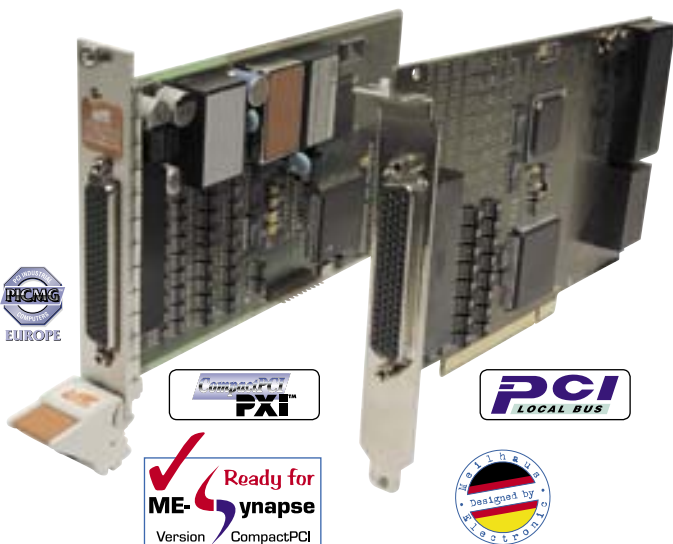


The high-precision, completely isolated 16 bit analog output board

ME-6x00



Do you consider high reliability, high noise immunity and high precision as very important for your application? Then this unique analog output board is a good solution for you. With its complete opto-isolation of all channels it is suitable for industry and lab. The board has high precision 16 bit D/A converters and some sophisticated extras...

- 4, 8, PCI also 16 **voltage outputs**. Range ± 10 V (max. ± 15 mA per channel). ME-6200 and ME-6300: 1 additional channel with 0...50 V.
- All channels with galvanic isolation, available as:
 - “p”/“island” channels: **Full isolation with separate GNDs**. All channels individually isolated from PC and from each other.
 - **Isolated outputs** with common ground/CGND.
- Individual **high-precision 16 bit D/A converter** per channel. Transparent output. Highspeed rates up to **500 kHz per channel**, independent from system for channels with FIFO.
- Automatic adjustment, no potentiometers.
- **Waveform generator - ME-6100/ME-6300**: 8 kByte FIFO per channel on channels 1 - 4 for advanced operating modes (generation of waveforms/signals):
 - Continuous output.
 - WrapAround, periodic output under timer control of data sets from the FIFO. Output of periodic signals up to 250 kHz [square signal].
- **16 TTL digital I/O channels**, grouped in 2x 8 bit ports. Each port programmable as inputs/outputs.
- Plug'n'Play. Available for the bus platforms **StandardPCI** and **PXI/CompactPCI** (PCI Local Bus 2.1 compatible) and with ME-Synapse: **Ethernet/LAN, USB**.



--- Software included on CD: ---

- ME-IDS and ME-IDC driver and configuration tool for **Windows XP, 2000, Vista and GNU Linux 2.6**.
 - Supports **Visual C/C++**, **Visual Basic**, **VEE Pro** (Windows), **LabVIEW** (Windows, Linux), **Python**.
 - Programming examples.
- “Soft manuals” English and German for Acrobat Reader/PDF.



Ready for ME-Synapse, that means: You can use the CompactPCI versions of the ME-6x00 with the **ME-Synapse LAN in your ethernet** or with the **ME-Synapse USB at the USB!** For more information see the ME-Synapse.

--- Specifications ---

Analog standard outputs

Number	4 or 8 voltage outputs, PCI versions also with 16 voltage outputs
Output current	Without external supply, depending on number of channels: I_{max} per channel $\pm 3...15$ mA. “p”/“island” channels, with external supply (± 15 V): ± 15 mA (external supply always required)
Output range	± 10 V
Accuracy	(Full scale) “i”/isolated max. $\sim 0.191\%$, min. $\sim 0.095\%$. “p”/“Island” max. $\sim 0.129\%$, min. $\sim 0.03\%$
Isolation	Versions “i”: Galvanic isolation from PC, channels with common ground/CGND. Versions “p”/“island”: Full galvanic isolation with separate grounds/no common ground. Max. 500 V isolation from PC; max. 250 V between the “islands”
D/A converter	1 serial high-precision converter per channel. 16 bit/max. 500 kHz (see “ information on A/D and D/A rates ”)
Settling time	Max. 2 μ s (-10 V to +10 V).
Operating modes	Output of single value (transparent). ME-6100/ME-6300 for channels 1 to 4: Continuous mode (continuous output under timer control) and WrapAround mode (periodic output under timer control). D/A timer from 2 μ s to 130 s in steps of 30.30 ns programmable
FIFOs	ME-6100/6300, channel 1...4: 8 k values D/A FIFOs per channel
External trigger	ME-6100/6300, channel 1...4: TTL level (typ. 5 V), rising/falling/both, for start of conversion (WrapAround, Continuous)

Analog high voltage outputs on models ME-6200 and ME-6300 (PXI/CompactPCI only)

Number	1 voltage output (channel 5 or channel 9)
Output range	0...+50 V
Output current	Max. 20 mA
Isolation	Versions “i”: Galvanic isolation from PC, channels with common ground/CGND. Versions “p”/“island”: Full galvanic isolation with separate grounds/no common ground. Max. 500 V isolation from PC; max. 250 V between the “islands”
D/A converter	1 serial high-precision converter. 16 bit/max. 500 kHz
Settling time	Max. 25 μ s at full scale (0 to +50 V).
Operating modes	Output of single value (transparent)

Digital I/O (TTL)

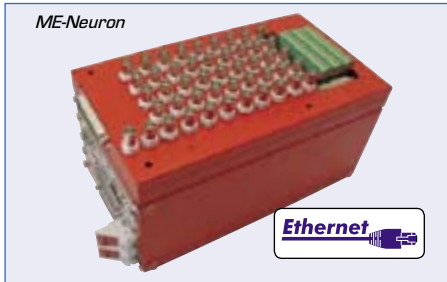
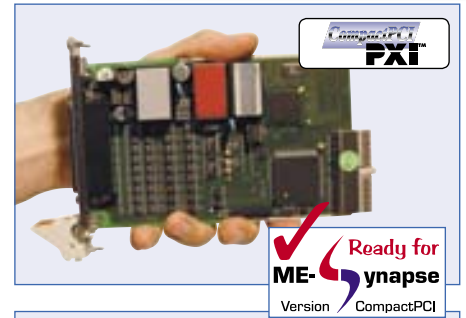
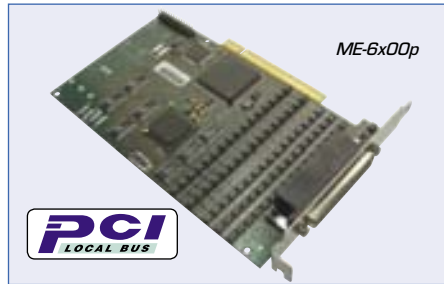
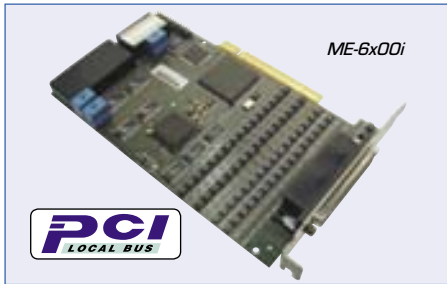
Number, type	2x 8 bit ports of I/O channels, each port programmable as inputs/outputs. Output U_{OL} max. 0.5 V at 24 mA, U_{OH} min. 2.4 V at -24 mA. Input U_{IL} max. 0.8 V at $V_{CC}=5$ V, U_{IH} min. 2 V at $V_{CC}=5$ V, input current ± 1 μ A
--------------	---

General

Bus interface	StandardPCI or CompactPCI/PXI; 32 bit/33 MHz 5 V PCI Local Bus 2.1 compatible
Size (mm)	StandardPCI: 174 x 98 (withput slot bracket/connector); CompactPCI/PXI: 160 x 100 (3 HE Europacard)
Connectors	78-pin D-sub female; a flat ribbon cable with 25-pin D-sub female and slot bracket (ME AK-D25F/S) is included; uses a second slot of the PC
Power consumption	(ati +5 V, 16 D/A channels, no external load) “i” max. 3.6 A, “p”/“island” max. 1.2 A
Certificates	CE certification, EG standards 89/336/EMC, emission EN 55022, noise immunity EN 50082-2

The high-precision, completely isolated 16 bit analog output board

ME-6x00



--- Ordering codes and features

ME-6x00 ---

Model ¹⁾	Chan.	Ranges ²⁾	Galvanic isolation	FIFO	Digital I/O	Bus	
ME-6000	ME-6000i/4 PCI	4	±10 V	With common ground/CGND	-	16 (2x 8 bit TTL ports). Expandable with ME-63Xtend or ME-UB	PCI
	ME-6000i/4 cPCI	4	±10 V	With common ground/CGND	-		PXI/CompactPCI
	ME-6000i/8 PCI	8	±10 V	With common ground/CGND	-		PCI
	ME-6000i/8 cPCI	8	±10 V	With common ground/CGND	-		PXI/CompactPCI
	ME-6000i/16 PCI	16	±10 V	With common ground/CGND	-		PCI
	ME-6000p/4 PCI	4	±10 V	Complete isolation/separate GNDs	-		PCI
	ME-6000p/4 cPCI	4	±10 V	Complete isolation/separate GNDs	-		PXI/CompactPCI
	ME-6000p/8 PCI	8	±10 V	Complete isolation/separate GNDs	-		PCI
	ME-6000p/8 cPCI	8	±10 V	Complete isolation/separate GNDs	-		PXI/CompactPCI
ME-6000p/16 PCI	16	±10 V	Complete isolation/separate GNDs	-	PCI		
ME-6100	ME-6100i/4 PCI	4	±10 V	With common ground/CGND	Ch. 1 - 4	16 (2x 8 bit TTL ports). Expandable with ME-63Xtend or ME-UB	PCI
	ME-6100i/4 cPCI	4	±10 V	With common ground/CGND	Ch. 1 - 4		PXI/CompactPCI
	ME-6100i/8 PCI	8	±10 V	With common ground/CGND	Ch. 1 - 4		PCI
	ME-6100i/8 cPCI	8	±10 V	With common ground/CGND	Ch. 1 - 4		PXI/CompactPCI
	ME-6100i/16 PCI	16	±10 V	With common ground/CGND	Ch. 1 - 4		PCI
	ME-6100p/4 PCI	4	±10 V	Complete isolation/separate GNDs	Ch. 1 - 4		PCI
	ME-6100p/4 cPCI	4	±10 V	Complete isolation/separate GNDs	Ch. 1 - 4		PXI/CompactPCI
	ME-6100p/8 PCI	8	±10 V	Complete isolation/separate GNDs	Ch. 1 - 4		PCI
	ME-6100p/8 cPCI	8	±10 V	Complete isolation/separate GNDs	Ch. 1 - 4		PXI/CompactPCI
ME-6100p/16 PCI	16	±10 V	Complete isolation/separate GNDs	Ch. 1 - 4	PCI		
ME-6200	ME-6200i/5 I cPCI	4 + 1	±10/+50 V	With common ground/CGND	-	16 (2x 8 bit TTL ports). Expandable with ME-63Xtend or ME-UB	PXI/CompactPCI
	ME-6200i/5 E cPCI	4 + 1	±10/+50 V	With common ground/CGND	-		PXI/CompactPCI
	ME-6200i/9 I cPCI	8 + 1	±10/+50 V	With common ground/CGND	-		PXI/CompactPCI
	ME-6200i/9 E cPCI	8 + 1	±10/+50 V	With common ground/CGND	-		PXI/CompactPCI
	ME-6200p/5 I cPCI	4 + 1	±10/+50 V	Complete isolation/separate GNDs	-		PXI/CompactPCI
	ME-6200p/5 E cPCI	4 + 1	±10/+50 V	Complete isolation/separate GNDs	-		PXI/CompactPCI
	ME-6200p/9 I cPCI	8 + 1	±10/+50 V	Complete isolation/separate GNDs	-		PXI/CompactPCI
ME-6200p/9 E cPCI	8 + 1	±10/+50 V	Complete isolation/separate GNDs	-	PXI/CompactPCI		
ME-6300	ME-6300i/5 I cPCI	4 + 1	±10/+50 V	With common ground/CGND	Ch. 1 - 4	16 (2x 8 bit TTL ports). Expandable with ME-63Xtend or ME-UB	PXI/CompactPCI
	ME-6300i/5 E cPCI	4 + 1	±10/+50 V	With common ground/CGND	Ch. 1 - 4		PXI/CompactPCI
	ME-6300i/9 I cPCI	8 + 1	±10/+50 V	With common ground/CGND	Ch. 1 - 4		PXI/CompactPCI
	ME-6300i/9 E cPCI	8 + 1	±10/+50 V	With common ground/CGND	Ch. 1 - 4		PXI/CompactPCI
	ME-6300p/5 I cPCI	4 + 1	±10/+50 V	Complete isolation/separate GNDs	Ch. 1 - 4		PXI/CompactPCI
	ME-6300p/5 E cPCI	4 + 1	±10/+50 V	Complete isolation/separate GNDs	Ch. 1 - 4		PXI/CompactPCI
	ME-6300p/9 I cPCI	8 + 1	±10/+50 V	Complete isolation/separate GNDs	Ch. 1 - 4		PXI/CompactPCI
ME-6300p/9 E cPCI	8 + 1	±10/+50 V	Complete isolation/separate GNDs	Ch. 1 - 4	PXI/CompactPCI		

Scope of delivery Board, ME-Power-CD, ME AK-D78/6000M-OE/1, ME AK-D25F/S, 25-pin mating plug

Attractive bundles:

Buy the ME board of your choice bundled with accessory of your choice and save money! For example:

ME-SK ME-6_00_--- **StartKit with:** ME-6x00 of your choice + cable of your choice + terminal block of your choice.

ME-PP ME-6_00_--- **PowerPack with:** ME-6x00 of your choice + cable of your choice + terminal block of your choice + graphic software development environment VEE Pro in current full version.

Examples - bundles with ME-6x00 and ME-Synapse or ME-Neuron

ME-Synapse USB 6100i/4 **USB signal generator station:** ME-Synapse USB + ME-6100i/4.

ME-Synapse LAN 6100i/4 **Remote ethernet signal generator station:** ME-Synapse LAN + ME-6100i/4.

ME-Neuron 6100i/4 **Complete ethernet or stand-alone signal-generator station:** ME-Neuron + ME-6100i/4.

ME-Synapse LAN PWR **Power supply for ME-Neuron and ME-Synapse LAN,** with Phoenix terminals, DIN rail mountable.

1) ME-6200 and ME-6300: Option "E" for external supply or option "I" for internal supply/ from PC.

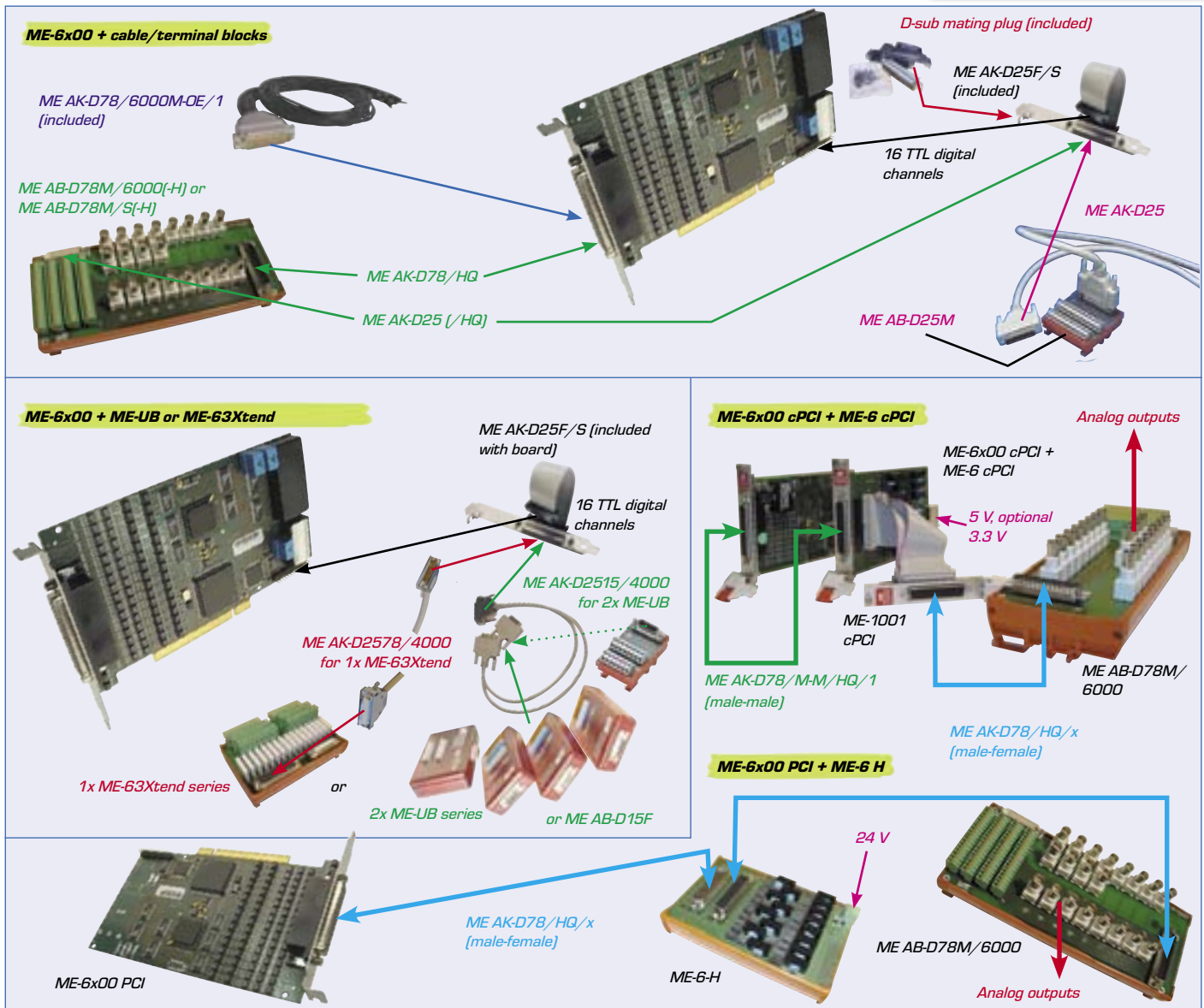
2) ME-6200 and ME-6300: Channels 1 - 4 or 1 - 8 are standard voltage outputs ±10 V. Channel 5 or channel 9 are high voltage outputs 0...+50 V.

3) The max. rates of channels without FIFOs are depending on the system when used in an ME-Synapse USB.

■ Light green: Standard models, short delivery times. All other models: Special custom versions on request.

The high-precision, completely isolated 16 bit analog output board

ME-6x00



... Recommended accessory for the ME-6x00... ...

For applications with high precision and optimum noise immunity:

ME AK-D78/HQ/x	x = 0.5 m, 1 m or 2 m high quality cable . 78-pin D-sub male to female, 1:1 contacted. Metal housing and 2 lines of cable.
ME AK-D25/HQ/1	1 m high quality cable . 25-pin D-sub male to female, 1:1 contacted. Metal housing.
ME AK-D25/2	2 m standard cable . 25-pin D-sub male to female, 1:1 contacted. Standard cable.
ME AB-D78M/6000	Deluxe terminal block . 78-pin D-sub male to BNC and pluggable spring terminals as well as 25-pin D-sub male to spring terminals. In a robust metal box or in a DIN rail mountable card carrier (-H).
ME AB-D78M/6000-H	
Alternative:	
ME AB-D78M/S	Deluxe terminal block . 78-pin D-sub male to pluggable spring terminals as well as 25-pin D-sub male to spring terminals. In a robust metal box or in a DIN rail mountable card carrier (-H).
ME AB-D78M/S-H	
ME AK-D78/6000M-OE/1	In cases you don't want to use a terminal block: 1 m special cable for ME-6x00 . 78-pin D-sub male and open ends. with special multiple shielding. Only required as spare part, 1x included with the board.
Expand the on-board digital ports:	
ME AK-D2578/4000	1 m special cable . 25-pin D-sub male to 78-pin D-sub female, use to connect 1x ME-63Xtend.
ME-63Xtend series	External expansion boards , DIN rail mountable, with relays or opto-isolation. 16 channels.
Alternative:	
ME AK-D2515/4000	1 m cable . 25-pin D-sub male to 2x 15-pin D-sub male, use to connect 2x ME-UB.
ME-UB series	External expansion boxes , with relays or opto-isolation. 8 channels. Use any combination of: ME-UB15, ME-UBRE, ME-UBOI, ME-UBOO. Alternative to ME-UB15: Terminal block ME AB-D15F.
ME AB-D15F	Standard terminal block . 15-pin D-sub female to spring terminals. Can be used as alternative to ME-UB15.
Further accessory:	
ME AB-D78M/P-H	Deluxe terminal block . 78-pin D-sub male to IDC and prototyping array for user signal conditioning. In a DIN rail mountable card carrier (-H).
ME-5	1-channel power amplifier for the analog outputs of the ME-6x00 series boards.
ME-6	Power supply board for the "island" channels of ther ME-6x00Op models
ME AK-D78/M-M/HQ/1	1 m high quality cable . 78-pin D-sub male to male, 1:1 contacted. Metal housing and 2 lines of cable. use to connect the ME-6 cPCI to a ME-6x00p cPCI.
ME-Synapse LAN and USB	Adaptor from 3 U ME CompactPCI to USB or Ethernet/LAN.
ME-Neuron	Pre-configured, 3 U CompactPCI-based complete DAQ and control system.