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 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.

This makes the LT3 a powerful tool for error proofing and die protection applications. 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 and can be used on targets that are not perpendicular to the sensor. With non-shiny surfaces (flat paint, for example), the LT3 can sense targets up to 60° off of perpendicular.
LT3 Series – Diffuse Mode
Long-Range Laser Distance Sensor

Wave length
Visible red
Typical beam diameter
Laser protection class
(IEC 60825, EN 60825)

Sensing range
Minimum window size
90 % white card
18 % grey card
6 % black card

Adjustment
Response speed
Window limits
(on sensor or remote TEACH)
Analogue output slope
Npn/pnp select

Supply
Supply voltage
Ripple V_{pp}
No load current
Delay upon power up
Remote TEACH input

Protection
Reverse polarity
Transient voltages
Short-circuit

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

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

Resolution/repeatability in mm versus distance in m

<table>
<thead>
<tr>
<th>Max. range [m]</th>
<th>90% white card</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...3...5</td>
<td>pnp</td>
<td>4...20 mA</td>
<td>cable</td>
<td>LT3PI</td>
<td>30 655 14</td>
<td></td>
</tr>
<tr>
<td>0...3...5</td>
<td>nnp</td>
<td>4...20 mA</td>
<td>connector</td>
<td>LT3PIQ</td>
<td>30 655 13</td>
<td></td>
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<tr>
<td>0...3...5</td>
<td>pnp</td>
<td>0...10 VDC</td>
<td>cable</td>
<td>LT3NI</td>
<td>30 655 11</td>
<td></td>
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<tr>
<td>0...3...5</td>
<td>nnn</td>
<td>0...10 VDC</td>
<td>connector</td>
<td>LT3NIQ</td>
<td>30 655 10</td>
<td></td>
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<tr>
<td>0...3...5</td>
<td>pnn</td>
<td>0...10 VDC</td>
<td>connector</td>
<td>LT3PU</td>
<td>30 655 08</td>
<td></td>
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<tr>
<td>0...3...5</td>
<td>nnp</td>
<td>0...10 VDC</td>
<td>connector</td>
<td>LT3PUQ</td>
<td>30 655 07</td>
<td></td>
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<tr>
<td>0...3...5</td>
<td>pnp/pnn</td>
<td>–</td>
<td>cable</td>
<td>LT3NU</td>
<td>30 655 05</td>
<td></td>
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<td>0...3...5</td>
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<td>–</td>
<td>connector</td>
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<td>30 655 04</td>
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<td>–</td>
<td>connector</td>
<td>LT3BD</td>
<td>30 655 17</td>
<td></td>
</tr>
<tr>
<td>0...3...5</td>
<td>pnp/pnn</td>
<td>–</td>
<td>connector</td>
<td>LT3BDQ</td>
<td>30 655 16</td>
<td></td>
</tr>
</tbody>
</table>

- 6% black, –– 18% grey, --- 90% white

### Wiring

- **pnp, 2 digital outputs**
  - (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

- **nnp, 2 digital outputs**
  - (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

- **pnp, analogue output**
  - (a) 4...20 mA (current) or 0...10 VDC (voltage); (b) digital output; (c) load; (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

- **nnp, 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 protective bracket
  - SMBLT32: 30 692 36 protective bracket

- **Connector**
  - WAK8-2/P00: 80 070 25 straight type, 8-pin
LT3 Series – Diffuse 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>
<tbody>
<tr>
<td>Fast</td>
<td>1 ms ON and OFF</td>
<td>400 Hz (1 ms average/1 ms update rate)</td>
</tr>
<tr>
<td>Medium</td>
<td>10 ms ON and OFF</td>
<td>45 Hz (10 ms average/2 ms update rate)</td>
</tr>
<tr>
<td>Slow</td>
<td>100 ms ON and OFF</td>
<td>4.5 Hz (100 ms average/4 ms update rate)</td>
</tr>
</tbody>
</table>

Linearity

± 30 mm from 0.3 to 1.5 m
± 20 mm from 1.5 to 5 m

Colour sensitivity

90% white to 18% grey: < 10 mm
90% white to 6% black: < 20 mm

Application note: allow 30-minute warm-up for optimal performance.

Applications:

Auto seat range-of-motion

Objective: To accurately measure the range of motion of an auto seat back.

Sensor models: LT3 diffuse-mode sensor.

Operation: The user needs to verify that each auto seat manufactured in a plant adjusts to the correct, predetermined positions. With the seat positioned in a fixture, the LT3 measures the distance to the back of the seat when it is placed into three angles of recline.

Log profiling

Objective: Detect and calculate the diameter of each log as it passes on the conveyor belt.

Sensor models: Two LT3 diffuse-mode sensors with analogue/digital outputs.

Operation: The LT3 sensors are placed above and to one side of the conveyor, approx. 2 m from the log's surface. Each sensor sends a signal to a PLC, representing the distance from the sensor to the surface of the log. The PLC calculates the log's diameter, based on the known distances to each sensor.

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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.