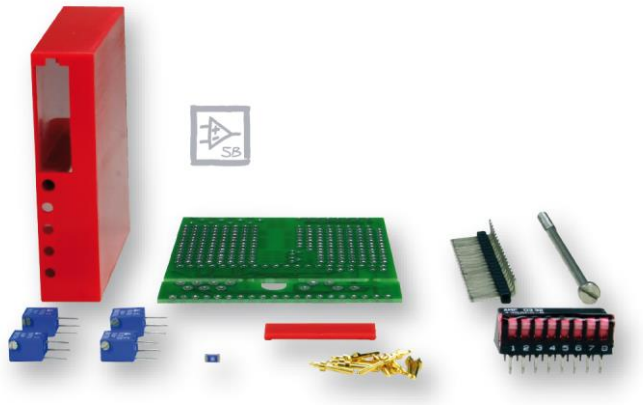
bmc messsysteme gmbh

MA-KIT

Construction kit for 5B modules (5B)



Self-made. Individual.

The construction kit MA-KIT allows for the realization of special applications compatible to the 5B module series. It includes a stripboard with SMD pads which is assembled conventionally or with SMD components and integrated in a 5B module housing.

5B technology. Industrial standard.

The pin assignment of the 5B module corresponds to the 5B module standard of Analog Devices and Burr Brown. An additional 0EX pin has been introduced for sensors requiring unipolar supply to be suitable for connection.

It's the setting that matters.

Numerous functions can be implemented which are configurable via 8 DIP switches and soldering bridges. 4 potentiometers can be used for calibration.

Basic functionality.

Basic functions are already provided on the board, which are selected by connecting solder bridges on the bottom side of the module.

Clearly safe.

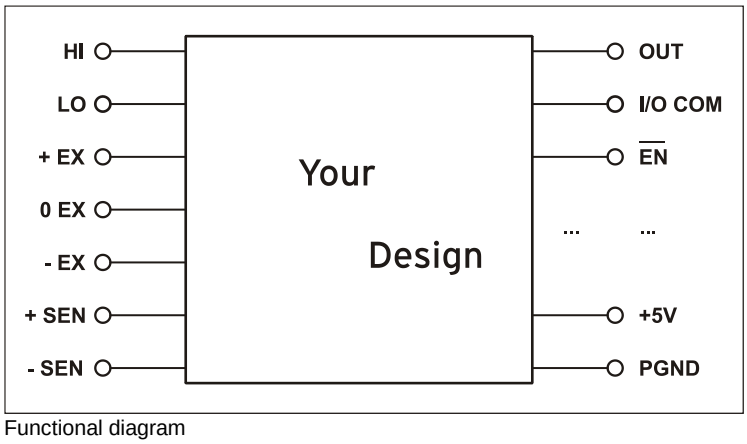
A Multifuse protects the module against overload. In this case, it is sufficient to interrupt the power supply. The Multifuse will be regenerated after one minute.

Compatibility.

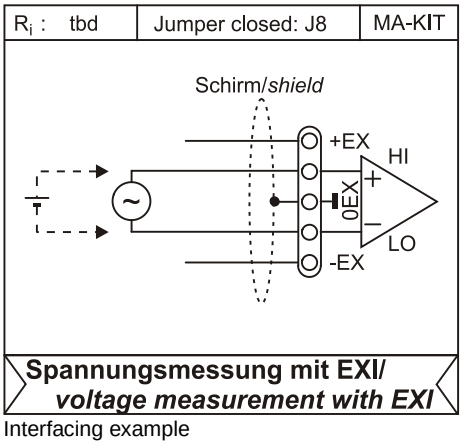
The MA series provides a great variety of measuring amplifiers, measuring converters, or filter modules. They can be used in any combination allowing for the solution of the most individual measuring tasks.

Get connected.

With the backplanes (AP series) and amplifier systems (AMS series) for 5B modules varying in size and design, signal connection is easy



Functional diagram



Interfacing example

1 Delivery

Please verify the number of included single components by means of the product picture (see p. 1):

- housing with cover, fixing screw
- 2 connected blank strip boards, 20-pin angled pin plug
- 4 potentiometers, DIP switch
- 10 pins
- fuse (Multifuse)

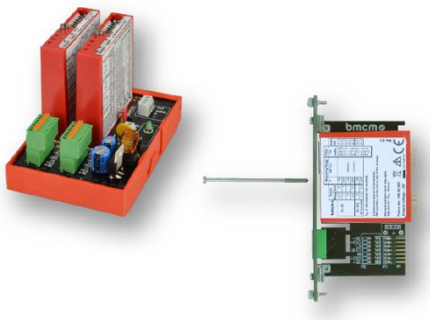
2 Assembly instructions

- The panel is broken in two and the parts jutting out are removed with a file.
- The 20-pin angled pin connector is soldered onto the big stripboard on the "-TL" labeled side.
- The required golden pins and the fuse (F1) are soldered onto the small board on the "-TL-" labeled side.
- The two boards are soldered together as illustrated on the left side.
- If necessary, the operating elements (potentiometers and DIP switch) accessible from the outside can be soldered as illustrated on the left side.
- To permanently fix the board into the housing, we recommend to put glue (e.g. Pattex) in the guide rails of the housing and to carefully push the board into the housing.
- Finally the included screw is twisted with light pressure into the housing.

Make sure that the two boards are aligned to each other in a right angle and that the adjusting screws of the potentiometers are correctly positioned.

3 Installation

For a tight installation, the 5B module is plugged into a backplane (AP series) or into an amplifier system (AMS series) from bmcm and fixed with a screw (see chapter 5). The sensor or signal is attached to the relevant connector provided by the backplane or the amplifier system.
If the module is integrated in systems of other manufacturers (e.g. Analog Devices, Burr Brown), the additional 0EX pin (see chapter 4.4) introduced for special measuring applications and for screening purposes must be removed.



- **Ensure that the settings of the DIP switches and the soldering bridges are correct (see chapters 4.1 and 4.3) before installing the modules.**
- **When inserting the modules, the power of the connection system must be turned off.**

4 Connections, operating elements, and assignments

4.1 DIP switches

Functions are selected via 8 DIP switches on the module front. The figure on the right shows in which position a switch (white) is set to on or off.

4.2 Trim potentiometers

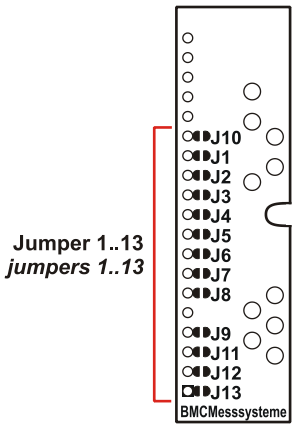
To calibrate the 5B module (e.g. offset, gain), four trim potentiometers are provided for adjustment on the front side of the module.

Recalibration is usually required after changing a function.

4.3 Solder jumpers

The solder bridges on the bottom of the module provide numerous functions if fitted with the relevant components.

Jumper	Function
J10, J1, J2, J3, J4, J5, J6	user-defined
J7	LO to 0EX (input ground)
J8	HI direct input
J9	EX
J11	-EX
J12	+SEN
J13	-SEN

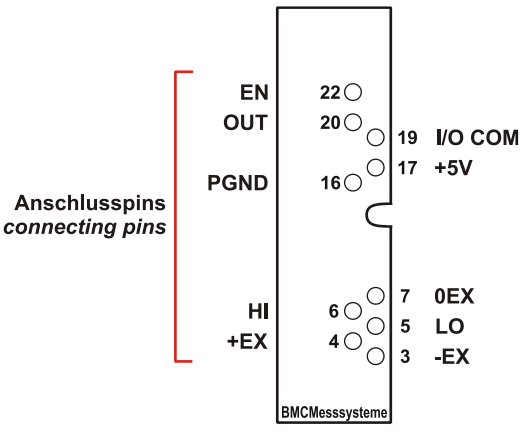


To prevent the modules from being damaged, close only jumpers required for the relevant application.

4.4 Connection pins

The following table and figure show the assignment of the connection pins of the measuring amplifier.

Pin	Assignment	Function
22	EN	enable input
20	OUT	output signal
19	I/O COM	output ground
17	+5V	+5V supply
16	PGND	power ground
7	0EX	0V potential of the input amplifier
6	HI	positive measuring amplifier input
5	LO	negative measuring amplifier input
4	+EX	positive supply voltage
3	-EX	negative supply voltage



The pin assignment of the MA-KIT corresponds to the 5B modules of Analog Devices and Burr Brown. An additional 0EX pin (pin 7) has been introduced as reference for +EX and -EX.
If using a non-bmcm backplane that does not provide a relating connection, this pin has to be removed. Then, however, a reference of the ±EX pins is only possible via the LO pin with J7 being closed. This is a specific assignment of BMC Messsysteme GmbH. The 0EX pin is not connected in modules of other manufacturers.

If using backplanes from other manufacturers, such as Analog Devices or Burr Brown, with integrated cold-junction compensation, the sensor terminals -SEN and +SEN of the measuring amplifier have to be deactivated (open J12, J13), or the cold-junction compensation on the backplanes must be disabled.

5 Supplementary products

Amplifier systems (AMS series) and backplanes (AP series) from bmcm allow the comfortable connection to the data acquisition system and the sensor supply. A variety different in size and design is available.
The 5B modules (MA series) can be used in any combination.
Further information about supplementary products is available on the website at www.bmcm.de/us.

6 Important notes for using the MA-KIT

- The module is only suitable for extra-low voltages - please observe the relevant regulations! The measuring amplifier must only be operated in closed housings (for reasons relating to EMC).
- All accessible pins are electrostatic sensitive devices. Provide for a grounded conductive work place. ESD voltages on open lines may cause malfunction. Only use an electrical isolated power supply unit (with CE).
- Only use non-solvent detergents for cleaning. The product is designed to be maintenance-free.
- As reference for the EX voltages or for screening purposes, a 0EX terminal was defined, which, however, can be removed if necessary. These EX voltages are not overload-proof.
- Turn off the power before mounting the module into the backplane.
- If the fastening screw is fixed too tightly, the module or the backplane may be damaged.
- The module must not be used for safety-relevant tasks. With the use of the product, the customer becomes manufacturer by law and is therefore fully responsible for the proper installation and use of the product. In the case of improper use and/or unauthorized interference, our warranty ceases and any warranty claim is 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.

7 Technical data

(typ. at 20°C, after 15min., +5V supply)

- General data

Voltage supply:	+5V DC (±5%), protected with Multifuse
Current:	to be defined by user, max. 250mA
CE standards:	to be defined by user
ElektroG // ear registration:	RoHS and WEEE compliant // WEEE Reg.-No. DE75472248
Temperature ranges // Relative humidity:	operating temp. to be defined by user, storage temp. –25°C..+70°C // 0 - 90% (not condensing)
Max. permissible potentials // Protection type:	**60V DC acc. to VDE**, max. 1kV ESD on open lines // IP30
Dimensions:	plastic housing 52 * 70 * 15mm
Delivery:	housing, screw, board, 10 pins, fuse, switch, 4 potentiometers, angled pin plug, description
Available accessories:	backplanes: AP2a, AP8a, AAB-II; AMS amplifier measurement systems
Warranty:	2 years from date of purchase at bmcm, claims for damages resulting from improper use excluded