

PCI-BASE50/300

Data Acquisition and Processing Card for Mxx Modules

Features

- 2 slots for Mxx modules
=> up to 32 analog channels
- FIFO for rapid data acquisition
- PCI bus compatible (short PCI!)
- 16 or 32 digital channels

Applications

- acquisition of analog signals
- analog controls
- recording of digital events
- digital controls



BMC Messsysteme GmbH proudly presents the

... PCI-Multifunction Measuring Card ...

with a highly integrated and modular concept at an unbeatable price which allows the user to tackle any measuring task by assembling his individual measuring card. The MAD modules provide sampling rates of up to

... 333kHz ...

Depending on the application various modules are available for analog in- and outputs with resolutions of

... 12 or 16 Bit ...

The measured data can be simultaneously displayed and stored on the hard disk. The switch-over from one measuring range to another can be defined for each channel and does not influence the sampling rate.

... 16 or 32 digital in-/ outputs respectively

are available on the PCI-BASE plate. This means that the base plate, without any analog module is a digital I/O card itself.

The

... modular concept ...

easily allows for

... 32 analog inputs ...

with resolutions of 12 or 16 Bit. In order to access the analog inputs 17..32, BMC Messsysteme offers a PC card cover with a 37-pole Sub-D socket plus connecting cable.

At present the following analog input modules are available:

- **MAD 12:** 100kHz; 12 Bit
- **MAD12f:** 333kHz; 12 Bit
- **MAD16:** 100kHz; 16 Bit

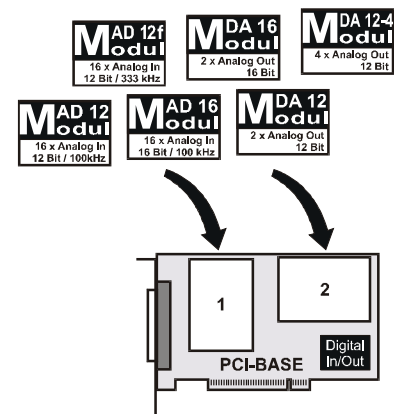


These modules freely combine with each other or the following analog modules:

- **MDA 12:** 12 Bit, 2 outputs
- **MDA 12-4:** 12 Bit, 4 outputs
- **MDA 16:** 16 Bit, 2 outputs

We provide ActiveX controls STR-PCI for Windows® 95/98/2000/NT as well as the operator's software ST-PCI for the display, control and automation of analog and digital processes. These are included with the "Software Collection"-CD.

As the hardware component of the measuring data acquisition and analysis system **NextView®/NT** by BMC Messsysteme GmbH, the **PCI-BASE50/300** offers superb performance under Windows® 98/2000 or NT and is available in the versions *Light*, *Professional* or *Client/Server*. A demo version is included.

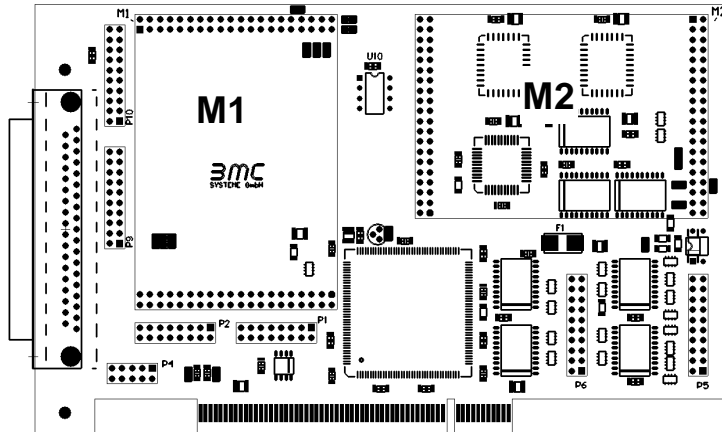


Installation: Module Slots M1 and M2, Dongle Slot

Dongle Slot:

If using the **NextView®/NT** software, the included dongle must be plugged in the IC socket U10. The component is an ESD - be sure to use a conductive pad connected to ground during installation! Be sure to install the dongles-IC correctly.

NextView®/NT version 3.1 or higher does not need the dongle so that it will not be included any more.

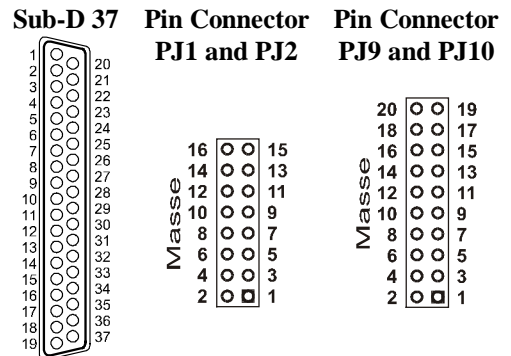


Module Slot - M1

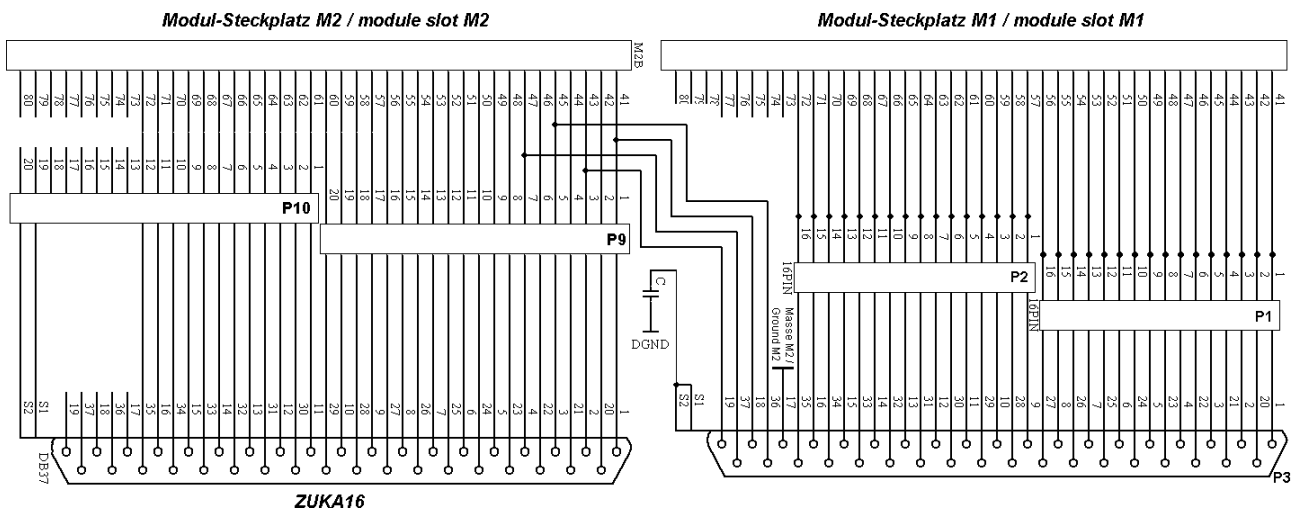
The 37pole Sub-D socket at the **PCI-BASE50/300** allows for the connection of the analog in- and outputs of the modules. The pin connectors P1 and P2 can be used for connecting an **AAB** amplifier box or current shunts **ZUSP1000** internally.

Module Slot - M2

All connections of the second module slot M2 are accessible via the pin connectors P9 and P10. Channels 1 and 2 of this module slot can also be accessed by means of the 37pole Sub-D socket at PIN 18 and 19. In this way, two D/A channels for example can be lead out. When using the **ZUKA16** the channels of the slot M2 are lead out via a 37pole Sub-D socket.



The figure below shows the pin assignment of the module slots M1 and M2 of the **PCI-BASE50/300**:



Pin Assignments

Module Slot 1 → Sub-D 37, PJ1 and PJ2

Module Slot 2 → PJ9 and PJ10

Pinassignm. Sub-D37	MAD (se)	MAD (diff)	MDA 12/16	MDA 12-4	Pinassignm. PJ1, PJ2	Pinassignm. PJ9, PJ10	MAD (se)	MAD (diff)	MDA 12/16	MDA 12-4	Pinassignm. ZUKA16
1	IN1	+ IN1	AOut1	AOut1	PJ1/1	PJ9/1	IN1	+ IN1	AOut1	AOut1	1
2	IN2	+ IN2	AOut2	AOut2	PJ1/3	PJ9/3	IN2	+ IN2	AOut2	AOut2	2
3	IN3	+ IN3	-	AOut3	PJ1/5	PJ9/5	IN3	+ IN3	-	AOut3	3
4	IN4	+ IN4	-	AOut4	PJ1/7	PJ9/7	IN4	+ IN4	-	AOut4	4
5	IN5	+ IN5	-	-	PJ1/9	PJ9/9	IN5	+ IN5	-	-	5
6	IN6	+ IN6	-	-	PJ1/11	PJ9/11	IN6	+ IN6	-	-	6
7	IN7	+ IN7	-	-	PJ1/13	PJ9/13	IN7	+ IN7	-	-	7
8	IN8	+ IN8	-	-	PJ1/15	PJ9/15	IN8	+ IN8	-	-	8
9	IN9	- IN1	-	-	PJ2/1	PJ9/17	IN9	- IN1	-	-	9
10	IN10	- IN2	-	-	PJ2/3	PJ9/19	IN10	- IN2	-	-	10
11	IN11	- IN3	-	-	PJ2/5	PJ10/1	IN11	- IN3	-	-	11
12	IN12	- IN4	-	-	PJ2/7	PJ10/3	IN12	- IN4	-	-	12
13	IN13	- IN5	-	-	PJ2/9	PJ10/5	IN13	- IN5	-	-	13
14	IN14	- IN6	-	-	PJ2/11	PJ10/7	IN14	- IN6	-	-	14
15	IN15	- IN7	-	-	PJ2/13	PJ10/9	IN15	- IN7	-	-	15
16	IN16	- IN8	-	-	PJ2/15	PJ10/11	IN16	- IN8	-	-	16
17	-	-	(GND)	(GND)			-	-	-	-	17
18	-	-	(AOut1)	(AOut1)			-	-	-	-	18
19	-	-	(AOut2)	(AOut2)			-	-	-	-	19
20,21	GND	-	GND	GND	PJ1/2,4	PJ9/2,4	GND	-	GND	GND	20,21
22,23	GND	-	-	GND	PJ1/6,8	PJ9/6,8	GND	-	-	GND	22,23
24..27	GND	-	-		PJ1/10,12,14,16	PJ9/10,12,....,18,20	GND	-	-	-	24..29
28..35	GND	-	-		PJ2/2,4,....,14,16	PJ10/2,4,....,10,12	GND	-	-	-	30..35
36	-	-	-	(AOut3)			-	-	-	-	36
37	-	-	-	(AOut4)			-	-	-	-	37

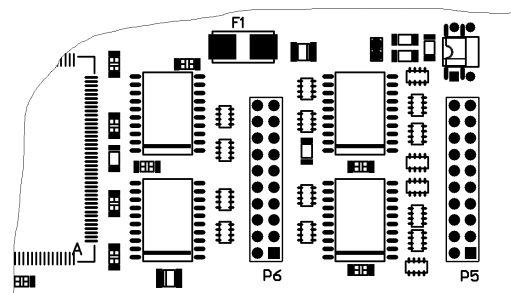
The channels indicated in brackets represent the channels of the second module slot, if plugged.

Digital In- and Outputs

The PCI-BASE50/300 provides two digital channels with 8/16 input and 8/16 output lines:

- Pin connector P5 => Input channels 1..8 (PCI-BASE50) or 1..16 (PCI-BASE50/300)
- Pin connector P6 => Output channels 1..8 (PCI-BASE50) or 1..16 (PCI-BASE50/300)

The direction of the digital interface is fixed.

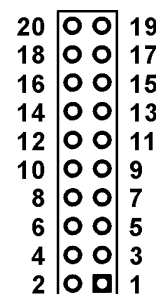


The digital in-/ outputs are protected by serial resistors only!

The 20pole pin connectors on the plate represent the connections for the digital interfaces and can be lead from the PC by means of a relevant socket and a ribbon cable (Option ZUKA16). The figure on the right shows the numbering of the connector (view from top of the plate). The pin assignment can be taken from the following table:

P5	Function
PIN 1...16	Digital inputs D1..D16
PIN 17	GND
PIN 18 - 20	Not assigned

P6	Function
PIN 1 ...16	Digital outputs D1..D16
PIN 17, 18	V _{cc} (+5V, 100mA) from PC
PIN 19, 20	GND

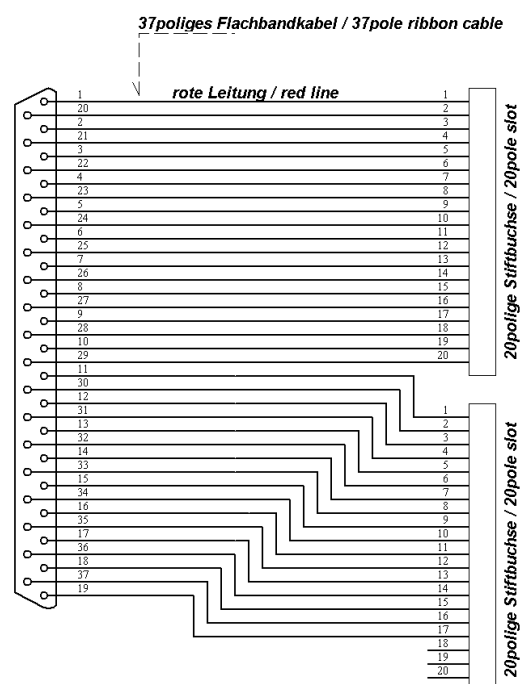


PIN 17 and 18 provide 5V DC. This output is protected by a fuse (F1, see figure above).

Pin Assignment Sub-D37 when using ZUKA16

The connector of the ribbon cable which is connected to PIN 1 of the Sub-D 37 (line marked in red) must be plugged on P6, PIN 1. The second connector must be plugged on P5.

Sub-D 37	Function	Sub-D 37	Function
PIN 1	D-OUT 1	PIN 11	D-IN 1
PIN 20	D-OUT 2	PIN 30	D-IN 2
PIN 2	D-OUT 3	PIN 12	D-IN 3
PIN 21	D-OUT 4	PIN 31	D-IN 4
PIN 3	D-OUT 5	PIN 13	D-IN 5
PIN 22	D-OUT 6	PIN 32	D-IN 6
PIN 4	D-OUT 7	PIN 14	D-IN 7
PIN 23	D-OUT 8	PIN 33	D-IN 8
PIN 5	D-OUT 9	PIN 15	D-IN 9
PIN 24	D-OUT 10	PIN 34	D-IN 10
PIN 6	D-OUT 11	PIN 16	D-IN 11
PIN 25	D-OUT 12	PIN 35	D-IN 12
PIN 7	D-OUT 13	PIN 17	D-IN 13
PIN 26	D-OUT 14	PIN 36	D-IN 14
PIN 8	D-OUT 15	PIN 18	D-IN 15
PIN 27	D-OUT 16	PIN 37	D-IN 16
PIN 9	+5V	PIN 19	GND
PIN 28	+5V		
PIN 10	GND		
PIN 29	GND		

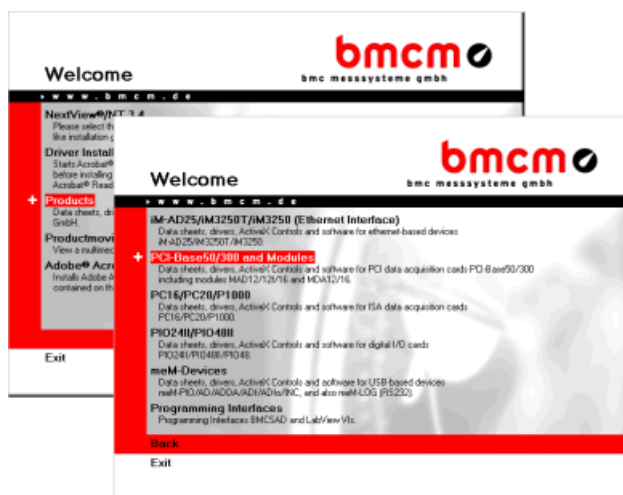


Software Installation

The installation must proceed in the following order:

1. Driver installation
2. Installation of the programming interface (ActiveX Control)
3. Installation of the operator's software (if desired)

Before using the device, the **hardware driver** must be installed. The device can be programmed under Windows® 95/98/2000 or NT 4.0 by means of programming languages (Visual Basic, Delphi, Visual C++ etc), which are able to link the ActiveX Controls, using the programming interface **STR-PCI**.



The operator's program **ST-PCI** allows you to utilize the hardware's capacity to its full extent. The device driver, the ActiveX Control **STR-PCI** and the operator's program **ST-PCI** is included on the "Software Collection"-CD which comes with the delivery.

Put the CD in your CD-ROM drive. The CD starter opens automatically.

For installation of the software or in order to read the relevant documentation (PDF files), please select the entry "Products" and then the product group "PCI-BASE50/300 ActiveX Control and Modules".

Now choose the desired product. For opening manuals or data sheets, please first install the program Adobe® Acrobat Reader. You will find the corresponding link on the "Welcome" screen of the CD.

1. Driver Installation

The installation depends on the operating system. If using the **PCI-BASE50/300** with Windows® 95/98/2000 please mount the PC card into your PC. When starting the PC the system announces the new hardware. The hardware assistant will guide you step by step through the installation. For detailed information about the installation of the hardware drivers see the "Driver Installation Manual (PDF)".

On Windows® NT there is no extra hardware installation necessary. Just mount the PCI-BASE50/300 into your computer and install the ActiveX controls.

2. Installation of the ActiveX Controls STR-PCI

To install or upgrade the ActiveX Control please select the entry "PCI-Baes50/300 ActiveX Control" and start the installation by choosing the option "STR-PCI-Base50 Setup" or "STR-PCI-BASE50/300 Setup".

If you don't use the auto run function of the "Software Collection"-CD for installation, you can install by opening the file `pci50-actx-us.exe` or `pci300-actx-us.exe` (english setup) in the directory `products / pci`.

After a short introduction the driver information will be displayed. Then the required files will be copied to your hard disk and you will be prompted if the installation has been successful. Restart your computer, if necessary.

3. Installation of the Operator's Program ST-PCI



The USB driver and the ActiveX Control STR-PCI must be installed before installing this program!

The program is installed in the same way as the ActiveX Controls, except that you now select "ST-PCI Control Utility" instead of **STR-PCI**. If you don't start the installation from the CD, open the setup program `st-pci-install-1.0.exe` in the directory `products / pci`.

After a short introduction you will be asked to confirm the suggested installation path and group name or enter your changes. Then the required files will be copied to your hard disk and prompt will show whether the installation has been successful. Restart your computer if necessary.

Programming

You will find references about programming and programming examples in the entry "STR-PCI Programming Examples", which you can choose to install. For further information about the programming of the PCI-Base50/300 please read the respective PDF file, which will be installed together with the programming examples. If you don't start the installation from the CD, open the setup program `pcibase-examples.exe` in the directory `products / pci`.

Important Notes for Using the PCI-BASE50/300

- The **PCI-BASE50/300** is only suitable for extra-low voltages - please observe the relevant regulations!
- The **PCI-BASE50/300** must only be used in closed PC housings (for reasons relating to EMC).
- All accessible pins are electrostatic sensitive devices. Provide for a conductive work place connected to ground.
- For CE reasons use well shielded cables, connect shield at one end only. Close open inputs, if possible. At the 37pole plug the signals are connected, use shielded cables only. For best possible interference suppression connect shield at one end only. Close open inputs if necessary. ESD voltages at open lines may cause malfunction.
- The **PCI-BASE50/300** ground is electrically connected to the chassis of the PC, which is usually also connected to ground. Be sure to avoid ground loops since they will cause measuring errors!
- For cleaning use water and mild detergent only. The modules are designed to be maintenance-free.
- 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.
- Improper installation of the modules on the **PCI-BASE50/300** may damage the modules and/or the **PCI-BASE50/300**. When removing the modules use only blunt tools!
- When connecting internal ribbon cables to the **PCI-BASE50/300**, please observe that the modules are well ventilated to prevent excess heating. Also observe the temperature ranges of the PC.

Technical Data PCI-BASE50/300 (typical at 20°C and 5V Supply)

• Sampling Parameters (in connection with measuring and analysis software NextView®/NT)

	PCI-BASE50	PCI-BASE50/300
Max. cumulative sampling rate:	50kHz	330kHz
Digital input channels:	8 x TTL	16 x TTL
Digital output channels:	8 x TTL	16 x TTL
FIFO:	1kByte	4kByte
Frequenzy drift:	max. ±50ppm/°C	
Memory depth:	depending on the RAM or HD space available (up to 4GByte)	
Trigger:	rising edge, falling edge, window trigger, logical trigger	
Prehistory:	0..99%	

* The cumulative sampling rate is the total of the individual channel sampling rates (e.g. 5 channels à 10kHz => 50kHz cum. sampling rate).

• Digital In-/ Outputs

Level / digital IN R _i :	CMOS/TTL-level (0 = 0.0V..0.5V; 1 > 2.6V..5.0V) / 1MΩ
Digital IN surge resistant to:	60V DC
Digital OUT R _i / output current:	1kΩ / 1mA

• Signal Connection

Analog In-/ Outputs (of MAD/MDA modules):	All channels are accessible at a 37pole Sub-D socket at the PC-card blende or via pin connectors.
Digital channels:	2x20pole pin connectors on the plate; The digital channels are brought out via the ZUKA16 (option).

• General Data

Power supply:	+5V from PCI-Bus, max. 500mA
Bus connection:	PCI-Bus
CE standards:	EN50081T1, EN50082T1, EN61010-1
Max. permiss. potentials:	60V DC acc. to VDE , max. 2kV ESD on the lines
Temperature ranges:	ambient temp. 0..40°C, working temp. 0..70°C, storage temp. -25..85°C
Relative humidity:	0 – 90% (not condensing)
Size:	178 x 103 x 13,5 mm ³
Other:	
Accessory (included):	product, PC bracket for mounting, "Software Collection" CD with drivers and documentation, description
Other accessory:	connecting cable with bracket for internal cabling ZUKA16, 37-pole Sub-D plug ZUST37, connecting cables ZUKA37SB, ZUKA37SS, connector box ZU37BNC, current shunts ZUSP1000, modules of the series MAD/MDA, fuse ZU-SI500
Guarantee:	2 years with effect from sales date, damages at product resulting from improper use excluded

• Software

Software (included):	STR-PCI (ActiveX Control) for programming under Windows® 95/98/2000/NT; operating program ST-PCI for displaying of analog and digital signals.
NextView®/NT:	Measuring and analysis software on Windows® 98/2000 or NT 4.0 for the optimum performance of the measuring card.