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® 310 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® 310 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

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® 310EN-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® 310EN-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® 310EN-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® 310Jxx with the corresponding external ZUMBACH processors**

- WIREMASTER
- USYS 20
- USYS 200
- USYS IPC 1e
- USYS IPC 2e
Set of calibration standards
Delivered in a protection box, comprising:
– Calibration standard holder
– Calibration standard Ø 6 and 200 mm
– Certificate
Other calibration standards on request.

Local display LOC 01
Is mounted directly on the measuring head.
Requires connection cable # ODAC.9167.00005 between LOC 01 and the measuring head.
Not for ODAC J versions.

Deviation unit ODAC-310-90° Emitter
Deviation unit ODAC-310-90° Receiver
(Mounted onto receiver unit)

Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set of calibration standards</td>
<td>ODAC.9501.72000</td>
</tr>
<tr>
<td>Local display LOC 01</td>
<td>LOC.011.01000</td>
</tr>
<tr>
<td>Deviation unit ODAC-310-90° Emitter</td>
<td>ODAC.3101.940S</td>
</tr>
<tr>
<td>Deviation unit ODAC-310-90° Receiver</td>
<td>ODAC.3101.940E</td>
</tr>
<tr>
<td>Analogue interface AI 4-ODAC</td>
<td>ODAC.000.100</td>
</tr>
<tr>
<td>Connector</td>
<td>A10 125 0070</td>
</tr>
<tr>
<td>Proximity switch</td>
<td>A16 100 0110</td>
</tr>
<tr>
<td>Signal cable L2 Bus 1DR22 x 02R</td>
<td>A13 252 0150</td>
</tr>
</tbody>
</table>

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

Connector
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
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.)

Signal cable L2 Bus 1DR22 x 02R
For the connection between the Profinus DP interface and the customer's data acquisition system. Only for ODAC DP version.

Dimensions

Installation in Vertical Lines

Models with rail

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>ODAC.310.DT.250</td>
<td>1220 (48.0)</td>
<td>500 (19.7)</td>
<td>900 (35.4)</td>
<td>250 (9.8)</td>
</tr>
<tr>
<td>ODAC.310.DT.500</td>
<td>1620 (63.8)</td>
<td>1000 (39.4)</td>
<td>1400 (55.1)</td>
<td>500 (19.7)</td>
</tr>
<tr>
<td>ODAC.310.DT.750</td>
<td>2320 (91.3)</td>
<td>1500 (59.1)</td>
<td>1900 (74.8)</td>
<td>750 (29.5)</td>
</tr>
<tr>
<td>ODAC.310.DT.1000</td>
<td>2820 (111.0)</td>
<td>2000 (78.7)</td>
<td>2400 (94.4)</td>
<td>1000 (39.4)</td>
</tr>
</tbody>
</table>

Dimensions in mm (inch)
### Measurement

<table>
<thead>
<tr>
<th>Model(s)</th>
<th>ODAC 310Ixx</th>
<th>ODAC 310EJ-RxP</th>
<th>ODAC 310EN-DxP</th>
<th>ODAC 310EJ-PxN</th>
<th>ODAC 310EN-ExN</th>
<th>ODAC 310EJ-ExxP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Version</strong></td>
<td>Standard</td>
<td>Profile measurement</td>
<td>Same with synchronization input</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Measuring field M</strong></td>
<td>310 mm (12.2 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min. object ø</strong></td>
<td>1 mm (.04 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Scanning frequency scans/s</strong></td>
<td>1000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Scanning speed</strong></td>
<td></td>
<td>606 m/s (1988 ft./s)</td>
<td></td>
<td>606 m/s (1988 ft./s)</td>
<td></td>
<td>606 m/s (1988 ft./s)</td>
</tr>
<tr>
<td><strong>Width of laser beam</strong></td>
<td>8 mm (0.3 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Repeatability</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(σ) at measuring distance D and averaging time (t)</td>
<td>250 mm (.98 in.)</td>
<td>2.0 µm (0.1 σ)</td>
<td>0.00008 in.</td>
<td>1.0 µm (1 σ)</td>
<td>0.0004 in.</td>
<td>3.0 µm (0.1 σ)</td>
</tr>
<tr>
<td><strong>Scan distance D</strong></td>
<td>500 mm (19.69 in.)</td>
<td>2.5 µm (0.1 σ)</td>
<td>0.0001 in.</td>
<td>1.2 µm (1 σ)</td>
<td>0.00048 in.</td>
<td>5.7 µm (0.1 σ)</td>
</tr>
<tr>
<td><strong>Measuring zone</strong></td>
<td>750 mm (29.53 in.)</td>
<td>3.0 µm (0.1 σ)</td>
<td>0.0012 in.</td>
<td>1.5 µm (1 σ)</td>
<td>0.0006 in.</td>
<td>4.5 µm (0.1 σ)</td>
</tr>
<tr>
<td><strong>Measuring field M</strong></td>
<td>1000 mm (39.37 in.)</td>
<td>3.5 µm (0.1 σ)</td>
<td>0.0014 in.</td>
<td>1.7 µm (1 σ)</td>
<td>0.00067 in.</td>
<td>5.0 µm (0.1 σ)</td>
</tr>
<tr>
<td><strong>Measurement error centric</strong></td>
<td>250 mm (.98 in.)</td>
<td>± 25 µm (-0.0009 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Measurement error at the measuring distance D</strong></td>
<td>500 mm (19.69 in.)</td>
<td>± 32 µm (.00126 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Measurement error at the measuring distance D</strong></td>
<td>750 mm (29.53 in.)</td>
<td>± 40 µm (.00157 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maximum power of the laser</strong></td>
<td>1000 mm (39.37 in.)</td>
<td>± 45 µm (.00177 in.)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Technical Data

- **Technical specifications are subject to change without notice**
- **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, CI 1J/EN-EI.**
- **Ask for corresponding data sheets.**

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**Ordering Information**

When ordering, please specify the following:

1. **Models:** ODAC 310Ix, Jxs or ODAC 310EN-Rsx, -DxP, -ExN, -PxN, -ExxP
2. **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:**
  - **for ODAC 310EN-DPx and the higher level system is to be provided by the customer (via serial interface).**
  - **For ODAC 310EN-DP, the connection to a higher level system is made with the signal cable # A13 252 010.**
  - **For the ODAC 310EN-EN/PN/-EI 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 310Ix and the processor:**
  - **Available lengths:** 1, 2, 3, 5, 10, 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., 721 ft., 871 ft. Longer cables on request.
  - **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 (5.5, 6.5, 10, 13, 16, 19, 27, 32 ft.). Minimum length = 2 x measuring distance D = 0.9 m (3 ft.)

3. **Processor model (Data acquisition system), only for ODAC 310Ix:**
   - **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, CI 1J/EN-EI.**