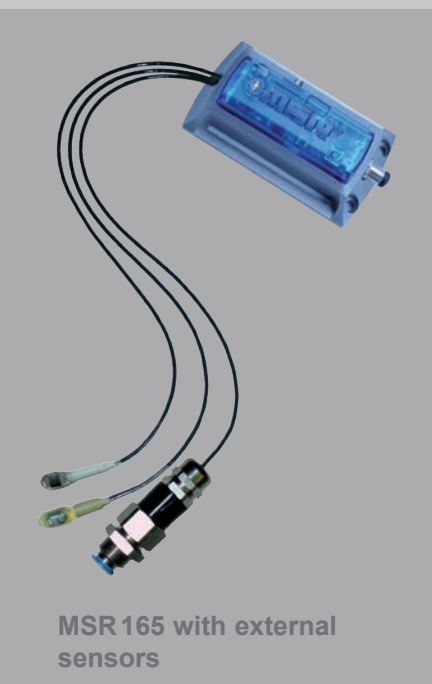
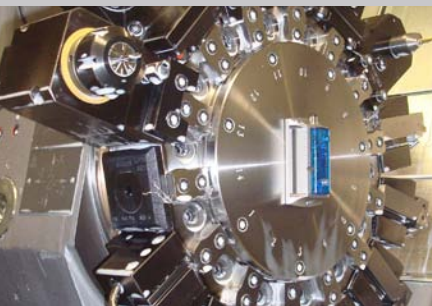


# MSR 165

## Datalogger for shock and vibration



The highest performance in the smallest space! The robust MSR 165 datalogger is capable of making 1600 acceleration (shock, vibrations) measurements per second in all three axes. Shock monitoring is possible up to  $\pm 15g$ , 32 measurement values are recorded even before the event takes place. This waterproof datalogger has extremely low power requirements due to its high-performance 3-axis accelerometer. Thanks to its rechargeable 900 mAh lithium-polymer battery the unit can record shock measurements over a period of six months.

The installed memory is capable of storing over two million measurement parameters which is sufficient for over 10000 shocks. Using an SD card ( $\geq 4GB$ ) the memory capacity can also be significantly increased which is particularly useful for recording vibration measurements. All saved measurements can be quickly transferred to a PC or laptop via the USB interface.

The basic specification of the MSR 165 includes a high resolution 3-axis acceleration sensor. In addition you can also record temperature, humidity, pressure, light and four analogue input signals.

### Basic specification and technical data

<b>Housing:</b>	Anodised aluminium case, PC, not encapsulated, waterproof (IP67)
<b>Size &amp; weight:</b>	39 x 23 x 72 mm, approx. 69g
<b>Medium:</b>	Air, various liquids
<b>Memory capacity:</b>	Over 2m measurement parameters, expandable to > 1bn
<b>Colour:</b>	Blue, anthracite
<b>Key:</b>	Set bookmark or start and stop recording
<b>Integrated sensor:</b>	3-axis digital accelerometer (13 Bit resolution)
<b>Working range:</b>	$\pm 15g$ , $-20\dots+65^\circ C$
<b>Accuracy:</b>	$\pm 0.15g$ ( $+25^\circ C$ )
<b>Measurement / storage rate:</b>	up to 1600/s ( $\pm 15\%$ )
<b>Power supply:</b>	<ul style="list-style-type: none"> <li>• Rechargeable lithium polymer battery 900 mAh</li> <li>• The battery is charged via the USB connection</li> <li>• At a measurement rate of 1600/s up to once every 12h, 3-axis acceleration data can be recorded over a period of six months</li> </ul>
<b>PC software:</b>	Free Setup, Reader, Viewer- & Online software (Windows 2000 / XP / Vista / 7)
<b>Interface:</b>	USB
<b>Operating conditions:</b>	Temperature $-20\dots+65^\circ C$
<b>Storage conditions:</b>	<ul style="list-style-type: none"> <li>• Temperature <math>+5\dots+45^\circ C</math> (ideal storage condition for the battery)</li> <li>• 10...95% relative humidity, non-condensing</li> </ul>
<b>Standards:</b>	The MSR 165 complies with EU-Directives RoHS/WEEE

### Measurement parameters for the additional sensors (internal and external)

In addition to 3-axis acceleration you can also simultaneously measure temperature, humidity, pressure and/or light using the MSR165 datalogger. There is a choice between internal and external sensors for these additional measurement parameters. The external sensors are available with cable lengths of 0.15m, 0.4m, 1.0m and 1.6m.

Measured parameters	Working range	Accuracy	Measurement/storage rate
<b>Temperature</b>	int.: -20...+65 °C	±0.5 °C (-10...+65 °C)	1/s to every 12h
	ext.: -55...+125 °C	±0.5 °C (-10...+65 °C) ±2 °C (-55...+125 °C)	
<b>Relative humidity</b> with integrated temperature	0...100% rel. humidity -20...+65 °C	±2% rel. humidity (10...85%, 0...+40 °C) ±4% rel. humidity (85...95%, 0...+40 °C)	1/s to every 12h
<b>Air pressure</b> absolute, with integrated temperature	0...2000 mbar absolute -20...+65 °C	±2.5 mbar (750...1100 mbar absolute, +25 °C)	1/s to every 12h
	optional: 0...14 bar absolute -20...+65 °C	±50 mbar (1...10 bar absolute, +25 °C)	
<b>Light</b>	0...65 000 lx	max. sensitivity at 500 nm	1/s to every 12h

### Additional analogue inputs for connecting third-party sensors

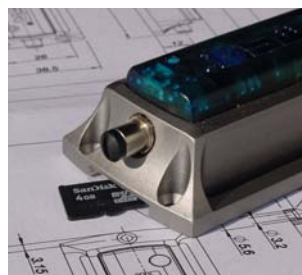
Should you wish to connect additional third-party sensors to your MSR 165 datalogger you can order four analogue inputs.

MSR 165 Analogue	Inputs
Inc. alarm output and input for starting and stopping data recording.	<p><b>4 analogue inputs</b> with freely selectable input configuration: 0...20 mA; 4...20 mA; 0...3.0V; 0.5...4.5V; 0...5.0V; 1.0...6.0V; 0...10.0V; 0...12.0V; 0...24.0V</p> <p><b>Resolution:</b> 12 Bit (max. 2 external sensors possible, light sensor not available)</p> <p><b>Measurement/storage rate:</b> 1/s (or 1000/s if the acceleration measurement rate is less than 1/s) up to every 12h</p>



### Expanding the memory capacity with an SD memory card

On request the MSR165 can be supplied with an interface for plugging in a standard SD card (one ≥4GB microSD card is included). Please note that this expansion slot with plugged-in microSD-card only meets the protection category IP60.



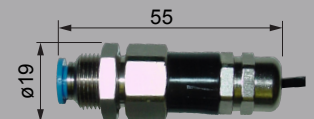
### Options:



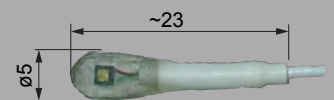
External temperature sensor



External humidity sensor



External air pressure sensor



External light sensor

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