

## C VIB 6.631 : Laser trigger / Laser RPM sensor

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Laser / Sensor



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RPM / Trigger

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### Application

This sensor is used as a trigger for vibration measurements and for RPM measurements.

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### Description

The sensor detects the signals optically, i.e. without having contact with rotating machine parts during the measurement. Red laser light is emitted from the sensor head and impinges on a mark on the rotating shaft. The mark can be light reinforcing (e.g. reflective tape VIB 3.306) or light damping (e.g. black, high-contrast line on a bright surface). Every time the optical system measures a brightness contrast, the sensor emits an electrical pulse. The data collector (VIBXPRT, VIBSCANNER) calculates the shaft speed based on the rate of repetition of this voltage pulse.

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### Installation and adjustment

The sensor is mounted on the machine using the trigger stand (VIB 6.632). To adjust the sensor, the laser beam is pointed toward the measurement mark while the machine is at a standstill. As far as possible, the laser beam should be slightly inclined to the shaft surface and shaft axis.

### Safety notes

- Do not stare into the laser beam!
- Do not open the housing!

### Cleaning instructions

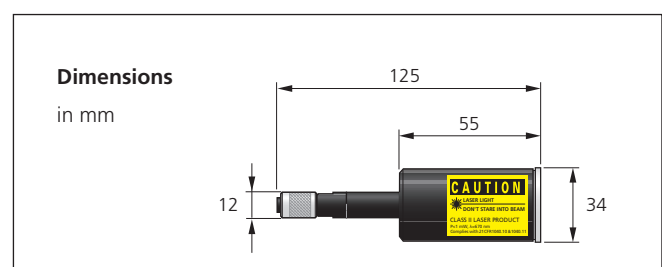
- Clean the lens with a moist cloth.
- Use water only. Do not use alcohol of any kind!
- Protect the lens from contamination with skin grease. Avoid direct contact. Do not touch with areas of the cloth that were previously touched.

### Accessories

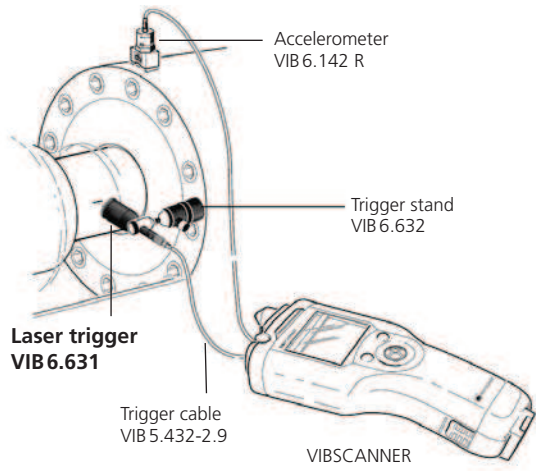
- VIB 6.632 Trigger stand
- VIB 5.432-2,9 Trigger cable
- VIB 3.306 Reflective tape (measurement mark)

### Technical data

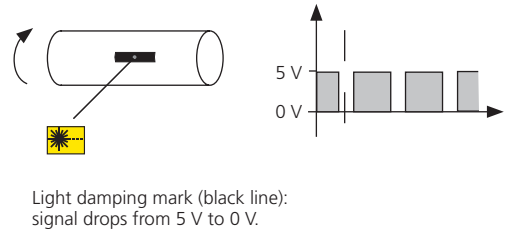
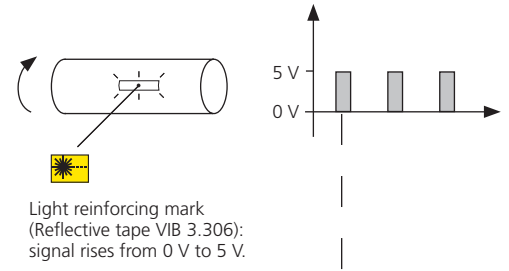
PARAMETER		VIB 6.631
Measurement	Measurement principle	optical
	Measurement range	0.1 ... 600'000 1/min.
	Measurement distance w/ reflective mark	0.05 ... 2 m
		w/ contrast mark
	Temperature range	-20 °C ... +50 °C
Electrical	Power requirement	< 5.8 V (from device)
	Output	5 V (TTL)
	Laser wave length	670 nm (red)
	Laser class	2 (DIN EN 60825-1, May 2008)
Mechanical	Connection	Trigger cable VIB 5.432-2,9
	Environmental protection	IP 65
	Weight	72 g
	Dimensions	see drawing



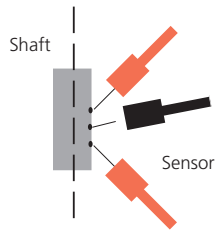
**Typical setup**



**Signal response**



**Adjusting**



Acceptable angular deviation:  
 $\pm 45^\circ$  (Reflective mark)  
 $\pm 15^\circ$  (Contrast mark)



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## VIB 6.631 EX: Laser trigger / Laser RPM sensor, intrinsically safe

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Laser / Sensor



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### Application

This sensor is used as a trigger for vibration measurements and for RPM measurements in a hazardous industrial environment. The signal acquisition and processing is carried out with an intrinsically safe PRÜFTECHNIK data collector (e.g. VIBSCANNER EX, VIBXPERT EX).

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For measurements outside a hazardous area the sensor can also be used with data collectors without EX protection.

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### Description

The sensor detects the signals optically, i.e. without having contact with rotating machine parts during the measurement. Red laser light is emitted from the sensor head and impinges on a mark on the rotating shaft. The mark can be light reinforcing (e.g. reflective tape VIB 3.306) or light damping (e.g. black, high-contrast line on a bright surface). Every time the optical system measures a brightness contrast, the sensor emits an electrical pulse. The data collector (VIBXPERT, VIBSCANNER) calculates the shaft speed based on the rate of repetition of this voltage pulse.

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### Installation and adjustment

The sensor is mounted on the machine using the trigger stand (VIB 6.632). To adjust the sensor, the laser beam is pointed toward the measurement mark while the machine is at a standstill. As far as possible, the laser beam should be slightly inclined to the shaft surface and shaft axis.

### Accessories

VIB 6.632	Trigger stand
VIB 5.432-2,9	Trigger cable
VIB 3.306	Reflective tape (measurement mark)

### Safety notes

- Do not stare into the laser beam!
- Do not open the housing!

### Cleaning instructions

- Clean the lens with a moist cloth.
- Use water only. Do not use alcohol of any kind!
- Protect the lens from contamination with skin grease. Avoid direct contact. Do not touch with areas of the cloth that were previously touched.

### Notes on intrinsic safety

The intrinsically safe laser trigger sensor of the series VIB 6.631 EX is only for „connection to a compatible measuring device/operating equipment with a separate EG type examination certificate“ or „for connection to certified intrinsically safe circuits that do not exceed the following maximum values:

$U_{max}$	12V DC
$P_{max}$	600 mW
$I_{i,max}$	160 mA
$C_i$	328 nF
$L_i$	negligible small

The details in the EC type examination certificate Zelm 10 ATEX 0429 must be considered.

Additionally the installation notes for hazardous areas annexed in this catalog and the european installation instructions must be followed (EN 60079-14:2003).

### Permissible cable

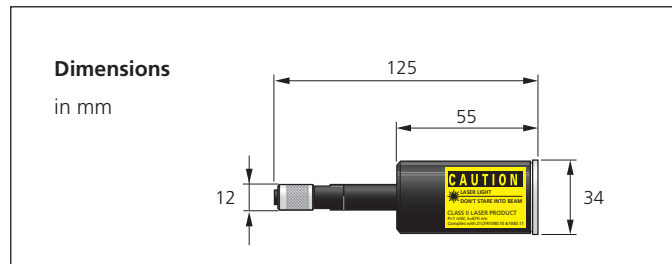
Cable for laser trigger sensor - VIB 5.432-2,9

### Service and maintenance

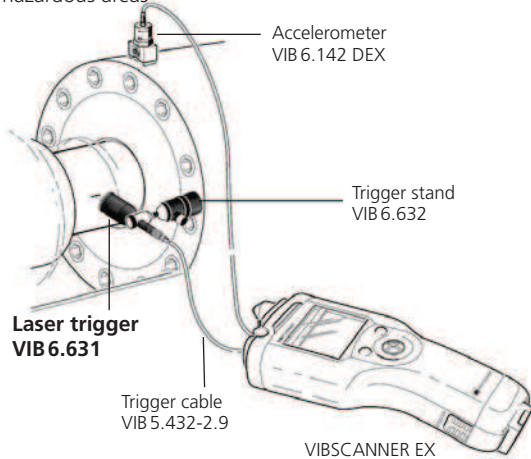
Service and maintenance cannot be performed on the sensor. If the sensor is damaged, it must be immediately removed from the hazardous area.

## Technical data

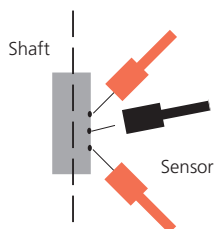
PARAMETER		VIB 6.631 EX
Measurement	Measurement principle	optical
	Measurement range	0.1 ... 600'000 1/min.
	Measurement distance w/ reflective mark	0.05 ... 2 m
		w/ contrast mark
	Temperature range	-20 °C ... +50 °C
Electrical	Power requirement	< 5.8 V (from device)
	Output	5 V (TTL)
	Laser wave length	670 nm (red)
	Laser class	2 (DIN EN 60825-1, May 2008)
Mechanical	Connection	Trigger cable VIB 5.432-2,9
	Environmental protection	IP 65
	Weight	72 g
	Dimensions	see drawing
	EX Marking	⊕ II 2 G Ex ib op is IIC T4



### Typical setup in hazardous areas

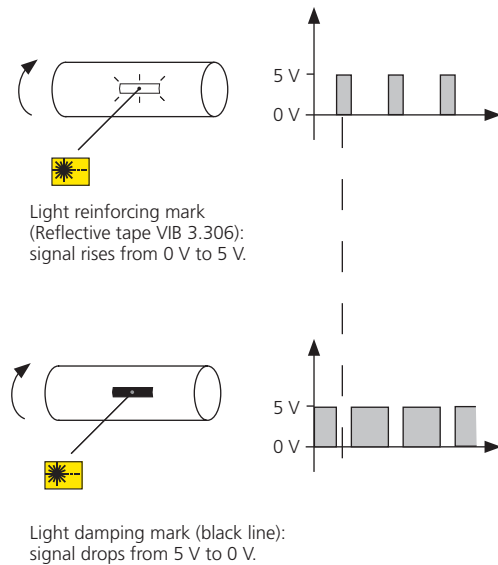


### Adjusting



Acceptable angular deviation:  
± 45° (Reflective mark)  
± 15° (Contrast mark)

### Signal response



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## VIB 6.640: Inductive proximity sensor for VIBXPRT incl. cable (3-15 mm)

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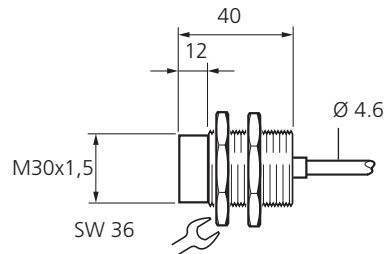
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Displacement / Expansion



Dimensions in mm

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### Application

The proximity sensor is used for contact-free measuring the gap of metallic objects within the specified range (3 - 15 mm).

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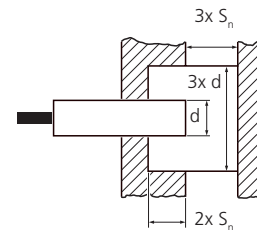
### Function

The sensor is suitable for measurements without the highest precision requirements. The linearization of the characteristic curve is automatically done in the VIBXPRT data collector.

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### Mounting

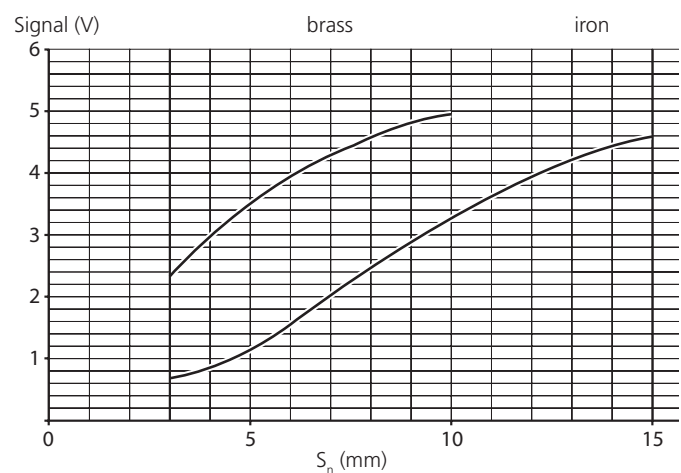
The through tapped hole enables the simple mounting and positioning of the sensor. The following notes according to EN 60947-5-2 for non-flush mounting in metal must be observed:



### Technical data

PARAMETER		VIB 6.640
Measurement	Measuring principle	Inductive
	Measurement variable	relative displacement / expansion
	Working range $S_n$	3 ... 15 mm
	Linearity	$\leq 5\%$
	Repeatability	$\leq 1\%$
	Average rise	0.333 V/mm $\pm 5\%$
	Max. frequency	300 Hz
	Influence $U_b$ on $U_a$ $dU_a/dU_b$	approx. 6.7% / 0.1V
	Temperature range	-25 °C ... +70 °C
Temperature drift	$\pm 5\%$	
Electrical	Operating voltage $U_b$	5 VDC, stabilized
	Operating current	$\leq 15\text{mA}$
	Output signal $U_a$	0.5 ... 4.5 VDC (see characteristic)
	Load resistance	$\geq 20\text{k}\Omega$
Mechanical	Case material	Brass, nickel-plated
	Material of active surface	PCP
	Environmental protection	IP 67
	Installation	Non-flush
	Connection	Cable with MiniSnap connector, 2.9 m long

### Characteristic



### Connection diagram

