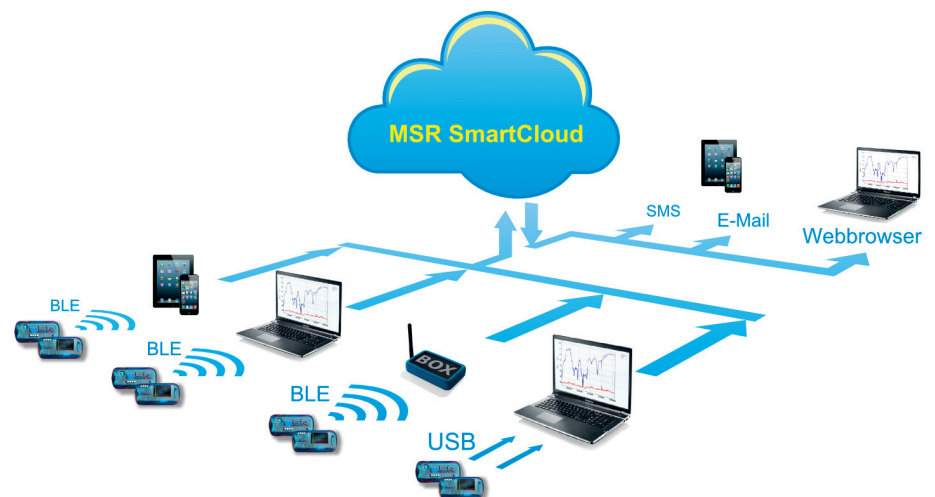**MSR**
Modular Signal Recorder

Swiss made

MSR145 wireless data logger with BLE, OLED display and MSR SmartCloud

Wireless monitoring of measured data and fast readings of measured values – the new features of the Bluetooth Low Energy Option and the OLED graphic display of the MSR145 mini data logger. Also new: the web-based "MSR SmartCloud" service for mobile data monitoring.

The BLE wireless radio link is particularly advantageous for applications that require monitoring of measured data from locations that are difficult to access, such as machine rotations. BLE allows the user immediate data visualisation irrespective of the location. You can recall the measured values on your smartphone, receive alarm messages via MSR SmartCloud and, if required, share data from multiple MSR145 data loggers with your team any time.
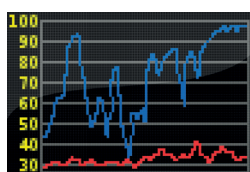

New: The web-based MSR SmartCloud service

MSR SmartCloud facilitates the storage of your measured data on a server via the Internet, allowing you to view, print or download the measured values of your data loggers to your PC for a detailed analysis, wherever you are. If you work in a team, you can grant fellow employees access to your measured data with a personal MSR SmartCloud login, thus facilitating efficient and easy co-operation.

MSR SmartCloud can notify you of incoming alarms via text messages and e-mail. Depending on the data logger type and existing infrastructure, measured data can enter the MSR SmartCloud in different ways: wireless using BLE via a smartphone, PC or a separate gateway; or using a USB cable via a PC.

Fast readings of measured values: MSR145 with brilliant OLED colour display

You can now equip the MSR145 data logger with a colour OLED display for a compact representation of data and graphic charts. The high screen resolution facilitates easy reading of measured values, even in total darkness and from virtually any viewing angle. The display is switched on and off manually; the desired display data can be configured in the MSR PC software program "Set up".

Technical data OLED display

- High-contrast, brilliant OLED (organic light-emitting diode) colour display to show data and graphical charts
- Resolution: 96 x 64 pixels
- Display area: 22.14 mm W x 15.42 mm H
- Fast response time: <10 µs
- Wide viewing angle >160°

For measurement mobility: MSR145 with Bluetooth Low Energy (BLE)

The wireless version of the MSR145 mini data logger facilitates easy and precise remote monitoring by means of the Bluetooth Low Energy short-range radio technology. You can use the smartphone app to recall the current and last recorded values at any time, without delay. A smartphone, a PC or our BLE receiver box can transmit the measured data to MSR SmartCloud, if required.

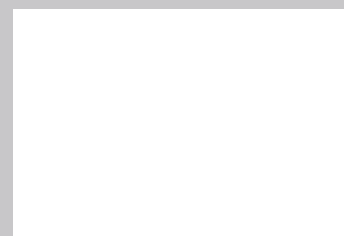### Technical data Bluetooth Low Energy

- Bluetooth Low Energy (Bluetooth 4.0 Smart) 2.4 GHz
- Radio range: approx. 10 m
- Communication with multiple MSR data loggers possible
- Alarm function, transmission to MSR SmartCloud
- Free smartphone app (from iPhone 4S, iPad 3, also planned for android)
- Compatible with Windows or Linux PC (Bluetooth dongle available)
- Sturdy BLE receiver box available as gateway

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Distributor:

The MSR145 data loggers with the BLE and OLED options and the web-based MSR SmartCloud service will be available from August 2013. Please contact us for prices and delivery conditions.

MSR 145
Revolutionary mini data logger

The prize-winning MSR 145 is the world's first miniaturised datalogger to have integrated temperature, humidity, pressure, light and 3-axis acceleration sensors. An additional two or four analogue inputs are provided for connecting external sensors. This tiny multitalent stores up to 2 000 000 measured values and is also available as a sealed watertight version. Freely selectable measurement rates of up to 50 values per second guarantee uninterrupted documentation of rapid processes. For long-term measurements, the MSR 145 datalogger has been fitted with a 900 mAh lithium polymer battery allowing you to easily record measured values over a period of up to two years.

The housing, the battery and measurement parameters, together with the type and number of sensors (internal and external) can be configured individually – you pay only for what you really need!

General technical data

Memory capacity:	Over 2 000 000 measured values – expandable to over 1bn measured values with optional microSD card.
Push-button:	Set bookmark or start and stop recording.
LED:	blue: Record indicator red: Alarm indicator yellow: Battery change indicator
Power supply:	• Lithium-polymer battery, 260 mAh or 900 mAh. • The battery is charged via the USB connection.
Options:	Charging station (USB hub) for 7 MSR 145
Interface:	USB
PC software:	Free Setup, Reader, Viewer and Online software (Windows 2000 / XP / Vista / 7 / 8) to record and evaluate data. All measured values can be rapidly transferred to a PC via USB connection both during the measurement operation and once the measurement task has been completed. Thanks to the integrated clock (RTC), data from as many MSR 145 units as required can be synchronised and merged into a single data record.
Operating conditions: **Storage conditions:**	• Temperature -20…+65 °C • Temperature +5…+45° C (ideal storage conditions for the battery) • 10…95% relative humidity, non-condensing
Standards:	The MSR 145 complies with EU-Directives RoHS / WEEE.

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MSR 145 with external sensors

MSR 145 with microSD card

Housing and battery selection

Housing	Sheat material battery capacity	Picture	Size & weight	Medium
Standard IP 60	PC housing 260 mAh		20 x 15 x 52 mm approx. 16 g	Air
	PC housing 900 mAh		39 x 23 x 72 mm approx. 56 g	
Waterproof IP 67	Silicon tube 260 mAh		18 x 14 x 62 mm approx. 18 g	Air, various liquids
	PC housing 260 mAh		20 x 15 x 61 mm approx. 23 g	
	PC housing 900 mAh		39 x 23 x 72 mm approx. 64 g	

Selection of Sensors

Make an individual assembly of your MSR145 data logger and select the requested internal and external sensors (cable length 0.20 m, 1.0 m, 1.6 m).

Measured parameters	Working range	Accuracy	Measurement/ storage rate
Temperatur	ext.: -10…+58 °C	±0.1 °C (+5…+45 °C) ±0.2 °C (-10…+58 °C)	1/s to every 12 h
	ext.: -55...+125 °C	±0.5 °C (-10…+65 °C) ±2 °C (-55…+125 °C)	
	int.: -20…+65 °C	±0.5 °C (-10…+65 °C) ±2 °C (-55… +125 °C)	
	ext.: 1 or 4 connectors for K-type thermocouples (excluding sensor) -250…+1200 °C		
Relative humidity with integrated temperature	0…100% rel. humidity ext. -20…+85 °C int. -20…+65 °C	±2% rel. humidity (10…85%, 0…+40 °C) ±4% rel. humidity (85…95%, 0…+40 °C)	1/s to every 12 h
Air pressure absolute, with integrated temperature	0…2000 mbar absolute ext. -20…+85 °C int. -20…+65 °C	±2.5 mbar (750…1100 mbar absolute, +25 °C)	10/s to every 12 h
	0…14 bar absolute -20…+65 °C	±50 mbar (1…10 bar absolute, +25 °C)	
Fluid pressure (external sensor) Material in contact with media: • Stainless Steel AISI 316L (DIN1.4404/1.4435) • O-Rings: Viton® 70° Shore	0…3000 mbar absolute -20…+85 °C	±30 mbar	20/s to every 12 h
	0...30 bar absolute -20...+85 °C	±300 mbar	
3-axis-acceleration (Position)	±15 g -20…+65 °C	±0.15 g (+25 °C)	50/s to every 12 h
Light	0…65'000 lx	max. sensitivity at 500 nm	1/s to every 12 h

Additional analogue inputs for connecting third-party sensors

MSR 145 Analogue		Technical data
	Including alarm output and input for starting and stopping data recording.	**2 or 4 analogue inputs** with freely selectable input configuration: 0…20 mA; 4…20 mA; 0…3.0 V; 0.5…4.5 V; 0…5.0 V; 1.0…6.0 V; 0…10.0 V; 0…12.0 V; 0…24.0 V **Resolution:** 12 Bit

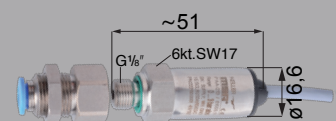**Please contact us for prices and terms of delivery.**

Modular Signal Recorder

~23
ø5
External temperature sensor

50
ø13
Connector for thermocouples

~23
ø6
External humidity sensor

~51
G1/8" 6kt.SW17
ø16,6
External fluid pressure sensor

~23
ø5
External light sensor

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