

# ODAC® 550

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® 550 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® 550 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 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)
- DP (Profibus DP)
- EN (Ethernet TCP/IP)
- PN (Profinet IO V2.3)
- EI (EtherNet/IP)
- J (digital, for connection to USYS processors)



### Main advantages

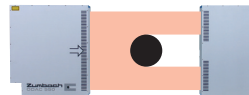
- Very high scan rate (measuring frequency)  
Standard: 1000/s, Version F: 2000/s
- High precision measurement
- High insensitivity to dirt and dust

### Flexible mounting

With or without rail, different measuring distances

### Types of measurement

1 Diameter



2 Slit width



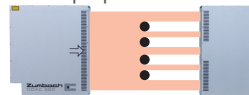
3 Penetration depth



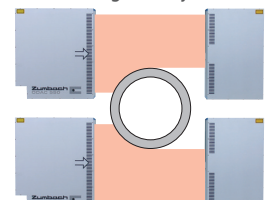
4 Height



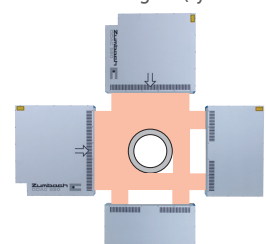
5 Multiple products



6 Dual scanning with large measuring field (synchronized)



7 Dual scanning XY (synchronized)



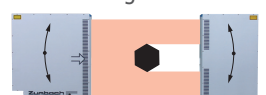
Other types of measurement on request

### Special applications

Measurement of hot steel



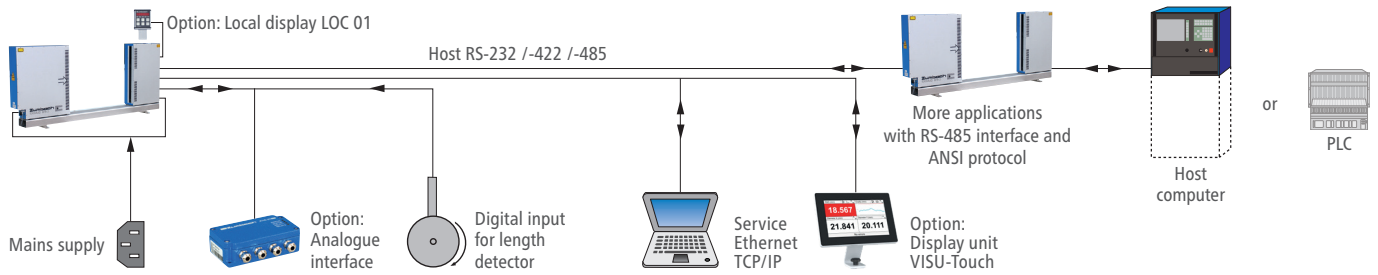
Profile measurement with rotating device



► Ask for special data sheets

## System Overviews

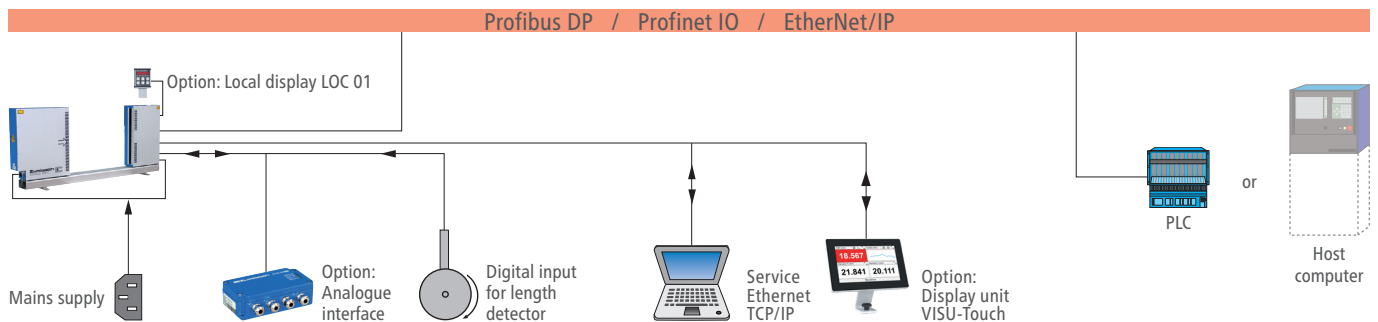
### ODAC® 550EN-RS (serial interface)



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.

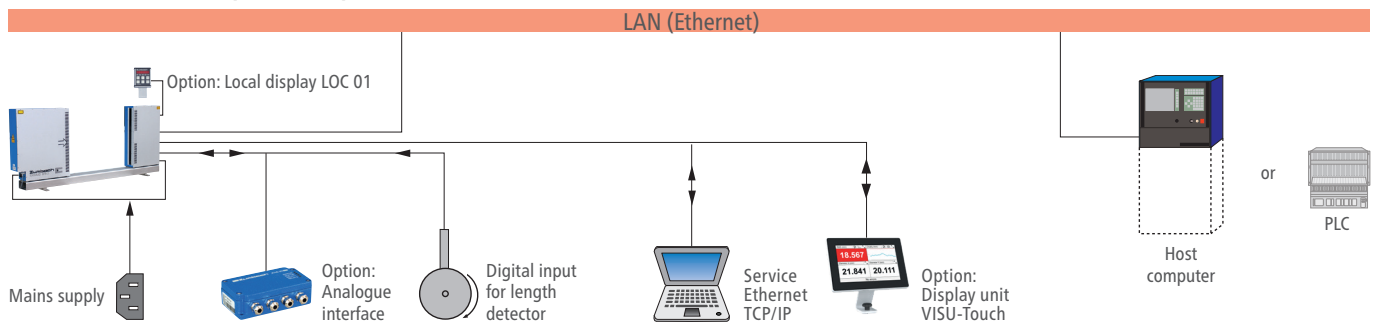
### ODAC® 550EN-DP (Profibus DP), -EN-PN (Profinet IO) or -EN-EI (Ethernet/IP)



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.

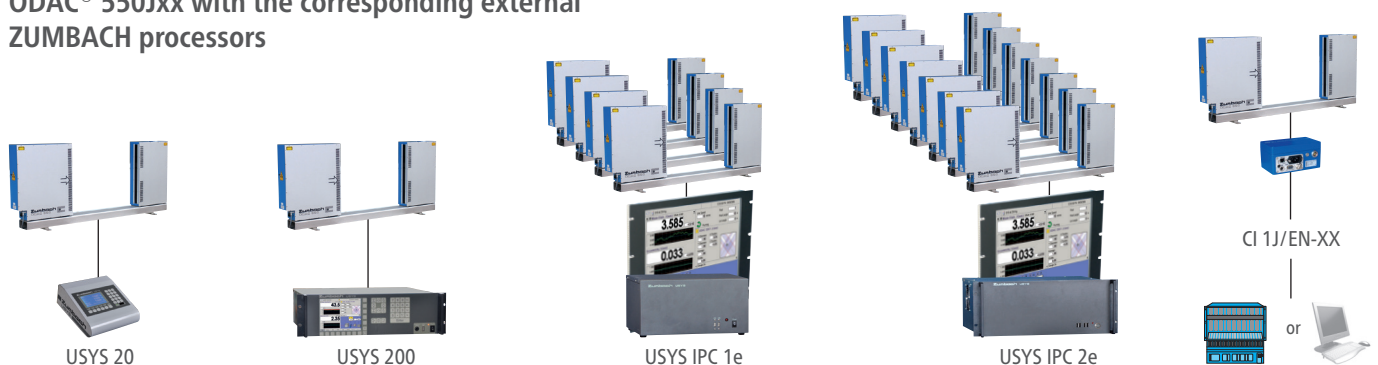
### ODAC® 550EN-EN (Ethernet)



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® 550Jxx with the corresponding external ZUMBACH processors



## Accessories

Description

### Set of calibration standards

Delivered in a protection box, comprising:

- Calibration standard holder
- Calibration standard  $\varnothing 6$  and 400 mm
- Certificate

Other calibration standards on request.

Order Number

ODAC.9501.76000



### Local display LOC 01

Requires connection cable no. ODAC.9167.0xxxx\* between LOC 01 and the measuring head.  
Not for ODAC J versions.

\* Cable length from 0.4 to 100 m; indicate length with ordering.

LOC.011.01000



### VISU-Touch

The VISU-Touch is a rugged and compact 7" touch screen. This universal PoE (Power over Ethernet) powered touch screen enables display of the integrated web interface of the connected measuring head. It is supplied with a holder for fixing on the measuring head. Not for ODAC J versions.

VISU.001.01XXX



### Ethernet cable

Ethernet network cable cat. 6 S/FTP with RJ45 connectors. (XXX in the order number stands for: x 0.1 m, e.g. A15 608 8025 stands for 25 x 0.1 m and thus a cable that is 2.5 m long). Not for ODAC J versions.

A15 608 8XXX

Description

### PoE Injector 48 V, 24 W

Power over Ethernet supply for devices that do not support PoE or a long Ethernet cable. Not for ODAC J versions.

Order Number

N2.7860.1000



### Analogue interface AI4-R

Interface with 4 analogue, 5 digital and 2 relay outputs. Direct connection of the digital input (proximity switch). Not for ODAC J versions.

ODAC.001.100



### Signal cable L2 Bus 1DR22 x 02R

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

A13 252 0150

### Connector

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

A10 125 0070



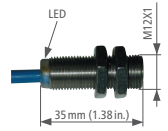
### Proximity switch

The proximity switch is used for the length detection.

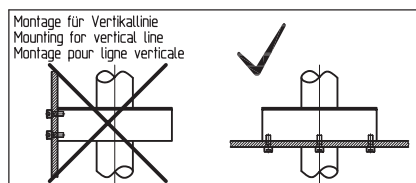
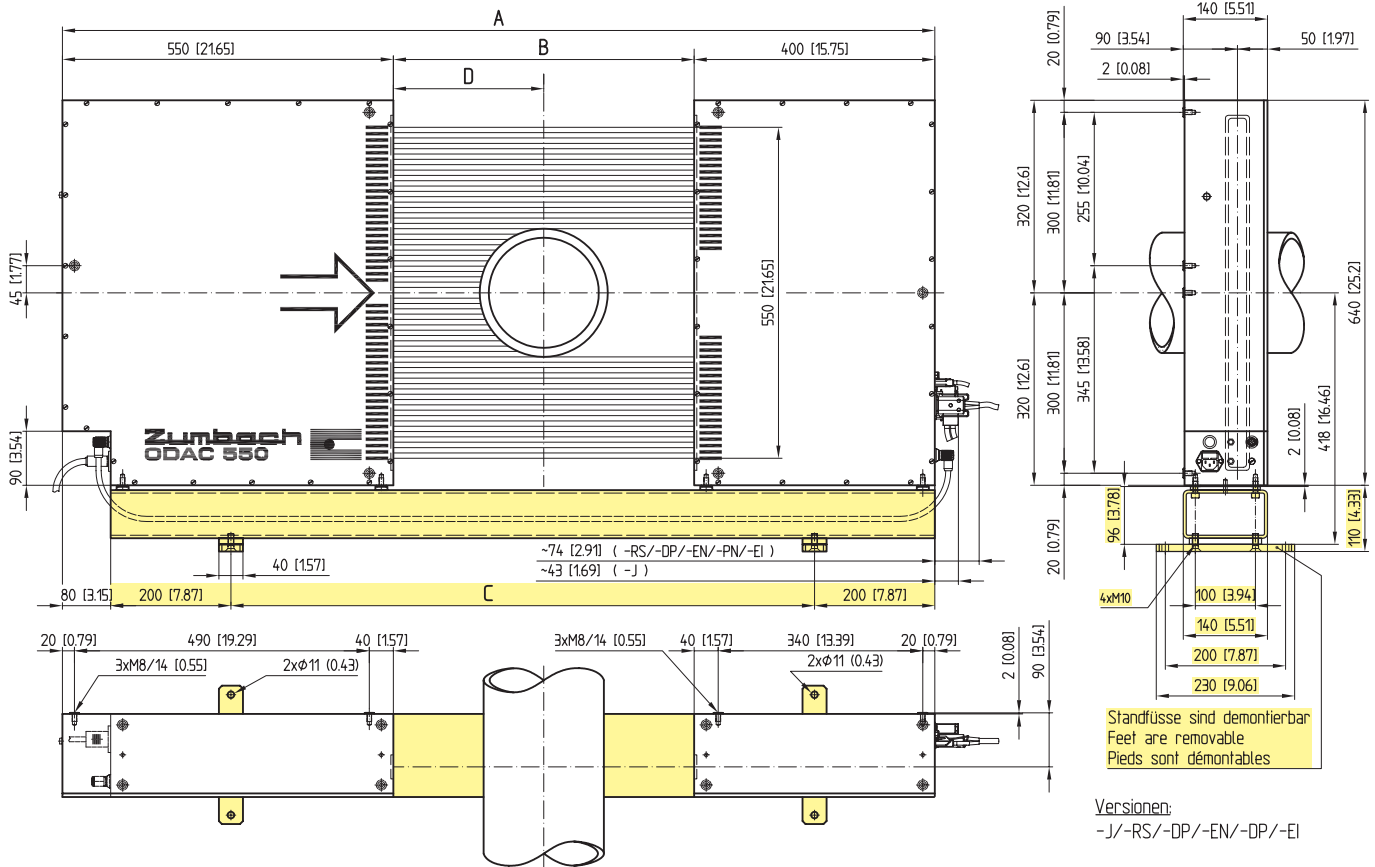
Main data:

- 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.)

A16 100 0110



## Dimensions



| Modell           | A            | B           | Models with rail |             |
|------------------|--------------|-------------|------------------|-------------|
|                  |              |             | C                | D           |
| ODAC.550.DT.400  | 1750 (68.9)  | 800 (31.5)  | 1270 (50.0)      | 400 (15.7)  |
| ODAC.550.DT.700  | 2350 (92.5)  | 1400 (55.1) | 1870 (73.6)      | 700 (27.6)  |
| ODAC.550.DT.1000 | 2950 (116.1) | 2000 (78.7) | 2470 (97.2)      | 1000 (39.4) |

Dimensions in mm (inch)

# Technical Data

| Model ODAC 550   |                     | JP / EN-xxP   |                         | JSP                             |                         |
|--|---------------------|---|-------------------------|---------------------------------|-------------------------|
| <b>Measurement</b>   |                     |   |                         |                                 |                         |
| Version  |                     | Standard including profile measurement                  |                         | Same with synchronization input |                         |
| Measuring field M <sup>1)</sup>                                    |                     | 550 mm (21.65 in.)                                      |                         |                                 |                         |
| Min. object ø  |                     | 2 mm (.08 in.)  |                         |                                 |                         |
| Scanning frequency scans/s   | standard            | 1000  | 500                     |                                 |                         |
|  | F version           | 2000  | -                       |                                 |                         |
| Scanning speed   |                     | 1056 m/s (3464 ft./s); F version: 2112 m/s (6929 ft./s) |                         | 1056 m/s (3464 ft./s)           |                         |
| Width of laser beam <sup>6)</sup>                                  |                     | 6 mm (0.24 in.)   |                         |                                 |                         |
| Repeatability (3 σ) at measuring distance D and averaging time (s) | 400 mm (15.75 in.)  | 6 μm (0.1 s) (.00024 in.)                               | 3 μm (1 s) (.00012 in.) | 8 μm (0.1 s) (.00032 in.)       | 5 μm (1 s) (.0002 in.)  |
|  | 700 mm (27.56 in.)  | 8 μm (0.1 s) (.00032 in.)                               | 5 μm (1 s) (.0002 in.)  | 10 μm (0.1 s) (.0004 in.)       | 6 μm (1 s) (.00024 in.) |
|  | 1000 mm (39.37 in.) | 10 μm (0.1 s) (.0004 in.)                               | 6 μm (1 s) (.00024 in.) | 12 μm (0.1 s) (.00048 in.)      | 8 μm (1 s) (.00032 in.) |
| Measurement error centric at measuring distance D <sup>2)</sup>    | 400 mm (15.75 in.)  |   | ± 50 μm (.0020 in.)     |                                 |                         |
|  | 700 mm (27.56 in.)  |   | ± 70 μm (.0028 in.)     |                                 |                         |
|  | 1000 mm (39.37 in.) |   | ± 90 μm (.0036 in.)     |                                 |                         |
| Measurement error within the measuring zone <sup>3)</sup>          |                     | 1.5 x value of the centric measurement error            |                         |                                 |                         |
| Measuring zone (width x height)                                    |                     | 600 x 530 mm (23.62 x 20.86 in.)                        |                         |                                 |                         |
| Resolution <sup>4)</sup>   |                     | 1 μm (.00005 in.)                                       |                         |                                 |                         |
| Light source <sup>5)</sup>   |                     | HeNe Laser, laser class 2 (device)                      |                         |                                 |                         |
| Types of measurement (see page 1)                                  |                     | 1, 2, 3, 4, 5   |                         | 1, 6, 7                         |                         |

| Interfaces / Connections                    |  |   |  |  |   |   |
|---|--|---|--|--|---|---|
| Model ODAC 550                              | EN-RSP   | EN-DPP  | EN-ENP   | EN-PNP   | EN-EIP  | Jx  |
| Interface Service                           | Ethernet TCP/IP, RJ45 10/100BaseT, galvanically isolated   |   |  |  |   | Only J interfaces to Zumbach processors:                                  |
| Interface Host                              | RS-232/-422/-485, D-sub. connectors 9p./m, galvanically isolated   | Profibus DP (RS-485), D-sub. connector 9p./f, galvanically isolated | Ethernet TCP/IP, 2 x RJ45 10/100BaseT, galvanically isolated | Profinet IO, 2 x RJ45 10/100BaseT, galvanically isolated | EtherNet/IP, 2 x RJ45 10/100BaseT, galvanically isolated  | USYS 20, USYS 200, USYS IPC 1e, USYS IPC 2e, CI 1J/EN-RS/-DP/-EN/-PN/-EI. |
| Data rate max. standard                     | 333/s  | 63/s  | 333/s  | 63/s   | 125/s   | USYS IPC 1e, CI 1J/EN-RS/-DP/-EN/-PN/-EI.                                 |
| Data rate max. F version                    | 333/s  | 125/s   | 333/s  | 125/s  | 200/s   | USYS IPC 2e, CI 1J/EN-RS/-DP/-EN/-PN/-EI.                                 |
| Interface LOC                               | Only for Zumbach local display LOC 01  |   |  |  |   | Data rate max. 63/s.  |
| Interface I/F                               | Can be used for the connection of a remote interface (e.g. AI4-R) or as digital input for length detector (e.g. proximity switch according to EN 60947-5-6, NAMUR) |   |  |  |   | JSP interfaces via synchrobox CI 2JS/1J to the processors.                |
| Indicator of contamin. windows              | Flashing LED on the measuring head (relay output 30VAC/VDC, 0.5 A)   |   |  |  |   |   |
| 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      | Indicates link, traffic, module status and network status | -   |
| <b>Energy supply emitter</b>                |  |   |  |  |   |   |
| Power                                       | 115/230 VAC switchable   |   |  |  |   |   |
| Tolerance                                   | ± 10%  |   |  |  |   |   |
| Mains frequency                             | 50/60 Hz   |   |  |  |   |   |
| Operating range                             | 47-63 Hz   |   |  |  |   |   |
| Power                                       | 40 VA  |   |  |  |   |   |
| <b>Energy supply receiver</b>               |  |   |  |  |   |   |
| Power supply                                | 100-240 VAC  |   |  |  |   | Supplied by the processor unit (24VDC / 5W)                               |
| Operating range                             | 85-265 VAC typically   |   |  |  |   |   |
| Mains frequency                             | 50/60 Hz   |   |  |  |   |   |
| Operating range                             | 47-63 Hz typically   |   |  |  |   |   |
| Power                                       | 20 VA  |   |  |  |   |   |
| <b>Operation conditions / Miscellaneous</b> |  |   |  |  |   |   |
| Ambient temperature                         | Operating: 0...45°C (32...113°F), Transport / Storage: -20...50°C (-4...122°F)   |   |  |  |   |   |
| Max. atmospher. humidity                    | 95% (non condensing)   |   |  |  |   |   |
| Altitude                                    | 0...3000 m (0...9843 ft.) over sea level   |   |  |  |   |   |
| Type of protection                          | Case IP 65, connection plate IP 40   |   |  |  |   |   |
| Weight                                      | Emitter: 35.5 kg (38.3 lbs.), Receiver: 23.5 kg (51.8 lbs.), short Rail (DT400): 29 kg (63.9 lbs.)   |   |  |  |   |   |

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

<sup>2)</sup> 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".

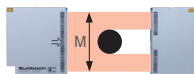
<sup>3)</sup> The measured borders of the object must be within this measuring zone. The centre of this measuring zone is at the "measuring distance D" as well as in the middle of the "measuring field M".

<sup>4)</sup> System resolution is the smallest practical value on the last digit of the display.

<sup>5)</sup> Maximum power of the laser can be read on the warning label.

<sup>6)</sup> Measured in the measuring plane, including lateral jitter of the scans.

<sup>7)</sup> Conformity not verified by UL.



## Ordering Information

\* Technical specifications are subject to change without notice

When ordering, please specify the following:

**1 Models:** ODAC 550JP, -JSP or ODAC 550EN-RSP, -DPP, -ENP, -PNP, -EIP

Versions: P (Profile measurement) standard, K (Components, without rail)

specify the measuring distance D (see page 3), F (Fast, with higher scan frequency)

**2 Connection cable**

**2a** The connection between ODAC 550EN-RSP and the higher level system is to be provided by the customer (via serial interface).

**2b** For ODAC 550EN-DPP, the connection to a higher level system is made with the signal cable # A13 252 0150.

**2c** For the ODAC 550EN-ENP/-PNP/-EIP version, the connection from the measuring head to the customer's Ethernet port can be made with a standard RJ45 Patch cable.

**2d Length** of the connection cable between ODAC 550JP and the processor. Available lengths: 1, 2, 3, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50m, each 10m up to 200m, 220m, 240m (3.3, 6.6, 10, 16, 33, 50, 65, 82, 98, 115, 131, 147, 164ft., each 33ft. up to 656ft., 722ft., 787ft.). Longer cables on request.

**2e** For "K" versions (without rail): Length of the connection cable between emitter and receiver. Available lengths: 1.5, 2, 3, 4, 5, 6, 8 m (5, 6.5, 10, 13, 16.4, 19.7, 26.2ft.). Minimum length = 2 x measuring distance D + 1 m (1.3 ft.). Order no. B.ODAC.821.32xxx.

**3 Processor model** (Data acquisition system), only for ODAC 550JP:

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, CI 1J/EN-EI.

► Ask for corresponding data sheets.