

Features

- standard, compact, flexible, reasonable
- differential input
- measured quantities: voltage, current
- electrically isolated
- output filter 6dB/Okt.

Applications

- supervision of processes
- development
- research and science



A reasonable and space-saving solution for isolated processing of analog signals is introduced by the miniature amplifiers **MAL-ISO50/10/5/1** for voltage or current.

The measuring amplifier serves for

... electrical isolation ...

as well as for the adjustment and amplification of sensor signals.

The amplifier types we offer differ in their measuring range. Via soldering jumpers on the underside of the board **MAL-ISO1** can be set to current measurement.

Regarding size and pin assignment the **MAL-ISO50/10/5/1** module is

... compatible ...

to the product of other manufacturers with an output voltage of $\pm 5V$. Measuring range and offset have been adjusted ex works.

In type of construction

... like a 24-pole IC ...

the measuring amplifier can be plugged on a carrier board (*BP16*, *BP16-PC*, *BP2*, *BP2-BOX*, *BP104*).

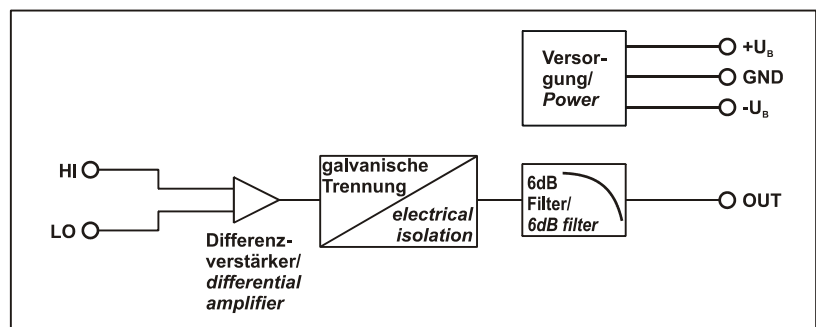
The differential amplifier at the input and the output filter integrated in the module guarantee a high noise suppression.

For the amplification of other physical quantities the miniature amplifiers of the *MAL-xx* series are available.

Available versions of the MAL-ISO10/5/1 measuring amplifiers

Product	Physical quantity	Measuring range
MAL-ISO50	voltage	$\pm 50V$
MAL-ISO10	voltage	$\pm 10V$
MAL-ISO5	voltage	$\pm 5V$
MAL-ISO1	voltage or current	$\pm 1V$ (factory setting), $\pm 20mA$

Block diagram

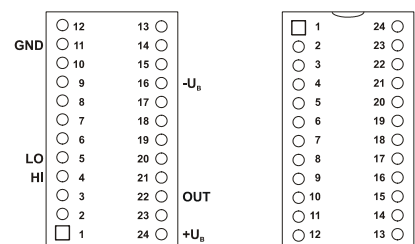


Installation

The measuring amplifier is plugged on a 24-pole socket. If the marking of the socket is on the left hand side, pin 1 is on the bottom left.



Check for correct poling. Change modules only at no load!



Ansicht von unten/
Bottom view

Ansicht von oben/
Top view

Pin assignment

The pin assignment of the modules is illustrated in the figure above and in the following table.

Pin	Name	Function	Pin	Name	Function	Pin	Name	Function
1	n. c.	-	9	n. c.	-	17	n. c.	-
2	n. c.	-	10	n. c.	-	18	n. c.	-
3	n. c.	-	11	GND	ground (GND)	19	n. c.	-
4	+IN	HI signal input	12	n. c.	-	20	n. c.	-
5	-IN	LO signal input	13	n. c.	-	21	n. c.	-
6	n. c.	-	14	n. c.	-	22	OUT	amplifier output ($\pm 5V$)
7	n. c.	-	15	n. c.	-	23	n. c.	-
8	n. c.	-	16	-U _B	supply -7.5V...-15V	24	+U _B	supply +7.5V...+15V

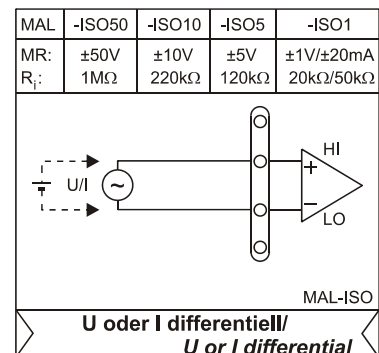
Connecting examples MAL-ISO50/10/5/1

Voltage DC or current DC

The module output is proportional to the input voltage. For current measurement a 50 Ω shunt is activated (close PL1).



Do not connect any power sources, as otherwise the shunt might be overloaded!



Important notes for using the MAL-ISO50/10/5/1

- The **MAL-ISO50/10/5/1** is only suitable for extra-low voltages - please observe the relevant regulations!
- For the power supply, an electrically isolated power unit (with CE) must be used. Before mounting the module onto the carrier board turn off the power.
- All accessible pins are electrostatic devices. Workplace must be conductive during installation.
- For reasons relating to EMC the **MAL-ISO50/10/5/1** must only be operated in closed housings.
- Use screened cables! For a good noise suppression connect the shield of the sensor lines at one end only.
- For cleaning use water and mild detergent only. The product is designed to be maintenance-free.
- The product must not be used for safety-relevant tasks. By using or processing this product the customer becomes manufacturer by law and therefore is responsible for the proper installation, use and handling of the product. In case of improper use or unauthorized interference our warranty ceases and any warranty claims are excluded.



Do not dispose of the product in the domestic waste or at any waste collection places. It has to be either duly disposed according to the WEEE Directive or can be returned to bmcm at your own expense.

Technical data MAL-ISO50/10/5/1 (typ. at 20°C, +/-7.5V supply, after 5min.)

Measuring ranges

Measuring range DC:

Input resistance (diff./unipolar):

MAL-ISO50	MAL-ISO10	MAL-ISO5	MAL-ISO1
$\pm 50V$	$\pm 10V$	$\pm 5V$	$\pm 1V$ or 20mA (PL1 closed)
1M Ω	220k Ω	120k Ω	20k Ω or 50 Ω

The values for accuracy always relate to the respective measured value. Errors might add at worst.

Input / output range

Input suppressor circuit for 1sec.:

Output // Output load // Power supply:

Bandwidth // Filter 1-pole (6dB/Oct.) f_g:

Temperature drift // Accuracy (typical):

Output ripple // Output supply sensitivity:

CE standards:

ElektroG // ear registration // protection type:

ESD resistance // max. perm. potentials:

Dimensions // rel. humidity // temp. range:

Guarantee:

max. 200V (not in case of current measurement)
$\pm 5V$ // >1k Ω ; recomb. >10k Ω for 0.1% acc. // $\pm 7.5V$ DC (app. 6mA) .. $\pm 15VDC$ (app. 10mA)
50Hz // app. 160Hz
50ppm/°C // MAL-ISO50: 0.2%; MAL-ISO10/5/1: 0.1%
typ. 5mV _{ss} at app. 100kHz (of BP16 - DC/DC converter) // typ. $\pm 10mV/V$
EN61000-6-1, EN61000-6-3, EN61010-1; for decl. of conformity (PDF) visit www.bmcm.de
RoHS and WEEE compliant // WEEE Reg.-No. DE75472248 // IP30
ESD 1000V // 60V DC (acc. to VDE)
33x20x15mm // 0-90% not condensing // -25°C...+70°C
2 years with effect from sales date, damages resulting from improper use excluded

Manufacturer: BMC Messsysteme GmbH. Subject to change due to technical improvements. Errors and printing errors excepted. Rev. 1.1 03/31/2008