Zumbach

SWISS PRIME MEASURING SINCE 1957

Extremely Fast and Accurate Laser Diameter Measuring Head. Dual-Axis (XY), with 18 mm (.71 in.) Measuring Field.

ODAC® 18XY

Modern two axis measuring head from the ODAC® laser measuring unit series. Highest accuracy, robustness, reliability and functionality distinguish all the laser measuring heads from Zumbach. Thanks to the compact design, the ODAC® 18XY measuring heads 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 300* data packages per second.
The measuring heads can be used with all line speeds. Vibrations during production have no noticeable influence on measurements.

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.

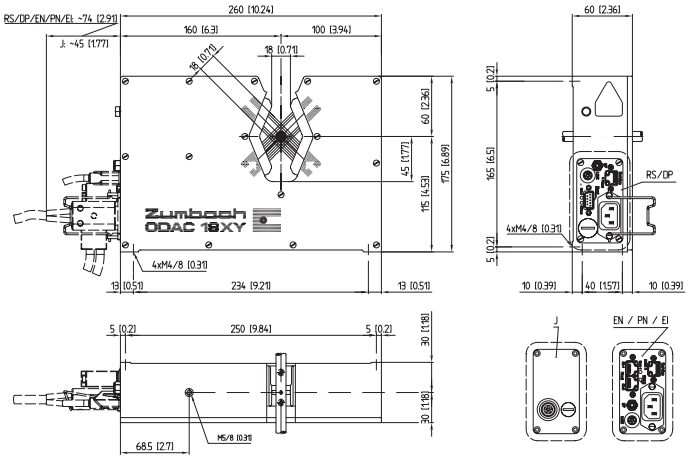
* Depending on the measuring head model, the number of transmitted measured values as well as the baud rate of the interface.

Display unit (option): VISU-Touch or LOC 01

Main Advantages
- Very high scan rate (measuring frequency) Standard: 2 x 1200/s, Version F: 2 x 2500/s
- High precision measurement
- High insensitivity to dirt and dust
- Easily removable splash guards (snap in/out)
- The M40 version measures measuring objects from ø 0.04 mm (0.0016 in.)

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)

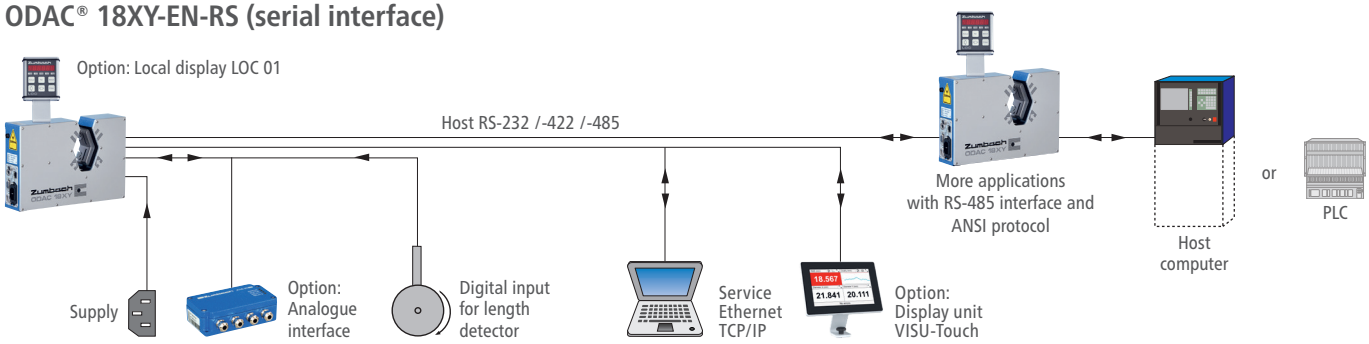
Dimensions



Dimensions in mm (inch)

System Overviews

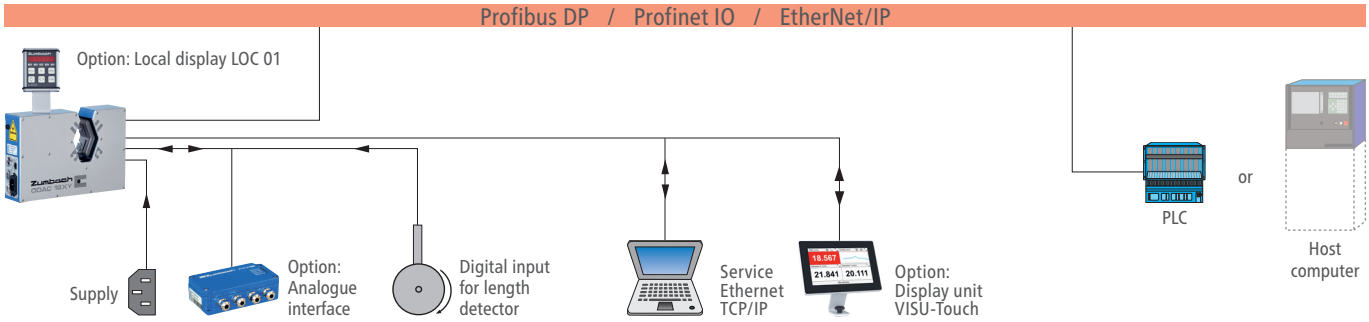
ODAC® 18XY-EN-RS (serial interface)



The built-in processor allows the acquisition and monitoring 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 or Host are selectable according to choice. The service interface (Ethernet TCP/IP) is used for configuring the measuring system.

ODAC® 18XY-EN-DP (Profibus DP), -EN-PN (Profinet IO) or -EN-EI (EtherNet/IP)

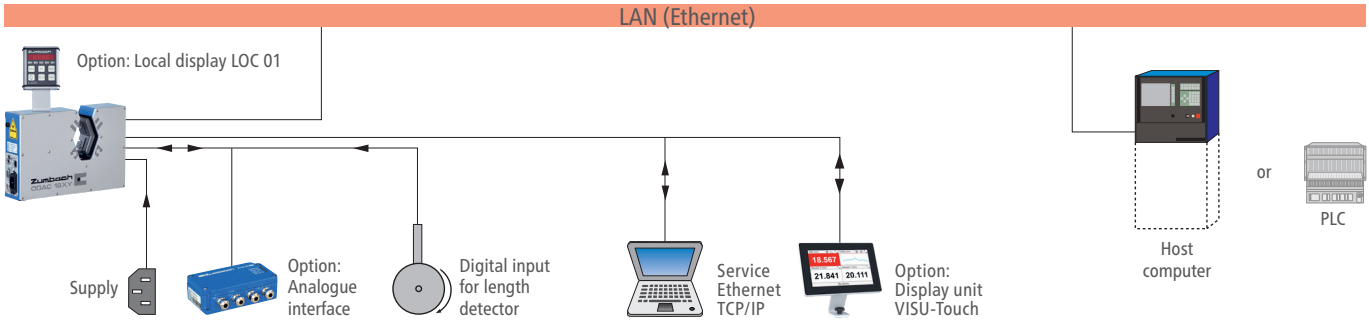
Profibus DP / Profinet IO / EtherNet/IP



The built-in processor allows the acquisition and monitoring of the measured values, as well as statistic functions, parameter selection and many other functions. These versions communicate via the integrated Profibus DP, Profinet IO or EtherNet/IP 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® 18XY-EN-EN (Ethernet)

LAN (Ethernet)



The built-in processor allows the acquisition and monitoring 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 measured values and parameters are integrated and transferred using a selectable Zumbach protocol (ODAC or Host protocol) in standardized packages of the TCP/IP. TCP/IP allows the data transfer through existing networks such as LANs and others.

ODAC® 18XY-J with the corresponding external ZUMBACH processors

Accessories

Description — **Order Number**

Pivoting support, DVW 1-ODAC 18XY-J/-J-F — **DVW.101.01800**
Mechanical device which pivots the measuring head continuously around the normal measuring axis within +/- 2.5°, 5°, 7.5° or 10° (selectable). With this method, the height and width of the profile can be measured accurately, regardless its angular position (twist).

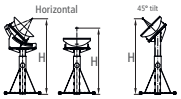
Adjustment device, DVW 1 +67.5°/-22.5° — **DVW.101.900**
For a continuos adjustment of the inclination of both measuring axes according to the horizontal and vertical axis.
► Use only with pivoting device DVW.101.01800

Adjustment device, DVW 1 ± 45° — **DVW.101.920**
For a continuos adjustment of the inclination of both measuring axes according to the horizontal and vertical axis.
► Use only with pivoting device DVW.101.01800

Adjustment device, DVW 1-ODAC18XYfix +67.5°/-22.5° — **DVW.101.930**
For a continuos adjustment of the inclination of both measuring axes according to the horizontal and vertical axis.

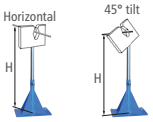
Floor stand ST1-DVW 1 (horizontal) — **ST01.392.98000**
Floor stand ST1-DVW 1 45° — **ST01.392.98010**
Vertically adjustable.

Line height (H): 900...1200 mm, (35.4...47.25 in.)



Floor stand ST2-ODAC 18XY — **ST02.063.65750**
Floor stand ST2-ODAC 18XY 45° — **ST02.063.65760**
Vertically adjustable.
Line height (H): 900...1200 mm, (35.4...47.25 in.)

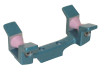
► Special lateral supports with rotary holder are available for USYS 20 processors (corresponding data sheets are available on request).



Swivel floor stand ST6-ODAC 18XY — **ST06.141.18000**
with heat protection shield ST6-ODAC 18XY "HS Front" — **ST06.141.18900**
Vertically adjustable.
Line height (H): 860...1150 mm (33.86...45.28 in.)
Swivel angle: 90° (upward)

Limiting socket VF15-ODAC15 — **ODAC.151.420**
Used as a device to delimit the measuring field.
It has no guiding function!

Guide VF6-ODAC15 — **ODAC.151.430**
With ceramic rollers (V shape) for measured object diameter up to 6 mm (.24 in.).



Guide VR1M-ODAC15 — **ODAC.151.450**
With ceramic rollers (V shape) for measured object diameter smaller than 1 mm (.04 in.). The measured object must be precisely guided through the middle of the measuring field.

Guide VR10-ODAC15 — **ODAC.151.470**
With steel rollers (V shape) for measured object diameter up to 10 mm (.4 in.).

Guide DF4-ODAC15 — **ODAC.151.500**
With ceramic guides. Used for the positioning of products such as monofilaments and similar.
For measured object diameter of up to 4 mm (.16 in.).

Guide FR13B-ODAC18 — **ODAC.181.430**
With flat ceramic rollers. Used for the precise guiding of flat profiles, having a border length of up to max. 13 mm (.51 in.).

Guide VF16-ODAC18 — **ODAC.181.440**
With ceramic rollers (V shape) continuously adjustable. Best for the centric guidance of products with diameter of up to 16 mm (.63 in.).

Guide FRG6B-ODAC18 — **ODAC.181.460**
With flat ceramic rollers and counter rollers.
Used for the precise guiding of flat profiles, having a border length of up to max. 6 mm (.24 in.).

Guide VR16-ODAC18 — **ODAC.181.470**
With steel rollers (V shape) continuously adjustable.
Best for the centric guidance of products with diameter of up to 16 mm (.63 in.).

Guide FR6B-ODAC18 — **ODAC.181.480-06**
With flat ceramic rollers. Best for the guiding of flat profiles, having a border length of up to max. 6 mm (.24 in.).

Heat protection shield, ODAC 18XY-Back (rear) — **ODAC.181.900**
Heat protection shield, HS-ODAC 18XY-Front — **ODAC.181.920**
Heat protection shield, HS-ODAC 18XY-Back (LV) — **ODAC.181.930**

Description — **Order Number**

Air curtain LV.D-ODAC 15-18 — **ODAC.151.140**
Pressurized dust guard. Recommended for wire drawing applications.
Metal bushing with ceramic inserts.
For the air curtain it's essential to select the corresponding bushing pair:

Part no.	Bushing Ø	Max. Product Ø:
B.ODAC.151.1440	1.5 mm (.06 in.)	1.000 mm (.04 in.)
B.ODAC.151.1450	2.5 mm (.10 in.)	2.000 mm (.08 in.)
B.ODAC.151.1460	3.5 mm (.14 in.)	3.000 mm (.12 in.)
B.ODAC.151.1470	4.5 mm (.18 in.)	4.000 mm (.16 in.)
B.ODAC.151.1480	5.5 mm (.22 in.)	5.000 mm (.20 in.)
B.ODAC.151.1500	6.5 mm (.26 in.)	5.500 mm (.22 in.)
B.ODAC.151.1510	8.0 mm (.32 in.)	7.000 mm (.28 in.)
B.ODAC.151.1490	9.0 mm (.35 in.)	8.000 mm (.32 in.)
B.ODAC.151.1520	10.0 mm (.40 in.)	9.000 mm (.35 in.)
B.ODAC.151.1530	11.0 mm (.43 in.)	10.000 mm (.40 in.)
B.ODAC.151.1540	12.0 mm (.47 in.)	11.000 mm (.43 in.)

► Suitable maintenance kit see below.

Bushing

Air curtain LV-ODAC 18XY — **ODAC.181.910**
This air curtain, supplied with compressed air, is used instead of the standard installed splash guards. The air curtain protects the measuring windows from contamination through steam and other "floating" particles. Not suitably for water splashes.
► Suitable maintenance kit see below.

Maintenance kit — **A34 200 0080**
Cleans and keeps the compressed air free of dirt.
Features: Filter regulators, submicrofilter, manometer, pressure difference display, automatic condensate emptying and wall fixture.

Air curtain LV.G-ODAC 15 ODAC 15/18XY — **ODAC.151.940**
Protective device for wire drawing application. It is supplied with filtered air by the GE 6 blower unit. The air curtain is supplied with 2.0 m (6.5 ft.) hose and two hose clamps. Metal bushing as for the air curtain LV.D-ODAC 15-18.

Blower unit GE 6 — **GE.601.060XX**
Order number: GE.601.06000 (230V/50Hz/0.2kW)
Order number: GE.601.06010 (115V/60Hz/0.2kW)
Spare filter cartridge CF4 to FL2/FL3/FL4: Order number: A15 105 3230

Set of calibration standards ODAC18XY — **ODAC.9500.38000**
Delivered in a protection box, comprising:
– Calibration standard holder
– Calibration standard ø 0.5 and 10 mm
– Certificate, other calibration standards on request.

Set of calibration standards ODAC18XY-J-M40 — **ODAC.9500.38010**
Delivered in a protection box, comprising:
– Calibration standard holder
– Calibration standard ø 0.1 and 10 mm
– Certificate, other calibration standards on request.

Local display LOC 01 — **LOC.011.01000**
Is mounted directly on the measuring head. Requires connection cable # ODAC.9167.00004 between LOC 01 and the measuring head.
Not for ODAC J versions.

VISU-Touch — **VISU.001.01XXX**
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.

Ethernet cable — **A15 608 8XXX**
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.

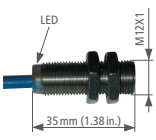
PoE Injector 48 V, 24 W — **N2.7860.1000**
Power over Ethernet supply for devices that do not support PoE or a long Ethernet cable.
Not for ODAC J versions.

Analogue interface AI4-R — **ODAC.001.100**
Interface with 4 analogue, 5 digital and 2 relay outputs.
Direct connection of the digital input (proximity switch).
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 DP version.

Connector — **A10 125 0070**
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.

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.)



Technical Data

Model ODAC 18XY-	EN-RS	EN-DP	EN-EN	EN-PN	EN-EI	J
Measurement						
Measuring field M [1]	18 x 18 mm (.71 x .71 in.)					
Min. object ø	0.08 mm (.003 in.) (standard); M40 version: 0.04 mm (.0016 in.)					
Scanning frequency	2 x 1200 scans/s (standard and M40 version); F version: 2 x 2500 scans/s					
Scanning speed	67.8 m/s (222.4 ft./s) (standard and M40 version); F version: 141.3 m/s (463.6 ft./s)					
Width of laser beam [3]	0.5 mm (.02 in.) (standard and M40 version); F version: 0.3 mm (.012 in.)					
Repeatability (3 σ)	0.12 µm (.0000047 in.) (Averaging time 0.1 s) 0.05 µm (.000002 in.) (Averaging time 1 s)					
Measurement error	± 0.5 µm (.00002 in.) ± 0.1‰					
Resolution [2]	0.1 µm (.000005 in.)					
Light source [4]	VLD (Visible Laser Diode) 630-680 nm, laser class 2 (device)					
Interfaces / Connections						
Interface Service	Ethernet TCP/IP, RJ45 10/100BaseT, galvanically isolated					Only J interfaces to Zumbach processors: USYS 20, USYS 200, USYS IPC 1e, USYS IPC 2e, CI 1J/EN-RS/-DP/-EN/-PN/-EI
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, galvanic. isolated	
Data rate max. standard	300/s	60/s	300/s	60/s	200/s	
Data rate max. F version	250/s	125/s	250/s	125/s	179/s	
Interface LOC	Only for Zumbach local display LOC 01					
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)					
Indicator of contamin. windows	Flashing LED on the measuring head					
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	–
Energy supply						
Mains voltage	100-240 VAC					Supplied by the processor unit (24 VDC / 5 W)
Operating range	85-265 VAC typically					
Mains frequency	50/60 Hz					
Operating range	47-63 Hz typically					
Power	20 VA					
Operation conditions / Miscellaneous						
Ambient temperature	Operating: 0...45° C (32...113° F), Transport / Storage: -20...50° C (-4...122° F)					
Max. atmospheric humidity	95% (non condensing)					
Altitude	0...3000 m (0...9843 ft.) over sea level					
Type of protection [5]	Case IP 65, connection plate IP 40					
Weight	3.1 kg (6.83 lbs)					

• Technical specifications are subject to change without notice

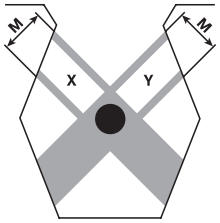
[1] M stands for measuring field height. In practice, the largest object diameter corresponds to Measuring Field Height minus instability of position.

[2] System resolution is the smallest practical value on the last digit of the display.

[3] Measured in the measuring plane, incl. lateral Jitter of the scans.

[4] Maximum power of the laser can be read on the warning label.

[5] Conformity not verified by UL.



Ordering Information

When ordering, please specify the following:

1 Measuring head models: ODAC 18XY-EN-RS/-DP/-EN/-PN/-EI, ODAC 18XY-J

2 Connection cable

2a The connection between **ODAC 18XY-EN-RS** and the higher level system is to be provided by the customer (via serial interface).

2b For the **ODAC 18XY-EN-DP** versions, the connection to a higher level system is made with the signal cable # A13 252 0150.

2c For the **ODAC 18XY-EN-EN/-PN/-EI** versions, the connection from the measuring head to the customer's Ethernet port, must be provided by the customer.

2d **Length** of the connection cable between ODAC 18XY-J and the processor.
Available lengths: 1, 2, 5, 10, 15, 20, 25 and 30 m (3.3, 6.6, 16.4, 32.8, 49.2, 65.6, 82 and 98.5 ft.); Longer cables on request.

3 **Processor model** (data acquisition system), only for ODAC 18XY-J: 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. Please ask for corresponding data sheets.

WORLDWIDE CUSTOMER SERVICE AND SALES OFFICES

Headquarter:
Zumbach Electronic AG
P.O. Box
CH-2552 Orpund
SWITZERLAND
Tel.: +41 (0)32 356 04 00
sales@zumbach.ch

BENELUX, sales@zumbach.be
CHINA P.R., sales@zumbach.com.cn
CZECH REPUBLIC, jvorlicek@zumbach.cz
FRANCE, ventes@zumbach.com.fr
GERMANY, verkauf@zumbach.de

INDIA, sales@zumbachindia.com
ITALY, zumit@zumbach.it
SPAIN, gestion@zumbach.es
TAIWAN, info@zumbach.tw
UK, sales@zumbach.co.uk

North American Headquarter:
Zumbach Electronics Corp.
140 Kisco Avenue
Mount Kisco, NY 10549-1407
Phone +1 914 241 7080
USA
sales@zumbach.com

Close to you wherever you are

www.zumbach.com