

USB-AD16f

USB data acquisition system



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Features

- 16 analog input channels (16bit)
- measuring range $\pm 10V$, $\pm 5V$, $\pm 2V$, $\pm 1V$
- max. sampling rate 250kHz
- analog inputs galvanically isolated
- 2 analog output channels (16bit)
- output range $\pm 10V$
- 4 digital input and output channels each
- 1 counter
- stable aluminum housing

Applications

- measuring analog signals
- analog controls
- measuring digital signals
- digital controls
- perfect for mobile use



In modern PC generation less and less internal slots are available for additional cards. Therefore the external data acquisition systems of the "meM" and "USB" series from BMC Messsysteme GmbH provide an attractive alternative to substitute the measuring cards integrated in the computer before.

With the **USB-AD16f** bmc m introduces a data acquisition system impressing by universality, high technical standard and an excellent price-performance ratio.

The **USB-AD16f** features

... 16 analog inputs and one analog output ...

with 16bit resolution, so that slightest signal changes are detected.

For optimum signal acquisition the

... $\pm 10V$, $\pm 5V$, $\pm 2V$, $\pm 1V$ measuring range ...

can be selected via software. With

... 250kHz sampling rate ...

the **USB-AD16f** is perfectly suitable for dynamic applications. The

... galvanic isolation ...

of the analog inputs protects measurement system and PC.

For controlling and recording digital states

... 4 digital inputs and outputs each ...

are available. An additional counter input allows pulse measurements, for instance.

Of course, the device also shows all the typical USB features such as *hot-pluggable* (devices can be plugged in during operation), up to 127 connectable devices, *Plug&Play* and power supply via USB interface.

Included as accessory is a USB driver and the hardware independent ActiveX control **LibadX** for programming under Windows[®] 2000/XP/Vista.

In addition the **USB-AD16f** can be used under Windows[®] 2000/XP/Vista together with our powerful software for acquisition and processing of measuring data

... NextView[®] ...

It is available as "Professional", "Lite" or "Client/Server" version. The free version **NextView[®] 4 Live!** is included with delivery.

With **NextView[®] 4 Live!** the entire functional range of the **USB-AD16f** can be tested.

Furthermore the **USB-AD16f** is directly supported by the operating systems

... MAC OS X, FreeBSD and Linux ...

A driver installation is not necessary.

For further information and software updates please visit our homepage at:

<http://www.bmcm.de>



Important notes for using the USB-AD16f

- The device is only suitable for extra-low voltages – please observe the relevant regulations! For reasons relating to EMC, the device must only be operated with housing closed. ESD voltages at open lines may cause malfunction during operation.
- For cleaning use water and mild detergent only. The device is designed to be maintenance-free.
- Signal cables are connected at the 37-pole and 15-pole Sub-D socket – use shielded cables only. For best possible interference suppression connect shield at one end only. Close open inputs if necessary.
- The device ground and the chassis are 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!
- PCs (notebooks), which are not grounded often produce high potentials to earth at the USB socket, so that safe operation cannot be guaranteed. In this case connect the measuring system to earth.
- The Gain is adjusted to even values. Therefore only 64000 values (for 16bit) of the full range of the converter are used. As a result, the measuring ranges are slightly larger (e.g. $\pm 5.12V$) than the indicated measuring ranges, providing the advantage that overranges can be recognized.
- 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.

Technical data USB-AD16f (typical at 20°C, 5V and after 5min.)

Analog inputs

Channels:	16 single-ended electrically isolated from PC
Surge protection:	max. $\pm 35V$ (when turned on), $\pm 20V$ (when turned off), max. $\pm 20mA$ in total of all input channels!
Input resistance // Input capacity:	1M Ω (with PC turned off: 1k Ω) // 5pF
Zero shift // Gain drop:	$\pm 50ppm/^{\circ}C$ // $\pm 50ppm/^{\circ}C$
Frequency accuracy // Frequency drift:	max. $\pm 50ppm$ // max. $\pm 50ppm/^{\circ}C$
	measuring range resolution overall sampling rate* noise
USB-AD16f:	$\pm 10V, \pm 5V, \pm 2V, \pm 1V$ 16 Bit 250kHz ± 6 LSB

* The overall sampling rate is the sum of the sampling rates of the individual used channels (e.g. from 5 channels scanned with 10kHz results an overall sampling rate of 50kHz).

Analog output

Voltage range:	1 voltage output with $\pm 10V$
Output current:	1mA max.
Resolution // Accuracy:	16bit // typ. ± 4 LSB, max. ± 8 LSB
Zero shift // Gain drop:	$\pm 50ppm/^{\circ}C$ // $\pm 50ppm/^{\circ}C$

Digital in-/ outputs

Channels:	4 input and 4 output channels, 1 counter
Level:	CMOS-level (low: 0V..1V; high: 3V..5V)
Current pick-up per output pin:	1mA (with app. 4V level), max. 2.5mA (with app. 3V level)
Surge protection:	max. $\pm 5.5V$, protected with 1k Ω , max. max. $\pm 20mA$ in total of all channels!

General data

Power supply:	+4.5V..+5.5V from USB connection to the PC, max. 100mA
Analog connections:	all channels at a 37-pole Sub-D socket at the device front
Digital connections:	all channels at a 15-pole Sub-D socket at the device back
CE standards:	EN61000-6-1, EN61000-6-3, EN61010-1; for decl. of conformity (PDF) visit www.bmcm.de
ElektroG // ear registration:	RoHS and WEEE compliant // WEEE Reg.-No. DE75472248
Max. permissible potentials:	60V DC acc. to VDE , max. 1kV ESD on open lines
Temperature range:	operating temp. 0..70°C, storage temp. -25..+85°C
Relative humidity:	0-90% (not condensing)
Dimensions // Protection type:	aluminum housing 167 x 113 x 30 mm ³ // IP50
Delivery:	device in aluminum housing, 1m USB connection cable, "Software Collection"-CD, description
Available accessories (optional):	DIN rail set ZU-SCHI, USB extension cable ZUKA-USB, connecting cables ZUKA37SB, ZUKA37SS, optocoupler board OI16, connector boards ZU37BB/-CB/-CO, 37-pole Sub-D plugs ZU37ST, ZU15ST
Guarantee:	2 years with effect from sales date, damages at product resulting from improper use excluded

Software support

Software on CD (included):	hardware independent ActiveX control LibadX for programming under Windows® 2000/XP/Vista; measuring program NextView®4 Live! for testing and operating the hardware; directly supported by MAC OS X, Universal, FreeBSD and Linux
NextView®5 (optional):	professional software (versions: Professional, Lite, Client/Server) for the acquisition and analysis of measurement data under Windows® 2000/XP/Vista

Manufacturer: BMC Messsysteme GmbH. Subject to change due to technical improvements. Errors and printing errors excepted. Rev. 2.1 11/20/2007