

16 bit/500 kHz Low Cost A/D DAQ Board

ME-4650

Low cost high quality DAQ board



16 single-ended 16 bit inputs

- 16 bit/500 kHz A/D conversion.
- External digital trigger.

4x 8 bit TTL digital I/O

- Each port programmable as input or output konfigurierbar.

PCI bus interface

- PCI Local Bus 2.1 compatible. Plug'n'Play.

Expandable with the ME-MultiSig system

- ME-MUX32: Up to 47 or 271 or 4096 analog inputs in multiplexing technology.
- ME-SIG32: 16 channels signal conditioning, flexible with plug-on modules.



Software:

Including: ME-Power-CD with...
 Drivers for **Windows** 98, Me, NT, 2000, XP. Supports Visual C++ >4.0, Delphi >2.0, Visual Basic >4.0 and Borland C/C Builder.
 Driver for **Agilent VEE™** and **LabVIEW™**.
 Support software for **Linux** Open Source (C source code for Kernel 2.2 - 2.4).
 Utilities, examples, demos.
 Online documentation, English and German, for Acrobat Reader (printed manuals as an option (extra charge)).

Accessories:

Cable ME AK-D78
 2 m, 1:1, 78-pin, D-sub male-female.

Cable ME AK-D78/1
 1 m, 1:1, 78-pin, D-sub male-female.

Terminal block ME AB-D78M
 78-pin D-sub male and spring terminals.

ME-MUX32
ME-SIG32
 Multiplexing and/or signal conditioning system.

ME-AA4-3 **ME-AA4-3-H**
 Connectivity adaptor, connects existing ME-2000i, ME-2600i or ME-3000 applications to a ME-FoXX series board. Model -H can be mounted to DIN rails.

Prices: www.meilhaus.com/e_me

Ordering Code:

ME-4650 PCI
 PCI A/D board: 16 bit/500 kHz A/D, 16 channels, 4x 8 TTL digital I/O ports.

Starter-Kit ME-SK6
 PCI DAQ lab with ME-4650 PCI, support software, cable, terminal block.

Starter-Kit ME-SK6 MUX
 47-channel DAQ system with A/D board ME-4650 PCI, 32-to-1 multiplexing extender board ME-MUX32M and cable ME AK-D78

iMEssbox 4600
 The new iMEssbox with 16 bit DAQ board ME-4650 PCI! Rugged, compact industrial chassis with backplane, power supply, CPU module, HDD, FDD and CD drive.

Prices: www.meilhaus.com/e_me

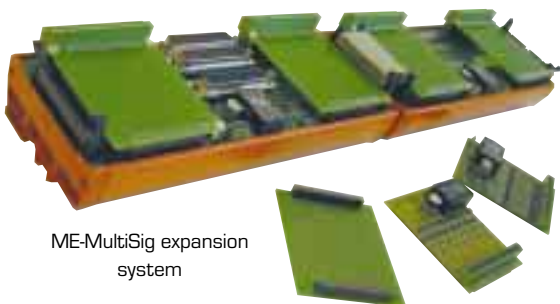
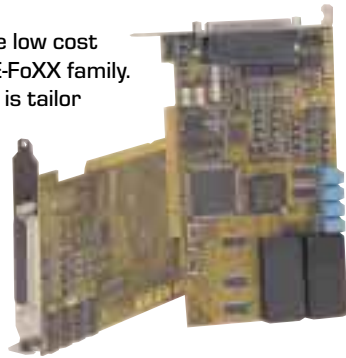
A/D DAQ Board with 32 Digital I/O Channels

ME-4650



The starter model for professional PC data acquisition

The ME-LittleFoXX is the low cost version of the 16 bit ME-FoXX family. This **high quality board** is tailor made for applications with a low budget. The ME-FoXX can be used for measurement data acquisition up to 500 kHz in labs and industrial environments. The ME-MUX32 is a low cost expansion for the ME-FoXX with up to **47, 271, or even 4096** analog inputs using multiplexing technology.



ME-MultiSig expansion system



DAQ System iMEssbox 4600

Professional PC data acquisition doesn't necessarily have to be expensive! **Proof:** The iMEssbox is a **complete PC DAQ system** including DAQ board, software and connectivity at a price often paid for a single DAQ board!

Just compare!

The new iMEssbox 4600 includes:

- 16 bit/500 kHz DAQ board ME-4650 incl. ME-Power-CD.
- Connectivity cable ME AK-D78.
- Terminal block ME AB-D78M.
- Rugged, compact industrial chassis with PCI backplane and power supply.
- CPU module.
- HDD, FDD and CD drive.

Go to: www.meilhaus.com/e_special

Specifications:		ME-LittleFoXX/ME-4650
Analog inputs		
Number	16 single-ended	
Ranges	±10 V, ±2.5 V, 0...10 V, 0...2.5 V	
FIFO	1 k FIFO (1024 values) for conversion with channel list	
A/D conversion	16 bit/500 kHz	
Trigger	External digital trigger (rising, falling, both edges).	
Digital I/O		
Number	4x 8 bit TTL I/O ports, each port can be configured as input or output	
Level	TTL level	
General		
Bus interface	32 bit/33 MHz PCI Local Bus 2.1 compatible	
Settings	Via software; Windows Plug'n'Play	
Size (mm)	175 x 107 (withput slot bracket/connector)	
Connectors	78-pin D-sub female; pin field connector on board (2x 8 bit TTL digital I/O ports). A flat ribbon cable with a 25-pin D-sub female and an additional slot bracket is included; uses another PC slot	
Expandability (see accessories)		
ME-MultiSig system for up to 4096 analog inputs (multiplexing/ME-MUX32) with or without signal conditioning or 32 channels with signal conditioning (ME-SIG32)		

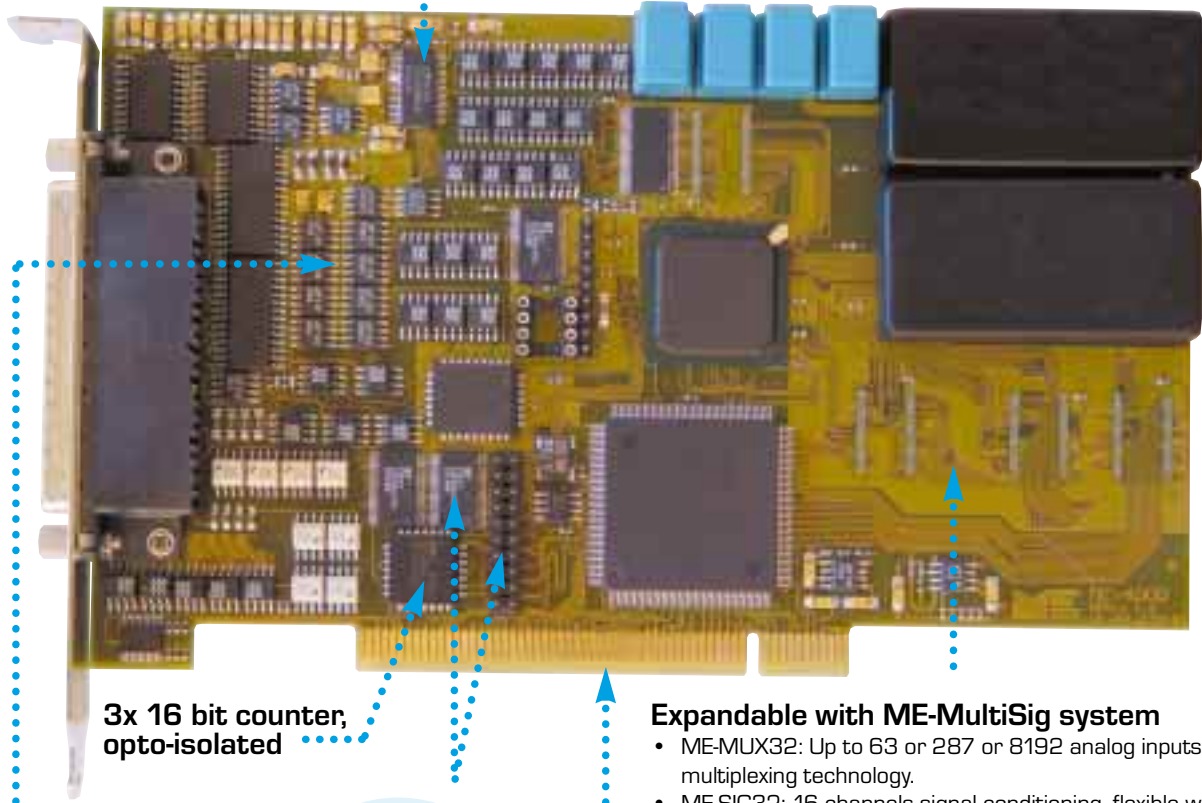
16 bit/500 kHz Isolated Allround Multi I/O Board

ME-4670i

Rugged, isolated midrange allround DAQ board

32 single-ended/ 16 differential inputs

- 16 bit/500 kHz A/D conversion.
- A/D section opto-isolated.
- External analog and digital trigger.



3x 16 bit counter, opto-isolated

Expandable with ME-MultiSig system

- ME-MUX32: Up to 63 or 287 or 8192 analog inputs in multiplexing technology.
- ME-SIG32: 16 channels signal conditioning, flexible with plug-on modules.
- ME-DEMUX32: 35 analog outputs in demultiplexing technology.

Isolated 16 bit analog output

- 16 bit/500 kHz D/A conversion. 4 chan.
- D/A sect. opto-isol.
- External digital trigger.

2x 8 bit TTL digital I/O

- Each port can be input or output (via software).

8 opto-inputs and 8 opto-outputs.

PCI-Bus interface

- PCI Local Bus 2.1 compatible. Plug'n'Play.



Software:

Including: ME-Power-CD with...
 Drivers for **Windows** 98, Me, NT, 2000, XP. Supports Visual C++ >4.0, Delphi >2.0, Visual Basic >4.0 and Borland C/C Builder.
 Driver for **Agilent VEE™** and **LabVIEW™**.
 Support software for **Linux** Open Source (C source code for Kernel 2.2 - 2.4).
 Utilities, examples, demos.
 Online documentation, English and German, for Acrobat Reader (printed manuals as an option (extra charge)).

Ordering Code:

ME-4670i PCI
 PCI multi I/O board: 16 bit/500 kHz isolated A/D, 32 single-ended or 16 differential channels, 4 isolated 16 bit analog outputs, 8/8 opto I/Os, 2x 8 TTL I/Os, 3x 16 bit isolated counters

Starter-Kit ME-SK7
 PCI DAQlab with ME-4670i PCI, support software, cable, terminal block.

Prices: www.meilhaus.com/e_me

Accessories:

Cable ME AK-D78
 2 m, 1:1, 78-pin, D-sub male-female.

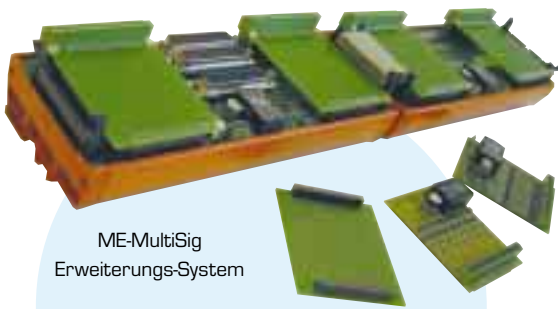
Cable ME AK-D78/1
 1 m, 1:1, 78-pin, D-sub male-female.

Terminal block ME AB-D78M
 78-pin D-sub male and spring terminals.

ME-MUX32 **ME-DEMUX32**
ME-SIG32
 Multiplexing, demultiplexing and/or signal conditioning system.

ME-AA4-3i **ME-AA4-3i-H**
 Connectivity adaptor, connects existing ME-2000i, ME-2600i or ME-3000 applications to a ME-FoXX series board, or for opto-isolated connectivity of ME-4670i to ME-MUX32. Model -H can be mounted to DIN rails.

Prices: www.meilhaus.com/e_me



ME-MultiSig
Erweiterungs-System

ME-MultiSig System:

- ME-MUX32:
Up to 63 or 287 or even 8192 analog inputs in multiplexing technology. Multiplexing with gain = 1. For the full functionality (multiplexing, reset, gain selection and control of address LEDs) an additional connectivity adaptor AA3-4i is required.
- ME-SIG32:
32 channels signal conditioning.
- ME-DEMUX32:
35 analog outputs in demultiplexing technology.

Specifications of the ME-SlyFoXX/ME-4670i see page 11 (ME-SylverFoXX/ME-4680)

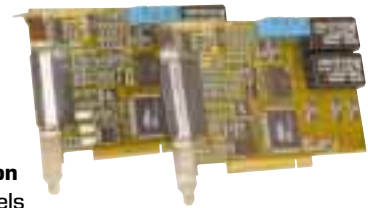


The Board for Professional PC DAQ and Control in Labs and Industry

The ME-SlyFoXX (ME-4670i PCI) is the ME-FoXX series midrange model from Meilhaus Electronic. With its

complete opto-isolation of all analog I/O channels

the board is a good choice for applications in industrial and lab environments, where **reliability and galvanic isolation** between a PC and the measurement and/or control processes is required.



ME-FoXX - Get the MaXXimum DAQ power

The ME-46xx family offers a variety of innovative features as well as some "small, excellent" functions many users have been looking for: **Isolated A/D, D/A, digital I/O and counters on a single PCI board, isolated channels with simultaneous sampling**, analog outputs with FIFOs and a sophisticated analog and digital trigger section.

There are 4 standard models. More versions are available on request as custom specific boards (high quantities):

	16 bit/500 kHz analog inputs					16 bit analog outputs			Digital I/O ⁵⁾		16 bit counters	
	Channels	Isolation	Diff. ¹⁾	ExATrig ²⁾	S&H ³⁾	Channels	Isolation	FIFO ⁴⁾	Channels	Isolation	Number	Isolation
ME-4650	16	-	-	-	-	-	-	-	4x 8	-	-	-
ME-4660*	32	-	16	-	-	-	-	-	4x 8	-	3	-
ME-4660i*	32	√	16	-	-	-	-	-	4x 8	2 ports	3	√
ME-4660s*	32	-	16	-	√	-	-	-	4x 8	-	3	-
ME-4660is*	32	√	16	-	√	-	-	-	4x 8	2 ports	3	√
ME-4670*	32	-	16	√	-	4	-	-	4x 8	-	3	-
ME-4670i	32	√	16	√	-	4	√	-	4x 8	2 ports	3	√
ME-4670s*	32	-	16	√	√	4	-	-	4x 8	-	3	-
ME-4670is*	32	√	16	√	√	4	√	-	4x 8	2 ports	3	√
ME-4680	32	-	16	√	-	4	-	√	4x 8	-	3	-
ME-4680i	32	√	16	√	-	4	√	√	4x 8	2 ports	3	√
ME-4680s*	32	-	16	√	√	4	-	√	4x 8	-	3	-
ME-4680is	32	√	16	√	√	4	√	√	4x 8	2 ports	3	√

1) Software-selectable: 32 single-ended or 16 differential inputs.

2) External analog trigger, see page 11. Moreover all models have an external digital trigger.

3) In addition to 1): Sample&hold for simultaneous sampling on 8 single-ended channels plus 24 "normal" single-ended inputs.

4) For extended D/A modes like waveform generator, periodic output of data sets.

5) Depending on model: 2x 8 bit wide ports with or without opto-isolation. 2 additional 8 bit wide, non-isolated TTL ports. TTL channels: Each port programmable as input or output. Opto-isolated channels: One 8 bit input and one 8 bit output port (fixed).

■ Standard models, short delivery times.

* Special custom models on request.

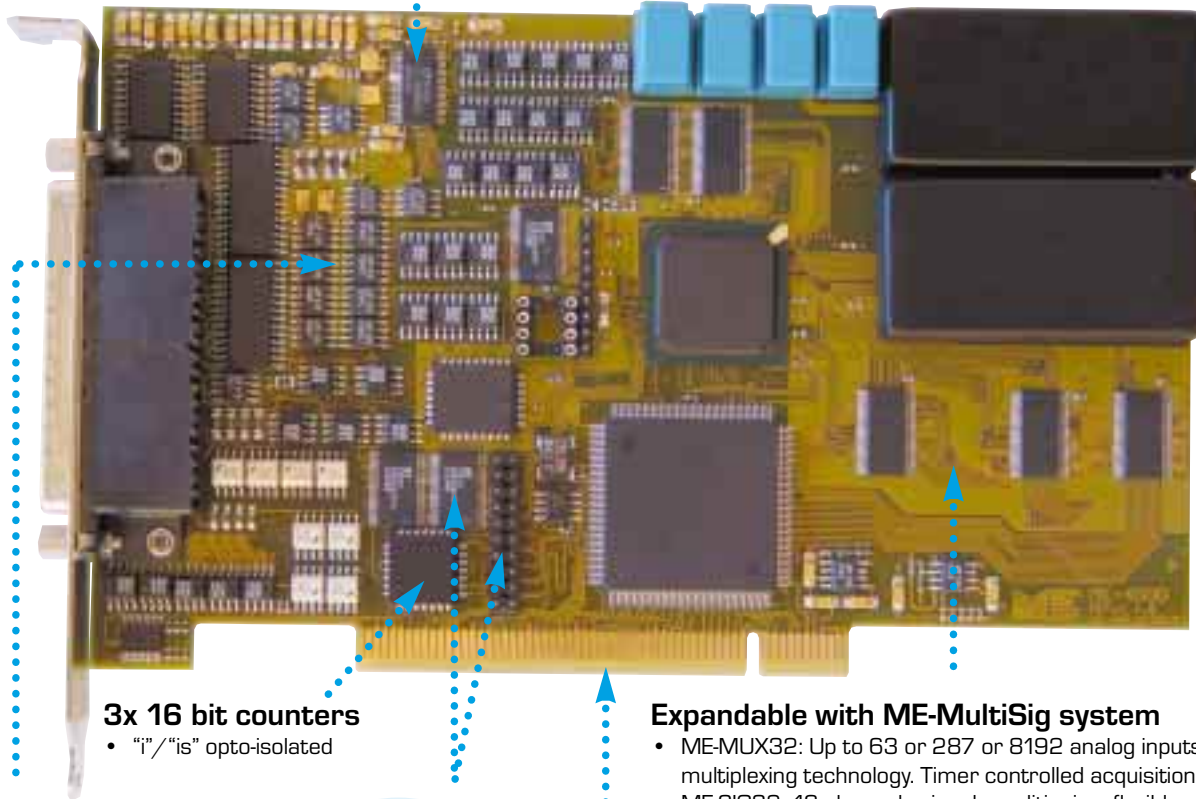
16 bit/500 kHz Isolated Highend Multi I/O Board

ME-4680is

Highend DAQ board with sophisticated features

32 single-ended/16 differential inputs

- 16 bit/500 kHz A/D conversion. Models "i"/"is": A/D section opto-isolated.
- External analog and digital trigger.
- Model "is": 8 of the inputs also with simultaneous sampling (single-ended).



3x 16 bit counters

- "i"/"is" opto-isolated

16 bit analog output with FIFOs

- 16 bit/500 kHz D/A conversion. 4 channels.
- "i"/"is" opto-isolated.
- External digital trigger.
- FIFO for each channel.

4x 8 bit digital I/O

- Depending on model/port: TTL or opto-isolated.
- Timercontrolled bitpattern output with FIFOs

Expandable with ME-MultiSig system

- ME-MUX32: Up to 63 or 287 or 8192 analog inputs in multiplexing technology. Timer controlled acquisition.
- ME-SIG32: 16 channels signal conditioning, flexible with plug-on modules.
- ME-DEMUX32: 35 analog outputs in demultiplexing technology.

PCI-Bus interface

- PCI Local Bus 2.1 compatible. Plug'n'Play.

see page 9



Software:

Including: ME-Power-CD with...
 Drivers for **Windows** 98, Me, NT, 2000, XP. Supports Visual C++ >4.0, Delphi >2.0, Visual Basic >4.0 and Borland C/C Builder.
 Driver for **Agilent VEE™** and **LabVIEW™**.
 Support software for **Linux** Open Source (C source code for Kernel 2.2 - 2.4).
 Utilities, examples, demos.
 Online documentation, English and German, for Acrobat Reader (printed manuals as an option (extra charge)).

Ordering Code:

ME-4680is
 PCI multi I/O board: 16 bit/500 kHz isolated A/D, channels: 32 se. or 16 diff. or 8 se. with simultaneous sampling + 24 "normal" se., 4 isolated 16 bit analog-outputs with FIFOs, 8/8 optal/Os, 2x 8 TTL digital I/Os, 3x 16 bit isol. counters

ME-4680i
 see ME-4680is, but 32 se. or 16 diff. channels (no simultaneous sampling)

ME-4680
 see ME-4680i, but without opto-isolation

Prices: www.meilhaus.com/e_me

Accessories:

Cable ME AK-D78
 2 m, 1:1, 78-pin, D-sub male-female.

Cable ME AK-D78/1
 1 m, 1:1, 78-pin, D-sub male-female.

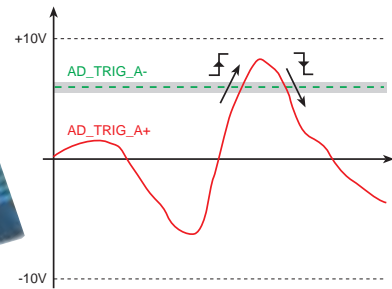
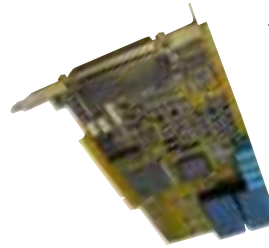
Terminal block ME AB-D78M
 78-pin D-sub male and spring terminals.

ME-MUX32 **ME-DEMUX32**
ME-SIG32
 Multiplexing, demultiplexing and/or signal conditioning system.

ME-AA4-3 **ME-AA4-3-H**
ME-AA4-3i **ME-AA4-3i-H**
 Connectivity adaptor, connects existing ME-2x00i/ME-3000 applications to a ME-FoXX series board, or for opto-isolated connectivity of ME-4670i to ME-MUX32. Model -H can be mounted to DIN rails. Versions "i" opto-isolated.

Prices: www.meilhaus.com/e_me

se. = single-ended, diff. = differential



The new Flexibility in Measurement Data Acquisition
 The ME-SylverFoXX (ME-4680, i, is) is the highend model of the ME-FoXX family. It has a **variety of innovative** features many users have been looking for. The most important feature is the **complete opto-isolation** of all analog inputs, outputs, counter lines as well as 2 digital I/O ports on the versions "i" and "is". Are **analog inputs with simultaneous sampling** required? The ME-4680is has 8 of them. The analog outputs have **FIFOs** which can be used for waveform generator applications. The digital outputs can be programmed for **bit pattern output under timer control** (with FIFOs). The trigger section, with its digital and analog trigger lines, is another innovative highlight worth taking a closer look (see text and picture on the right).

ExATrig Analog Trigger Technology

In trigger mode an A/D conversion is started only if a rising ("RISING"), falling ("FALLING") or a rising or a falling edge ("BOTH") occurs.

The analog A/D trigger makes use of a comparator which compares the positive trigger input (AD_TRIG+, dynamic signale up to 500 kHz, ±10 V) and the negative trigger input (AD_TRIG, threshold). "Rising edge" means that the threshold value is exceeded from negative to positive. "Falling edge" means that AD_TRIG_A+ is falling below the threshold value from positive to negative.

Specifications:	ME-SlyFoXX (ME-4670i) and ME-SylverFoXX (ME-4680, i, is)
Analog inputs	
Number	32 single-ended or 16 differential; ME-SylverFoXX ME-4680is: 8 of the inputs can also be used as single-ended channels with simultaneous sampling/Sample&Hold plus 24 "normal" single-ended channels
Ranges	±10 V, ±2.5 V, 0...10 V, 0...2.5 V
FIFO	1 k FIFO (1024 values) for conversion with channel list
Isolation	Models "i" and "is": Up to 500 V (specification of the opto-coupler chips)
A/D conversion	16 bit/500 kHz
Trigger	External digital trigger, external analog trigger (both on rising, falling or both edges)
Analog outputs	
Number	4 channels
Range	±10 V
Isolation	Models "i" and "is": Up to 500 V (specification of the opto-coupler chips)
D/A conversion	16 bit/500 kHz
FIFO	ME-SylverFoXX (ME-4680x): 4 k per channel
Trigger	External digital trigger (rising, falling edge)
Digital I/O	
Number	Models "i" and "is": 8 opto inputs, 8 opto outputs and 2x 8 bit TTL I/O ports, each port as input or output. Model ME-4680: 4x 8 bit TTL I/O ports, each port as input or output
Level	Depending on port: TTL level or opto-isolated (standard: 5 V level, optional: Up to 48 V. Outputs open-collector)
Extras	Bitpattern generator timercontrolled with FIFO
Counters	
Number	3 independent 16 bit, type 8254 compatible
Level	TTL. Models "i" and "is" opto-isolated (standard: 5 V level, optional: Up to 48 V. Outputs open-collector)
Lines	All lines (Clock, Gate, Out) of all counters available at the connector
General	
Bus interface	32 bit/33 MHz PCI Local Bus 2.1 compatible
Settings	Via software; Windows Plug'nPlay
Size (mm)	175 x 107 (without slot bracket/connector)
Connectors	78-pin D-sub female, pin field connector on board (2x 8 bit TTL digital I/O ports). A flat ribbon cable with a 25-pin D-sub female and an additional slot bracket is included; uses another PC slot
Expandability (see accessories)	
ME-MultiSig system for up to 8192 analog inputs (multiplexing/ME-MUX32) with or without signal conditioning, 32+3 analog outputs (models ME-4670i, ME-4680i/is with demultiplexing/ME-DEMUX32) or 32 channels with signal conditioning (ME-SIG32). To get the full functionality of the ME-MUX32 (multiplexing, reset, gain, address LEDs) with the ME-SlyFoXX and ME-SylverFoXX a ME-AA3-4 (models without isolation) or ME-AA3-4i (for models "i"/"is") is required. Without the ME-AA3-4(i): Multiplexing with Gain = 1.	