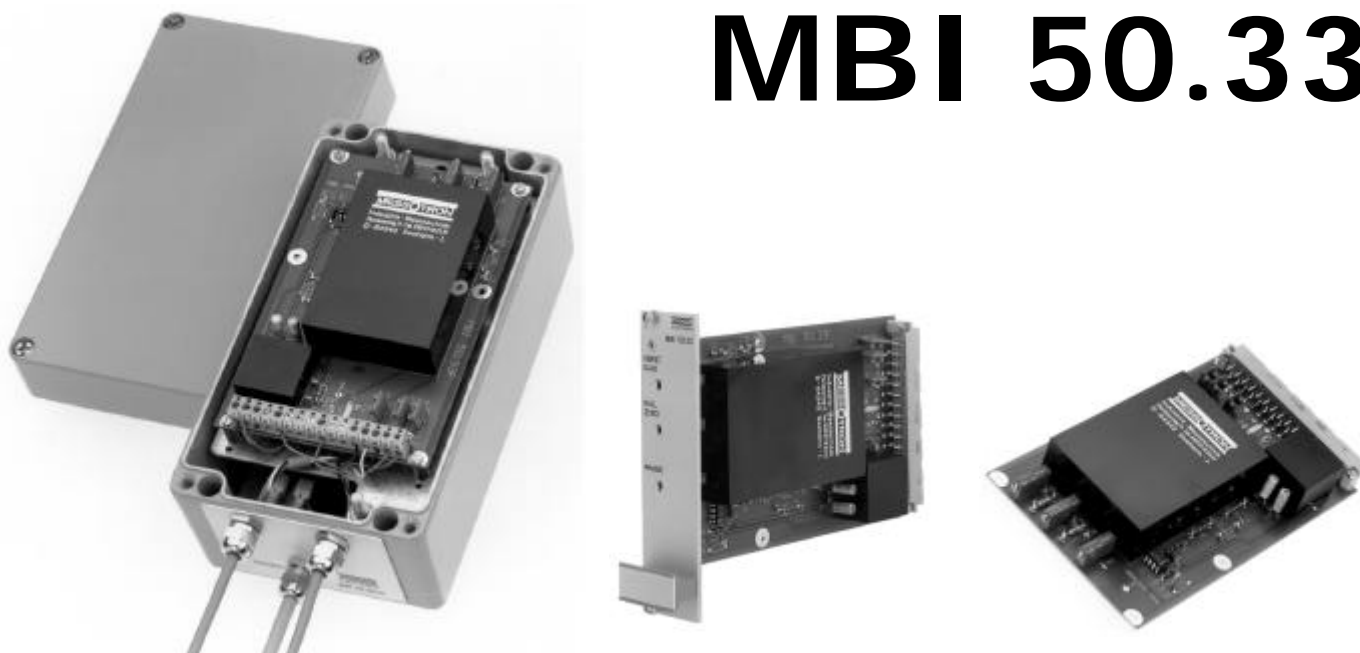


CARRIER FREQUENCY MEASURING AMPLIFIER

MBI 50.33



The measuring amplifier MBI 50.33 is a high precision amplifier for operation of inductive measuring transducers in connection with differential inductor or differential transformer sensors as well as strain gauges in full or half bridge configuration.

- ↻ Regulated, symmetric sine oscillator with constant amplitude
- ↻ Low temperature drift
- ↻ High signal-to-noise ratio, noise level $< 2 \text{ mV}$
- ↻ Low required sensitivity of 1 mV/V
- ↻ Robust design on European standard size PCB or in housing
- ↻ Compatible with 19"-assemblies and 19"- housings
- ↻ Output 10 V or $4 \dots 20 \text{ mA}$
- ↻ Easy zero-value adjustment

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Technical description

The carrier frequency measuring amplifier MBI 50.33 supplies the 5 kHz bridge circuitry voltage required for operating inductive measuring transducers and it interprets the signal from the transducer. The bridge circuitry voltage is set on the PCB via a resistor.

The amplifier is available with either a voltage output (max. ±10 V) or a current output (4 ... 20 mA). The voltage out put can be set to ±1 V ... ±10 V. The zero-value is adjustable to any value within the full measuring range.

Due to its excellent technical performance capabilities, the amplifier can be used in extreme cases, e.g. in connection with low-sensitivity transducers, under variable temperature conditions or with high operating frequencies.

The carrier frequency measuring amplifier MBI 50.33 is accommodated on a European standard size PCB 100 x 160 mm. It can directly be inserted into 19"-units or racks, interfacing via a DIN 41612 connector or, optionally, a terminal block. As another option, a housing-integrated (IP 65) version is available.

Adjustment is possible of zero-value setting and the gain. Coarse setting is done via resistors, fine adjustment via trimmers or 10-turn precision potentiometers, according to type. These are accommodated on the front panel - no adjustment on the PCB is required.

In connection with MESSOTRON transducers the adjustments are effected before delivery.

Types

Euro PCB **without front panel**, trimmers for gain, zero-value setting and phase adaptation, supply voltage ±15 V

MBI 50.33.5	10 V output
MBI 50.33.7	4 ... 20 mA output

Euro PCB **with front panel**, trimmers for gain, zero-value setting and phase adaptation, supply voltage ±15 V

MBI 50.33.3	10 V output
MBI 50.33.8	4 ... 20 mA output

Euro PCB without front panel, **10-turn precision potentiometers** for gain and zero-value setting, trimmer for phase adaptation, supply voltage ±15 V

MBI 50.33.1	10 V output
MBI 50.33.9	4 ... 20 mA output

Amplifier in **housing** (IP65), trimmers for gain, zero-value setting and phase adaptation, supply voltage 220 V~

MBI 50.33.10	10 V output
MBI 50.33.12	4 ... 20 mA output

Note: The 10 V port delivers an output signal of **±10 V with symmetric systems** (most standard inductive transducers), **with asymmetric systems** (e.g. MESSOTRON transducers type WP) between **0 ... 10 V**. Signal customisation is possible (option).

Specifications

Suitable transducers

Type	inductive transducer in differential inductor or differential transformer circuit; strain gauge transducer in full or half-bridge configuration
Required sensitivity	1 ... 200 mV/V

Oscillator

Carrier frequency	5 kHz $\pm 5\%$ (sinusoidal)
Bridge supply voltage	1 ... 10 V _{eff} , adjustable through resistor
Oscillator max. available power	0.35 VA

Amplifier

Linearity error	< 0.1%
Temperature coefficient of zero-value	< 0.01% /10K @ gain of 1000
Temperature coefficient of sensitivity	< 0.02% /10K @ gain of 1000
Noise level (Residual carrier voltage)	< 2 mV _{eff} @ gain of 1000
Input resistance	> 1 M Ω
Max. load current	10 mA
Zero-value adjustment range	approx. $\pm 10\%$ of max. measuring range value; optionally, up to 100%
Cut-off frequency of measuring signal (-3 dB)	700 Hz

General technical data

Consumption max.	75 mA @ ± 15 V supply without current booster 100 mA @ ± 15 V supply with current booster
Zero-value adjustment	by trimmer or potentiometer
Gain adjustment	fine by trimmer or potentiometer coarse by resistor
Phase adaptation	by trimmer
Interface	connector acc. to DIN 41612, 32-pin, type C special version:: 16-pin terminal
Mating part	multiple contact strip (DIN 41612) 32-pin, type C / D
Operating temperature	0 ... 60°C
Storage temperature	-25 ... 85°C

Type dependent technical data

Supply	± 15 V stabilised; 220V~ with housing
Output	± 10 V; 4 ... 20 mA
Dimensions (without front panel and housing)	approx. 100 x 167 x 25 mm
Front panel dimensions	35.3 x 128.4 mm (1.9" x 5.1")
Mass (without front panel and housing)	approx. 0.22 kg
Mass with front panel	approx. 0.25 kg
Dimensions and mass of housing-integrated amplifier are specified on the dedicated data sheet 'Amplifier with housing'.	

Subject to alteration
06/96