

## Product Datasheet - Technical Specifications



More information in our Web-Shop at ► [www.meilhaus.com](http://www.meilhaus.com) and in our download section.

### Your contact

Technical and commercial sales, price information,  
quotations, demo/test equipment, consulting:

Tel.: **+49 - 81 41 - 52 71-0**

FAX: **+49 - 81 41 - 52 71-129**

E-Mail: [sales@meilhaus.com](mailto:sales@meilhaus.com)

Downloads:

[www.meilhaus.com/en/infos/download.htm](http://www.meilhaus.com/en/infos/download.htm)

**Meilhaus Electronic GmbH** | Tel. **+49 - 81 41 - 52 71-0**  
Am Sonnenlicht 2 | Fax **+49 - 81 41 - 52 71-129**  
82239 Alling/Germany | E-Mail [sales@meilhaus.com](mailto:sales@meilhaus.com)

Mentioned company and product names may be registered trademarks of the respective companies. Prices in Euro plus VAT. Errors and omissions excepted.  
© Meilhaus Electronic.

[www.meilhaus.de](http://www.meilhaus.de)

# ME-6000 Isolated Analog Output Board

- Isolated analog output/control PC-board
- Depending on model: 4, 8, or 16 voltage outputs.
- Range  $\pm 10$  V (max.  $\pm 15$  mA per channel).
- All channels opto-isolated, available as:
  - \* Full opto-isolation with no common ground („p“). All individual channels opto-isolated from the PC and from each other.
  - \* Opto-isolated outputs with common ground („i“).
- Individual 16 bit/500 kHz high precision D/A converter per channel. Transparent output.
- Automatic adjustment, no potentiometers.
- 16 TTL digital I/O channels, organized as 2x 8 bit ports. Each port programmable as input or output.
- PC plug-in board for PCI (optional 3 U CompactPCI/PXI).

Model	Analog voltage outputs	Isolation	D/A-FIFO	Digital I/O	Bus platform
ME-6000i/8 PCI	8, 16 bit/max. 500 kHz, range $\pm 10$ V	Standard (common GND)	-	16, TTL	Standard PCI
ME-6000p/8 PCI	8, 16 bit/max. 500 kHz, range $\pm 10$ V	Complete floating	-	16, TTL	Standard PCI

Note: The D/A rate of 500 kHz is the max. value of the D/A converter chip. The true rate depends on the system (see datasheet), except for the ME-6100/ME-6300 channels with FIFOs in the corresponding operating mode.

# Specification

(Ambient temperature 25 °)

## PC-Interface

Standard-PCI- resp. CompactPCI-bus (32 bit, 33 MHz, 5 V)
PCI Local bus specification version 2.1 compliant;
CompactPCI Specification PICMG 2.0 R3.0,
Resources assigned automatically (Plug&Play)

## Voltage Outputs

(Partly different specifications are valid for the „U-Plus“-channel – see separate section)		
Number of channels	4, 8 or 16 (depends on model)	
D/A converter	1 serial converter (500 kHz) per channel	
Resolution	16 bit	
Output range	$\pm 10$ V	
Output current	Without external power supply: depends on the number of assembled resp. used channels:	
	<b>channels</b>	<b>I<sub>max</sub> per channel</b>
	4	15 mA
	8	15 mA
	12	10 mA
	16	3 mA
	With external power supply ( $\pm 15$ V) only in connection with options „Island channels“ and „High Current“: max. $\pm 15$ mA per channel)	
Ext. power supply	$\pm 15$ V (optional); current per channel: 7 mA + load (max. $\pm 15$ mA)	
Settling time (DAC)	max. 2 $\mu$ s at full-scale (-10 V $\rightarrow$ +10 V)	

**Total accuracy**

„With electrical isolation“	max. $\pm 20$ mV
„With island channels“	max. $\pm 10$ mV
Operation modes	„Single“, „Streaming“
Trigger modes	software start, ext. digital trigger, synchronous start (software/external)
External trigger edges	rising, falling, any

**Timer-Controlled Output (ME-6100/6300, channel 0...3)**

Channels	0...3 (independent of one other)
D/A-FIFOs	8 k values per channel
Sample-Rate	max. 500 kS/s
D/A-Timer	programmable from 2 $\mu$ s up to 130 s in steps of 30.30 ns

**External Trigger (channel 0...3)**

Voltage level	typ. 5 V
Input current $I_F$	7.5 mA $\leq I_F \leq$ 10 mA
Reference to ground	ground (GND_x)
Delay time	max. 80 ns

**Electrical Isolation, Island Channels (optional)**

Over-voltage protection	max. 500 V
-------------------------	------------

**Output Buffer „U-Plus“ (channel number 8)**

Output line l	$U_{OUT\_8}$
Voltage range	0...50 V
Output current	max. 20 mA
Offset error	typ. $\pm 5$ mV; max. $\pm 20$ mV
Gain error	$\pm 0,16$ %
Settling time	max. 25 $\mu$ s at full-scale (0 $\rightarrow$ 50 V) with 20 mA load

## Digital I/Os

Ports		2 x 8 bit
Reference to ground		PC ground (PC_GND)
Port type		bidirectional TTL ports
Output level	$U_{OL}$	max. 0.5 V bei 24 mA
	$U_{OH}$	min. 2.4 V bei -24 mA
Input level	$U_{IL}$	max. 0.8 V bei $V_{CC} = 5\text{ V}$
	$U_{IH}$	min. 2 V bei $V_{CC} = 5\text{ V}$
	Input current	$\pm 1\ \mu\text{A}$

## General Information

Power consumption at +5 V (16 D/A channels; without ext. load)	
„With electrical isolation“	max. 3.6 A
„With island channels“	max. 1.2 A
Load for VCC_OUT	max. 200 mA
Physical size PCI	174 mm x 99 mm
	(without mounting bracket and connector)
Physical size CompactPCI	3 U CompactPCI board
Connectors	78-pin D-Sub female connector (ST1) 20-pin IDC connector (ST2)
Operation temperature	0...70 C
Storage temperature	-40...100 C
Relative humidity	20...55 % (non-condensing)
Certification	CE

# Pinout

## Legend for pinouts:

**Attention:** With the options “High Current” and “Island Channels” the pins  $-U_x$  and  $+U_x$  are inputs for the external  $\pm 15$  V power supply. In all other cases these pins output  $\pm 15$  V and it is not permitted to connect them. **The hardware will be irreversible damaged!**

Pin-name	Function
Uout_x	analog output channels
+U_x	+15 V power supply; <b>only</b> with the options „High Current“ (HC) and “Island Channels”
-U_x	-15 V power supply; <b>only</b> with the options „High Current“ (HC) and „Island Channels”
AO_TRIG_x	digital trigger input for each D/A channels 0..3.
DIO_Ax	digital-I/O port A
DIO_Bx	digital-I/O port B
GND_x	Common ground for all D/A channels. Electrical isolated from PC ground. On models with the option “Island Channels” the grounds of the single D/A channels are additionally isolated from one another.
PC_GND	PC ground for the digital-I/O section
VCC_OUT	$V_{CC}$ output (+5 V from PC) max. 200 mA load
+U_EXT	ME-6200/6300 optional: pins for the positive supply for the output buffer of the „U-Plus“-channel ( $U_{OUT\_8}$ )
-U_EXT	ME-6200/6300 optional: pins for the negative supply for the output buffer of the „U-Plus“-channel ( $U_{OUT\_8}$ )
n.c.	pin not connected

# D-Sub Connector (ST1)

## ME-6000/6100

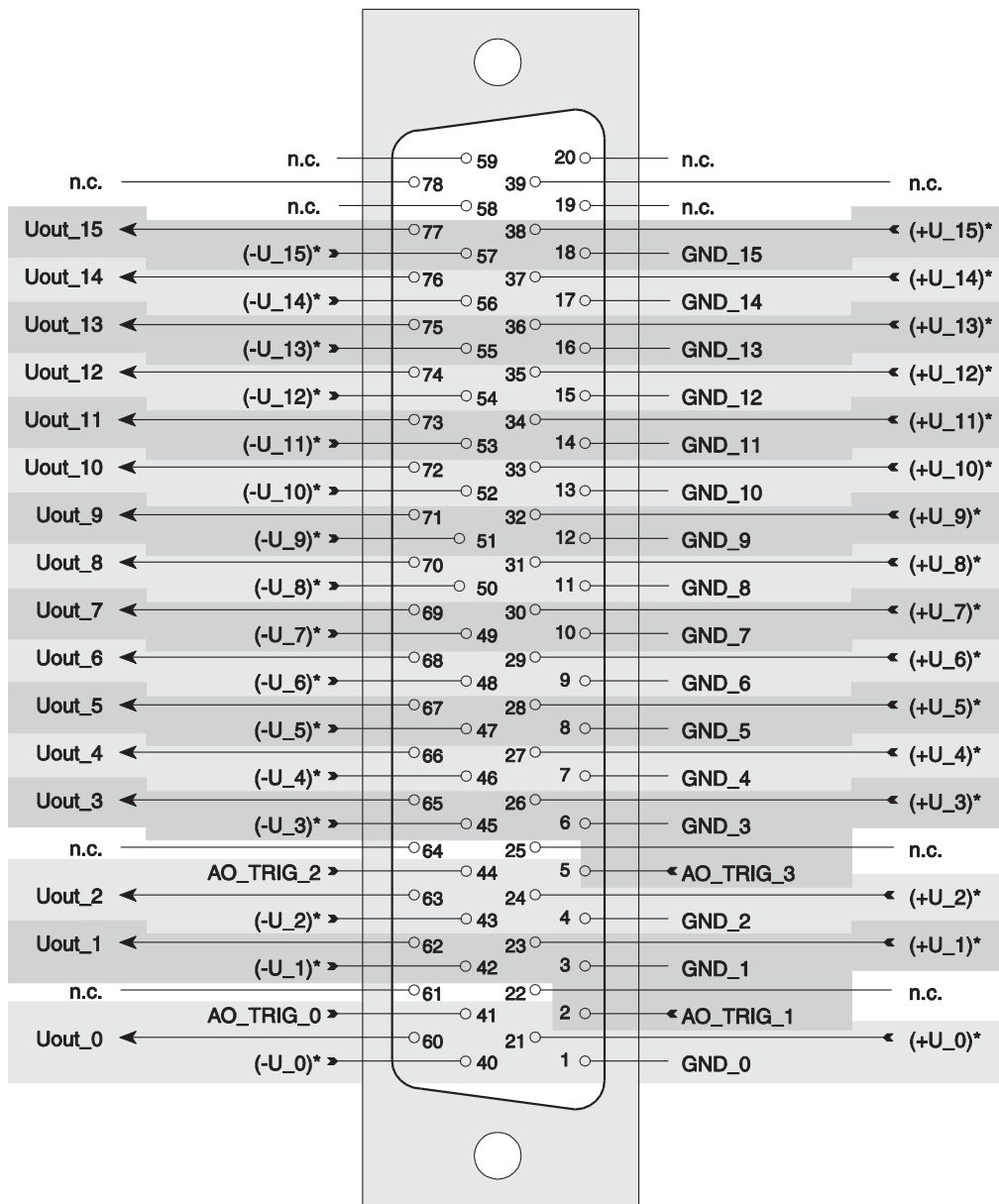


Diagram 11: Pinout of the 78-pin D-Sub female connector

# ME-6200/6300

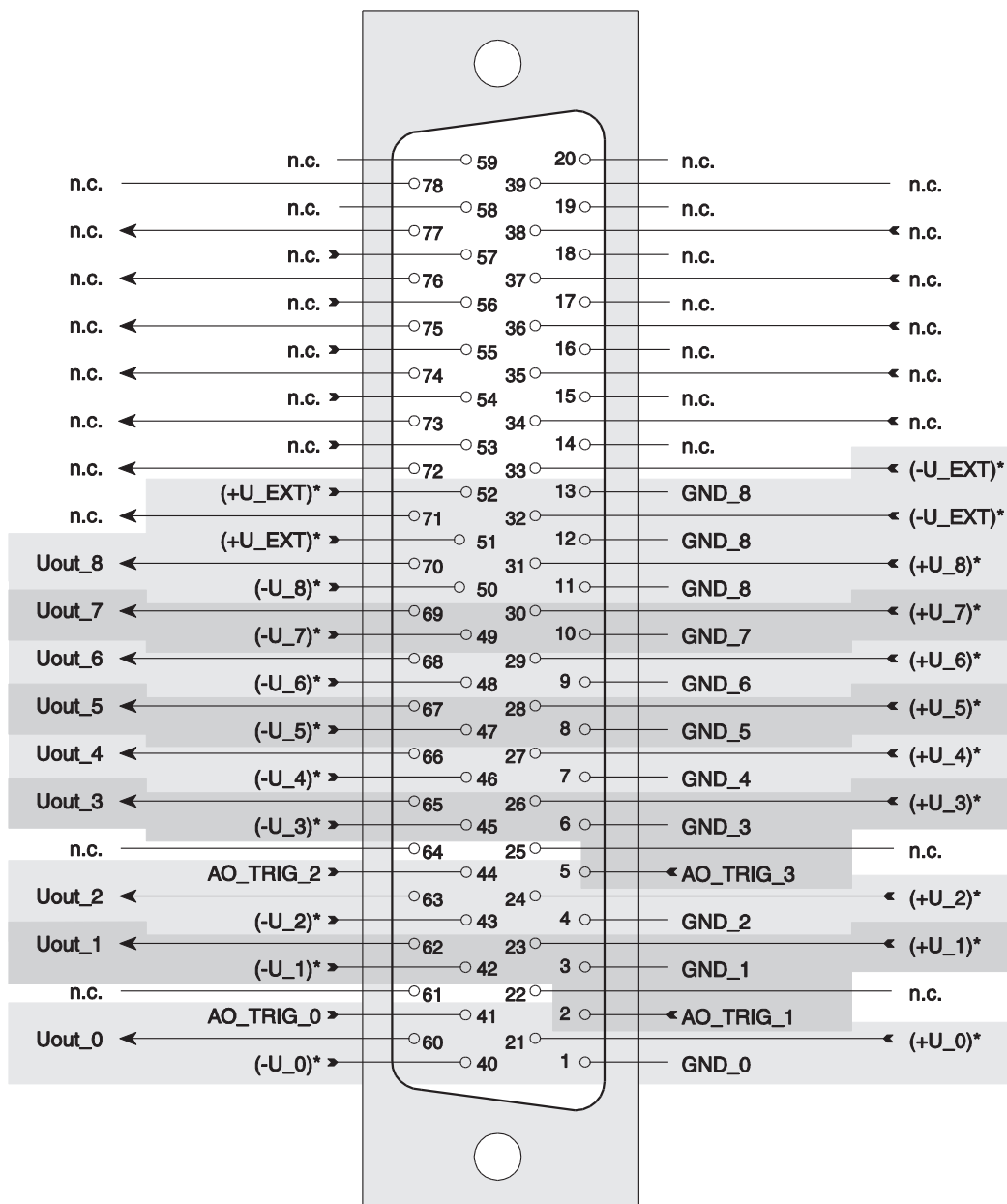


Diagram 12: Pinout of the 78-pin D-Sub female connector

**\*Note the warning on page 25.**



## Auxiliary Connector (ST2)

Adapter cable (ME-AK-D25F/S (cPCI)) from 20-pin IDC connector to mounting bracket with 25-pin D-Sub female connector (comes with the board).

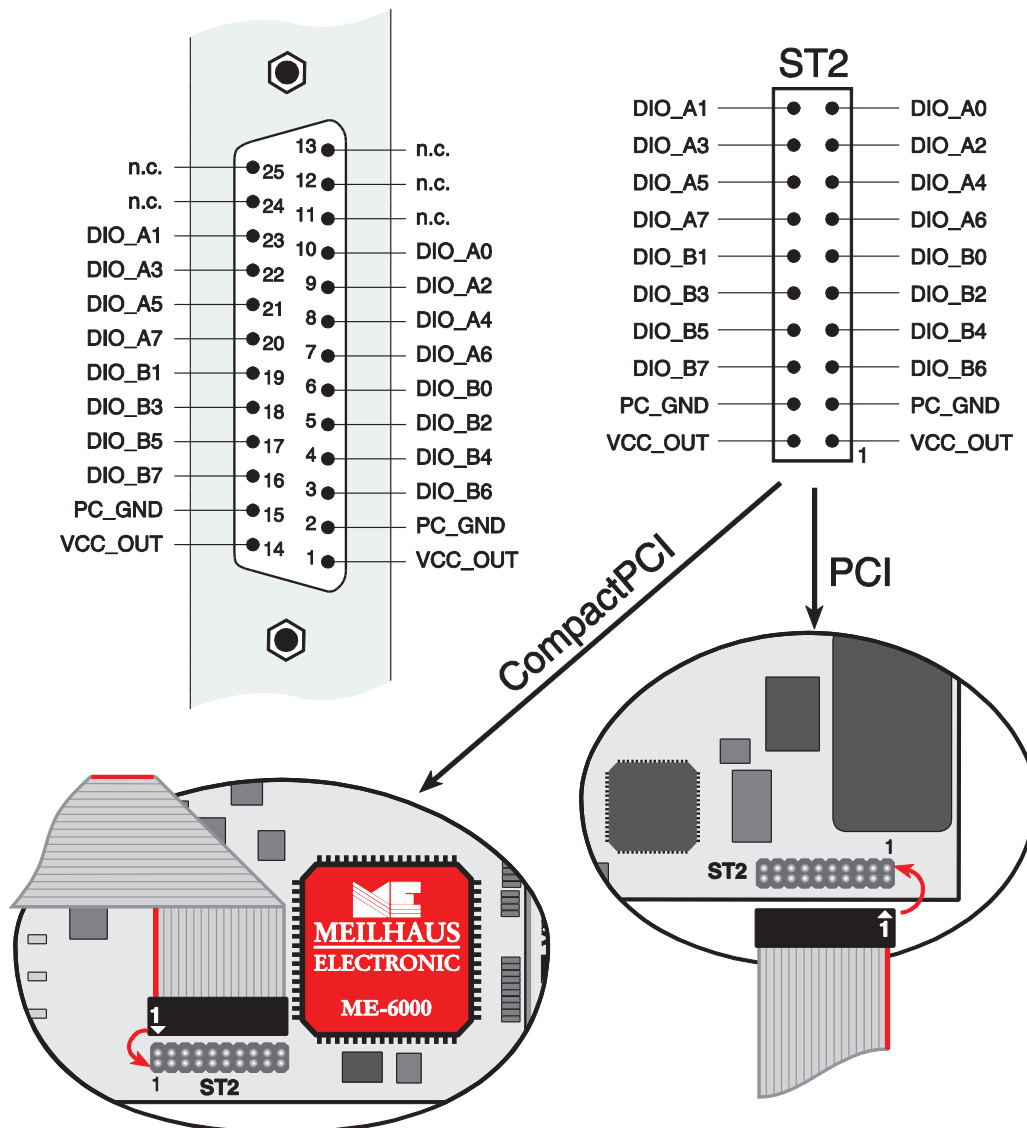


Diagram 13: Auxiliary connector ST2 for ME-6000 series (top view)

**Attention:** When connecting the mounting bracket make sure to plug in pin 1 of the flat ribbon cable (red marked line) as shown above to the IDC connector ST2.