

ODAC® 230

Modern single axis measuring head from the ODAC® laser measuring unit series. Highest accuracy, robustness, reliability and functionality distinguish all the laser heads from ZUMBACH. The ODAC® 230 is manufactured with a modular design. It is available with a support rail or as individual emitter and receiver parts when a maximum of flexibility is required to install the head in any position. The measuring head can also be installed in constricted confines or several emitter/receiver pairs can be mounted in the same plane. ODAC® 230 models can be used in virtually every manufacturing process in the wire and cable industry, the plastics and rubber industry as well as the steel and metal industry.

Known for precision, quality and ease of use the laser measuring heads from ZUMBACH are among the best of their class.

The technological basis considered for these measuring heads is always of the latest cutting edge technology, with laser diodes as light sources combined with intelligent and powerful measured-value processors which facilitate a simple and flexible integration. Our long-standing experience as a pioneer of in-line measuring technology, combined with high production figures result in a product with an excellent price-performance ratio.

Amongst the outstanding features are features such as single scan calibration (CSS), single scan monitoring and high data rate output of up to 333* data packages per second. The measuring heads can be used with all line speeds. Vibrations during production have no noticeable influence on measurements.

* Depending on the measuring head model, the number of transmitted measured values as well as the baud rate of the interface.

Adaptive signal processing in the measuring units increase accuracy

All the measuring heads of the ODAC® series have adaptive signal processing (patent DE3111356), which makes subsequent regular re-calibrations superfluous. Only in instances of component exchange or compliance to calibration regulations ISO 9000/9001 etc would re-calibration be required.

All the relevant parameters for accuracy are continuously monitored by the measuring system and automatically compensated. This is valid in particular also for possible long-term changes of the behaviour of the scanner motor or the measuring electronics.

Flexible communication integration

- RS (-232 /-422 /-485)
- EN (Ethernet TCP/IP)
- DP (Profibus DP)
- PN (Profinet IO V2.3)
- J (digital, for connection to USYS processors)



Main advantages

- Very high scan rate (measuring frequency)
Standard: 1000/s, Version F: 2000/s
- High precision measurement
- High insensitivity to dirt and dust

Flexible mounting

With or without rail, different measuring distances



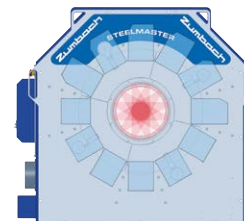
Types of measurement

- 1 Diameter
- 2 Slit width
- 3 Penetration depth
- 4 Height
- 5 Multiple products
- 6 Dual scanning with large measuring field (synchronized)
- 7 Dual scanning XY (synchronized)

Other types of measurement on request

Special applications

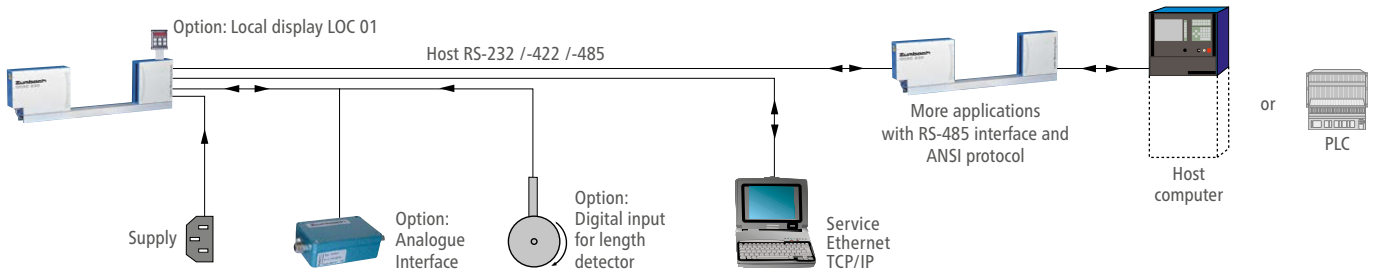
Measurement of hot steel



▶ Ask for special data sheets on STEELMASTER hot steel systems

System Overviews

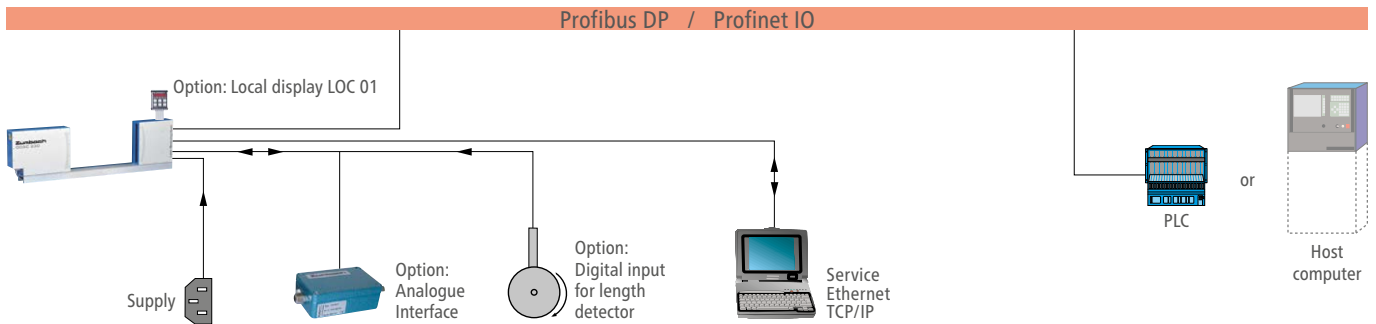
ODAC® 230-EN-RS (serial interface)



The built-in processor allows the acquisition and filtering of the measured values, as well as statistic functions, parameter selection and many other functions. The RS version communicates via the integrated

RS interface with a higher level system, like USYS from ZUMBACH, host computer (or PLC). The ZUMBACH protocols ODAC, ASCII or the network capable ANSI software protocols are selectable according to choice.

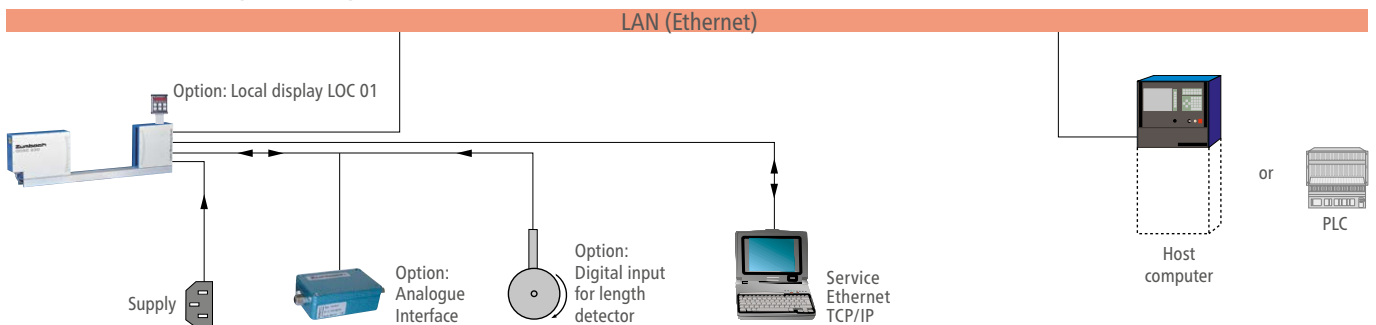
ODAC® 230-EN-DP (Profibus DP) or -EN-PN (Profinet IO)



The built-in processor allows the acquisition and filtering of the measured values, as well as statistic functions, parameter selection and many other functions. These versions communicate via the integrated Profibus DP or Profinet IO interface with a higher level system. These interfaces are designed for high speed data transfer at the sensor

actuator level. At this level, controllers such as programmable logic controllers (or PLC's) exchange data via a fast serial (Profibus DP) or Ethernet (Profinet IO) connection with their distributed peripherals such as drivers, valves or intelligent slaves like ODAC measuring heads from ZUMBACH.

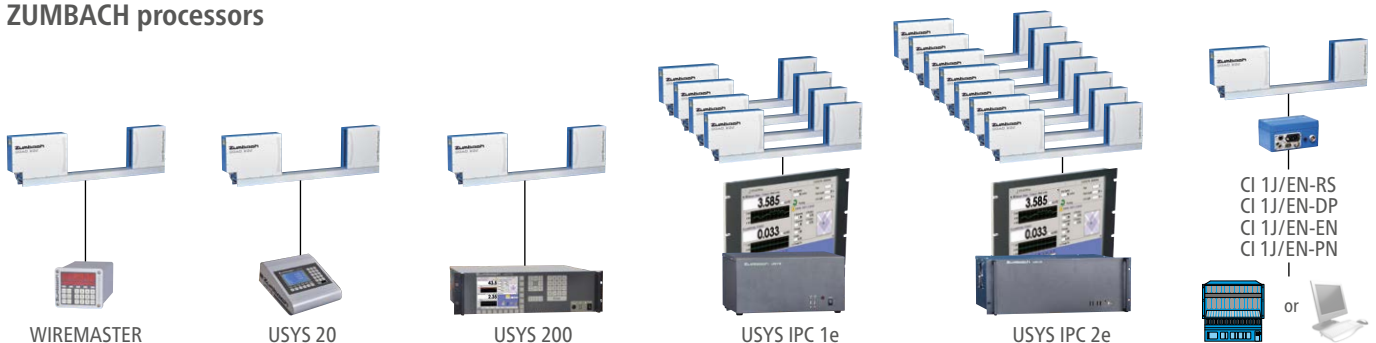
ODAC® 230-EN-EN (Ethernet)



The built-in processor allows the acquisition and filtering of the measured values, as well as statistic functions, parameter selection and many other functions. The EN version communicates via the integrated EN interface with a higher level system. The selectable

ZUMBACH protocols (ODAC or ASCII) are integrated and transmitted in the well known TCP/IP protocol. TCP/IP allows the data transfer through existing networks such as LANs and others.

ODAC® 230-Jxx with the corresponding external ZUMBACH processors



Accessories

| Description | Order Number |
|--|--------------|
| USYS 20 Rotary holder | USY.0002.910 |
| USYS 20 Fixation set for wall mounting (with pivot arm) | USY.0002.920 |
| USYS 20 Fixation set for table top | USY.0002.930 |

Set of calibration standards ODAC.9501.58300

Delivered in a protection box, comprising:

- Calibration standard holder
- Calibration standard \varnothing 2 and 140 mm
- Certificate

Other calibration standards on request.



Local display LOC 01 LOC.011.01000

Is mounted directly on the measuring head.
Requires connection cable no. ODAC.9167.00005
between LOC 01 and the measuring head.
Not for ODAC J versions.



Signal cable L2 Bus 1DR22 x 02R A13 252 0150

For the connection between the PROFIBUS DP interface and
the customer's data acquisition system. Only for ODAC DP version.

| Description | Order Number |
|-------------------------------------|---------------------|
| Analogue interface AI 4-ODAC | ODAC.000.100 |

Interface with 4 analogue and 5 digital outputs. Direct connection of the digital input (proximity switch).
Not for ODAC J versions.



Connector A10 125 0070

Counter connector for digital input "I/F".
Connection of a proximity switch. It is not required, if the analogue interface AI 4-ODAC is already used. Not for ODAC J versions.

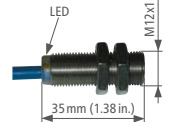


Proximity switch A16 100 0110

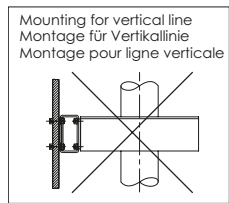
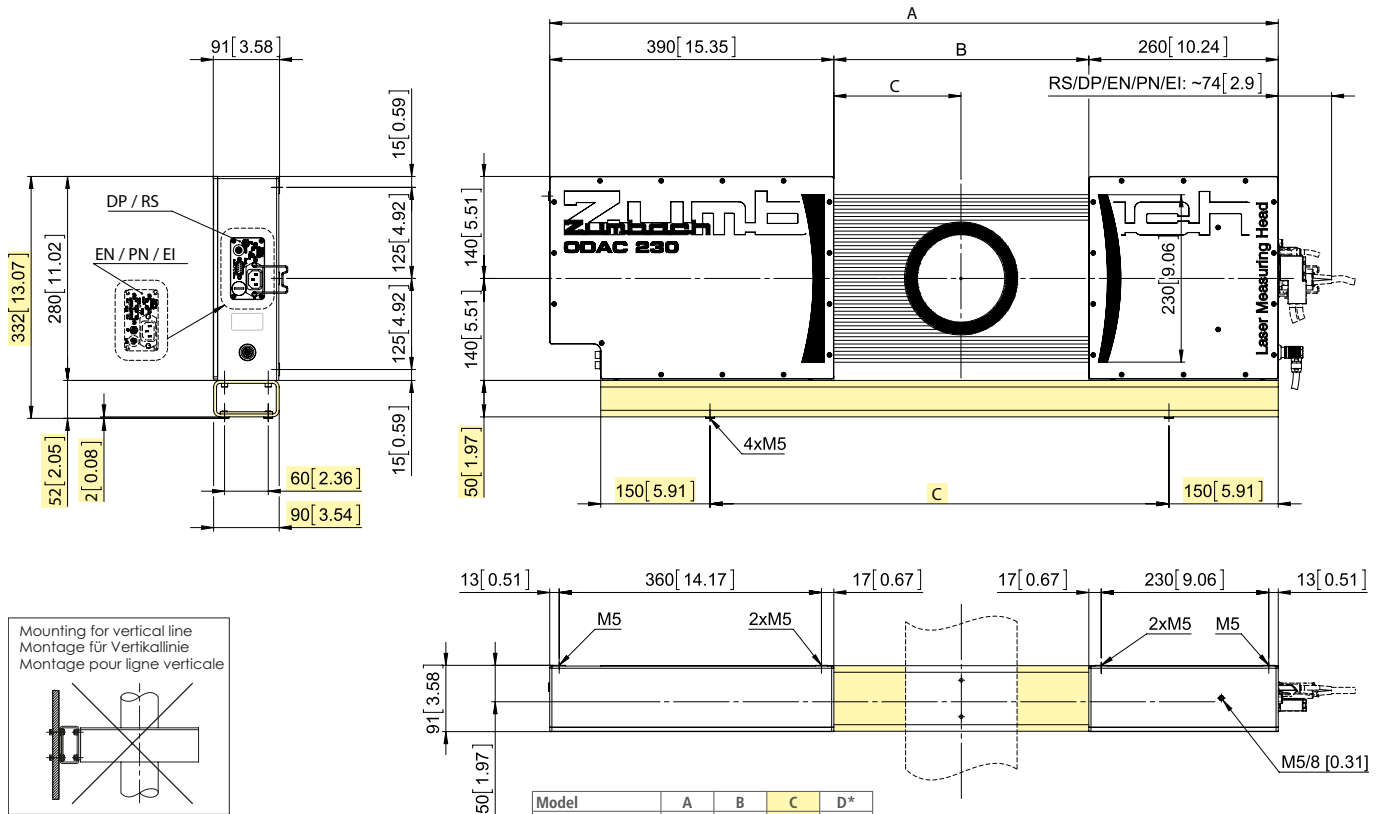
The proximity switch is used for the length detection.

Main data:

- Standard: EN 60947-5-6 (NAMUR, NC)
- Switching distance max. 2 mm (.08 in.), flush mounting
- Ambient temperature: -25...100°C (-13...212° F)
- Protection: IP 67
- Connection: PVC cable 2 m (6.5 ft.)



Dimensions



| Model | A | B | C | D* |
|------------------|-----------------|-----------------|-----------------|----------------|
| ODAC 230xx.DT175 | 1000 (39.37) | 350 (13.78) | 630 (24.80) | 175 (6.89) |
| ODAC 230xx.DT250 | 1150 (45.28) | 500 (19.69) | 780 (30.71) | 250 (9.84) |
| ODAC 230xx.DT375 | 1400 (55.12) | 750 (29.53) | 1030 (40.55) | 375 (14.76) |
| ODAC 230xx.DT500 | 1650 (64.96) | 1000 (39.37) | 1280 (50.39) | 500 (19.69) |

xx = Version J or JS or EN-RS, -DP, -EN, -PN, -EI
* Measuring distance C = Version with rail

Dimensions in mm (inch)

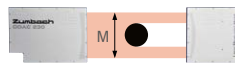
Technical Data

| Measurement | | ODAC 230J ODAC 230EN-xx | ODAC 230JP ODAC 230EN-xxP | ODAC 230JN ODAC 230EN-xxN | ODAC 230JSx |
|--|--------------------|--|--|--------------------------------|--|
| Model(s) | | ODAC 230J ODAC 230EN-xx | ODAC 230JP ODAC 230EN-xxP | ODAC 230JN ODAC 230EN-xxN | ODAC 230JSx |
| Version | | Standard | Profile measurement | "Narrow Beam" ⁷⁾ | Same with synchronization input |
| Measuring field M ¹⁾ | | 230 mm (9.05 in.) | 230 mm (9.05 in.) | 230 mm (9.05 in.) | see J/JP |
| Min. object ø | | 0.75 mm (.03 in.) | 1.5 mm (.06 in.) | 0.75 mm (.03 in.) | see J/JP |
| Scanning frequency scans/s | standard | 1000 | 1000 | 1000 | 500 |
| | option | F version: 2000 | — | F version: 2000 | — |
| Scanning speed | | 473 m/s (1552 ft./s); F version: 946 m/s (3104 ft./s) | | | |
| Width of laser beam ⁶⁾ | | 5 mm (0.2 in.) | 5 mm (0.2 in.) | 1 mm (0.004 in.) | see J/JP |
| Repeatability (3 σ) at measuring distance D and averaging time (s) | 175 mm (6.89 in.) | | 1.2 μm (0.1 s) (.000047 in.) 0.6 μm (1 s) (.000024 in.) | | 1.7 μm (0.1 s) (.000067 in.) 0.8 μm (1 s) (.000033 in.) |
| | 250 mm (9.84 in.) | | 1.5 μm (0.1 s) (.000059 in.) 0.8 μm (1 s) (.000030 in.) | | 2.1 μm (0.1 s) (.000084 in.) 1.1 μm (1 s) (.000042 in.) |
| | 375 mm (14.76 in.) | | 1.8 μm (0.1 s) (.000071 in.) 0.9 μm (1 s) (.000035 in.) | | 2.5 μm (0.1 s) (.00010 in.) 1.3 μm (1 s) (.000050 in.) |
| | 500 mm (19.68 in.) | | 2.1 μm (0.1 s) (.000083 in.) 1.1 μm (1 s) (.000041 in.) | | 3.0 μm (0.1 s) (.000117 in.) 1.5 μm (1 s) (.000058 in.) |
| Centric measurement error at measuring distance D ²⁾ | | | 175 mm (6.89 in.) ± 5 μm (.00020 in.) | | |
| | | | 250 mm (9.84 in.) ± 6 μm (.00024 in.) | | |
| | | | 375 mm (14.76 in.) ± 7.5 μm (.00030 in.) | | |
| | | | 500 mm (19.68 in.) ± 9 μm (.00036 in.) | | |
| Measurement error within the measuring zone ³⁾ | | 2 x value of the centric measurement error (ODAC 230xxP: 4 x value of the centric measurement error) | | | |
| Measuring zone (width x height) | | 110 x 218 mm (4.33 x 8.58 in.) | 220 x 218 mm (8.66 x 8.58 in.) | 110 x 218 mm (4.33 x 8.58 in.) | see J/JP |
| Resolution ⁴⁾ | | 0.1 μm (.000005 in.) | | | |
| Light source ⁵⁾ | | VLD (Visible Laser diode) 650 nm, class 2 | | | |
| Types of meas. (see page 1) | | 1, 2, 3, 4, 5 | | | 1, 6, 7 |

| Interfaces / Connections | | | | | | |
|-----------------------------------|--|---|---|--|----------------|--|
| Model(s) | ODAC 230EN-RSx | ODAC 230EN-DPx | ODAC 230EN-ENx | ODAC 230EN-PNx | ODAC 230EN-Elx | ODAC 230Jx |
| Interface Service | Ethernet TCP/IP, RJ45, 10/100BaseT, isolated | | | | | Only J interfaces to Zumbach processors: |
| Interface Host | RS-232/-422/-485 D-sub. connectors 9p./m, isolated. Data rate: up to 333/s | Profibus DP (RS-485), D-sub. connector 9p./f, isolated. Update rate: up to 62/s (fast: 125/s) | Ethernet TCP/IP, 2 x RJ45, 10/100BaseT isolated. Data rate: up to 333/s | Profinet IO, 2 x RJ45, 10/100BaseT isolated. Update rate: up to 62/s (fast: 125/s) | | WIREMASTER, USYS 20, USYS 200, USYS IPC 1e, USYS IPC 2e, CI 1J/EN-RS/-DP/-EN/-PN |
| Interface LOC | Only for Zumbach local display LOC 01 | | | | | |
| Interface I/F | Can be used for the connection of a remote interface (e.g. AI 4-ODAC) or as digital input for the length detector (e.g. proximity switch according to EN 60947-5-6, NAMUR) | | | | | J5x interfaces via Synchrobox CI 2JS/1J to the ZUMBACH processors |
| LED Service interface | Indicates link and traffic | | | | | — |
| LED Host interface | Indicates traffic | Indicates traffic and error | Indicates link and traffic | Indicates link, traffic, system error and bus error | | |
| Indicator of contaminated windows | Flashing LED on the measuring head (relay output 48V / 0.5A as option) | | | | | |
| Power supply | 90...265 VAC, 48...62 Hz, 20 VA | | | | | supplied by the processor unit (24V) |

| Operation conditions / Miscellaneous | |
|--------------------------------------|--|
| Ambient temperature | Operating: 0...45°C (32...113°F), Transport / Storage: -20...50°C (-4...122°F) |
| Max. atmosphere humidity | 95% (non condensing) |
| Altitude | 0...2500 m (0...8200 ft.) over sea level |
| Type of protection | Case IP 65, connection plate IP 40 |
| Weight | Emitter: 12 kg (26.5 lbs.), Receiver: 7 kg (15.4 lbs.), Rail (DT175): 7.3 kg (16.1 lbs.) |

¹⁾ M stands for measuring field height. In practice, the largest object diameter corresponds to Measuring Field Height minus instability of position.



²⁾ Valid for object diameter bigger than "Min. object ø" and smaller than 95% from "measuring field M". The centre of the object is at the "measuring distance D" as well as in the middle of the "measuring field M".

³⁾ The measured borders of the object must be within this measuring zone. The centre of this measuring zone is at the "measuring distance D" as well as in the middle of the "measuring field M".

⁴⁾ System resolution is the smallest practical value on the last digit of the display.

⁵⁾ Maximum power of the laser can be read on the warning label.

⁶⁾ Measured in the measuring plane, including lateral jitter of the scans.

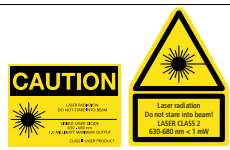
⁷⁾ The xxN versions (Narrow beam) is recommended in case of products with very uneven surfaces, for the contour measurement and detection of surface defects, such as lumps and neckdowns.

Ordering Information

When ordering, please specify the following:

- Models:** ODAC 230Jx, -JSx or ODAC 230EN-RSx, -DPx, -ENx, -PNx, -Elx
 Versions: Standard, P (Profile measurement), N (Narrow Beam), K (Components, without rail) specify the measuring distance D (see page 3), F (Fast, with higher scan frequency)
- Connection cable**
 - The connection between ODAC 230EN-RS and the higher level system is to be provided by the customer (via serial interface).
 - For ODAC 230EN-DP, the connection to a higher level system is made with the signal cable # A13 252 0150.
 - For the ODAC 230EN-EN/-PN version, the connection from the measuring head to the customer's Ethernet port can be made with a standard RJ45 Patch cable.
 - Length of the connection cable between ODAC 230Jx and the processor. Available lengths: 1, 2, 3, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50 m, each 10 m up to 200 m, 220 m, 240 m (3.3, 6.6, 10, 16, 33, 50, 65, 82, 98, 115, 131, 147, 164 ft., each 33 ft. up to 656 ft., 722 ft., 787 ft.). Longer cables on request.
 - For "K" versions (without rail): Length of the connection cable between emitter and receiver. Available lengths: 1.16, 1.5, 2, 3, 4, 5, 6, 8 m (3.8, 5, 6.5, 10, 13, 16.4, 19.7, 26.2 ft.). Minimum length = 2 x measuring distance D + 0.65 m (2.13 ft.). Order no. B.ODAC.821.32xxx.
- Processor model** (Data acquisition system), only for ODAC 230Jx: WIREMASTER, USYS 20, USYS 200, USYS IPC 1e, USYS IPC 2e, CI 1J/EN-RS, CI 1J/EN-DP, CI 1J/EN-EN, CI 1J/EN-PN. ▶ Ask for corresponding data sheets.

All units, which are equipped with lasers, were designed to meet the regulations CDRH (USA), BS 4803, EN 60825-1, DIN/VDE 0837. They hold the warning and explanatory labels prescribed by EN 60825-1.



• Technical specifications are subject to change without notice

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