

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 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

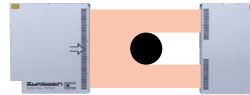
- Very high scan rate (measuring frequency)
Standard: 1000/s, Version F: 2000/s
- High precision measurement
- High insensitivity to dirt and dust

Flexible mounting

With or without rail, different measuring distances

Types of measurement

1 Diameter



2 Slit width



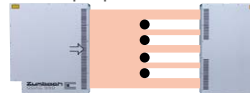
3 Penetration depth



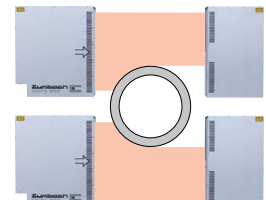
4 Height



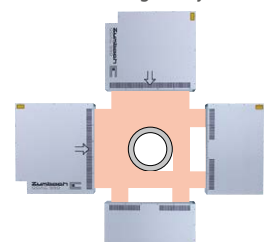
5 Multiple products



6 Dual scanning with large measuring field (synchronized)



7 Dual scanning XY (synchronized)



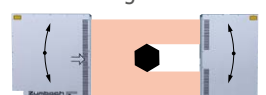
Other types of measurement on request

Special applications

Measurement of hot steel



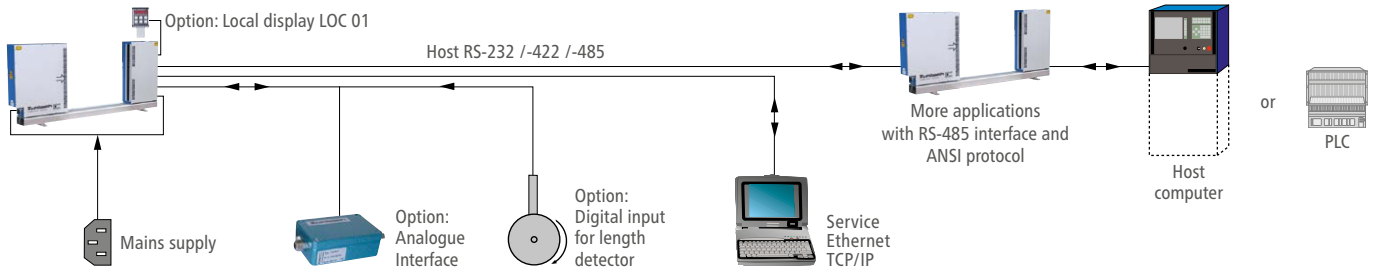
Profile measurement with rotating device



► Ask for special data sheets

System Overviews

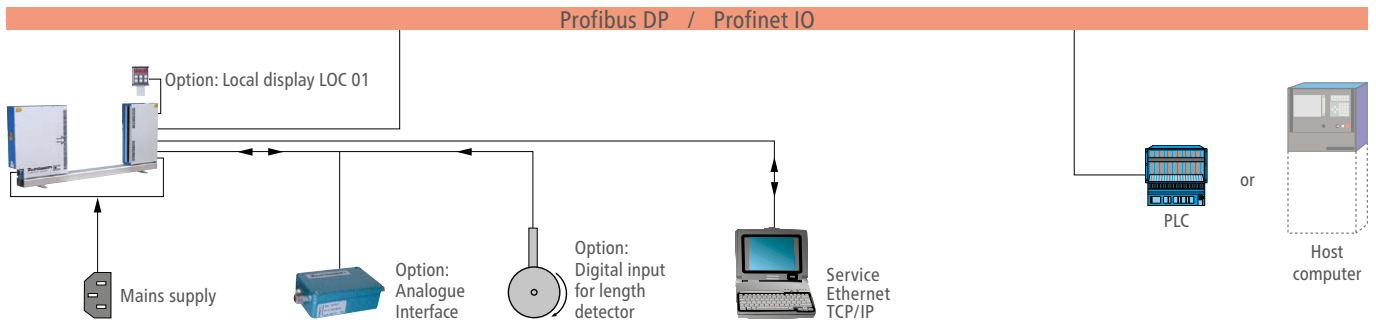
ODAC® 550-EN-RS (serial interface)



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.

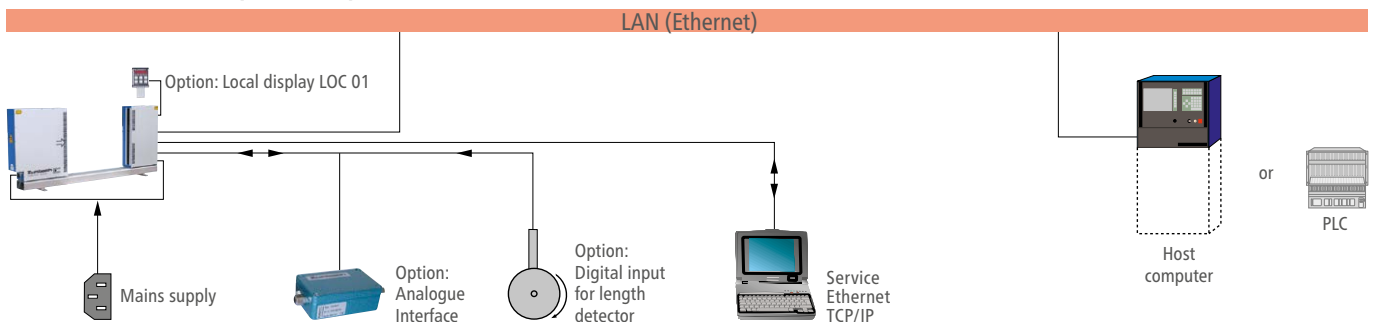
ODAC® 550-EN-DP (Profibus DP) or -EN-PN (Profinet IO)



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.

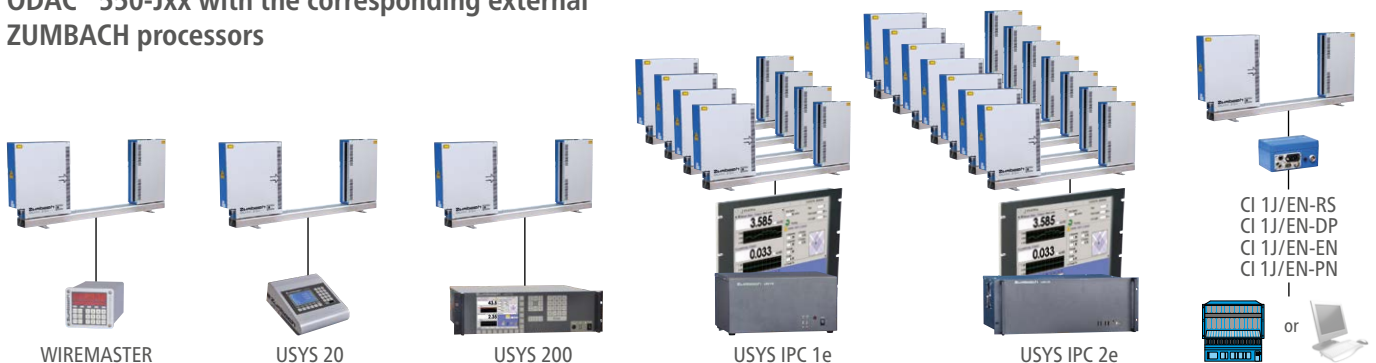
ODAC® 550-EN-EN (Ethernet)



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® 550-Jxx with the corresponding external ZUMBACH processors



Accessories

Description

Order Number

Set of calibration standards

ODAC.9501.76000

Delivered in a protection box, comprising:

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

Other calibration standards on request.



Local display LOC 01

LOC.011.01000

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.



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.



Description

Order Number

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.



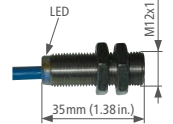
Proximity switch

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.)

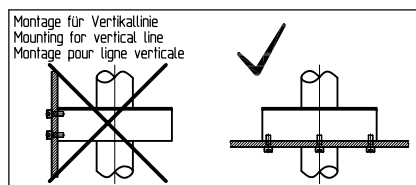
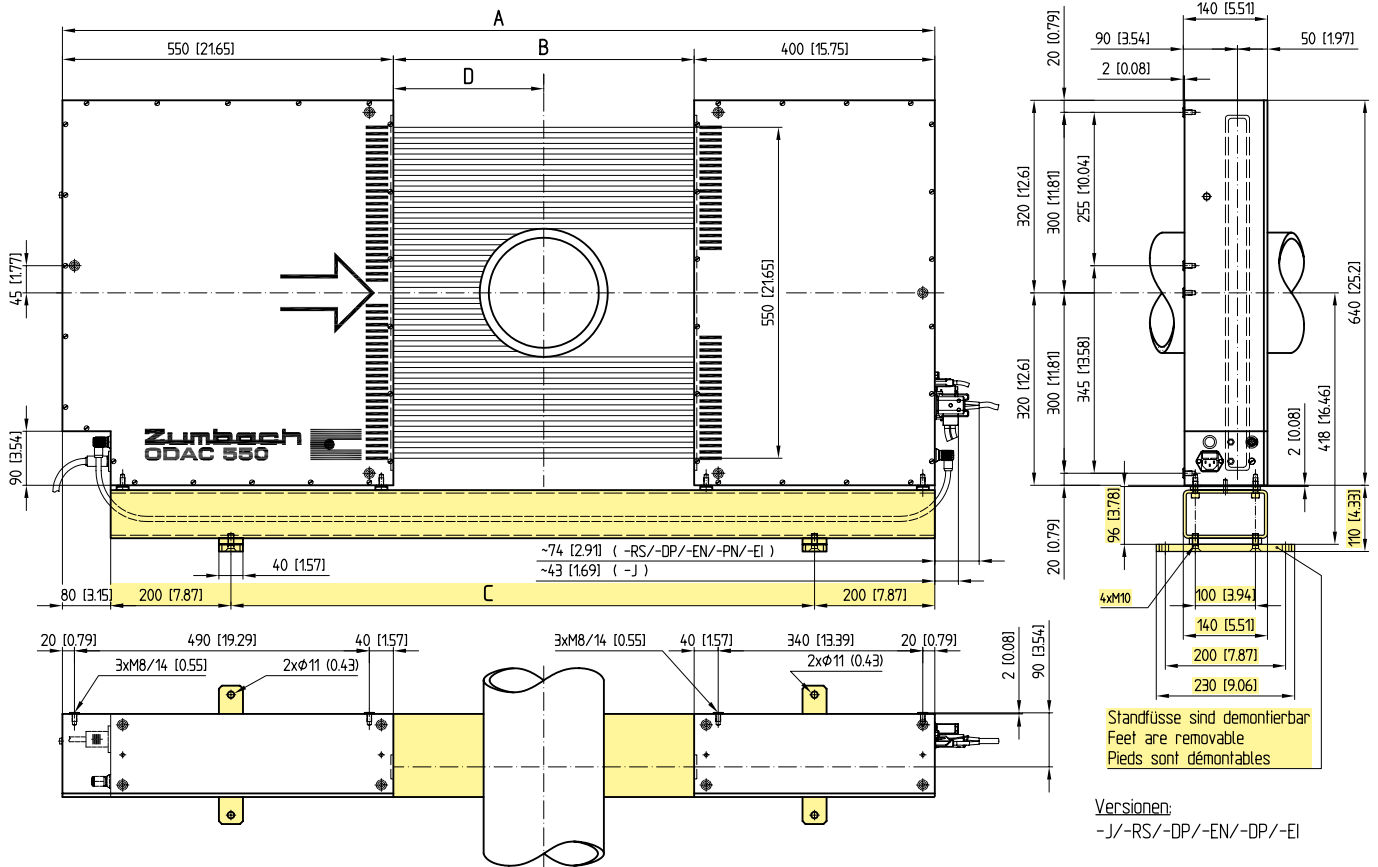


Signal cable L2 Bus 1DR22 x 02R

A13 252 0150

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

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

Measurement						
Model(s)	ODAC 550JP ODAC 550EN-xxP		ODAC 550JN ODAC 550EN-xxN		ODAC 550JSx	
Version	Standard including profile measurement		"Narrow Beam" ⁷⁾		Same with synchronization input	
Measuring field M ¹⁾	550 mm (21.65 in.)					
Min. object ø	2 mm (.08 in.) ["Narrow Beam": 1 mm (.04 in.)]					
Scanning frequency scans/s	standard	1000		500		
	option	F version: 2000		F version: 1000		
Scanning speed	1056 m/s (3464 ft./s); F version: 2112 m/s (6929 ft./s)					
Width of laser beam ⁶⁾	6 mm (0.24 in.)		1.4 mm (.055 in.)		see JP/JN	
Repeatability (3 σ) at measuring distance D and averaging time (s)	400 mm (15.75 in.)	6 μm (0.1 s) (.000236 in.)	3 μm (1 s) (.000118 in.)	8 μm (0.1 s) (.000315 in.)	5 μm (1 s) (.000197 in.)	
	700 mm (27.56 in.)	8 μm (0.1 s) (.000315 in.)	5 μm (1 s) (.000197 in.)	10 μm (0.1 s) (.000394 in.)	6 μm (1 s) (.000236 in.)	
	1000 mm (39.37 in.)	10 μm (0.1 s) (.000394 in.)	6 μm (1 s) (.000236 in.)	12 μm (0.1 s) (.000472 in.)	8 μm (1 s) (.000315 in.)	
Centric measurement error at measuring distance D ²⁾	400 mm (15.75 in.)	± 50 μm (.002 in.)				
	700 mm (27.56 in.)	± 70 μm (.003 in.)				
	1000 mm (39.37 in.)	± 90 μm (.004 in.)				
Measurement error within the measuring zone ³⁾	1.5 x value of the centric measurement error (ODAC 550xxN: 1.25 x value of the centric measurement error)					
Measuring zone (width x height)	600 x 530 mm (23.62 x 20.86 in.)		300 x 530 mm (11.81 x 20.86 in.)		see JP/JN	
Resolution ⁴⁾	1 μm (.00004 in.)					
Light source ⁵⁾	HeNe Laser, class 2					
Types of measurement (see page 1)	1, 2, 3, 4, 5				1, 6, 7	

Interfaces / Connections						
Model(s)	ODAC 550EN-RSx	ODAC 550EN-DPx	ODAC 550EN-ENx	ODAC 550EN-PNx	ODAC 550EN-EIx	ODAC 550Jx
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 48 V / 0.5 A 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: 35.5 kg (38.3 lbs.), Receiver: 23.5 kg (51.8 lbs.), short Rail (DT400): 29 kg (63.9 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".

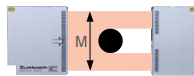
³⁾ The measured borders of the object must be within this measuring zone. The centre of this measuring zone is at the "measuring distance D" as well as in the middle of the "measuring field M".

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 and for the contour measurement.



Ordering Information

When ordering, please specify the following:

- Models:** ODAC 550Jx, -JSx or ODAC 550EN-RSx, -DPx, -ENx, -PNx, -EIx
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 550EN-RS and the higher level system is to be provided by the customer (via serial interface).
 - For ODAC 550EN-DP, the connection to a higher level system is made with the signal cable # A13 252 0150.
 - For the ODAC 550EN-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 550Jx 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: 1.5, 2, 3, 4, 5, 6, 8 m (5, 6.5, 10, 13, 16.4, 19.7, 26.2 ft.). Minimum length = 2 x measuring distance D + 1 m (1.3 ft.). Order no. B.ODAC.821.32xxx.
- Processor model** (Data acquisition system), only for ODAC 550Jx: 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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