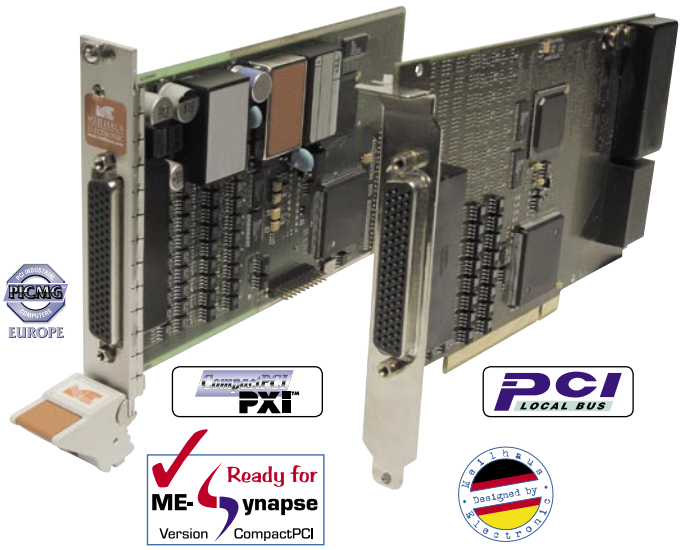
The high-precision, completely isolated 16 bit analog output board — ME-6x00



Do you consider high reliability, high noise immunty 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 compatibel) 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 ±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. ~0.191%, min. ~0.095%. "p"/"Island" max. ~0.129%, min. ~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 µs (-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 µs 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	ersions "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 µs 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 µA
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

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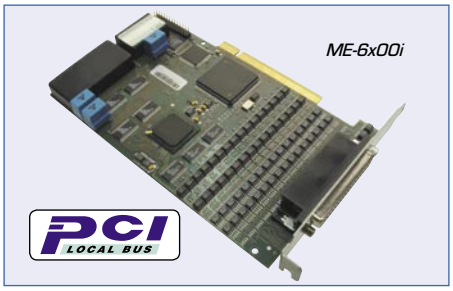

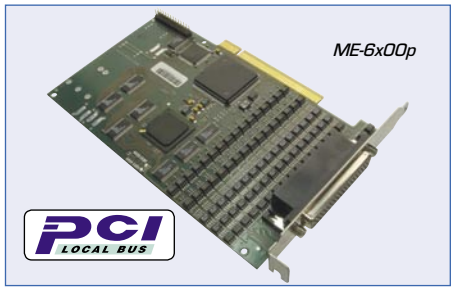

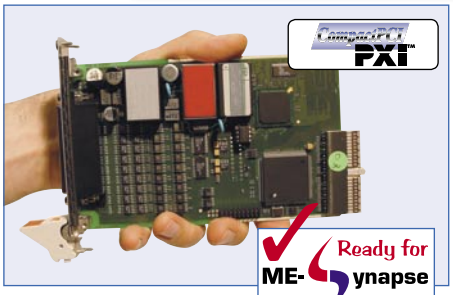

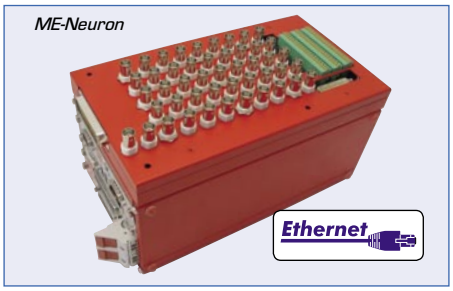

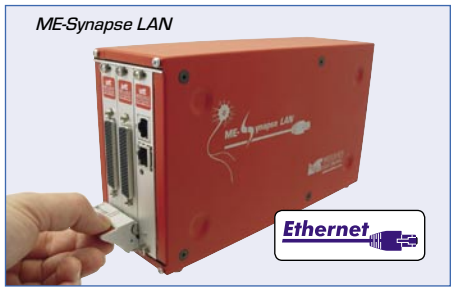

--- Ordering codes and features — ME-6x00 ---

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	**Powerm 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.

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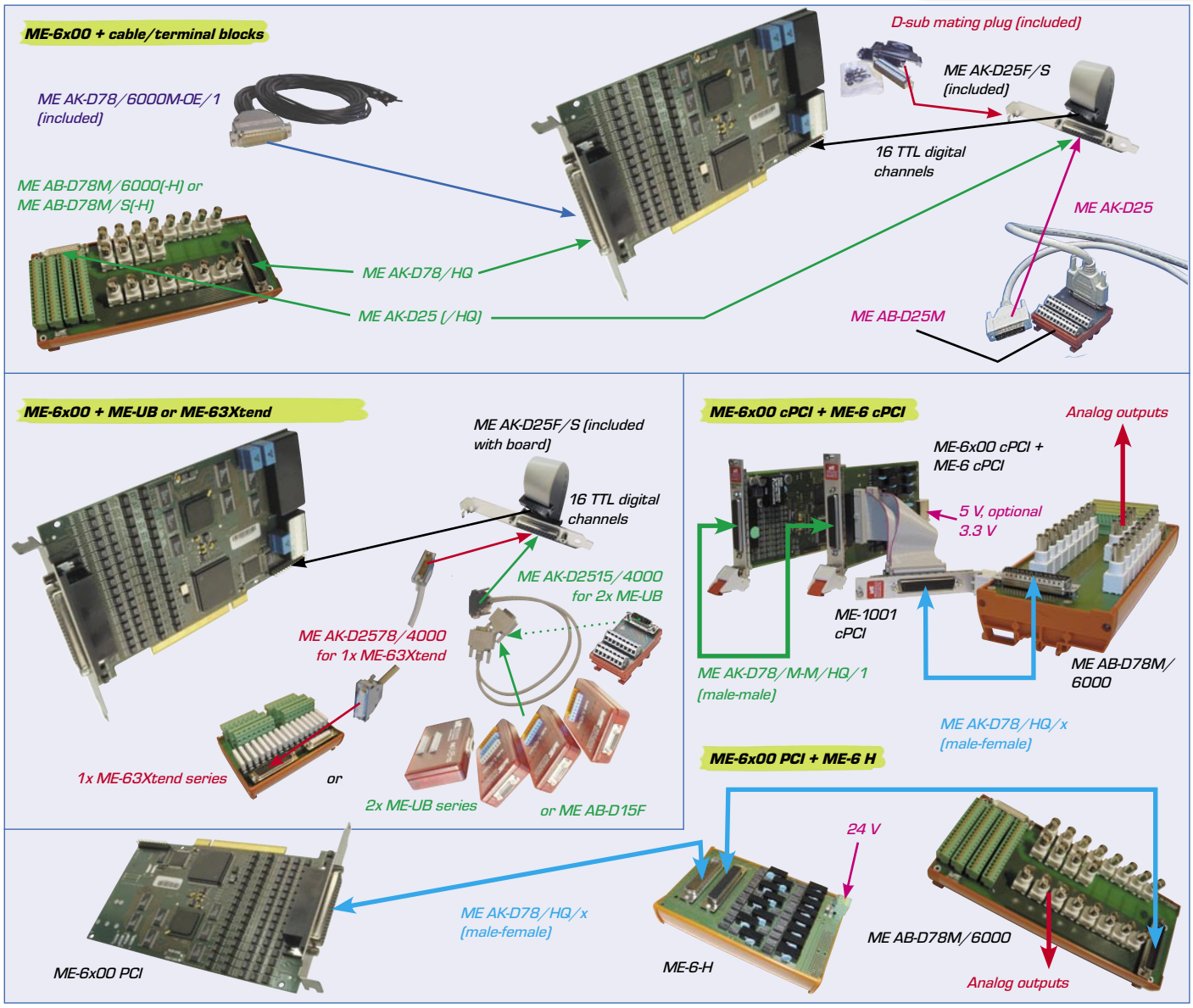

--- Recommended accessory for the ME-6x00... ---		
For applications with high precision and optimum noise immunity:		
	ME AK-D78/HQ/x	x = 0.5 m, 1 m or 2 m **high quality cable**. 78-pin D-sub male to female, 1:1 contacted. Metal housing and 2 lines of cable.
	ME AK-D25/HQ/1	1 m **high quality cable**. 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-UB00. 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-6x00p 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.