



## AMS42/84

### 5B amplifier system

#### Amplifier technology at its best. Compact or 19 inch.

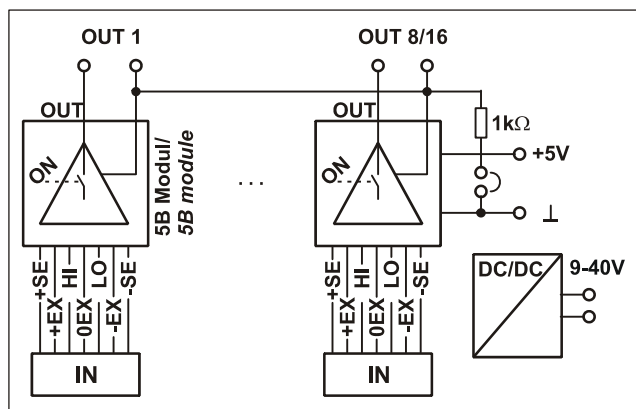
Get your amplifier technology wrapped up with the AMS42/84. Available in a robust aluminum housing as a mobile tabletop unit (AMS42) with skid-proof, tip-up feet or as a stationary version (AMS84) for 19" rack systems.

#### Modular concept. Equip individually. Be flexible.

The AMS device is equipped with cassettes, on which the required 5B measuring amplifiers are mounted. The variety of available 5B modules allows for the optimum adaptation of the AMS42/84 to any special measuring task.

#### Choose connector. Mount 5B amplifier. Done.

The available plug-in cassettes have different connectors on the front panel. Depending on the sensor or signal to be connected, the suitable cassette can be chosen. The 5B module only has to be fixed on the cassette now and be integrated in the AMS.



Functional diagram

#### Clearly safe.

Most of the 5B modules feature galvanic isolation of the channels from each other and from the data acquisition and control system. This perfectly protects the whole system against high potentials and interferences.

#### Well supplied.

The AMS42/84 is operated with 9-40V via an external power supply.

#### Connection to the DAQ system.

The amplifier outputs are available at a D-Sub37 female connector. They are connected to the input lines of a data acquisition system. Combining the AMS42/84 with a measuring card or DAQ system from bmc makes a powerful measurement system.

#### Accessories. Just makes it easier.

To individually equip the AMS devices, various 5B modules and plug-in cassettes as well as other accessories (e.g. external power supply, carrying handle, connection cable) are provided.

#### Versions and options. Something for everybody.

AMS42/84 versions with an integrated DAQ (USB, LAN) are also available. With the 8-channel extension *AMS-EXT8*, the number of channels can optionally be increased to 16 (AMS42) or 32 (AMS84) at the maximum.

# 1 Installation



## 1.1 Assembly

- Equip the AMS42/84 with the plug-in cassettes (see chapter 4.2) carrying the required 5B modules.
- Carefully push the cassette along the guide bars of the relevant slot until the 7-pole pin connector of the cassette and the pins of the 5B module are plugged into the corresponding connectors on the AMS backplane.
- If using the AMS42/84 with the option *AMS-EXT8* (see chapter 4.4), the additional cassettes are mounted on the back of the device.
- For a tight installation, fix the front panel at both ends with screws to the housing. Bridge unneeded slots by a blank panel (*AMS-K-BLANK*) to protect the device against outside influences.
- If the AMS84 is mounted to a 19" rack system, the relevant input wiring should be prepared first before attaching the device to the rack system with screws.

## 1.2 Software installation and start-up procedure

- Connect your PC data acquisition system to the 37-pole D-Sub female.
- Attach an external power unit to the 3-pole DIN coupling for 9-40V power supply (use a supply cable with a cross sectional area  $>1\text{mm}^2$ ) and turn on the AMS42/84 by pressing the switch to "1" (ON) (see chapter 2.1 and 2.2).
- Signals are connected at the specific female connector of the respective AMS cassette panel.



- **To change the cassettes, the power of the AMS device must be turned off!**
  - **If the AMS system is operated standalone, additional grounding to enhance shielding is recommended but not mandatory.**
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## 2 Connections / Assignments

All available connectors and operating elements of the AMS42/84 are accessible on the right-hand side of the device front.

### 2.1 Switch and LED

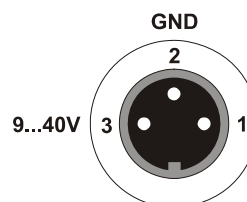
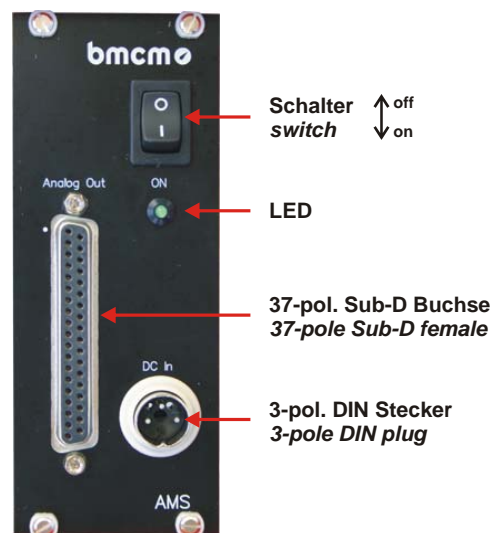
The AMS42/84 is turned on (press "1") and off (press "0") with the switch.

The green LED "ON" indicates the operation of the device.

### 2.2 Power supply "DC In"

The AMS device is supplied with power (9..40V) via the 3-pole DIN plug. A power supply unit ZU-PW70W (24V, 2.92A DC) is optionally available.

Pin	Assignment
1	n. c.
2	ground (GND)
3	9-40V DC

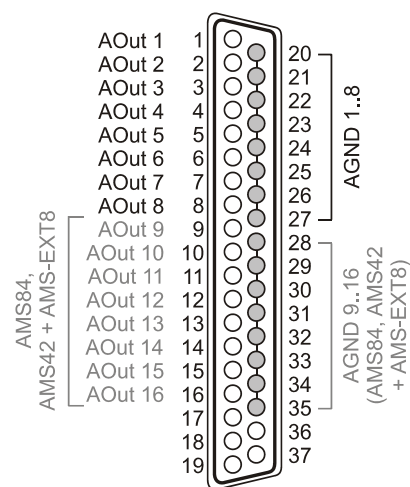


### 2.3 Analog channels

8 (AMS42) or 16 (AMS84) analog signals can be connected to the amplifier inputs available at the respective connectors of the cassette panels.

Their assignment is illustrated in the data sheet of the AMS-K-xxx cassettes. To connect a PC data acquisition system, these analog outputs are led out to the 37-pole D-Sub female.

Pin	AssignmentAMS42	AssignmentAMS84
1..8	Analog OUT 1..8	Analog OUT 1..8
9..16	n. c.	Analog OUT 9..16
17..19	n. c.	n. c.
20..27	analog ground (AGND) channel 1..8	AGND channel 1..8
28..35	n. c.	AGND channel 9..16
36..37	n. c.	n. c.



● AGND = analog ground

Depending on the application, the shield of the analog input cables can be applied to ground or 0V. Be sure to connect at one end of the cable only. Run the signal ground separately if possible. Lay input cable separately if possible.

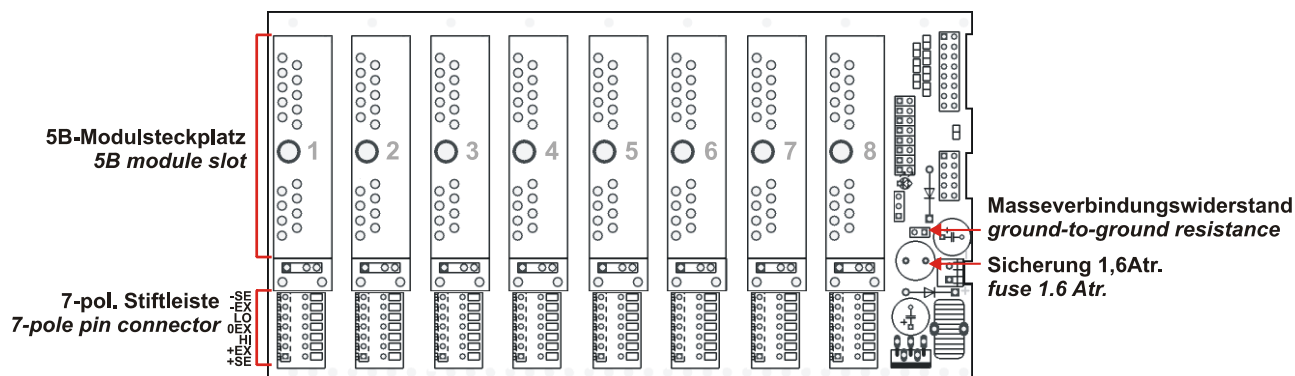


- The housing of the D-Sub37 female is connected to the AMS housing (and ground eventually).
- If the device features 16 or more channels, the ground of the first eight channels is not electrically connected to the ground of the next ( and further) eight channels.

### 3 AMS backplane

The AMS -backplane provides 8 slots for 5B modules and the AMS-K-xxx plug-in cassettes (see chapter 4.2) carrying the 5B modules. Two backplanes are integrated in the AMS84.

If the optional add-on AMS-EXT8 (see chapter 4.4) is used, eight (AMS42) or 16 (AMS84) slots each are available on the front and on the back of the device.



#### 3.1 Ground-to-ground resistance

The ground-to-ground resistance is required when the output ground is not electrically connected with the power supply ground. If the jumper (see fig. above) on the analog backplane is closed, the output switches of the modules are switched through.

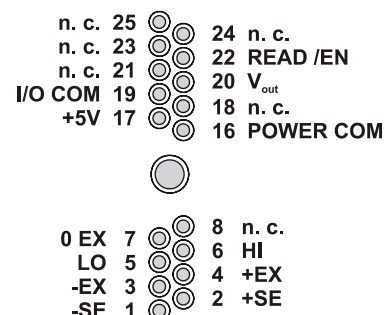


**In the case of electrically connected systems (e.g. PC), this jumper represents a high-resistance bridge (1kΩ) and may generate a hum loop!**

#### 3.2 Module pin assignment

The pin assignment on the right shows the top view of the module backplane (see chapter 3).

The pin assignment corresponds to the 5B modules of Analog Devices®, BURR BROWN® etc. However, an additional 0EX pin has been introduced, which is particularly suitable for ungrounded shielding. This is a specific assignment of BMC Messsysteme GmbH. The 0EX pin is not connected in modules of other manufacturers.

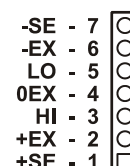


#### 3.3 Fuse

The fusing of the AMS backplane is effected on the backplane (see chapter 3) with one reversible semiconductor fuse. In case of overload, it turns off. To make the fuse work effectively again, first remove the cause for overload before disconnecting the power supply of the AMS42/84.

#### 3.4 Connection for AMS cassettes

The cassettes are connected to the AMS backplane via 7-pole pin connectors, leading the input signals connected at the cassette panel to the backplane. The assignment of the 7-pole female connector on the board is illustrated in the figure on the right-hand side.



## 4 Supplementary products for AMS42/84

### 4.1 5B modules (MA series)

The 5B measuring amplifiers from bmcM allow for the professional signal adjustment to a data acquisition system.

The amplifier output is  $\pm 5V$  or  $0..5V$ . Most of the modules are electrically isolating and provide sensor supply.



The following 5B modules from bmcM are available:

Product	Description
<i>MA-UNI</i>	universal amplifier with galvanic isolation for U, I, R, PT100, DMS, LVDT
<i>MA-UI</i>	multi-range amplifier with galvanic isolation for U, I
<i>MA-U</i>	voltage measuring amplifier with galvanic isolation, 50kHz bandwidth
<i>MA-FU</i>	frequency/voltage converter with galvanic isolation
<i>MA-DFI</i>	digital filter module with galvanic isolation, 60dB/oct.
<i>MA-FI</i>	filter module with galvanic isolation, 30dB/oct.

### 4.2 Plug-in cassettes (AMS-K series)

The amplifier system can be individually equipped with 8 (AMS42-USB) or 16 (AMS84) plug-in cassettes.

Each cassette is equipped with the relevant 5B module and suitable input connector.

The suitable input connector on the front panel guarantees for the relevant connection to be available when exchanging the cassette.

The following cassettes are available:



Product	Description
<i>AMS-K-BIN5</i>	cassette with panel and 5-pole Binder female connector (712 series)
<i>AMS-K-BLANK</i>	blank panel
<i>AMS-K-BNC</i>	cassette with front panel and BNC female connector
<i>AMS-K-CO5</i>	cassette with front panel and 5-pole terminal connector
<i>AMS-K-THK</i>	cassette with front panel and thermocouple socket (type K)

### 4.3 AMS-HANDLE, AMS-HANDLE2

For mobile use, the AMS42/84 can be equipped with a lateral, foldaway strap carrying handle (*AMS-HANDLE*) or with two stable metal handles at the housing frame (*AMS-HANDLE2*).



### 4.4 AMS-EXT8

With the add-on option *AMS-EXT8*, 8 additional analog channels each are available for the AMS42/84 accessible at the back of the amplifier measurement system. The AMS42 can be extended to max. 16 channels, the AMS84 to max. 32. The analog outputs are accessible at a second D-Sub37 female with the same assignment as the D-Sub37 female of the AMS device (see chapter 2.3).



## 5 Important notes for using the AMS42/84

- The device is only suitable for extra-low voltages - please observe the relevant regulations! For reasons relating to EMC, it must only be used in closed PC housings.
- 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.
- For calibration purposes, the device must be returned to BMC Messsysteme GmbH.
- Use shielded cables for reasons relating to CE. Connect the shield to ground at one end only. Close open inputs if possible.
- When mounting the cassettes, a connection between power supply ground and chassis of the device is made via the module screw.
- The device 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.

## 6 Technical data

(typical at 20°C, after 5min., +24V supply)

### • Electrical data

Power supply:

Galvanic isolation:

Max. permissible potentials:

+9..40V DC, ±5%, min 3W, max. 20W (depends on number of 5B modules used) at 3-pole DIN male
depends on the 5B modules used
<b>60V DC acc. to VDE</b>

### • General data

Signal connection:

CE standards:

ElektroG // ear registration:

Protection:

Temperature ranges:

Relative humidity

Dimensions (W x H x D):

Delivery:

Warranty:

different connectors (Phoenix, Binder, BNC, Thermo) on the front panels of the cassettes
EN61000-6-1, EN61000-6-3, EN61010-1; for decl. of conformity (PDF) visit <a href="http://www.bmcm.de">www.bmcm.de</a>
RoHS and WEEE compliant // WEEE Reg.-No. DE75472248
IP20
operating temp. -25..50°C, storage temp. -25..70°C
0-90% (not condensing)
AMS42-USB: 23.5 x 13.2 x 25.6 cm <sup>3</sup> ; AMS84-USB: 48.3 x 13.2 x 25.6cm <sup>3</sup> (incl. mounting brackets)
device, description
2 years from date of purchase at bmcm, claims for damages resulting from improper use excluded

### • Available accessories

AMS-K-BIN5:

AMS-K-BLANK:

AMS-K-BNC:

AMS-K-CO5:

AMS-K-THK:

AMS-EXT8:

Other accessories:

cassette and front panel with 5-pole Binder socket (712 series)
blank panel
cassette and front panel with BNC female
cassette and front panel with 5-pole terminal connector
cassette and front panel with thermocouple socket (type K)
extension of 8 extra channels (accessible on the back of the device)
desktop power supply ZU-PW70W (24V, 2.92A DC), 3-pole DIN female ZU3DIN, USB extension cable ZUKA-USB, carrying handles AMS-HANDLE, AMS-HANDLE2