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MB08.1

Measurement Amplifier for SMT Systems for Supplying and Acquiring Ratiometric Transducers

Using the bridge amplifier MB08.1, up to eight ohmic and piezoresistive full and half bridges can be acquired. Every channel can be adapted individually and flexibly to the specific measuring bridge.

Areas of Application

- Acquisition of forces, torque and pressure using strain gauges
- Acquisition of piezoresistive acceleration transducers
- Distance measurements with potentiometers

Advantages

- Simple parameterization using transducer memory
- High precision with regulation of the bridge supply using sense lines
- No external components for sensor supply and bridge completion
- Optimum adaptation of signal amplitude with flexible sensor supply
- Higher measurement resolution with offset compensation of half bridges
- Optical indication of channel and module state

Signal Conditioning

The signal conditioning of the measurement amplifier can be parameterized per channel. This allows, for example, flexible setting of the transducer supply and the completion of connected half bridges to full bridges without additional components. This makes it possible to operate different measuring bridges on the same measurement amplifier at the same time.

Measurement Calculation

The bridge amplifier is suitable both for linear and non-linear transducers. In the case of linear transfer behavior, measured values are calculated on the basis of transducer sensitivity and offset. For the acquisition of non-linear transducers, polynomials up to the sixth order can be configured with freely selectable coefficients.

Transducer Memory

If required, all relevant channel parameters can be stored in the electronic data sheet of the transducer. This not only reduces the amount of time required for configuration but also reduces the risk of incorrect parameterization. Typical user errors such as a transducer supply that has been set incorrectly or resolution loss due to unsuitable measurement ranges, are thus impossible.

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Technical Data

General	
Number of channels	8
Transducers	Ohmic and piezoresistive full and half bridges (ratiometric signal acquisition)
Sampling rate	100 kSPS, time-synchronous over all channels
Data rate	1 SPS … 50 kSPS online, can be set per module
Transducer memory	TEDS ready
Measuring Input	
Connection types	5-wire and 4-wire with full bridges 4-wire and 3-wire with half bridges
Bridge expansion (internal)	Half bridge
Sensitivity	0.3125 mV/V … 500 mV/V
Input impedance	≥10 MΩ
Bridge resistance	120 Ω … 2 kΩ
Resolution	16 bit
Anti-aliasing filters	Butterworth, 6th order, 16 kHz, can be switched on per channel
Digital filters	FIR 10 Hz … 10 kHz, in stages, can be set per module
Measurement uncertainty	≤1.0 % of the measurement range at 0.3125 mV/V ≤0.5 % of the measurement range between 0.625 mV/V and 1.25 mV/V ≤0.3 % of the measurement range between 2.5 mV/V and 500 mV/V Via use temperature range, at 10 Hz
Galvanic isolation	No
Sensor Supply	
Output voltage	0 V … +5 V, resolution 16 bit
Output current	≤30 mA per channel, current-limited, short-circuit-proof
Galvanic isolation	No
Environmental Conditions	
Storage	-30 °C … +85 °C, 10 % … 90 % rel. humidity, non-condensing
Operation	-30 °C … +70 °C, 10 % … 90 % rel. humidity, non-condensing

Order Numbers

MB08.1	Measurement amplifier for SMT systems for supplying and acquiring ratiometric transducers (8 channels)
MB08.1-CAL	MB08.1 calibration
MB08.1-ADJ	MB08.1 adjustment

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