 mm

LE250 Models

	Distance		
	100 mm	250 mm	400 mm
X	3.2 mm	2.1 mm	1.2 mm
Y	2.2 mm	1.5 mm	0.9 mm

Temperature Effect	**LE250**: ±0.03 to ±0.15 mm/°C **LE550**: ±0.25 to ±0.5 mm/°C
Analog Linearity	**LE250**: ±0.375 to ±0.9 mm **LE550**: ±2 to ±4.5 mm
Analog Resolution	**LE550:** Less than 0.5 mm (100 – 600 mm) Less than 1 mm (600 – 1000 mm) **LE250:** Less than 0.02 mm (100 – 250 mm) Less than 0.2 mm (250 – 400 mm)
Construction	**Housing:** die-cast zinc **Lens:** polycarbonate
Vibration/Mechanical Shock	IEC 60947-5-2
Operating Conditions	**Temperature:** –20 to +55 °C **Humidity:** 90% at +55 °C
Environmental Rating	IP67, NEMA 6
Certifications	CE c UL us LISTED

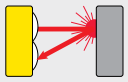
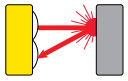
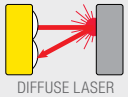
LH Series

High-Precision Laser Measurement

- Highly precise laser technology of a 1024 pixel CMOS linear imager provides reliable and accurate measurement on most materials, including machined metal, wood, ceramic, paper and painted targets.
- Automatic laser power and measurement rate control for reliable measurement under changing or challenging conditions such as moving processes, hot parts, machined parts and a variety of colors and textures
- Robust, self-contained laser displacement sensor

Class 2 Laser LH

Visible Red Laser

Sensing Mode	Measurement: Span	Measurement: Start of Range	Measurement: End of Range	Reference Distance	Connection	Output	Spot Size at Reference Distance	Models
 DIFFUSE LASER	10 mm	25 mm	35 mm	30 mm	8-pin Euro Pigtail QD	Analog 4-20 mA & RS-485	50 micron	**LH30IX485QP**
 DIFFUSE LASER	40 mm	60 mm	100 mm	80 mm	8-pin Euro Pigtail QD	Analog 4-20 mA & RS-485	125 micron	**LH80IX485QP**
 DIFFUSE LASER	100 mm	100 mm	200 mm	150 mm	8-pin Euro Pigtail QD	Analog 4-20 mA & RS-485	225 micron	**LH150IX485QP**

Connection options: A model with a QD requires a mating cordset.

	8-Pin
M12/Euro-Style with Shield Straight connector models listed	**MQLH-806-F** 2 m (6.5') **MQLH-815-F** 5 m (15') **MQLH-830-F** 9 m (30')

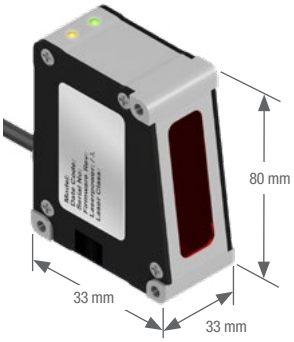
Additional cordset information is available
See page 758

	8-Pin		
	Straight Male to Straight Female	Straight Male to Straight Male	
Double Ended M12/Euro-Style with Shield Straight connector models only	—	**MQLH-801-MM** 0.3 m (1')	
	MQLH-806-MF 2.0 m (6')	—	
	MQLH-815-MF 5 m (15')	—	
	MQLH-830-MF 9 m (30')	—	

	8-Pin	
Euro QD—Splitter with Shield	**CSB-M1280M1280-LH** Branches 2 x 0 m	
	CSB-M1281M1282-LH Branches 2 x 0.6 m (2')	Trunk 0.3 m (1')
	CSB3-M1281M1282-LH Branches 3 x 0.6 m (2')	Trunk 0.3 m (1')

SMBLH1 **SMBLH30** **SMBLH80** **SMBLH150**

Additional bracket information is available
See page 724



LH Specifications

Sensing Beam	670 nm (1mW) visible red IEC and CDRH Class 2 laser
Supply Voltage and Current	18 to 30 V dc (10% max. ripple); 250 mA max. @ 24 V dc (exclusive of load)
Supply Protection Circuitry	Protected against reverse polarity and transient over voltages
Delay at Power-up	1.25 seconds
Temperature Effect	0.01% of measurement range/ °C
Linearity	0.1% of measurement range
Resolution	**LH30:** 1 µm **LH80:** 4 µm **LH150:** 10 µm Resolution obtained with an average of 64 readings on a white ceramic target
Ambient Light	≤ 3000 Lux
Measurement Frequency	Dynamically adjusted from 300 to 4000 Hz depending on target conditions, or locked via LH Series configurator software
Indicators	**Green:** Power ON; Flashing = target at reference distance **Orange:** Target inside measurement range
Construction	**Housing:** Aluminum **Cover:** Aluminum **Lens:** Glass **Cable:** PVC and nickel-plated brass
Environmental Rating	IP67
Output Configuration	**Analog current output:** 4 to 20 mA (current sourcing) **Analog output rating:** 1 kΩ max. @ 24 V dc, max. load resistance = [(Vcc-4.5)/0.02]Ω
Operating Conditions	**Operating Temperature:** –10 to +45 °C **Storage Temperature:** –10 to +80 °C **Maximum relative humidity:** 85% at +45 °C, non-condensing
Vibration and Mechanical Shock	**Vibration:** 60 Hz, 30 minutes, 3 axes **Shock:** 30G for 11 milliseconds, half sine wave, 3 axes
Application Notes	Allow 30-minute warm-up for specified performance
Factory Default Settings	**Mode:** Displacement Mode **Sensor Address:** Unset (address 0) **Baud Rate:** 115200 **Analog Output:** 4-20 mA, positive slope, full range
Certifications	CE

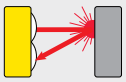
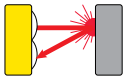
LG Series

High-Precision Short-Range Laser Measurement

- The LG5 uses an ultra-narrow beam for applications requiring precise measurement of distance, height or thickness as well as gauging applications
- Replaces two-piece laser gauging sensors with completely self-contained, compact housing
- Houses discrete (switched) and analog outputs in the same unit, each independently programmable

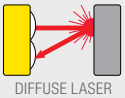
Diffuse LG5

Visible Red Laser

Sensing Mode	Laser Class	Sensing Distance	Beam Size	Connection	Analog Output	Models NPN	Models PNP
 DIFFUSE LASER	Class 2	45-60 mm	**At 53 mm:** 0.4 mm x 0.6 mm **Focus:** 70 mm	2 m 8-pin Euro Pigtail QD 2 m 8-pin Euro Pigtail QD	0-10 V dc 4-20 mA	LG5A65NU LG5A65NUQ LG5A65NI LG5A65NIQ	LG5A65PU LG5A65PUQ LG5A65PI LG5A65PIQ
 DIFFUSE LASER	Class 2	45-60 mm	**At 53 mm:** 0.1 mm **Focus:** 53 mm	2 m 8-pin Euro Pigtail QD 2 m 8-pin Euro Pigtail QD	0-10 V dc 4-20 mA	LG5B65NU LG5B65NUQ LG5B65NI LG5B65NIQ	LG5B65PU LG5B65PUQ LG5B65PI LG5B65PIQ

Diffuse LG10

Visible Red Laser

Sensing Mode	Laser Class	Sensing Distance	Beam Size	Connection	Analog Output	Models NPN	Models PNP
 DIFFUSE LASER	Class 2	75-125 mm	**At 125 mm:** 0.6 mm x 0.8 mm **Focus:** 180 mm	2 m 8-pin Euro Pigtail QD 2 m 8-pin Euro Pigtail QD	0-10 V dc 4-20 mA	LG10A65NU LG10A65NUQ LG10A65NI LG10A65NIQ	LG10A65PU LG10A65PUQ LG10A65PI LG10A65PIQ

Connection options: A model with a QD requires a mating cordset.

For 9 m cable, add suffix **W/30** to the 2 m model number (example, **LG10A65PU W/30**).

	8-Pin
Euro QD (w/ Shield) Straight connector models only	**MQDC-806** 2 m (6') **MQDC-815** 5 m (15') **MQDC-830** 9 m (30')

Additional cordset information is available
See page 758

SMBLG

SMBLGA

Additional bracket information is available
See page 724

LG5 and LG10 Specifications

Sensing Beam	650 nm visible Red IEC and CDRH Class 2 laser; 0.20 mW max. radiant output power
Supply Voltage and Current	12 to 30 V dc (10% max. ripple); 50 mA max. @ 24 V dc (exclusive of load)
Supply Protection Circuitry	Protected against reverse polarity and transient overvoltages
Delay at Power-up	1.25 second
Output Rating	**Discrete (switched) and Alarm outputs:** 100 mA max. **OFF-state leakage current:** less than 5 µA Output saturation voltage **PNP outputs:** less than 1.2 V at 10 mA and less than 1.6 V at 100 mA **NPN outputs:** less than 200 mV at 10 mA and less than 600 mV at 100 mA **Analog Current output:** 1 kΩ max. @ 24 V dc, max. load resistance = [(Vcc - 4.5)/0.02]Ω **Analog Voltage output:** 2.5 kΩ min. load impedance
Output Configuration	Discrete (switched) & alarm outputs: Solid-state switch; choose NPN (current sinking) or PNP (current sourcing) models Analog output: 4 to 20 mA (current sourcing) or 0 to 10 V dc (voltage sourcing), depending on model
Output Protection	Discrete and alarm outputs are protected against continuous overload and short circuit
Output Response Time	Discrete Outputs (ON/OFF) **Fast:** 2.0 milliseconds **Medium:** 10 milliseconds **Slow:** 100 milliseconds Analog Output (-3dB) **Fast:** 450 Hz (1 millisecond average/1 millisecond update rate) **Medium:** 45 Hz (10 millisecond average/2 millisecond update rate) **Slow:** 4.5 Hz (100 millisecond average/5 millisecond update rate)
Analog Resolution and Repeatability of Discrete Trip Point*	**LG5: Fast:** Less than 40 µm @ 50 mm **LG10: Fast:** Less than 150 µm @ 100 mm **Medium:** Less than 12 µm @ 50 mm **Medium:** Less than 50 µm @ 100 mm **Slow:** Less than 3 µm @ 50 mm **Slow:** Less than 10 µm @ 100 mm
Analog Linearity*	**LG5:** +/- 60 µm over 45 to 60 mm sensing window **LG10:** +/- 200 µm over 75 to 125 mm sensing window +/- 10 µm over 49 to 51 mm sensing window +/- 20 µm over 95 to 100 mm sensing window *Resolution and linearity specified @ 24 V dc, 22 °C, using a white ceramic test surface (see Application Notes)
Minimum Window Size (Analog or Discrete)	**LG5:** 1.5 mm **LG10:** 5 mm
Discrete Output Hysteresis	**LG5:** Less than 0.2 mm **LG10:** Less than 1.0 mm
Color Sensitivity (typical)	**LG5:** Less than 75 µm for white to dark gray ceramic target **LG10:** Less than 100 µm for white to dark gray ceramic target
Temperature Effect	**LG5:** +/- 7 µm/ °C **LG10:** +/- 25 µm/ °C
Adjustments	**Response speed:** Push button toggles between Slow, Medium, and Fast (see Output Response Time) **Window limits (analog or discrete):** TEACH-mode programming of near and far window limits. Limits may also be taught remotely using TEACH wire **Analog output slope:** The first limit taught is assigned to the minimum analog output (0 V dc or 4 mA)
Indicators	**Green Power ON LED:** Indicates when power is ON, overloaded output and laser status **Yellow Output LED:** Indicates when discrete load output is conducting **Red Signal LED:** Indicates when target is within sensing range and the condition of the received light signal **Tri-color Red/Green/Yellow TEACH LED:** Indicates sensor is ready for programming each limit (indicates Red for analog output, Green for discrete, and Yellow for simultaneous analog and discrete) **Yellow Fast/Slow LEDs:** Combination of 2 lights ON or OFF indicates 1 of 3 response speeds
Construction	**Housing:** Zinc alloy die-cast, plated and painted finish **Cover plate:** Aluminum with painted finish **Lens:** Acrylic
Environmental Rating	IP67; NEMA 6
Operating Conditions	**Temperature:** –10 to +50 °C **Relative humidity:** 90% at 50 °C (non-condensing)
Vibration and Mechanical Shock	**Vibration:** 60 Hz, 30 minutes, 3 axes **Shock:** 30G for 11 milliseconds, half sine wave, 3 axes
Certifications	CE cULus

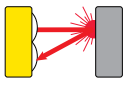
LT3 Series

Time-of-Flight Laser Distance-Gauging Sensors

- The LT3 uses advanced "time-of-flight" technology for precise, long-distance gauging.
- Reliably detects targets regardless of angles
- Visible red laser spot for easy alignment
- Offers push-button programming for other output response times or remote programming for added security and convenience

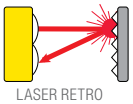
Diffuse LT3, Class 2 Laser

Visible Red Laser

Sensing Mode	Range	Connection	Analog Output	Models NPN	Models PNP
 DIFFUSE LASER	0.3 to 5 m*	2 m 8-pin Euro QD	None	**LT3BD** (Dual NPN or PNP selectable) **LT3BDQ** (Dual NPN or PNP selectable)	
	0.3 to 5 m*	2 m 8-pin Euro QD	0 to 10 V dc	**LT3NU** **LT3NUQ**	**LT3PU** **LT3PUQ**
	0.3 to 5 m*	2 m 8-pin Euro QD	4 to 20 mA	**LT3NI** **LT3NIQ**	**LT3PI** **LT3PIQ**

Retro LT3, Class 1 Laser

Visible Red Laser

Sensing Mode	Range	Connection	Analog Output	Models NPN	Models PNP
 LASER RETRO	0.5 to 50 m†	2 m 8-pin Euro QD	None	**LT3BDLV** (Dual NPN or PNP selectable) **LT3BDLVQ** (Dual NPN or PNP selectable)	
	0.5 to 50 m†	2 m 8-pin Euro QD	0 to 10 V dc	**LT3NULV** **LT3NULVQ**	**LT3PULV** **LT3PULVQ**
	0.5 to 50 m†	2 m 8-pin Euro QD	4 to 20 mA	**LT3NULVQ** **LT3NILVQ**	**LT3PILV** **LT3PILVQ**

Connection options: A model with a QD requires a mating cordset.

For 9 m cable, add suffix **W/30** to the 2 m model number (example, **LT3BD W/30**).
* Based on a 90% reflectivity white card
† Retroreflective range is specified using a **BRT-TVHG-8X10P** high-grade target.
Actual sensing range may differ, depending on the efficiency and reflective area of the retroreflector used. See Accessories for more information.

Euro QD (w/ Shield)
Straight connector models only

8-Pin
MQDC-806
2 m (6')
MQDC-815
5 m (15')
MQDC-830
9 m (30')

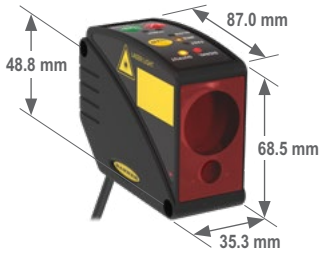
Additional cordset information is available
See page 758

SMBLT31

SMBLT32

SMBLT3IP

Additional bracket information is available
See page 724



Reflectors

Additional information is available
See page 790

L-GAGE® LT3 Specifications

Sensing Beam	**Typical beam diameter:** 6 mm @ 3 m **Typical laser lifetime:** 75,000 hours **Diffuse:** 658 nm visible red IEC and CDRH Class 2 laser; 0.5 mW max. radiant output power **Retroreflective:** 658 nm visible red IEC and CDRH Class 1 laser, 0.15 mW max. radiant output power	
Sensing Range	**Diffuse:** **90% white card:** 0.3 to 5 m **18% gray card:** 0.3 to 3 m **6% black card:** 0.3 to 2 m	**Retroreflective:** 0.5 to 50 m (using supplied target)
Supply Voltage and Current	12 to 24 V dc (10% max. ripple); 108 mA max. @ 24 V dc or [2600/V dc] mA	
Supply Protection Circuitry	Protected against reverse polarity and transient voltages	
Delay at Power-up	1 second; outputs do not conduct during this time	
Output Rating	**Discrete (switched) output:** 100 mA max. **OFF-state leakage current:** less than 5 µA **Output saturation NPN:** less than 200 mV @ 10 mA; less than 600 mV @ 100 mA **Output saturation PNP:** less than 1.2 V at 10 mA; less than 1.6 V at 100 mA **Analog voltage output:** 2.5 kΩ min. load impedance (voltage sourcing) **Analog current output:** 1 kΩ max. @ 24V; max. load resistance = [Vcc-4.5/0.02 Ω] (current sourcing)	
Output Protection	Protected against short circuit conditions	
Output Response Time	**Discrete output** **Fast:** 1 millisecond ON/OFF **Medium:** 10 milliseconds ON/OFF **Slow:** 100 milliseconds ON/OFF **Diffuse Analog Voltage output (-3 dB)** **Fast:** 450 Hz (1 ms average/1 ms update rate) **Medium:** 45 Hz (10 ms average/2 ms update rate) **Slow:** 4.5 Hz (100 ms average/4 ms update rate) **Retroreflective Analog Voltage output (-3 dB)** **Fast:** 114 Hz (6 ms average/ 1 ms update rate) **Medium:** 10 Hz (48 ms average/ 1 ms update rate) **Slow:** 2.5 Hz (192 ms average/ 1 ms update rate)	
Color Sensitivity (typical)	**Diffuse:** 90% white to 18% gray: less than 10 mm; 90% white to 6% black: less than 20 mm.	
Analog Linearity	**Retroreflective:** ± 60 mm from 0.5 to 50 m (0.12% of full scale) (Specified @ 24 V dc, 22° C using supplied BRT-TVHG-8X10P retroreflector) **Diffuse:** ± 30 mm from 0.3 to 1.5 m; ± 20 mm from 1.5 to 5 m (Specified @ 24 V dc, 22° C using a 90% reflectance white card)	
Discrete Output Hysteresis	**Diffuse** **Fast:** 10 mm **Medium:** 5 mm **Slow:** 3 mm	**Retroreflective** **Fast:** 20 mm **Medium:** 10 mm **Slow:** 6 mm
Temperature Effect	**Diffuse:** less than 2 mm/ ° C	**Retroreflective:** less than 3 mm/° C
Minimum Window Size	**Diffuse:** 20 mm	**Retroreflective:** 40 mm
Remote TEACH Input	18 kΩ min. (65 kΩ at 5 V dc)	
Remote TEACH	**To teach:** Connect yellow wire to +5 to 24 V dc **To disable:** Connect yellow wire to 0 to +2 V dc (or open connection)	
Construction	**Housing:** ABS/polycarbonate blend **Window:** Acrylic **Quick-disconnect:** ABS/polycarbonate blend	
Environmental Rating	IP67; NEMA 6	
Operating Conditions	**Temperature:** 0 to +50 °C **Relative humidity:** 90% at 50 °C (non-condensing)	
Certifications	CE cULus	

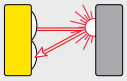
LT7 Series

Time-of-Flight Laser Distance-Gauging Sensors

- Visible red laser spot during programming mode for easy alignment
- Features TEACH-mode programming using integrated push-buttons or a serial interface
- Onboard LCD display for easy troubleshooting
- Long-range retroreflective models up to 250 m and diffuse models up to 10 m

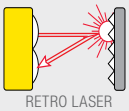
Diffuse L-GAGE® LT7

Infrared Laser

Sensing Mode	Laser Class	Sensing Distance*	Connection	Discrete Output	Analog Output	Serial	Models
 DIFFUSE LASER	Class 1 Infrared Sensing Laser (Class 2 Visible Red Alignment Laser)	0.5 to 10 m	12-pin M16 QD	2 PNP	4-20 mA	RS-422 or SSI	**LT7PIDQ**

Retro L-GAGE® LT7

Infrared Laser

Sensing Mode	Laser Class	Sensing Distance*	Connection	Discrete Output	Analog Output	Serial	Models
 RETRO LASER	Class 1 Infrared Sensing Laser (Class 2 Visible Red Alignment Laser)	0.5 to 250 m	12-pin M16 QD	2 PNP	—	RS-422 or SSI	**LT7PLVQ**

Connection options: A model with a QD requires a mating cordset.

*Diffuse-mode range specified using a 90% reflectance white card.
Retroreflective range is specified using a **BRT-250**, **BRT-540** or **BRT-700** retroreflective target (see page page 790).

Euro QD (w/ Shield)
Straight connector models listed; for right-angle, replace **ST** with **RA** at the end of the model number (example, **MQDC-1210RA**)

12-Pin
MQDC-1210ST
3 m
MQDC-1213ST
10 m

Additional cordset information is available
See page 758

SMBLT7

Additional bracket information is available
See page 724

Reflectors

Additional information is available
See page 790

L-GAGE® LT7 Specifications

Sensing Range	**LT7PLVQ:** 0.5 to 250 m (using specified reflector) **LT7PIDQ: 6% Black card:** 0.5 to 3 m **18% Gray card:** 0.5 to 7 m **90% White card:** 0.5 to 10 m
Supply Voltage and Current	18 to 30 V dc (10% max. ripple)
Power Consumption	Less than 4.5 W @ 25° C
Measuring Laser	Infrared, 900 nm, Class 1
Laser Control	Measurement laser is ON when sensor is ON. Pilot (visible) laser enabled during Programming mode; alternates with measurement laser.
Spot Size	**LT7PLVQ:** Distance: 10 m, 50 m, 100 m, 250 m; Spot Size: ø 20 mm, ø 100 mm, ø 200 mm, ø 500 mm **LT7PIDQ:** Distance: 4 m, 6 m, 10 m; Spot Size: 3 x 10 mm, 4 x 12 mm, 10 x 20 mm
Pilot Laser (Alignment)	Visible red, 650 nm, Class 2
Discrete & Analog Output Protection	Protected against continuous overload and short circuit
Discrete Outputs	(2) 100 mA, PNP
Discrete Switch Points	Adjustable in 1 mm steps
Discrete Output Hysteresis	Adjustable, 10 mm min.
Alarm Outputs	50 mA, PNP (NO)
Analog Output	**LT7PLVQ:** None **LT7PIDQ:** 4-20 mA
Output Response Time	12 milliseconds
Linearity	±10 mm
Resolution/Repeatability	**LT7PLVQ:** ±2 mm **LT7PIDQ:** ±4 mm
Temperature Effect	Less than ± 5 mm over the total sensing range
Minimum Analog Window Size	**LT7PLVQ:** Not Applicable **LT7PIDQ:** 300 mm
Adjustments	Push-button directed password enable/disable, measurement unit select, offset value select, output limits set, output mode select, analog output slope select (diffuse models only) and output limit manual adjust. See datasheet for information.
Serial Measurement Speed	**SSI:** 1.4 milliseconds (SSI cycle 80 microseconds) **RS-422:** 2.9 milliseconds @ 57.6 kBaud
Construction	ABS shock-resistant housing; PMMA window; polycarbonate displays
Weight	Approximately 230 g
Environmental Rating	IEC IP67
Operating Conditions	**Temperature:** –10 to +50 °C in continuous operation
Storage Temperature	–30 to +75 °C
Vibration/Shock	EN 60947-5-2
Certifications	CE