The LT3 uses pulsed time-of-flight technology to achieve unsurpassed performance. The laser pulses one million times per second. The microprocessor records the time required for each pulse to travel to the retro-reflective target and back to the sensor. Every millisecond, it averages one thousand pulse times and outputs a value from the microprocessor.

The sensor’s long range enables it to detect very small features or parts, even when it is mounted well back from the hazards of a process.

The retro-reflective models can accurately position cranes and other equipment up to 50 m away — with accuracy within a few millimetres. The bright visible spot makes it easy to set up and align.

The LT3 laser sensor is not affected by wind, temperature or pressure changes.

- Extremely long range of 50 m for retro-reflective models
- Banner’s unique scalable analogue output automatically distributes the output signal over the width of the programmed sensing window
- Two independent outputs in each sensor, either two digital or one analogue and one digital
- Choose npn or pnp digital output(s); 0 to 10 VDC or 4 to 20 mA sourcing analogue output also available
- Models with two digital outputs are selectable for pnp or npn
- Fast, easy-to-use integrated push-button TEACH-mode programming; no potentiometer adjustments
- Remote TEACH function for security and convenience
- Output response is programmable for three speeds
- Choose 2 m unterminated cable, or 8-pin eurocon swivel QD connector
- Rugged construction withstands demanding sensing environments; rated IEC IP67
LT3 Series – Retro Mode
Long-Range Laser Distance Sensor

Wave length
Visible red
Typical beam diameter 6 mm at 3 m
Laser protection class I
(IEC 60825, EN 60825)

Sensing range
Minimum window size 40 mm
Range 0.3...50 m with BRT-TVHG-8x10P

Adjustment
Digital response speed
Window limits
(on sensor or remote TEACH)
Analogue output slope

Npn/pnp select

Supply
Supply voltage 12...24 VDC
Ripple \( V_{pp} \) ≤ 10 %
No load current 108 mA max. at 24 VDC
Delay upon power up 1 s
Remote TEACH input 18 k\( \Omega \) min.
(65 k\( \Omega \) at 5 VDC)
Reverse polarity
Transient voltages
Short-circuit

Protection

Outputs
Digital
Analogue
Current output load
Voltage output load

Material
Housing
Lens (window)
Protection class
(IEC 60529, EN 60529)
Temperature range
Temperature drift
Cable

Connector

Indicator LEDs
Green
Yellow
Red

Yellow (speed)
Analogue/Digital models:
Red/green TEACH
Output 1
Output 2
Digital-only models:
Yellow TEACH
Output 1 and 2

Outputs
Digital
Analogue
Current output load
Voltage output load

Material
Housing
Lens (window)
Protection class
(IEC 60529, EN 60529)
Temperature range
Temperature drift
Cable

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Indicator LEDs
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Yellow
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Analogue/Digital models:
Red/green TEACH
Output 1
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Digital-only models:
Yellow TEACH
Output 1 and 2

Wiring and Accessories
See page 3
LT3 Series
Long-Range Laser Distance Sensor

Resolution/repeatability in mm versus distance in m

Retro-reflective

<table>
<thead>
<tr>
<th>Max. range [m] with BRT-TVHG-8x10P</th>
<th>Output function</th>
<th>Analogue output</th>
<th>Connection</th>
<th>Type</th>
<th>Ident number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,5...50</td>
<td>pnp</td>
<td>4...20 mA</td>
<td>cable</td>
<td>LT3PILV</td>
<td>30 672 79</td>
</tr>
<tr>
<td>0,5...50</td>
<td>pnp</td>
<td>4...20 mA</td>
<td>connector</td>
<td>LT3PILVQ</td>
<td>30 672 80</td>
</tr>
<tr>
<td>0,5...50</td>
<td>nnn</td>
<td>4...20 mA</td>
<td>cable</td>
<td>LT3NILV</td>
<td>30 672 82</td>
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<tr>
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<td>nnn</td>
<td>4...20 mA</td>
<td>connector</td>
<td>LT3NILVQ</td>
<td>30 672 83</td>
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<tr>
<td>0,5...50</td>
<td>pnp</td>
<td>0...10 VDC</td>
<td>cable</td>
<td>LT3PULV</td>
<td>30 672 73</td>
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<tr>
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<td>0...10 VDC</td>
<td>connector</td>
<td>LT3PULVQ</td>
<td>30 672 74</td>
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<td>0...10 VDC</td>
<td>cable</td>
<td>LT3NULV</td>
<td>30 672 76</td>
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<tr>
<td>0,5...50</td>
<td>nnn</td>
<td>0...10 VDC</td>
<td>connector</td>
<td>LT3NULVQ</td>
<td>30 672 77</td>
</tr>
<tr>
<td>0,5...50</td>
<td>pnp/nnp</td>
<td>–</td>
<td>cable</td>
<td>LT3BDLV</td>
<td>30 673 80</td>
</tr>
<tr>
<td>0,5...50</td>
<td>pnp/nnp</td>
<td>–</td>
<td>connector</td>
<td>LT3BDLVQ</td>
<td>30 673 81</td>
</tr>
</tbody>
</table>

Wiring

- **pnnp, 2 digital outputs**
- **nppn, 2 digital outputs**
- **pnpp, analogue output**
- **nppn, analogue output**

(a) load 1; (b) load 2; (c) output select; (d) laser control: beam enabled, connect to +5...24 VDC; 150 ms (slow), 60 ms (medium) or 51 ms (fast) delay upon enable when sensor is powered; (e) TEACH; (f) shield

Accessories [dimensions in mm]

- **Brackets**
  - SMBLT31: 30 685 05 right-angle, stainless steel
  - SMBLT32: 30 692 36 protective bracket

- **Connector**
  - WAK8-2/P00: 80 070 25 straight type, 8-pin

- **Reflector**
  - BRT-TVHG-8x10P: 30 691 19 size 203 x 254 mm (included)
LT3 Series – Retro Mode
Long-Range Laser Distance Sensor

Indicator LEDs: analogue and digital outputs
A Signal LED
B Response speed indicators
C Analogue TEACH LED
D Analogue output programming push button
E POWER ON/OFF LED
F Output LED
G Response speed push button
H Digital TEACH LED
I Digital (switched) output programming push button

Indicator LEDs: two digital outputs
A Signal LED
B Response speed indicators
C Digital output 1 TEACH LED
D Digital output 1 programming push button
E POWER ON/OFF LED
F Output LED
G Response speed push button
H Digital output 2 TEACH LED
I Digital output 2 programming push button

<table>
<thead>
<tr>
<th>Digital output response time</th>
<th>Digital output hysteresis</th>
<th>Analogue voltage output response time (-3 dB)</th>
</tr>
</thead>
</table>
| Fast
| 1 ms ON and OFF
| 20 mm
| 114 Hz (6 ms average/1 ms update rate) |
| Medium
| 10 ms ON and OFF
| 10 mm
| 10 Hz (48 ms average/1 ms update rate) |
| Slow
| 100 ms ON and OFF
| 6 mm
| 2.5 Hz (192 ms average/1 ms update rate) |

Linearity
± 60 mm throughout sensing range. Application note: allow 30-minute warm-up for optimal performance.

Applications:

Two-axis crane position
Objective: To verify the position of an overhead bridge crane, in two axes.
Sensor models: Two LT3 retro-reflective-mode sensors with analogue/digital outputs and included retro-reflective targets.
Operation: The sensors are mounted facing their retro-reflective targets, which are mounted on two mobile components of a bridge crane. One component moves back and forth, the other moves from side to side. As the crane maneuvers the roll of sheet stock, the two sensors monitor the distance to their respective reflectors, enabling a PLC to continuously track the crane's exact position.

Storage and retrieval system positioning
Objective: To locate the position of an automated storage/retrieval system.
Sensor models: LT3 retro-reflective-mode sensor with analogue/digital outputs and included retro-reflective target.
Operation: A measurement technique is required to accurately locate the position of the vertical lift unit of an automated storage/retrieval system as it moves back and forth on its path. The distance of the unit can range up to 50 m. The included retro-reflective target is mounted on the facing edge of the unit.

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IMPORTANT SAFETY WARNING! These sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can result in either an energised or de-energised output condition. These products should not be used as sensing devices for personnel safety.