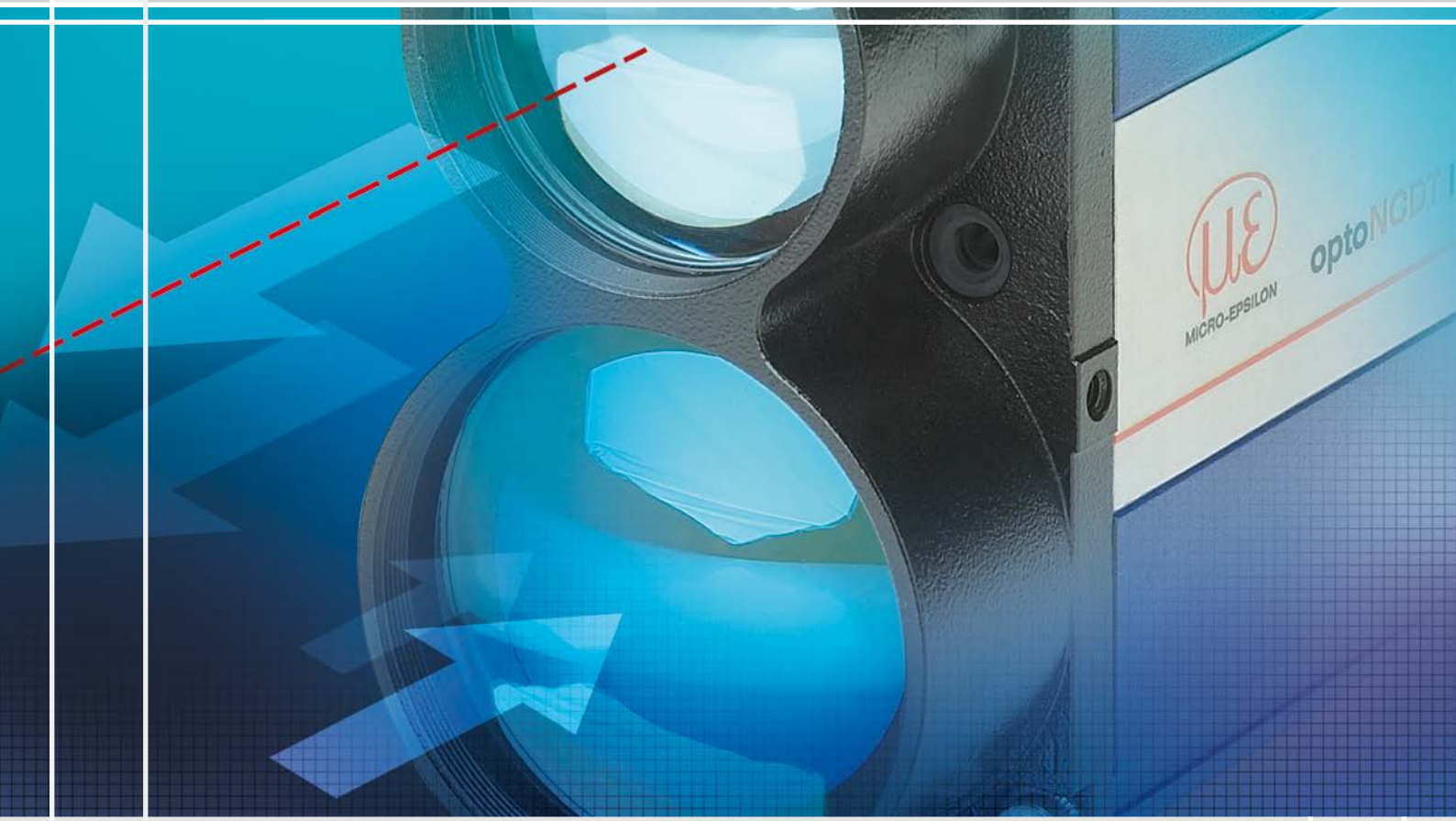
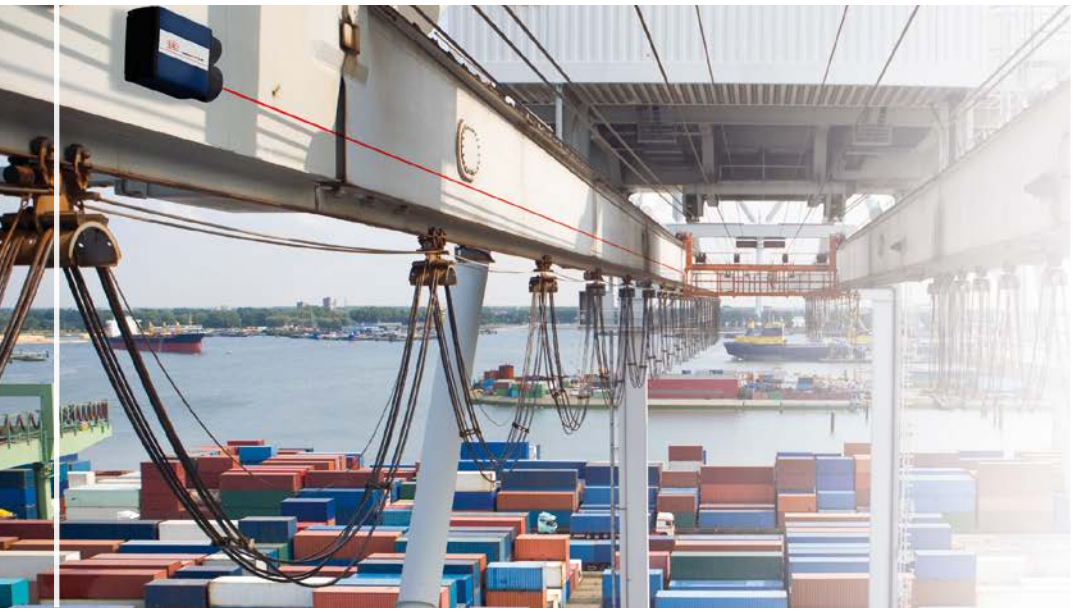
MICRO-EPSILON

# More Precision

## optoNCDT ILR // Laser distance sensors





- *Non-contact distance measurement: more than 300m without reflector more than 3000m with reflector*
- *Excellent repeatability and linearity*
- *Short response time*
- *Compact sensor design*
- *Various interfaces*
- *Sighting laser for easy set up*
- *Excellent price-performance ratio*

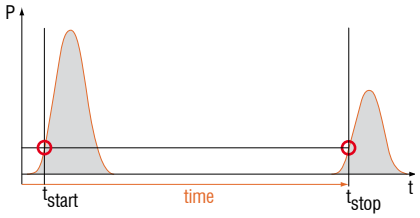
**Laser distance sensors**

Sensors in the optoNCDT ILR series are optoelectronic sensors for non-contact displacement, distance and also speed measurement. The large measuring range of the laser distance sensors enables measurements on critical surfaces such as, e.g. hot metal, from a safe distance or the regulation of large travel displacements with a small installation size. Measurements without wear and thus a long service life are made possible due to the non-contact measurement technique. Depending on the application, there are four series available with different focuses on accuracy and measuring speed.

The sensors are designed for operation with and without reflector and are thus very flexible to use. Due to their robust construction and compact design, the ILR sensors are used indoors and outdoors for many different measurement tasks, both for static as well as moving measurement objects. The exact positioning of the sensor can be performed easily due to the switchable sighting laser.

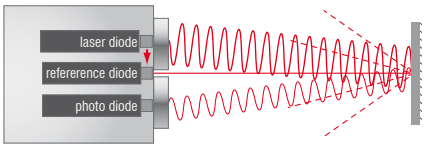
**Time of flight measurement principle**

The ILR102x, 103x, 110x, 115x and 119x sensors operate according to the time of flight measurement principle. A laser diode in the sensor produces short laser pulses which are projected onto the target. The light reflected from the target is recorded by the sensor element. The time of flight of the light pulse to the target and back determines the measurement distance. The integrated electronics in the sensor derives the distance using the time of flight and conditions the signal for the analogue and digital output. Sensors using this principle are not sensitive to external light.




**Phase comparison measuring principle**

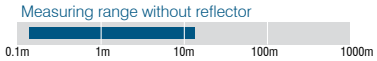
The ILR118x sensors operate according to the phase comparison principle. High frequency modulated laser light with low amplitude is transmitted to the target. Depending on the distance of the object, the distance changes the phase relationship between transmitted and received signal. Sensors using this principle operate with high accuracy for measurement distances up to 150 metres.

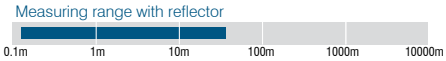


## Compact & reliable Sensor
## ILR 1030/1031

Page 4-5

- Measuring ranges 0.2 ... 50m
- Linearity ±20mm
- Repeatability <5mm
- Resolution 1mm
- Measurement with and without reflector
- Analogue output 4 ... 20mA
- Very compact plastic housing
- Easy adjustment with laser sighting
- Laser class 1 options available
- IP65

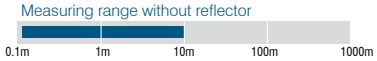



## Compact & fast
## ILR 1020/1100/1150

Page 6-7

- Measuring ranges 0.2 ... 10m
- Linearity ±8 ... ±40mm
- Repeatability ±4 ... ±10mm
- Resolution from 0.1mm
- Fast response time
- Interface RS422/SSI
- Analogue output 4 ... 20mA
- Compact sensor design
- Sensor configuration via touch keys
- IP67

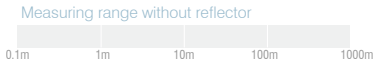


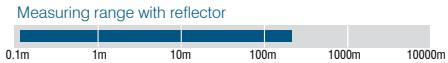


## Compact & fast (Reflector)
## ILR 1021/1101/1151

Page 8-9

- Measuring ranges 0.2 ... 250m
- Linearity ±3 ... ±60mm
- Repeatability ±2 ... ±10mm
- Resolution from 0.1mm
- Fast response time
- Interface RS422/SSI
- Analogue output 4 ... 20mA
- Compact sensor design
- Sensor configuration via touch keys
- IP67

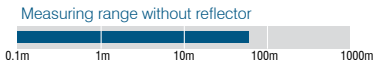


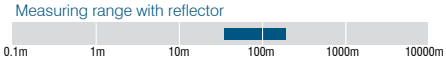




## Industrial Standard with high Precision
## ILR 1181/1182/1183

Page 10-11

- Measuring ranges 0.1 ... 150m
- Linearity ±2 ... ±5mm
- Repeatability <0.5mm
- Resolution 0.1mm
- Measurement with and without reflector
- Interface RS232/RS422/SSI/Profibus
- Analogue output 4 ... 20mA
- Integrated heating (option)
- Small spot diameter
- IP65




## High-Performance Sensor
## ILR 1191

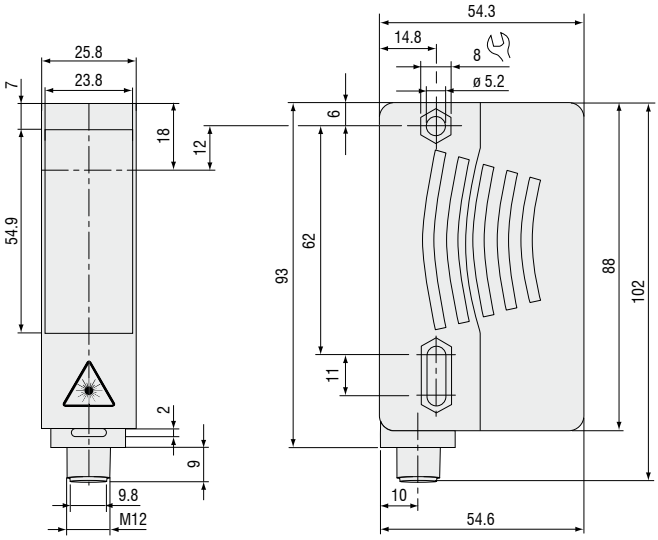
Page 12-13

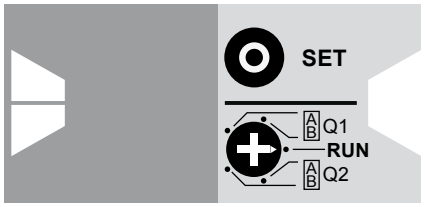
- Measuring ranges 0.5 ... 3000m
- Linearity ±20 ... ±60mm
- Repeatability <20mm
- Resolution 1mm
- Measurement with and without reflector
- Distance and speed measurement
- Interface RS232/RS422/SSI/Profibus
- Analogue output 4 ... 20mA
- High measuring rate
- With integrated heating
- IP67



- *Measuring range up to 15m on diffuse reflecting targets / 50m on reflector*
- *Very short response time*
- *Small size*
- *Excellent price-performance ratio*

The laser distance sensors ILR1030/1031 operate according to the time-of-flight technology. Thanks to this technology the sensors permanently offer – independent of environmental conditions such as surface characteristics, dark colour or present external light – accurate, reliable and clear as well as reproducible measurement results.




ILR103x: Analogue output and limit output programming via touch keys

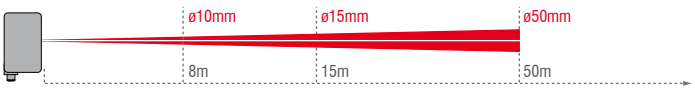
| Model | | ILR1030-8 | ILR 1030-8/LC1 | ILR 1030-15 | ILR1031-50 | ILR1031-50/LC1 |
|---|---|---|---|---|---|---|
| Measuring range [1] | black 10% | 0.2 ... 2.5m | 0.2 ... 2.5m | 0.2 ... 5m | - | - |
| | grey 18% | 0.2 ... 3.5m | 0.2 ... 3.5m | 0.2 ... 6m | - | - |
| | white 90% | 0.2 ... 8m | 0.2 ... 8m | 0.2 ... 15m | - | - |
| | reflector | - | - | - | 0.2 ... 50m (ILR-RF250/ILR-RF70) | |
| Linearity [2] | | ±20mm | | | | |
| Resolution | | 1mm | | | | |
| Repeat accuracy | | <5mm | | | | |
| Response time | | 10ms | | | | |
| Laser class | meas. laser red 660nm | class 2 | class 1 | class 2 | class 2 | class 1 |
| Permissable ambient light | | 50,000lx | | | | |
| Operation temperature [3] | | -30° … +50°C (humidity 5 - 95%, no condensation) | | | | |
| Storage temperature | | -30° … +70°C | | | | |
| Limit outputs | | Q1/Q2 push-pull outputs | | | | |
| Switching voltage | | max. 30VDC | | | | |
| Switching current | | max. 100mA | | | | |
| Analogue output | | 4 ... 20mA, short-circuit/overload protected | | | | |
| Temperature stability | | ≤0.25mm/°C | | | | |
| Supply | | 10 - 30VDC, class 2 | | | | |
| Connection | | connector M12x1, 4-pin | | | | |
| Protection class | | IP 65 | | | | |
| Material | housing | Plastic ABS | | | | |
| | window | Plastic pane | | | | |
| Weight | | 90g | | | | |
| Accessoires | | page 14 - 15 | | | | |

[1] depending on target reflectivity, stray light effects and atmospheric conditions
[2] with statistical spread of 95%
[3] when crossing O°C an additional heating may be required


optoNCDT ILR 103x-LC1 use a semiconductor class 1 laser. With this laser class no protection is needed.


optoNCDT ILR 1030/1031 operate with a wavelength of 660nm (visible, red). The maximum optical output is ≤ 1 mW. The sensors are classified in Laser Class 2. Class 2 lasers are not notifiable and a laser protection officer is not required either.

**Spot diameter ILR 1030 / 1031**

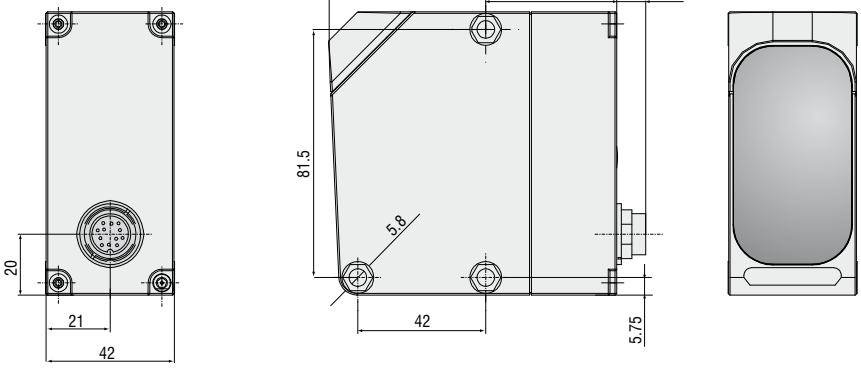


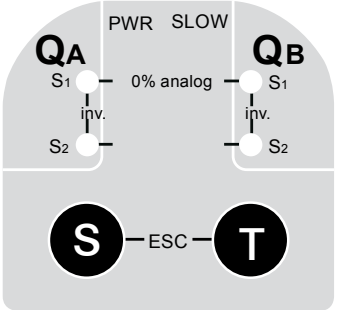
- *Measuring range up to 10m on diffuse reflecting targets*
- *Short response time*
- *Excellent price-performance ratio*
- *Fast sensor set configuration via touch keys*

Gaging sensors of the series optoNCDT 1020/1100/1150 are designed for non-contacting measurements at distances of up to 10m. These measurements are required for position determination, attendance checking, type classification and for machine control in numerous fields of application.

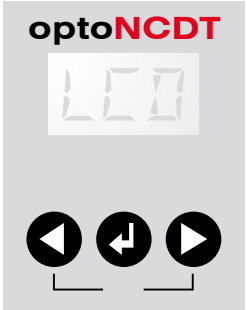
**Precise sensor alignment**

The aiming laser can be turned on for accurate alignment of the sensor with the measurement object. For mounting the sensor a mounting bracket and a fine adjuster are available as accessories, which simplify the precise alignment of the sensor to the measurement object.

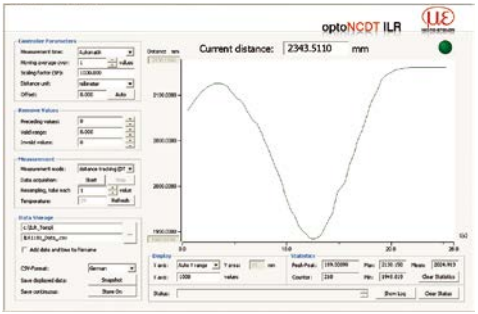



ILR1020: Limit switch programming via touch keys




ILR1100/ILR1150: Limit switch programming via software



| Model | | ILR1020-6 | ILR1100-6 | ILR1150-10 |
|---|---|---|---|---|
| Measuring range | black 6% | 0.2 ... 2.5m | 0.5 … 2m | 0.5 … 3m |
| | grey 10% | 0.2 ... 6m | 0.5 m … 4m | 0.5 … 7m |
| | white 90% | 0.2 ... 6m | 0.5 m … 6m | 0.5 … 10m |
| Linearity | | ±40mm | ±10mm | ±8mm |
| Resolution | | 1 ... 5mm | 0.1mm | 0.1mm |
| Repeatability | | ±10/±15mm [1] | ±5mm | ±4mm |
| Response time | | 80/13ms [1] | 12ms | 12ms |
| Laser class | measuring laser | IR 905nm, laser class 1 | IR 900nm, laser class 1 | |
| | sighting laser | red 650nm, laser class 2 | | |
| Operation temperature [2] | | -10° … +50°C; -20° … +50°C in continous operation (humidity 5 - 95%, no condensation) | | |
| Storage temperature | | -30° … +75°C | | |
| Limit outputs | | QA/QB (max. 100 mA) | | |
| Switching points | | free adjustable (teach in) | adjustable in 1-mm-steps | |
| Switching hysteresis | | 30mm | min. 20mm (adjustable) | min. 10mm (adjustable) |
| Plausibility output | | - | QP (max. 50mA) | |
| Service output | | - | QS (max. 50mA) | |
| Serial interface | | - | RS422 (2.9ms at 57.6kBaud)<br>SSI - compatible (GRAY/BINÄR adjustable) (SSI cycle 80µs) | |
| Bus interface | | - | Profibus or DeviceNet via respective gateway (accessory) | |
| Analogue output | | 4 - 20mA | | |
| Temperature stability | | <1.2mm/°C | <0.5mm/°C | <±5mm absolute |
| Supply | | 18 - 30 VDC | | |
| Max. consumption | | <3W at 24V | | |
| Connection | | 5-pin connector M12 | 12-pin connector M16 | |
| Protection class | | IP 67 | | |
| Material (housing) | | ABS shock resistant | | |
| Vibration | EN 60947-5-2 | 10 - 55 Hz, amplitude 1.5mm, period 5min. at resonant frequency or 55Hz, stress time 30min. per axis | | |
| Shock | EN 60947-5-2 | acceleration 30g, pulse duration 11ms, half sinusoid, 3 shocks/axis | | |
| Weight | | appr. 200g | appr. 230g | |
| Accessoires | | page 14 - 15 | | |

All data regarding accuracy and distance are based on the specified surface
at constant ambient conditions and with a minimum operating time of 15 minutes.
[1] slow/fast
[2] when crossing O°C an additional heating may be required

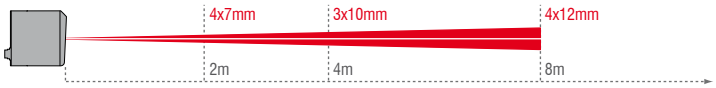
Operating Mode
Laser Class 1 (Infrared)

Setup Mode
Laser Class 2 (Visible - Red)
**Do not stare into beam**
λ: 650 nm
$t_p$: 0,25 µs; T: 2,5 µs
$P_{max}$: 3 mW

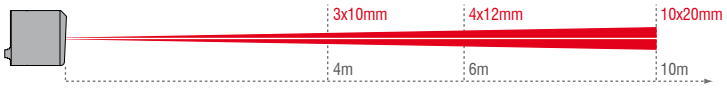
EN 60825-1. 10/2003

optoNCDT ILR 1020/1100/1150 use a semiconductor class 1 laser (operating mode) and a semiconductor class 2 laser (setup mode). With these classes no protection is needed.

**Spot diameter ILR1020**




**Spot diameter ILR1100/1150**

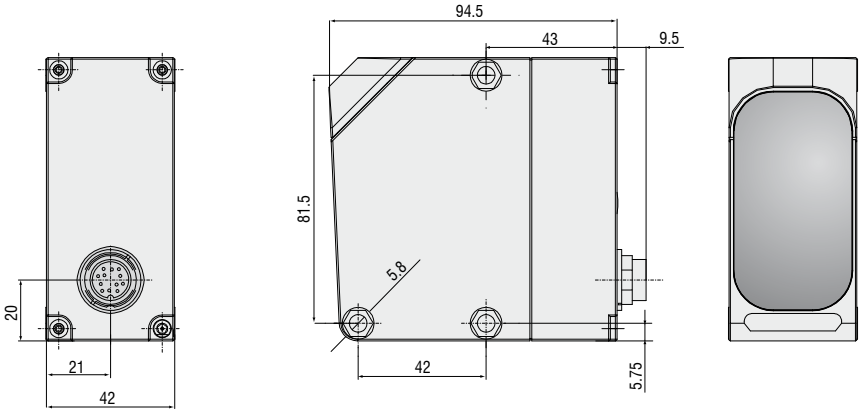


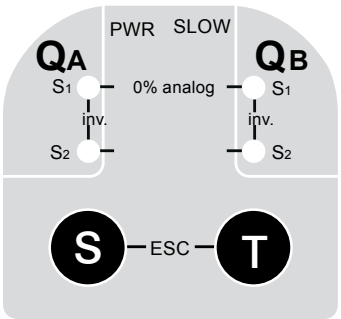

- *Measuring ranges up to 250m with reflector*
- *Short response time*
- *Excellent price-performance ratio*
- *Fast sensor set configuration via touch keys*

Distance sensors of the series optoNCDT 1021/1101/1151 are designed for non-contact measurements against objects up to 250m. These distance sensors need a special reflector on the measurement object with the sensor being matched to its reflective properties. The use of this reflector facilitates measurement distances of up to 250m with excellent accuracy.

**Precise sensor alignment**

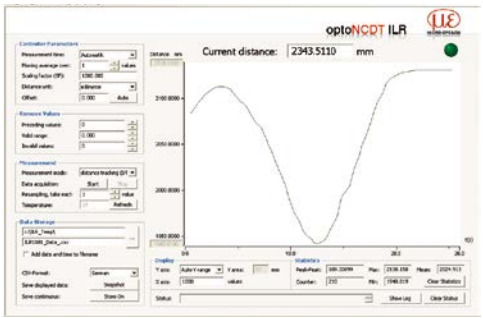
The aiming laser can be turned on for accurate alignment of the sensor with the measurement object. With large measurement distances this laser is adjusted using the optical alignment aid available as an accessory. For mounting the sensor a mounting bracket and a fine adjuster are available as accessories, which simplify the precise alignment of the sensor to the measurement object




ILR1021: Limit switch programming via touch keys


ILR1101/ILR1151: Limit switch programming via software



| Model | | ILR1021-30 | ILR1101-50 | ILR1151-250 |
|---|---|---|---|---|
| Measuring range | | 0.2 ... 30m | 0.5 … 50m | 0.5 … 250m |
| | | reflector required for operation | | |
| Linearity | | ±60mm | ±5mm [1] | ±3mm [1] |
| Resolution | | 1 ... 5mm | 0.1 or 0.125mm | |
| Repeatability | | ±5/10mm [2] | ±4mm | ±2mm |
| Response time | | 65/30ms [2] | 12ms | |
| Laser class | measuring laser | IR 905nm, laser class 1 | IR 900nm, laser class 1 | |
| | sighting laser | red 650nm, laser class 2 | | |
| Operation temperature [3] | | -10° … +50° C; -20° … +50° C in continous operation (humidity 5 - 95%, no condensation) | | |
| Storage temperature | | -30° … +75°C | | |
| Limit outputs | | QA/QB (max. 100mA) | | |
| Switching points | | free adjustable (teach in) | adjustable in 1-mm-steps | |
| Switching hysteresis | | 30mm | min. 20mm (adjustable) | min. 10mm (adjustable) |
| Plausibility output | | - | QP (max. 50mA) | |
| Service output | | - | QS (max. 50mA) | |
| Serial interface | | - | RS422 (2.9ms at 57.6kBaud)<br>SSI - compatible (GRAY/BINÄR adjustable) (SSI Zyklus 80µs) | |
| Bus interface | | - | Profibus or DeviceNet via respective gateway (accessory) | |
| Analogue output | | 4 ... 20mA | - | - |
| Temperature stability | | <1.2mm/°C | <0.5mm/°C | <±5mm absolut |
| Supply | | 18 - 30 VDC | | |
| Max. consumption | | <3W at 24V | | |
| Connection | | 5-pin connector M12 | 12-pin connector M16 | |
| Protection class | | IP 67 | | |
| Material (housing) | | ABS shock resistant | | |
| Vibration | EN 60947-5-2 | 10 - 55Hz, amplitude 1.5mm, period 5min. at resonant frequency or 55Hz, stress time 30min. per axis | | |
| Shock | EN 60947-5-2 | acceleration 30g, pulse duration 11ms, half sinusoid, 3 shocks/axis | | |
| Weight | | appr. 200g | appr. 230g | |
| Accessoires | | page 14 - 15 | | |

All data regarding accuracy and distance are based on the specified surface
at constant ambient conditions and with a minimum operating time of 15 minutes.
[1] min. distance 2m
[2] slow/fast
[3] when crossing O°C an additional heating may be required

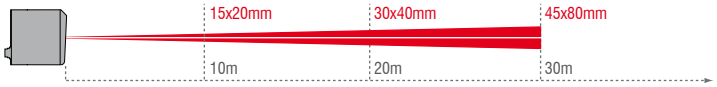
Operating Mode
Laser Class 1 (Infrared)

Setup Mode
Laser Class 2 (Visible - Red)
**Do not stare into beam**
λ: 650 nm
$t_p$: 0,25 µs; T: 2,5 µs
$P_{max}$: 3 mW

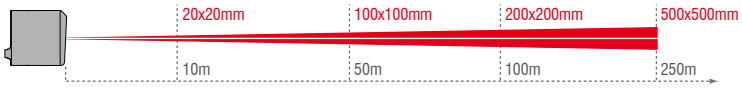
EN 60825-1. 10/2003

optoNCDT ILR 1021/1101/1151 use a semiconductor class 1 laser (operating mode) and a semiconductor class 2 laser (setup mode). With these classes no protection is needed.

**Spot diameter ILR1021**




**Spot diameter ILR1101/1151**

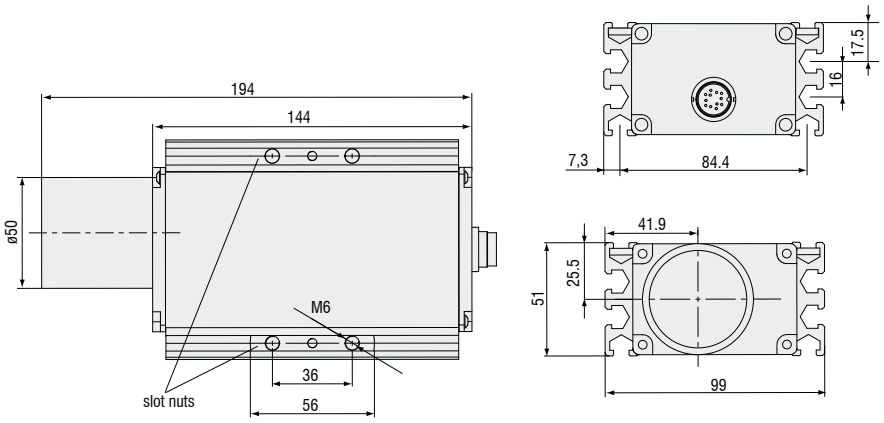


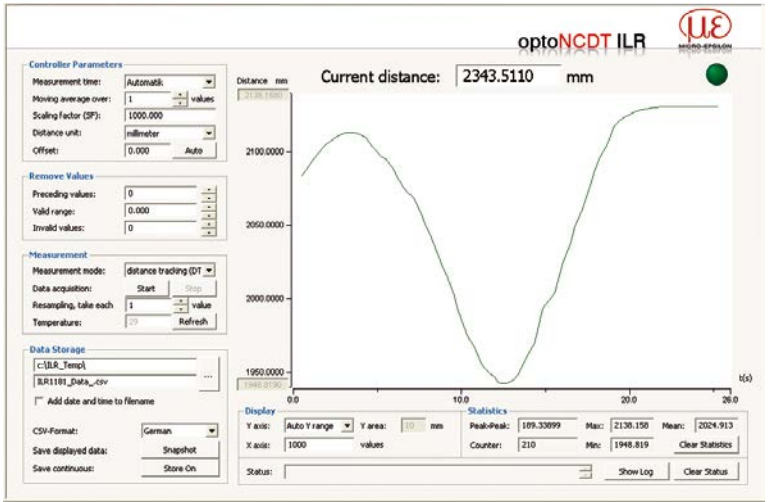
# optoNCDT ILR 1181-30/ 1182-30/1183-30

- *Measuring range up to 80m on diffuse reflecting surfaces, up to 150m with reflector*
- *Option with integral heating*
- *Easy adjustment with laser sighting*
- *Precise measurement on various surfaces*
- *Practical mounting grooves for easy installation*
- *Accessories for harsh environments*

Sensors in the optoNCDT ILR 1181/1182/1183 series are optoelectronic sensors for non-contact distance and displacement measurement for industrial applications. Both sensors operate according to the phase comparison principle, whereby higher precision can be achieved. They can be aligned and positioned in use with a visible laser beam with little effort.

The optoNCDT ILR 1182 series operates with a 50Hz measuring rate and is therefore suitable for fast processes. The mounting grooves on the housing offer flexible mounting options for many situations.




Configuration and measurement software for ILR1181 and ILR1182

| Model | | ILR1181-30 | ILR1182-30 | ILR1183-30 |
|---|---|---|---|---|
| Measuring range [1] | black 6% | 0.4 ... 17m | | |
| | grey 10% | 0.1 ... 30m | | |
| | white 90% | 0.1 ... 50m | | |
| | reflector | 50 ... 150m (reflector film ILR-RF118x) | | |
| Linearity [2] | | ±2mm (+15°C … +30°C), ±5mm (-40°C … +50°C) | | |
| Resolution | | 0.1mm | | |
| Repeatability | | ≤0.5mm | | |
| Response time [1] | | 100ms ... 6s | 20ms ... 6s | 20ms ... 6s |
| Laser class (IEC 825-1/EN 60825-1) | | red 650nm, laser class 2 | | |
| Operation temperature | | -10°C … + 50°C (optional -40°C … +50°C, with integrated heating) | | |
| Storage temperature | | -40°C … +70°C | | |
| Limit outputs | | QA (max. 500mA) | | QA/QB (max. 500mA) |
| Switching points | | free adjustable | | |
| Switching hysteresis | | free adjustable | | |
| Trigger input (not compatible with integral heating) | | trigger edge and delay selectable, trigger pulse of max 24V | | |
| Serial interface | | RS232 or RS422 3)<br>adjustable, max 38.4 kBaud | | SSI interface (RS422), 24Bit,<br>Gray-encoded, 50kHz … 1MHz |
| Profibus [3] | | - | | Profibus (RS485)<br>9.6kBaud … 12MBaud [3] |
| Operation mode | | external triggering, single/continuous measurement, distance tracking | | |
| Analogue output | | 4 … 20mA (16 Bit DA) | | - |
| Temperature stability | | ≤50ppm/°C | | |
| Supply | | 10 … 30 VDC | | |
| Max. consumption | | <1.5W at 24 V (<24W with heating) | | 3.2W at 24V<br>(<26W with heating) |
| Connection | | 12-pin M16 | | 1 x 12-pin M16<br>2 x 5-pin M12 B-encoded |
| Protection class | | IP 65 | | |
| Material (housing) | | aluminium strangeness profile, powder-coated | | |
| Vibration/Shock | | 500g, 0.5ms, 1 shock/axis (DIN ISO 9022-30-08-1) | | |
| | | 10g, 6ms, 1000 shocks/axis (DIN ISO 9022-3-31-01-1) | | |
| Weight | | 980g | | |
| EMV | | EN 61000-6-2, EN 55011 | | |
| Accessoires | | page 14 - 15 | | |

[1] depending on target reflectance, ambient light influences and atmospheric conditions
[2] with statistical spread of 95%
[3] sensor configuration via profibus interface

**Product identification**
**ILR 118x - 30 (x x)**

*Serial interface*
0= none
1= RS232
2= RS422

0= without heating
2= integral heating

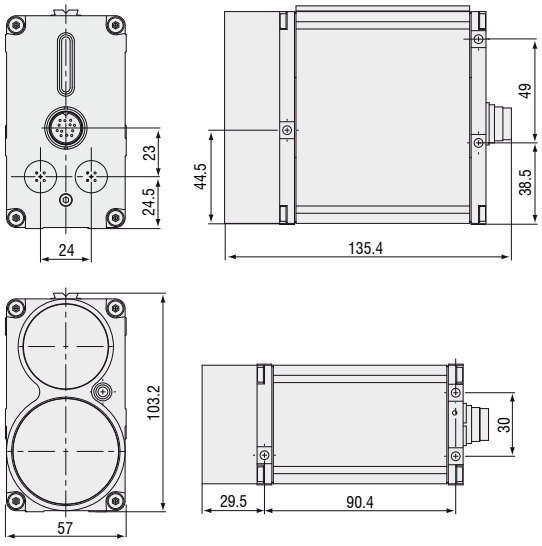

optoNCDT ILR 1181/1182/1183 operate with a wavelength of 650nm (visible, red). The maximum optical output is ≤ 1 mW. The sensors are classified in Laser Class 2. Class 2 lasers are not notifiable and a laser protection officer is not required either.

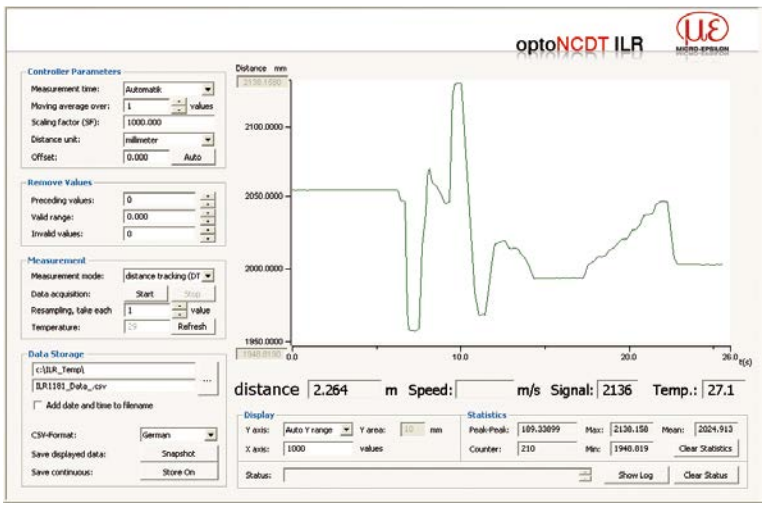
**Spot diameter ILR1181/1182/1183**


- *Measuring range 500m in diffuse reflecting surfaces, up to 3000m with reflector*
- *Distance and speed measurement*
- *Integrated heating*
- *For fast measuring events*
- *Easy installation*
- *Accessories for harsh environments*

Sensors in the optoNCDT ILR 1191 series are optoelectronic sensors for non-contact distance and speed measurement for industrial use. The sensor is designed for very large measuring ranges, with and without reflector. Due to the very high measuring rate of the sensor, moving objects can be measured easily. The sensor operates according to the laser pulse runtime principle and is therefore particularly well suited to applications with large distances.

Commissioning of the sensor is straightforward due to a variety of interfaces and easy mounting options. The optoNCDT ILR 1191 is fitted with an integrated heater for outdoor use. A sighting device is also integrated for alignment.



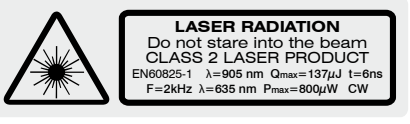

Configuration and measurement software for ILR1191

| Model | | ILR1191-300 |
|---|---|---|
| Measuring range [1] | black 6% | 1 ... 150m |
| | grey 10% | 0.5 ... 200m |
| | white 90% | 0.5 ... 300m |
| | reflector | 300 ... 3000m |
| Speed | | 0ms$^{-1}$ ... 100ms$^{-1}$ |
| Linearity [2] | | ±20mm (at measurement output 100Hz) ±60mm (at measurement output 2kHz) |
| Resolution | | 1mm |
| Repeatability | | ≤20mm |
| Response time | distance measurement | 0.5ms |
| | speed measurement | 12ms |
| Laser class | measuring laser | 905nm, laser class 1 |
| | sighting laser | 635nm, laser class 2 |
| Operation temperature | | -40°C … +60°C |
| Storage temperature | | -40°C … +70°C |
| Limit outputs | | QA/QB (max. 200mA) |
| Switching points | | free adjustable |
| Switching hysteresis | | free adjustable |
| Trigger input | | trigger edge and trigger delay programmable, trigger pulse max. 30V |
| Serial interface | | RS232 and RS422 with 1.2kBaud … 460.8kBaud<br>SSI interface (RS422), 24Bit, Gray-encoded 50kHz … 1MHz |
| Profibus | | RS485, 9.6 kBaud … 12MBaud |
| Operation mode | | single/continuous measurement, external triggering (adjustable near field elimination), speed measurement |
| Analogue output | | 4 … 20mA (16 Bit DA) |
| Temperature stability | | ≤50ppm/°C |
| Supply | | 10 … 30 V DC |
| Max. consumption | | <5W without heating, 11.5W with heating |
| Connection | | 1 x 12-pin M16, 2 x 5-pin M12 B-coded |
| Protection class | | IP 67 |
| Material (housing) | | aluminium strangeness profile, powder-coated |
| Weight | | 800g (depends on equipment) |
| Vibration/Shock | | 500g, 0.5ms, 1 shock/axis (DIN ISO 9022-30-08-1) |
| | | 10g, 6ms, 1000 shocks/axis (DIN ISO 9022-3-31-01-1) |
| EMV | | EN 61000-6-2, EN 55011 |
| Accessoires | | page 14 - 15 |

[1] depending on target reflectivity, stray light effects and atmospheric conditions
[2] with statistical spread of 95%

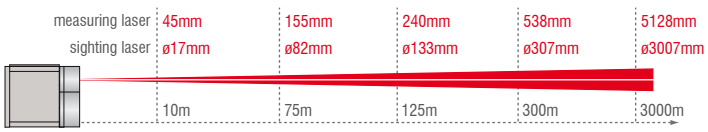
**Product identification**
**ILR 1191 - 300 (0 x)**

*Serial interface*
1= RS232
2= RS422
3= RS232 + SSI
4= RS232 + Profibus




optoNCDT ILR 1191 use a semiconductor class 1 laser (operating mode) and a semiconductor class 2 laser (setup mode). With these classes no protection is needed.

**Spot diameter ILR1191**



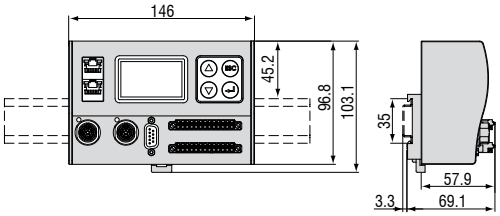
**Setup and configuration software**
Software for easy configuration of the sensor is included as standard. All settings can be conveniently performed with this using a Windows interface on a PC. The sensor parameters are transmitted to the sensor via the serial port and can also be saved if required. The software also contains a module which can display and store the measurement results. The connection to the PC is made using the respective sensor cable with a USB converter.

**Software download free of charge from**
www.micro-epsilon.com/download


## CSP 2008: universal controller for multiple sensor signals


**Inputs/Outputs sensors**
2 sensor connectors (16 pin)
- Digital
  1x Ethernet (PC 100MBit); 1x EtherCAT; 1x RS422 (SPS max. 1.5Mbaud); 2 terminal strips (13 pins)
- Analogue
  voltage 0…5V, scalable via software 0…10V, -5…5V, -10…10V), electrically insulated, 100kHz, 16Bit

**Functions**
Filter: moving average 1…1024/recursive 1...32768/median 3/5/7/9 zero, master; trigger (measuring value, edge, gate, software); automatic sensor detection (digital interface) scaleable measuring ranges; synchronisation
- Limits
  OG, UG, OW, UW, OK
- Calculation
  A,B; A+B; A-B; -A-B; K-A-B; K+A+B; K+A-B; K+A; K+B; K(A+B); K(A+k*B)




## Accessories

**Supply and output cable ILR10xx**
- PC1000-2 length 2m
- PC1000/90-2 length 2m, 90°-connector
- PC1000-5 length 5m
- PC1000/90-5 length 5m, 90°-connector
- PC1000/90-10 length 10m, 90°-connector

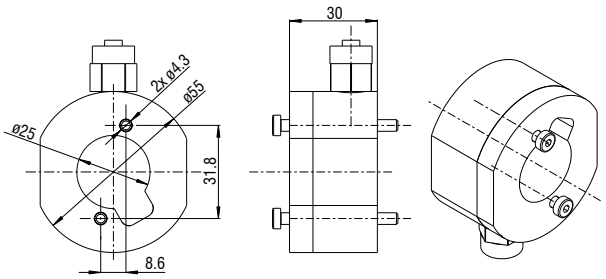
**Supply and output cable ILR11xx**
- PC1100-3 length 3m
- PC1100/90-3 length 3m, 90°-connector
- PC1100-5 length 5m
- PC1100/90-5 length 5m, 90°-connector
- PC1100/10 length 10m
- PC1100/90-10 length 10m, 90°-connector
- PC1100/20 length 20m
- PC1100/90-20 length 20m, 90°-connector
- PC1100/30 length 30m
- PC1100/90-30 length 30m, 90°-connector
- FC1100 connector
- FC1100/90 connector, 90°
- PC115x-3/CSP interface cable ILR110x/115x with CSP
- PC118x-3/CSP interface cable ILR118x/119x with CSP

**Configuration cable ILR118x and ILR1191:**
- PC1100/90-3/RSxxx length 3m, D-Sub for RS232 and RS422, integrated power supply

**Profibus**
- PBC1100-I/O-5 Profibus input and output cable, 5m
- PBC1100-I-5 Profibus input cable, 5m
- PBC1100-I-10 Profibus input cable, 10m
- PBC1100-O-5 Profibus output cable, 5m
- PBC1100-O-10 Profibus output cable, 10m
- PBFC1100 Profibus plug
- PBMC1100 Profibus connector
- PBLR1100 Profibus load resistance
- ILR-M-PB/USB Profibus/USB module and service software for ILR1183 1191

### Accessories ILR 10xx/110x/115x

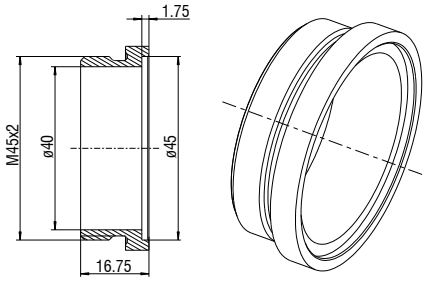
- ILR-RF250 reflector film 250x250mm
- ILR-R250 reflector film 250x250mm
- ILR-R460 reflector film 460x460mm
- ILR-R540 reflector film 540x540mm
- ILR-R660 reflector film 660x660mm
- ILR-R700 reflector film 700x700mm
- ILR-MA90 mounting bracket (not ILR 103x)
- ILR-FA1 fine adjustment for mounting bracket (not ILR 103x)
- ILR-AA1 aligning aid (not ILR 103x)
- ILR-APB connector adapter, Gateway/ProfiBus (not ILR 103x)
- ILR-ADN connector adapter, Gateway/DeviceNet (not ILR 103x)




ILR-FBV118x air purge collar for ILR118x

### Accessories ILR 118x/1191

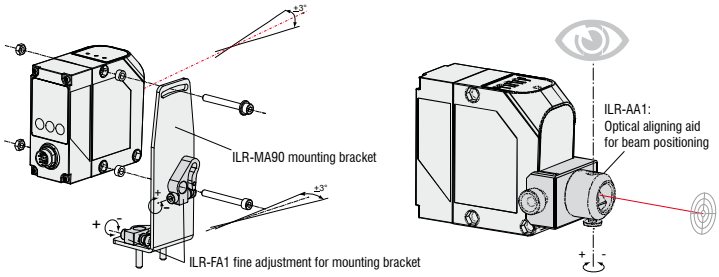
- ILR-MP1191 mounting plate for ILR1191
- ILR-AA1191 aligning aid for ILR1191
- ILR-RPT1191 protection tube, 100mm for ILR1191
- ILR-RF118x reflector film 250x250mm for ILR1181X
- ILR-MT118x mounting clamp for ILR118x
- ILR-MP118x mounting plate for ILR118x
- ILR-MTN118x slot nuts for ILR118x
- ILR-FBV118x air purge collar for ILR118x
- ILR-PG118x protection glass for




ILR-PG118x protection glass for ILR118x

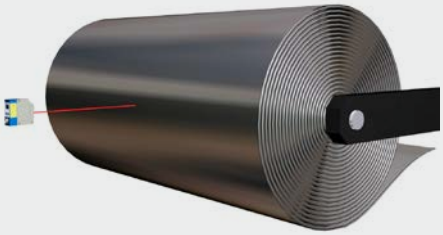
### Display and signal processing units

- DD241PC digital process display, 1 analogue input
- DD245PC digital process display, 2 analogue inputs
- DD214NA display for SSI-sensors
- CSP2008 universal controller for multiple signals




## Applications

**Position measurement on gantry cranes**
Numerous measurement tasks on gantry cranes must be performed: Positioning of the trolley, detection and dimensioning of containers and monitoring of the minimum clearance between the cranes. The ILR1191 with a very large measuring range and low response time is designed for these measurement tasks.



**Acquisition of coil diameters**
The quantities of steel, paper and fabric wound on and off are monitored via the acquisition of coil diameters using laser probes.

**Level measurement in container, tanks and silos**
The quantities of steel, paper and fabric wound on and off are monitored via the acquisition of coil diameters using laser probes.

## High performance sensors made by Micro-Epsilon

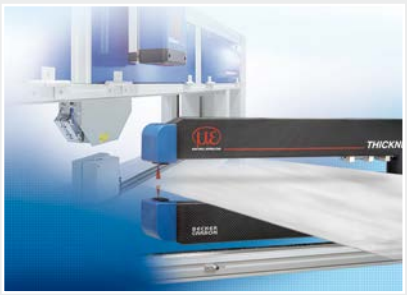
Sensors and systems for displacement and position

Sensors and measurement devices for non-contact temperature measurement

2D/3D profile sensors (laser scanner)

Optical micrometers, fibre optic sensors and fibre optics

Colour recognition sensors, LED analyzers and colour online spectrometer



Measurement and inspection systems



MICRO-EPSILON

MICRO-EPSILON Headquarters
Koenigbacher Str. 15 · 94496 Ortenburg / Germany
Tel. +49 (0) 8542 / 168-0 · Fax +49 (0) 8542 / 168-90
info@micro-epsilon.com · www.micro-epsilon.com

MICRO-EPSILON UK Ltd.
No.1 Shorelines Building · Shore Road · Birkenhead · CH41 1AU
Phone +44 (0) 151 355 6070 · Fax +44 (0) 151 355 6075
info@micro-epsilon.co.uk · www.micro-epsilon.co.uk