

# PROTEC Process Monitor

## Compact Process and Tool Monitoring



**for Single-Purpose Application**  
Monitoring of a cut respectively a machining operation, collision monitoring  
**Overload, Missing and Contact Limit** process set-up by push-buttons and switches protected in the same housing, no Teach-In required

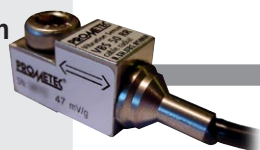
**Sensors:** Force, vibration, structure-borne sound, vibration speed; preamplifiers in casing

**PROTEC PES** for piezoelectric sensor signals, force sensors, in form of Measuring Pill, Measuring Cell, Measuring Wedge, Measuring Dowel, Measuring Bolt, etc.



**PROTEC VBS-VA** for monitoring of vibration acceleration

**PROTEC VBS-VV** for monitoring of vibration velocity/unbalance



ICP<sup>®</sup>-based vibration sensors, VBS sensors in different configurations

**PROTEC AES 30** for structure-borne sound sensor AE 30



**Process Monitor PROTEC PES** (for piezoelectric force sensors) for Process-accompanying and **continuous monitoring of process forces** at die cutting and bending operations, process forces at joining- and pancaking operations, all further production processes, which are carried out by applying forces at work pieces. **Tool and process monitoring** of machines and systems as well as quality assurance are further areas of application.

For example: **press capacity monitoring** on forming-, punch- and bending presses, achieved by elongation measurements on the press frame or **Mould protection** on plastic injection moulding- and aluminum die-cast machines etc. (photo: Tünkers, press capacity monitoring)



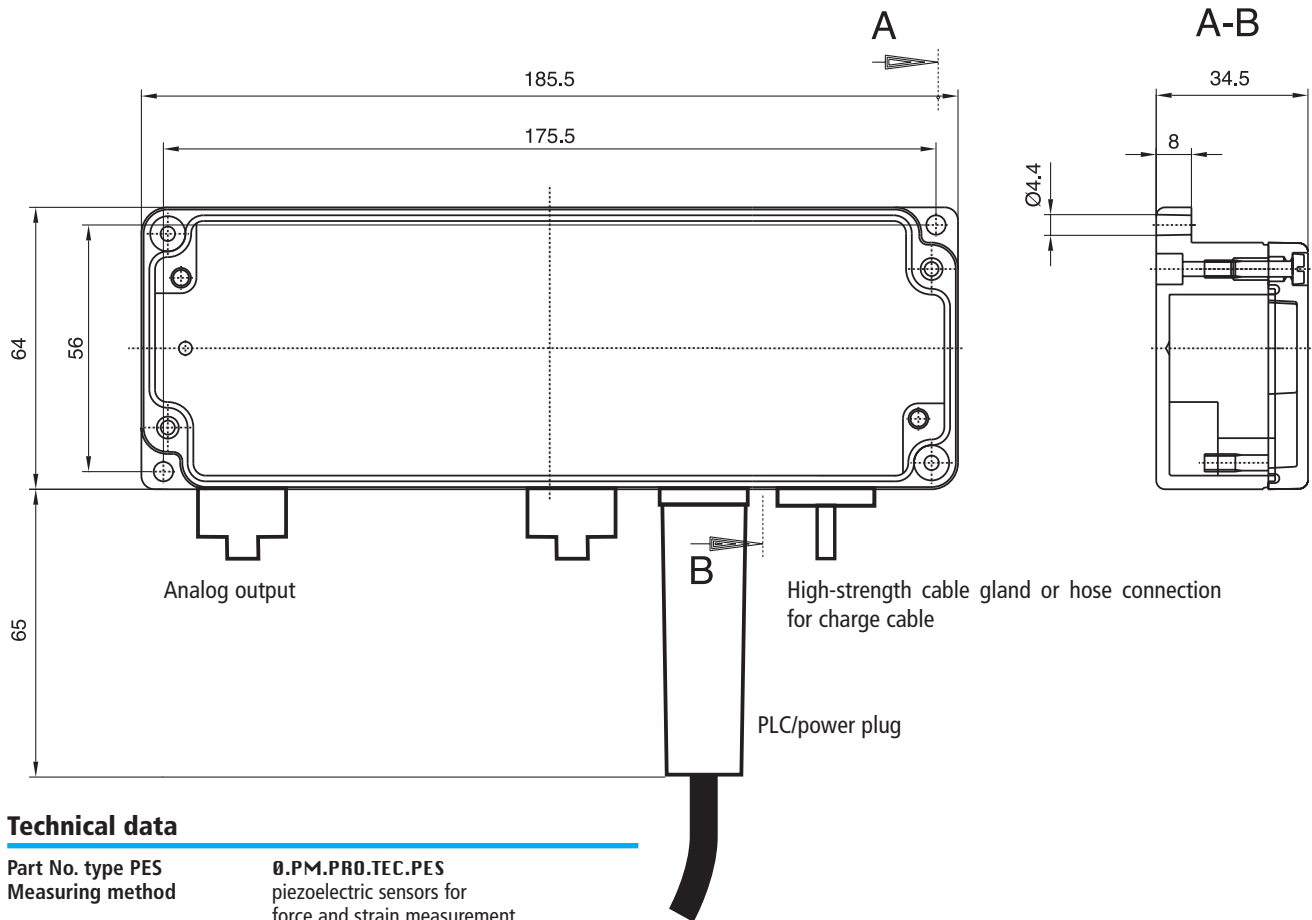
**Process Monitor PROTEC VBS** (for vibration sensors) **process-accompanying and continuous monitoring of acceleration/vibration signals** from all machining processes for a fast-stop of the machine at collision. **Also available as a variant for monitoring of vibration speed/unbalance.**

**Process Monitor PROTEC AES 30** (for PROMETEC Ultra Sound and Vibration Sensor AE 30) for **process monitoring on grinding machines.** Tool and process monitoring of machines and systems as well as quality assurance are further areas of application.

Examples are the use of ultra sound and vibration sensors to detect tool-workpiece contact in ultrasonic lapping operations resp. drill breakage detection or detection of missing tools. In simple turning applications, for example plunge or parting off operations, the ultra sound and vibration sensor can also be used.

**for**  
Lathes  
Machining Centers  
Transfer Lines  
Rotary Machines  
Robots  
Compressing, Joining  
Grinding Machines

**Measurements**

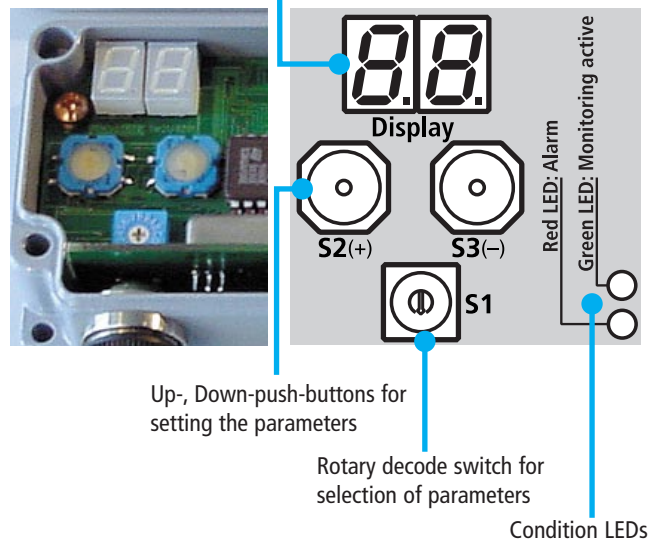


**Technical data**

<b>Part No. type PES</b> Measuring method	<b>0.PM.PRO.TEC.PES</b> piezoelectric sensors for force and strain measurement
<b>Part No. type VBS-VA</b> Measuring method	<b>0.PM.PRO.TEC.UBS</b> vibration sensors with ICP® interface (acceleration measurement)
<b>Part No. type VBS-VV</b> Measuring method	<b>0.PM.PRO.TEC.UBSUV</b> vibration sensors with ICP® interface (vibration velocity/unbalance)
<b>Part No. type AES 30</b> Measuring method	<b>0.PM.PRO.TEC.AES30</b> structure-bourne sound with AE 30 Sensor
<b>Interfaces/connections</b>	1 Sensor input 1 analog output 2 digital inputs 3 digital outputs, optical decoupled
<b>Limits</b>	2 independent, freely configurable (e.g. 2 Overload limits, 1 Overload + 1 Contact limit, or 1 Overload + 1 Missing limit)
<b>Digital inputs</b>	24V, 10mA
<b>Digital outputs</b>	24V, max. 10mA
<b>Analog output</b>	0 ... 10 V / 0(4) ... 20 mA
<b>Limit settings</b>	0...100%
<b>Delay time</b>	0...99ms
<b>Power supply/-consumption</b>	24VDC, approx. 10mA
<b>Protection</b>	IP67 (DIN 40050)
<b>Temperature range</b>	-10 ... 60°C [14 to 140° F]

**Operating and visualization**

Seven segment LEDs display the chosen or measured values



Subject to technical modifications  
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