

# ODAC® 60J

The ODAC® 60 measuring head uses the latest laser scanning technology. It 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 ODAC® 60 head can also be installed in constricted confines or several emitter/receiver pairs can be mounted in the same plane. The head is offered with a complete range of accessories and interface units for optimal integration into almost any process and thus can be used for all products. ODAC® 60 is available in following versions:

- J version (standard version)
  - JP version (for profile measurement)
  - JN version (with narrow beam for contour measurement)
- These versions are also available in the JS version, i.e. for the external synchronization of 2 units by means of the CI 2JS/1J unit or of multiple axis systems like the STEELMASTER SMO or SMS systems.

### Typical Applications

- Cable extrusion, hoses, profiles etc.
- Metal / steel processes such as drawing, grinding, bar, tubing etc.
- Testing (NDT) for all kinds of product
- Food, packing, medical tubing etc.

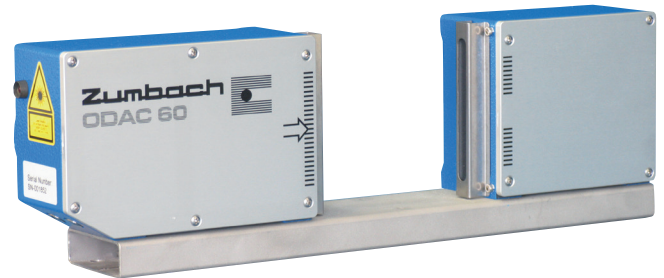
### Advantages

- Very high scan rate
- Highest precision
- Single scan Calibration CSS
- Single scan monitoring
- Data rate up to 333/s (depending on version of measuring head, number of transmitted measured values as well as the baud rate of the interface)
- Compact and rugged design
- Flexible mounting
- Special beam geometries available:
  - Parallel beam for profiles and similar
  - Narrow beam for contour measurements
- Different measuring modes, e.g. for diameter, gap, penetration, multiple measurement etc.

### Options / Accessories (see also page 3)

- F versions: – Double scan rates as the standard versions, i.e. more measurements per time unit
- Maximum fault detection (lumps/neckdowns) at increased line speeds
  - FFT/SRL analysis with higher bandwidths
- Diagnostic output
  - Synchronization\* of multiple ODAC measuring heads
  - Computer interface CI 1J/EN-xx for RS-232/-422/-485, Profibus DP, Ethernet TCP/IP, Profinet IO, EtherNet/IP
  - Protection windows
  - Guides (upon customer specific request)

\* Signal processing with special USYS unit



### Flexible mounting

With or without rail, different measuring distances



### Types of Measurement

#### ① Diameter measurement



#### ② Slit width measurement



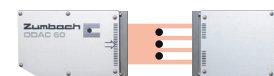
#### ③ Penetration depth measurement



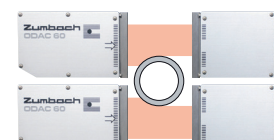
#### ④ Height measurement



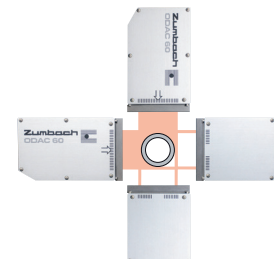
#### ⑤ Multiple measurement



#### ⑥ Dual scanning with large measuring field (synchronized)



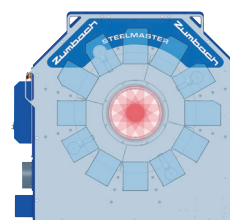
#### ⑦ Dual scanning XY (synchronized)



Other types of measurement on request

### Special Applications

Measurement of hot steel with STEELMASTER systems:

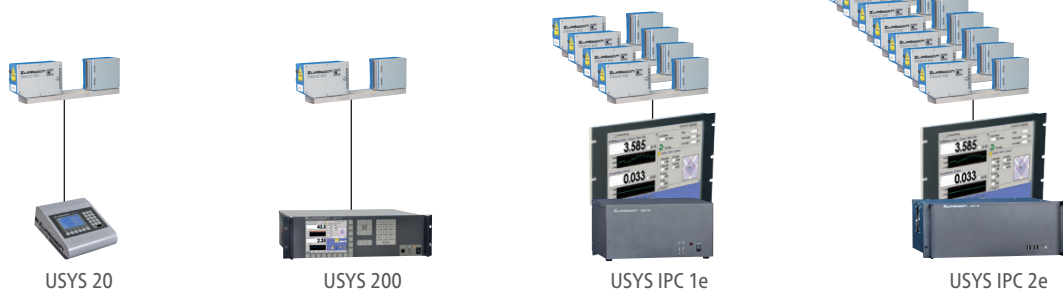


**SMO:** Oscillating 2, 3, 4 or 6 axis systems

**SMS:** Static 2, 4 or 6 axis systems

► Ask for special data sheets on STEELMASTER hot steel systems

## ODAC 60J with the corresponding processors



The measured signals are forwarded to the processor unit through a connection cable. Signal processing, automatic line or process control, tolerance limit monitoring and many additional functions are carried out by this processor.

## Dual head measuring systems with USYS processor



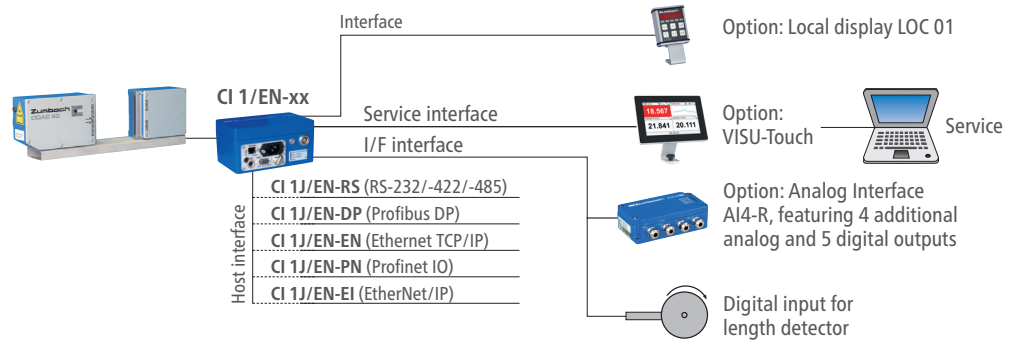
A measuring system for a dual plane (XY) measurement configuration or for a larger measuring field can be set up with two ODAC 60JK, an USYS IPC 1e/ 2e processor.



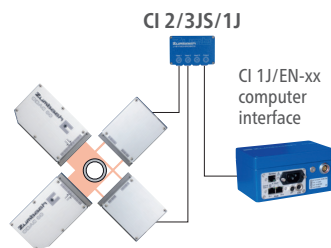
## Configurations with CI compact boxes

### ODAC 60J single head configuration with computer interface CI-1J/EN-RS, -DP, -EN, -PN, -EI

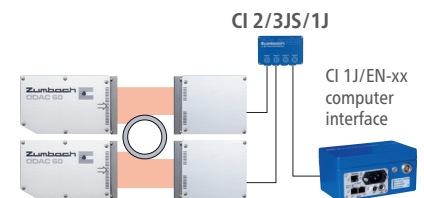
The computer interfaces are used as connections to a higher-level computer system. According to the execution, the host interface may be an RS-232/-422/-485, a Profibus DP, an Ethernet TCP/IP, a Profinet IO or an EtherNet/IP interface.



### ODAC 60JS dual head measuring system with synchronization box CI 2/3JS/1J



Thanks to this synchronization box, it is possible to use two ODAC 60 measuring heads of the JS models. This allows special configurations, e.g. for a 2 axis (XY) measurement or for a larger measuring field.

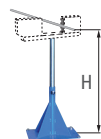


## Accessories

### Floor stand ST2-ODAC 60.DT60

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

ST02.100.75000



### Rotary holder USYS 20

USY.0002.910

### Fixation set for wall mounting (with pivot arm)

USY.0002.920

### Fixation set for table top

USY.0002.930

### Swivel floor stand ST6-ODAC 60J

Vertically adjustable.  
Line Height: 860... 1160 mm (33.86...45.67 in.)  
Swivel angle: 90° (upward)

ST06.144.60000



### Set of calibration standards ODAC 60

ODAC.9500.87000

Delivered in a protection box, comprising:  
– Calibration standard holder  
– Calibration standards  $\varnothing$  2 and 40 mm  
– Certificate  
Other calibration axis standards on request.



### Mountable support for ST2

Lateral support, including rotary holder (USY.0002.910) for table top version of the USYS 20 processor.

ST02.060.190



### Limiting socket VF60-ODAC60

ODAC.601.400

### Air curtain LV.G-ODAC 60

ODAC.601.920

### Blower unit GE 7, 0.55kW

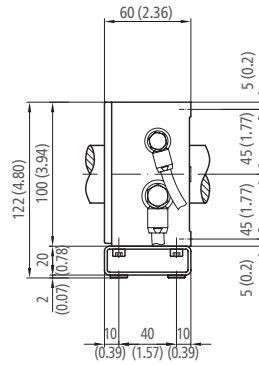
GE.701.07000

### Deviation unit ODAC 60-90°

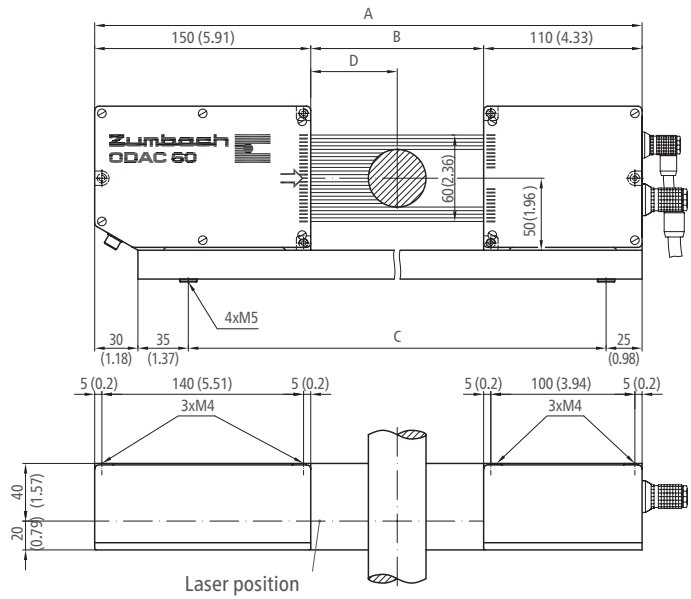
ODAC.601.940

## Dimensions

ODAC 60J  
 ODAC 60JS  
 ODAC 60JP  
 ODAC 60JSP  
 ODAC 60JN  
 ODAC 60JSN



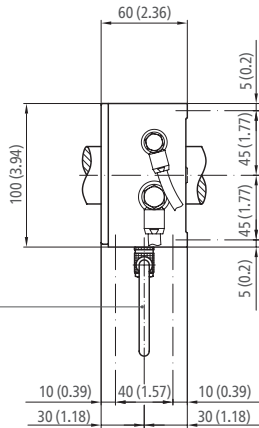
Model	A	B	C	D
ODAC.60J.DT60	380 (14.96)	120 ( 4.72)	290 (11.42)	60 ( 2.36)
ODAC.60J.DT100	460 (18.11)	200 ( 7.87)	370 (14.57)	100 ( 3.94)
ODAC.60J.DT200	660 (25.98)	400 (15.75)	570 (22.44)	200 ( 7.87)
ODAC.60J.DT300	860 (33.86)	600 (23.62)	770 (30.31)	300 (11.81)
ODAC.60J.DT400	1060 (41.73)	800 (31.50)	970 (38.19)	400 (15.75)



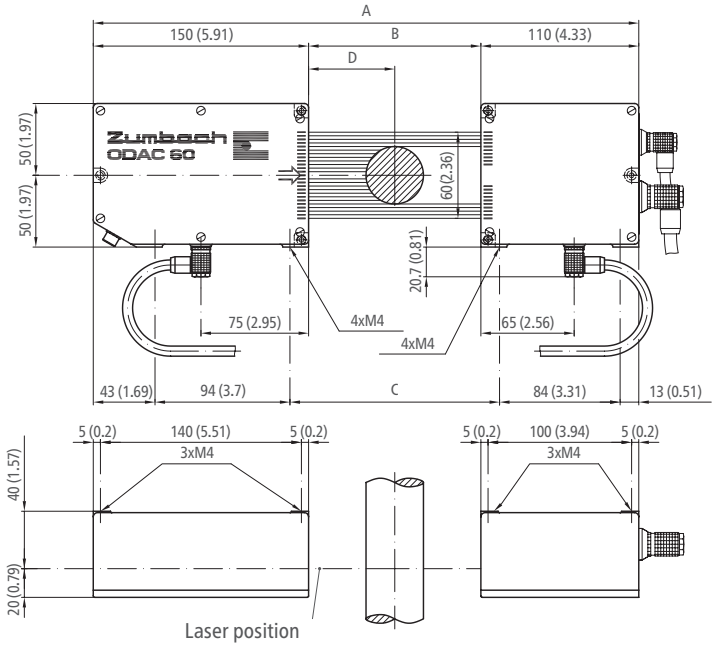
ODAC 60JK  
 ODAC 60JSK  
 ODAC 60JPK  
 ODAC 60JSPK  
 ODAC 60JNK  
 ODAC 60JSNK

Connection cable between emitter and receiver

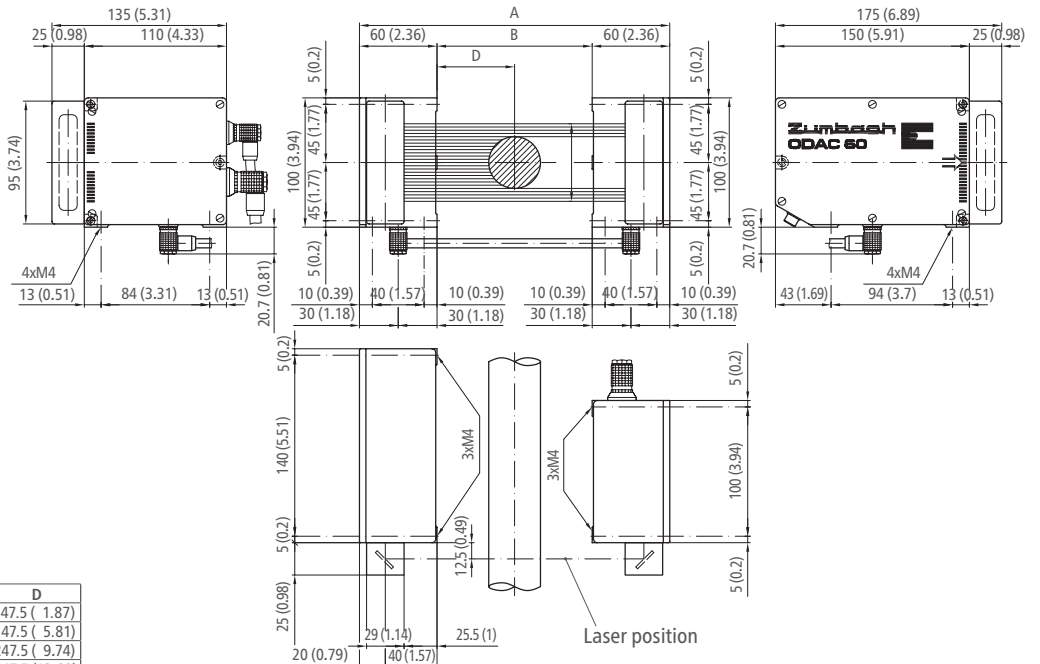
Order number	Length m/ft.
B.ODAC.601.3305	0.5 1.6
B.ODAC.601.3309	0.9 3.0
B.ODAC.601.3315	1.5 5.0
B.ODAC.601.3320	2.0 6.5
B.ODAC.601.3325	2.5 8.2
B.ODAC.601.3330	3.0 9.8
B.ODAC.601.3340	4.0 13.1



Model	A	B	C	D
ODAC.60J.DT60	380 (14.96)	120 ( 4.72)	290 (11.42)	60 ( 2.36)
ODAC.60J.DT100	460 (18.11)	200 ( 7.87)	370 (14.57)	100 ( 3.94)
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ODAC.60J.DT300	860 (33.86)	600 (23.62)	770 (30.31)	300 (11.81)
ODAC.60J.DT400	1060 (41.73)	800 (31.50)	970 (38.19)	400 (15.75)



ODAC 60J..K with deviation unit  
 ODAC 60-90°



Model	A	B	D
ODAC.60JK.DT100	215 ( 8.46)	95 ( 3.74)	47.5 ( 1.87)
ODAC.60JK.DT200	415 (16.34)	295 (11.61)	147.5 ( 5.81)
ODAC.60JK.DT300	615 (24.21)	495 (19.49)	247.5 ( 9.74)
ODAC.60JK.DT400	815 (32.08)	695 (27.36)	347.5 (13.68)

Dimensions in mm (inch)

## Technical Data

Measurement		ODAC 60J	ODAC 60JP	ODAC 60JN	ODAC 60JS ODAC 60JSP ODAC 60JSN
Model(s)					
Version		Standard	Profile measurement	"Narrow Beam" <sup>7)</sup>	Same with synchronization input
Measuring field M <sup>1)</sup>		60 mm (2.36 in.)			
Min. object $\varnothing$		0.25 mm (.01 in.)	0.6 mm (.024 in.)	0.20 mm <sup>8)</sup> (.007 in.)	see J/JP/JN
Scanning frequency scans/s	standard	1000	1000	1000	500
	F version	2000	2000	2000	
Scanning speed		157.7 m/s (517.4 ft./s); F version: 315.4 m/s (1034.8 ft./s)			
Width of laser beam <sup>6)</sup>		4.5 mm (0.18 in.)	4.5 mm (0.18 in.)	0.5 mm (.02 in.)	see J/JP/JN
Repeatability (3 $\sigma$ ) at measuring distance D and averaging time (s)	60 mm ( 2.36 in.)	0.5 $\mu$ m (0.1 s) (.000020 in.)	0.25 $\mu$ m (1 s) (.000010 in.)	0.7 $\mu$ m (0.1 s) (.000028 in.)	0.35 $\mu$ m (1 s) (.000014 in.)
	100 mm ( 3.94 in.)	0.5 $\mu$ m (0.1 s) (.000020 in.)	0.25 $\mu$ m (1 s) (.000010 in.)	0.7 $\mu$ m (0.1 s) (.000028 in.)	0.35 $\mu$ m (1 s) (.000014 in.)
	200 mm ( 7.88 in.)	0.6 $\mu$ m (0.1 s) (.000024 in.)	0.30 $\mu$ m (1 s) (.000012 in.)	0.9 $\mu$ m (0.1 s) (.000036 in.)	0.45 $\mu$ m (1 s) (.000018 in.)
	300 mm (11.81 in.)	0.8 $\mu$ m (0.1 s) (.000032 in.)	0.40 $\mu$ m (1 s) (.000016 in.)	1.2 $\mu$ m (0.1 s) (.000048 in.)	0.60 $\mu$ m (1 s) (.000024 in.)
	400 mm (15.75 in.)	1.0 $\mu$ m (0.1 s) (.000039 in.)	0.50 $\mu$ m (1 s) (.000020 in.)	1.4 $\mu$ m (0.1 s) (.000056 in.)	0.70 $\mu$ m (1 s) (.000028 in.)
Measurement error centric at measuring distance D <sup>2)</sup>		60 mm ( 2.36 in.) $\pm$ 2 $\mu$ m (.00008 in.)			
		100 mm ( 3.94 in.) $\pm$ 2 $\mu$ m (.00008 in.)			
		200 mm ( 7.88 in.) $\pm$ 3 $\mu$ m (.00012 in.)			
		300 mm (11.81 in.) $\pm$ 4 $\mu$ m (.00016 in.)			
		400 mm (15.75 in.) $\pm$ 5 $\mu$ m (.00020 in.)			
Measurement error within the measuring zone <sup>3)</sup>		2 x value of the centric measurement error (ODAC 60xxP: 4 x value of the centric measurement error)			
Measuring zone (width x height)		40 x 56 mm (1.57 x 2.2 in.)	80 x 56 mm (3.15 x 2.2 in.)	30 x 56 mm (1.18 x 2.2 in.)	see J/JP/JN
Resolution <sup>4)</sup>		0.1 $\mu$ m (.000004 in.)			
Light source <sup>5)</sup>		VLD (Visible Laser Diode) 630-680 nm, laser class 2 (device)			
Indicator of contamin. windows		Flashing LED on the measuring head (relay output 30 VAC/VDC, 0.5 A as option)			
Power		Supplied by the connected ZUMBACH processors or computer interfaces over the J-interface (24 VDC / 5 W)			
Types of meas. (see page 1)		1, 2, 3, 4, 5			1, 6, 7
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 <sup>9)</sup>		Case IP 65, connection and connector area plate IP 40			
Weight		Emitter: 1.35 kg (2.98 lbs.), Receiver: 0.90 kg (1.98 lbs.), Rail (DT100): 1.05 kg (2.32 lbs.)			

• Technical specifications are subject to change without notice

<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  $\varnothing$ " 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.

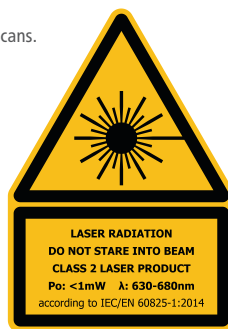
<sup>5)</sup> Maximum power of the laser can be read on the warning label.

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

<sup>7)</sup> 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.

<sup>8)</sup> For a measuring distance of 60 mm (2.36 in.), the minimum object diameter is 0.16 mm (.0063 in.).

<sup>9)</sup> Conformity not verified by UL.



### Ordering Information

When ordering, please specify the following:

- Models: **ODAC 60J/JP/JN (K)** for "K" Version: specify the measuring distance D (see page 3).
- Connection cable**
  - Length of the connection cable between **ODAC 60Jx** 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: minimum length = 2 x measuring distance D + 0.3 m (1 ft.) (available lengths see tables ODAC 60JK on page 3).
- Processor model** (Data acquisition system): 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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