LT3 Series
Long-Range Laser Distance Sensor
Retro-Reflective Mode

- **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**

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.

LT3 Series – Retro Mode
Long-Range Laser Distance Sensor

Dimensions [mm]

• Cable

• Connector
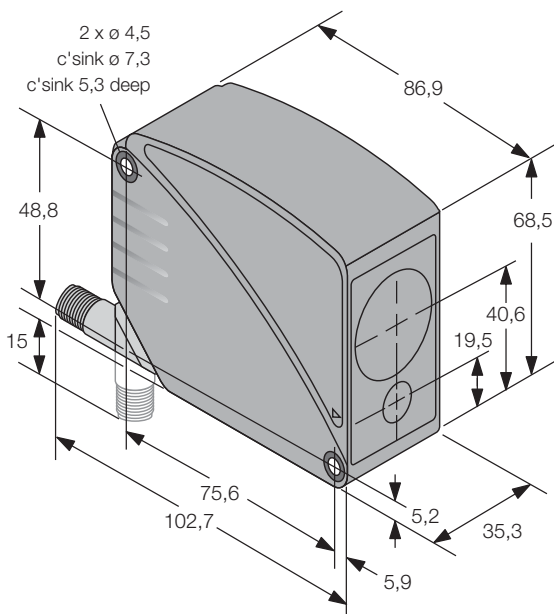
Wiring and Accessories

See page 3

Wave length

Visible red	658 nm
Typical beam diameter	6 mm at 3 m
Laser protection class	1
(IEC 60825, EN 60825)	

Sensing range

Minimum window size	40 mm
Range	0,5...50 m with BRT-TVHG-8x10P Reflector

Adjustment

Digital response speed	1, 10, 100 ms ON and OFF
Window limits	analogue or digital output
(on sensor or remote TEACH)	
Analogue output slope	positive or negative, depending on TEACH
Npn/pnp select	via wiring (digital-only models)

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 kΩ min. (65 kΩ at 5 VDC)
Protection	reverse polarity transient voltages short-circuit

Outputs

Digital	pnp or npn, ≤ 100 mA
Analogue	0...10 VDC or 4...20 mA
Current output load	1 kΩ max. at 24 VDC
Voltage output load	2,5 kΩ min. impedance

Material

Housing	ABS/polycarbonate blend
Lens (window)	acrylic
Protection class	IP67
(IEC 60529, EN 60529)	
Temperature range	0...+50 ºC
Temperature drift	< 3 mm per ºC
Cable	2 m, PVC 7 x 0,34 mm^2 (shielded)
Connector	*euro*con (M12 x 1) (8-pin)

Indicator LEDs

Green	power ON
Yellow	digital output conducting
Red	target in sensing range signal strength
Yellow (speed)	response speed setting

Analogue/Digital models:

Red/green TEACH	programming mode
Output 1	red: analogue output
Output 2	green: digital output

Digital-only models:

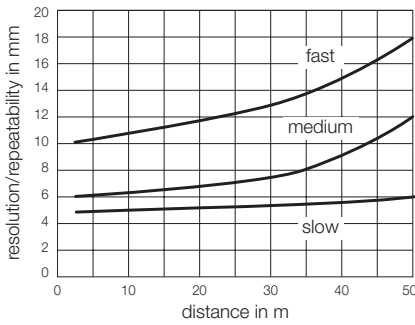|	
Yellow TEACH	programming mode
Output 1 and 2	yellow

LT3 Series
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Resolution/repeatability in mm versus distance in m

### Retro-reflective

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

Wiring
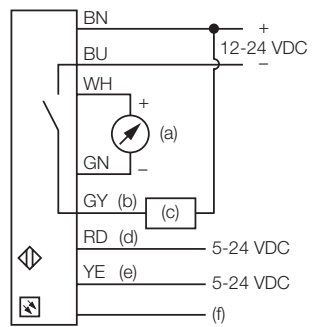
pnp, 2 digital outputs
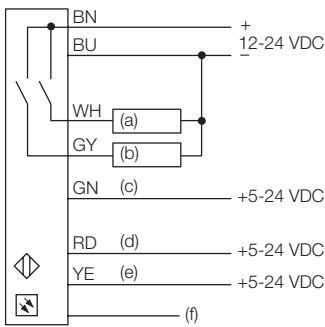
npn, 2 digital outputs
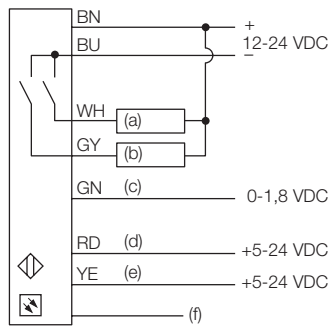
pnp, analogue output
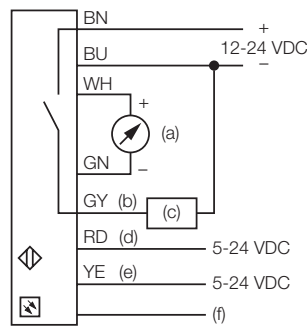
npn, analogue output

(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

(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

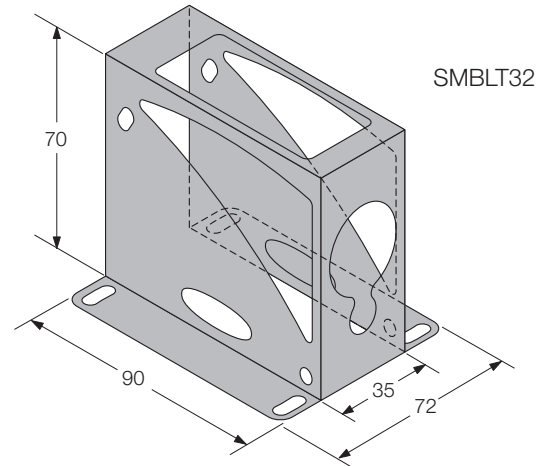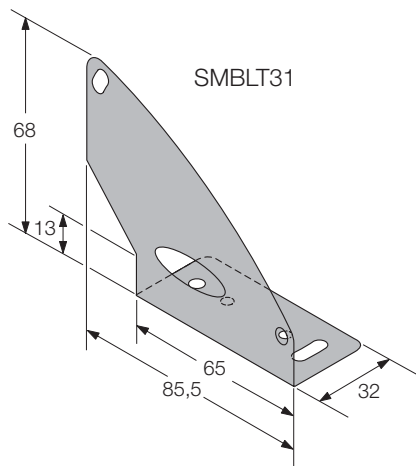## Accessories [dimensions in mm]

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)

SMBLT31

SMBLT32

# 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
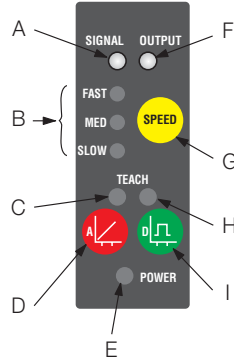
Indicator LEDs: two digital outputs

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
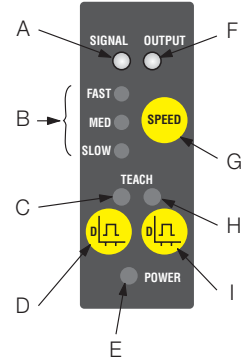
	Digital output response time	Digital output hysteresis	Analogue voltage output response time (-3 dB)
Fast	1 ms ON and OFF	20 mm	114 Hz (6 ms average/1 ms update rate)
Medium	10 ms ON and OFF	10 mm	10 Hz (48 ms average/1 ms update rate)
Slow	100 ms ON and OFF	6 mm	2,5 Hz (192 ms average/1 ms update rate)

Linearity

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

Applications:

retro targets

X

Y
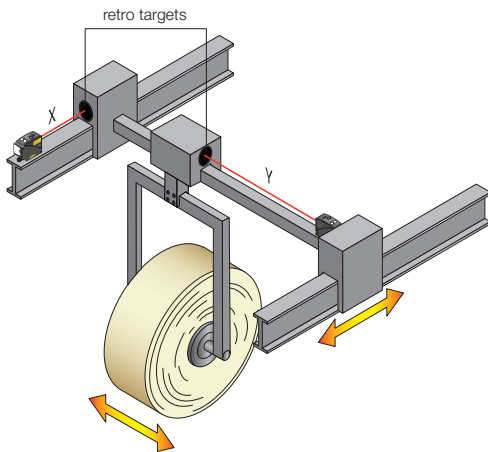
Two-axis crane position

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.
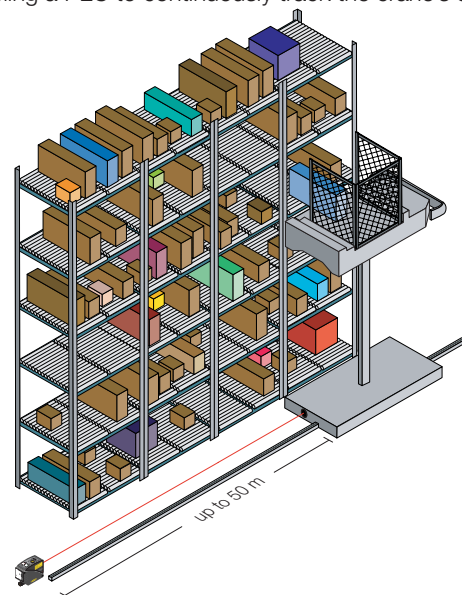
Operation: The sensors are mounted facing their retro-reflective targets, which are mounted on two mobile components of a bridge crane. One component moves back and forth, the other moves from side to side. As the crane maneuvers the roll of sheet stock, the two sensors monitor the distance to their 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.

up to 50 m