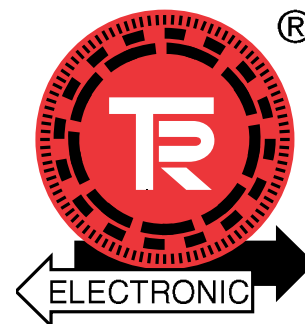


Introducing

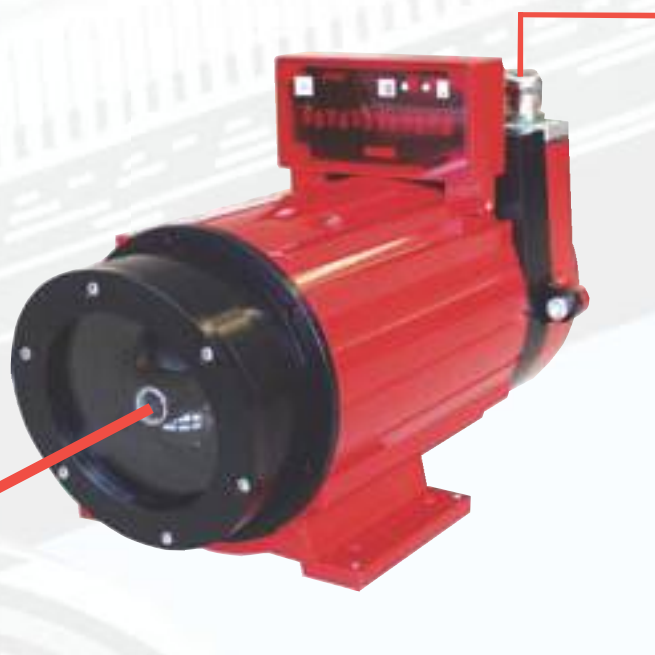
the **next** generation of Laser Distance measurement and Optical Data transmission



LE series

Laser Distance measurement

- absolute measurement
- 0.2 to 170 m (558 ft) range
- class 2 laser
- supports all major fieldbus protocols
- rugged design - high tech capability



ID series

Optical Data transmission

- 200 m (650 ft) range
- Infra-red Laser Class 1
- supports all major fieldbus protocols
- RS422, RS485 and fiber optic interface
- rugged design for industrial use

Absolute Laser Distance measurement ...

The **LE-200**, from TR Electronic, is an optical measuring system which, via a visible, red, class 2 laser beam, (wave length 670 nm), accurately measures, in a clear line of sight, the distance between itself and a positioned reflector.

Either the **LE-200** or the reflector can be mobile, permitting positioning of objects moving in a linear direction at speeds of up to 5 meters per second.

By calculating the phase shift between the transmitted and reflected light beam the **LE-200** measures the precise distance up to a maximum of 170 meters.

The principle of phase shift measurement enables, in less than 2 milliseconds, calculation of measured values

Electrical Data

Range	0.2 to 170 m
Accuracy	Absolute accuracy ± 5 mm over complete range
Repeatability	± 2 mm
* Resolution, Pre Configured options	10 mm, 1 mm, 0.1 mm, 0.01 mm; 1 inch, 0.1 inch
Light Source	Laser Diode (red light)
Wave length λ	670 nm
Maximum Laser Power	$P \leq 1$ mW
Laser Protection Class	2 (IEC 825)
Lifetime (25° C / 77° F)	50,000 hrs.
Receiver	Photo Diode
Supply Voltage	18 - 27 VDC $\pm 5\%$
Measurement Value Output	distance, speed
Measurement Value Output/Cycle Time	1000 values per second
Programmable via RS485	PC IBM compatible WINPROG software / Bus
* Output Code	Binary, Gray
Interfaces	SSI, CANbus, CAN-Open, CAN DeviceNet, Profibus, InterBus, FIPIO
* Output Format	Standard, Tree, with repetition
* Input Options	Laser Diode on/off
Preset 1	Adjustable absolute position (ie. zero set)
Logic Levels	"0" < +2 VDC, "1" > +8 VDC, max. 30 VDC
* Output Options	loss of signal, error
Pin Configuration	On Request

Mechanical Data

Vibration (50-2000 Hz Sinusoidal)	DIN IEC 68-2-6
Shock (11 ms)	DIN IEC 68-2-27
Connector	12 pin Contact (Others by request)

Environmental Data

Operating Temperature	0 to 50 C (32 F to 122 F)
Extended Temperature (Optional)	-20 to 50 C (-4 F to 122 F)
Relative Humidity	98% (non condensing)
* Protection Class	IP 65 (DIN 40 050)
Electromagnetic	EN 61000-4-2 (IEC-801-2) / EN 61000-4-4 (IEC-801-4)

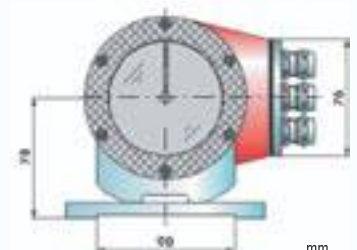
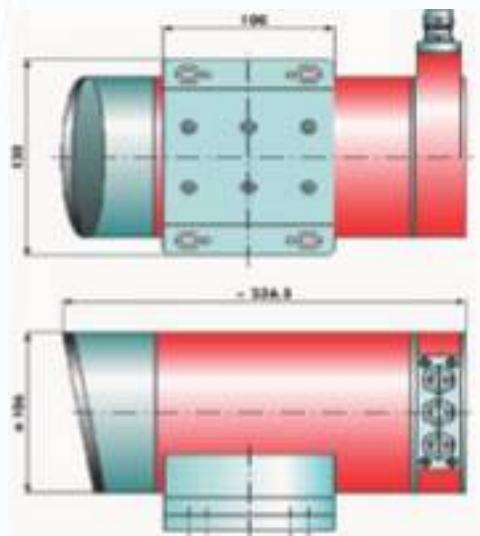
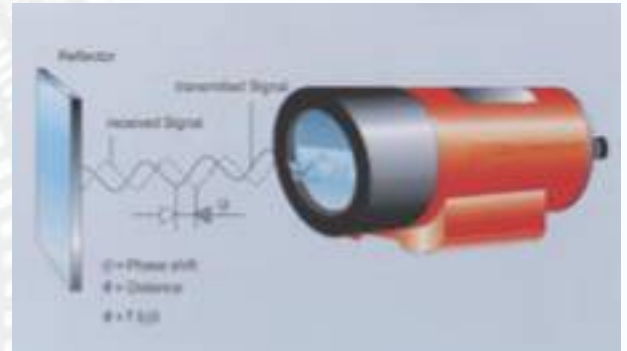
* The protection class can be affected by the type of cable and connector used

with very high reproducibility. This allows the **LE-200** to be used in closed loop control systems giving it a distinct advantage over its competitors.

Designed to operate flawlessly in the most challenging industrial environments, the **LE-200** can also be fitted with a lens heater for low temperature applications.

Some of the many applications for this exciting new addition to the TR family include; Automated warehouses, Stackers, Cranes, AGV's, Conveyors, Transfer machines and Overhead Gantry systems.

The **LE-200** is completely compatible with the ID series of Optical Data Transmission devices, increasing its flexibility and utilization. Synchronous Serial Interface (SSI) output and all major fieldbus protocols are supported.



Optical Data transmission ...

Introducing the **ID-200**, bus capable, optical data transmission series from TR Electronic. Utilizing a Class 1 rated laser beam the **ID-200** can transfer various data formats, over distances of up to 200 meters, in the infra-red range.

The advanced design technology incorporated in the **ID-200** permits single person set-up and calibration. A bar graph indicates signal strength making set up simplicity itself.

Numerous applications exist for the transmission of data without the use of wires or cables. The **ID-200** measures up to the task of operating within industrial environments and is completely compatible with the TR Electronic LE-200 laser distance measurement devices.



Amongst the many different protocols supported by the **ID-200**, Data Highway+ (DH+) and Remote IO (RIO) figure prominently.

All major fieldbus protocols are available

Some of the many applications for this exciting new addition to the TR family include; Automated high-bay warehouses, Stationary transfer between buildings, extensions to existing bus cable runs already at maximum length. The **ID-200** is the next generation of Optical Data Transmission devices.

Electrical Data

Supply Voltage	18 to 30 VDC
Current without Optics heating	approx. 200 mA at 24 VDC (no load at switching output)
Current with Optics heating	approx. 800 mA at 24 VDC (no load at switching output)
Optical Data	
Sensing Distance	0.2 to 120 m, ID-200 / 120 m 0.2 to 200 m, ID-200 / 200 m
Transmission Diode	infra-red light, wavelength 880 nm
Opening Angle	± 0.5° to optical axis
Ambient Light	> 10,000 Lux per EN 60947-5-2 (2000)
Laser Safety Class	Class 1 per EN 60825-1 (2001)
Input/Output	
Input	0 to 2 VDC: transmitter/receiver deactivated 18 to 30 VDC: transmitter/ receiver activated 0 to 2 VDC: normal operation Vin - 2 VDC: limited performance reserve output current max. 100 mA, short circuit proof, protected against surge voltage, transients and overheating
Output	

Extend bus node drops by using the ID-200



Operating and Display Elements

Membrane Buttons	change the operating mode
Individual LED's	indicate voltage supply, operating mode, data traffic
LED Strip	bar graph display of the receiving level

Mechanical Data

Housing	aluminum die cast; light inlet/outlet, glass
Weight	approx. 1,200 g
Protection Class	IP 65 per EN 60529

Environmental Data

Operating Temperature	-5°C +50°C without optics heating -30°C +50°C with optics heating (non-condensing)
Storage Temperature	-30°C +70°C
Relative Humidity	max. 90% rel. humidity, non-condensing
Vibration	per EN 60068-2-6
Noise	per EN 60068-2-64
Shock	per EN 60068-2-27 and EN 60068-2-29
EMC	per EN 61326 (1998) + A1 (1999)

TR Electronic - World leader in absolute rotary encoder, linear displacement transducer, glass scale linear, optical data transmission and laser distance measurement

Service & Technical Support ...

TR recognizes the need for high quality "before and after" sales service.

We offer skilled and experienced application engineering support for all your positioning requirements.

A "state-of-the-art" technical service department provides unparalleled support either on-site, by telephone or via the internet.

TR Electronic continues to develop and extend its interactive web site at <http://www.trelectronic.com> providing access and download of all relevant documentation, such as, operating manuals, specification data, cable connections and dimensional drawings.

Custom modification and conventional repair capability is backed by a large inventory of product and components.

Contact these TR services by emailing us at service@trelectronic.com or calling toll free, 1-800-265-9483, in North America.

Other TR products ...

- absolute, rotary, multi-turn, high resolution encoders
- incremental rotary encoders
- software programmable incremental encoders
- linear magnetostrictive position sensors
- glass scale linears
- absolute encoders and linear transducers with incremental A Quad B output

Leading edge technology with industry proven ruggedness and reliability

For **world wide** support check "Offices" on our web site at:
www.trelectronic.com



ID-200 ...

— *extending the way we measure* —



United States Head Office

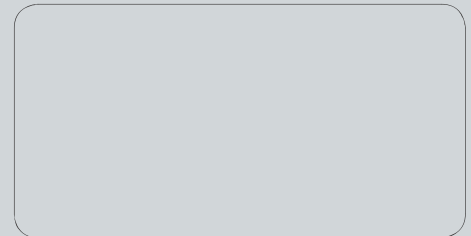
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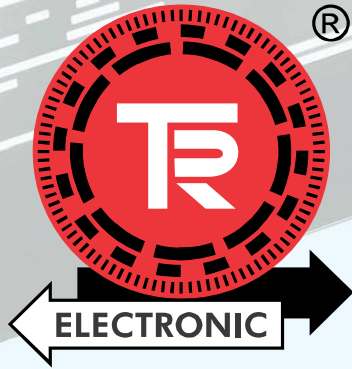
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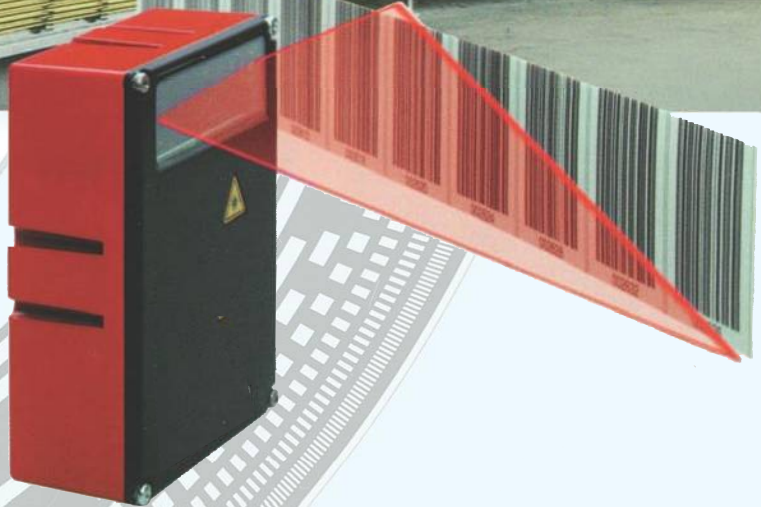
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BARCODE



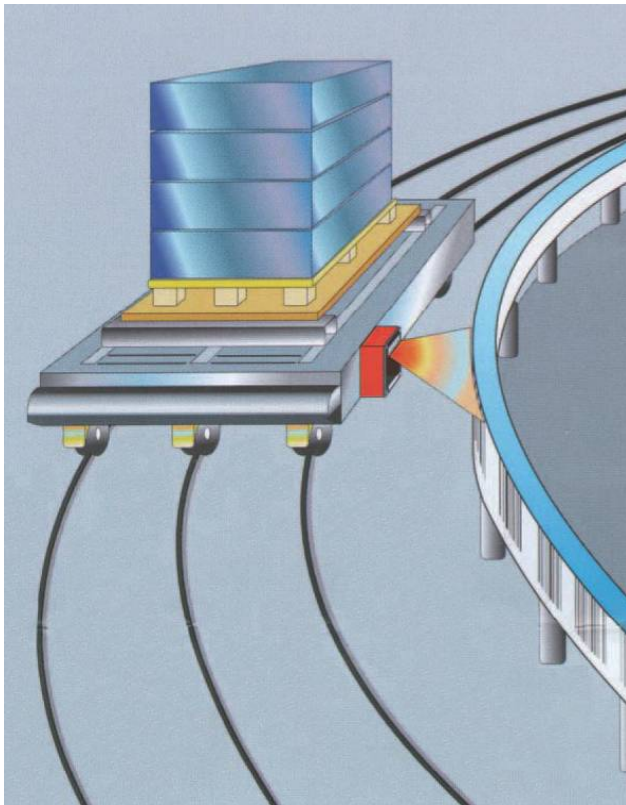
POSITION MEASUREMENT SYSTEM



BE 90

POSITIONING: MORE FLEXIBLE - MORE TOLERANT

APPLICATIONS



Anywhere systems are operated automatically it's important to determine their exact position.

Various measuring procedures are used. In addition to mechanical measuring sensors, optical positioning systems are particularly suitable since they can determine position without any mechanical wear and/or slip.

In comparison to other well-known optical measuring methods, the BE-90 bar code distance measuring system is not restricted to just linear movement. It can also be used on curved or circular systems.

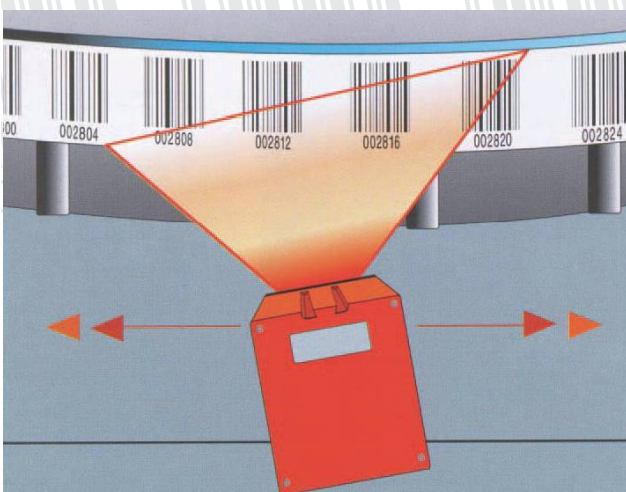
With the BE-90, position can be determined precisely to the millimeter anywhere the durable barcode tape can be attached.

Guidance clearances for the equipment do not play a role due to the large permissible operating distance available between tape and detector.

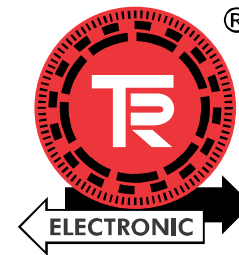
Typical applications for this system are location identification and positioning of:

- storage rack control devices and lifting gear
- crane installations
- shuttle cars
- transfer machines
- electrical overhead conveyors

ADVANTAGES



- Simple assembly and start up
- Positioning of non linear systems
- No re-referencing required after power failure
- Due to the large scanning depth, mechanical tolerances become insignificant
- Distances up to 10,000m



FUNCTION:



The BE-90 is an optical measuring system which, via a red light visible laser, determines its position relative to a bar code tape.

The determination of its position is established in essentially three steps:

Step 1:
Reading the code on the barcode tape.

Step 2:
The code read by the laser beam determines the position.

Step 3:
From the code information and position, the precise position, to the millimeter, is determined.

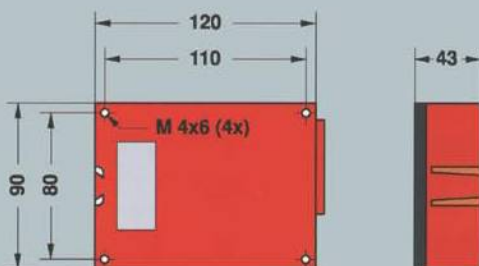
TECHNICAL DATA:

BE-90

Integration time:	16 (8) msec.
Reproducibility:	± 1 (2) mm
Measurement value readout:	1000 /s
Resolution:	1/100 mm
Operating temperature:	0 - 40°C
with optics heater:	-30... + 40°C
Protection Class:	IP 65
Interface:	SSI, Profibus DP
Sampling distance:	60 - 140 mm
Supply voltage:	10 - 30 VDC
Laser class:	2 (IEC 825-1)

Barcode tape

Max. length:	10 000 m
Temperature range:	-40... +120°C
Print:	Photo type set
Adhesive:	Acrylic adhesive
Environmental:	Scratch and smear proof as well as UV light, humidity and chemical resistant



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TR Electronic - the standard by which others are measured



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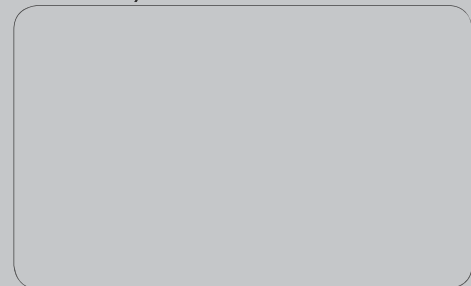
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Distributed by:



ID-200

- Optical Data transmission up to 200 meters.
- Extend bus drop nodes or simply transmit from building to building without trailing wires

extending the way we measure