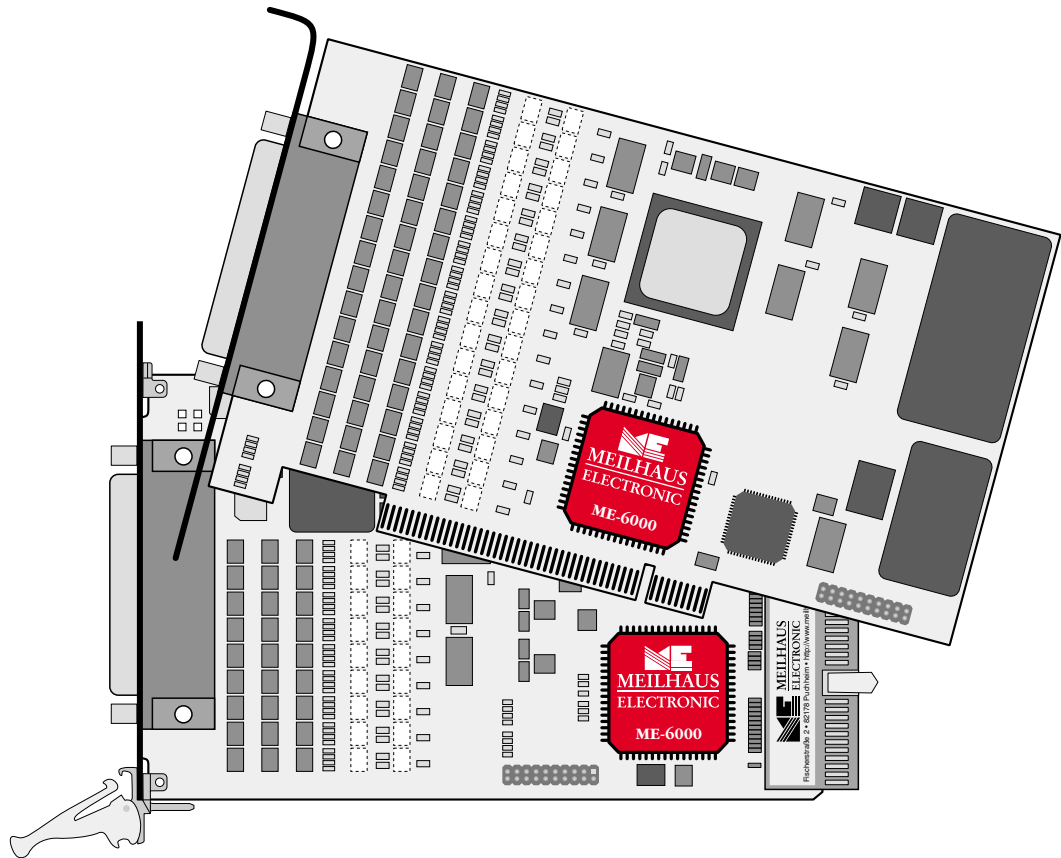


Meilhaus Electronic Manual

ME-6000 Series 2.3E (ME-6000/6100/6200/6300)



**16 Bit D/A-Conversion Board with up to 16 Channels
and electrical Isolation; optional: „Island Channels“**

Imprint

Manual ME-6000/6100/6200/6300

Revision 2.3E

Revised: 1. Oktober 2009

Meilhaus Electronic GmbH
Fischerstraße 2
D-82178 Puchheim/Munich
Germany
<http://www.meilhaus.com>

© Copyright 2009 Meilhaus Electronic GmbH

All rights reserved. No part of this publication may be reproduced or distributed in any form whether photocopied, printed, put on microfilm or be stored in any electronic media without the expressed written consent of Meilhaus Electronic GmbH.

Important note:

The information contained in this manual has been reviewed with great care and is believed to be complete and accurate. Meilhaus Electronic assumes no responsibility for its use, any infringements of patents or other rights of third parties which may result from use of this manual or the product. Meilhaus Electronic assumes no responsibility for any problems or damage which may result from errors or omissions. Specifications and instructions are subject to change without notice.

Borland Delphi is a trademark of Borland International Inc.

Turbo/Borland C is a trademark of Borland International Inc.

Visual C++ and Visual Basic are trademarks of the Microsoft Corporation.

VEE Pro and VEE OneLab are trademarks of Agilent Technologies.

ME-VEC and ME-FoXX are trademarks of Meilhaus Electronic.

Other company names and product names found in the text of this manual are also trademarks of the companies involved.



Table of Contents

1	Introduction.....	5
1.1	Important Notes	5
1.1.1	Use in Accordance with the Requirements.....	5
1.1.2	Improper Application.....	6
1.1.3	Unforseeable Misapplication	6
1.2	Package Contents	7
1.3	Features.....	8
1.4	System Requirements.....	10
1.5	Software Support.....	10
2	Starting up.....	11
2.1	Software-Installation.....	11
2.2	Test Program	11
3	Hardware	13
3.1	Block Diagram.....	13
3.2	D/A Section	15
3.2.1	Notes for Wiring.....	16
3.2.2	Electrical Isolation	16
3.2.3	Island Channels	18
3.2.4	Option „High Current“	19
3.2.5	External Trigger D/A Section.....	20
3.3	Digital I/O Section.....	21
4	Programming.....	23
4.1	D/A Section	24
4.1.1	Single Value Output	24
4.1.2	Timer Controlled Output	25
4.2	Digital I/O Section	26
4.2.1	Simple Input/Output	26
Appendix	27
A	Specifications	27
B	Pinout.....	30
B1	D-Sub Connector (ST1).....	31
B2	Auxiliary Connector (ST2)	33

C Accessories..... 34

D Technical Questions 36

 D1 Hotline 36

 D2 Service address 36

 D3 Driver Update 36

E Index 37

1 Introduction

Valued customer,

Thank you for purchasing this device from Meilhaus Electronic. You have chosen an innovative high technology product that left our premises in a fully functional and new condition.

Take the time to carefully examine the contents of the package for any loss or damage that may have occurred during shipping. If there are any items missing or if an item is damaged, contact us immediately.

Before you install the board in your computer, we recommend to read this manual carefully, especially the chapter describing board installation.

The descriptions in this manual concern both PCI- and CompactPCI versions of the ME-6000 series if not otherwise noted.

1.1 Important Notes

1.1.1 Use in Accordance with the Requirements

The PC boards of the ME-6000 series are designed for acquisition and output of analog and digital signals with a PC. Depending on type install the models of the ME-6000 series into:

... a free PCI slot (ME-6x00 PCI) or

... a free CompactPCI slot (ME-6x00 cPCI)

For installing a plug-in board please read the manual of your PC.

Please follow the notes and the specifications from page 27 on:

- Ensure a sufficient heat conductance from the board in the PC housing.
- All unused inputs should be connected to the ground reference of the appropriate functional section. This avoids cross talk between the input lines.

- Depending on the model the analog outputs are opto-isolated either as a whole relative to PC ground or the single channels against each another.
- Note, that the computer must be powered up, prior connecting signals by the external wiring of the board.
- Basically all connections to the board should only be made or removed in a powered down state of all components.
- Ensure that no static discharge occurs when handling the board or when connecting/disconnecting the external cable.
- Ensure that the connection cable is properly connected. It must be seated firmly on the D-Sub connector and must be tightened with the both screws, otherwise proper operation of the board can not be guaranteed!

1.1.2 Improper Application

PC plug-in boards for the PCI resp. CompactPCI bus may not be taken into operation outside of the PC. Never connect the devices with voltage-carrying parts, especially not with mains voltage.

Make sure, that not any contact with voltage-carrying parts can happen by the external wiring of the device. Basically all connections should only be made or removed in a powered down state.

1.1.3 Unforseeable Misapplication

The device is not suitable to be used as children's toy, in household or under unfavourable environment conditions (e. g. in the open). Appropriate precautions to avoid an unforseeable misapplication must be taken by the user.

1.2 Package Contents

We take great care to make sure that the package is complete in every way. We do ask that you take the time to examine the content of the box. Your box should consist of:

- D/A conversion board of the ME-6000 series for PCI resp. CompactPCI bus.
- Manual in PDF format on CD/DVD.
(optional as printed version)
- Driver software on CD/DVD.
- Additional mounting bracket ME-AK-D25F/S (cPCI) for PCI resp. CompactPCI slot
- 25pin D-Sub male connector

1.3 Features

ME-6000/6100 PCI/CompactPCI

Model	16 bit D/A converter		Digital I/Os
	total	...with FIFO	
ME-6000 _x /4	4	–	16
ME-6000 _x /8	8	–	16
ME-6000 _x /16	16	–	16
ME-6100 _x /4	4	4	16
ME-6100 _x /8	8	4	16
ME-6100 _x /16	16	4	16
$x = „i“$	„i“-option: all D/A channels electrically isolated from PC GND however with common ground reference ISO_GND		
$x = „p“$	„p“-option: all D/A channels isolated from each another („Island Channels“)		

Table 1: Model overview ME-6000/6100

ME-6200/6300 CompactPCI

Model	16 bit D/A converter		Digital I/Os
	total	...with FIFO	
ME-6200 _x /5	4 + 1 „U-Plus“	–	16
ME-6200 _x /9	8 + 1 „U-Plus“	–	16
ME-6300 _x /5	4 + 1 „U-Plus“	4	16
ME-6300 _x /9	8 + 1 „U-Plus“	4	16
$x = „i“$	„i“-option: all D/A channels electrically isolated from PC GND however with common ground reference ISO_GND		
$x = „p“$	„p“-option: all D/A channels isolated from each another („Island Channels“)		

Table 2: Model overview ME-6200/6300

Depending on the model the boards of the ME-6000 series provide 4-, 8- or 16 D/A channels for bipolar voltage output in the

output range ± 10 V as well as 16 digital I/Os. Each channel has its own high accuracy, high speed 16 bit D/A converter.

The D/A section is **electrically isolated** as a whole from the rest of the board. As an option you can isolate the single channels from each another („p“-option with so called **„Island Channels“**). With that accuracies better $\pm 1\%$ are possible.

Independently of the total number of channels you can use the first 4 channels for signal curve output on the **ME-6100/6300**. Each of the 4 channels has its own 8 kByte FIFO for output values. Sample rates up to **500 kHz per channel** are possible without load for the host computer. You can choose between the operation mode „Continuous“ for putting out values continuously and the operation mode „Wraparound“ for periodically signal curves.

All ME-6000/6100 with hardware version 2.6 and higher as well as all CompactPCI boards provide **16 digital I/O lines**. These are organized in two 8 bit wide TTL ports. The connection is done by the 25pin D-Sub connector of the included additional mounting bracket.

All models of type **ME-6200/6300** provide a special D/A channel (Uout_8) for voltage output in the range of 0...+50 V at 20 mA maximum. This channels is also named as „U-Plus“-channel. The supply for the electrical isolated output buffer of this channel provides a DC/DC converter on board (as a standard). The settling time of the channel is 25 μ s (full-scale).

On demand OEM-versions with other output voltage ranges up to ± 28 V are possible. An external supply for the output buffer in the range of ± 12 ... ± 28 V is also possible. If you are interested in OEM-versions please contact our sales department under the phone number: +49 (0)89/8901660.

1.4 System Requirements

The ME-6000 series can be installed into any PC with Intel® Pentium® processor or compatible computer with a free standard PCI or CompactPCI slot (32 bit, 33MHz, 5V). The board is supported by the Meilhaus Intelligent Driver System (ME-iDS) under Windows 2000 or higher and Linux kernel 2.6 or higher.

1.5 Software Support

The ME-6000/6100 is supported by the Meilhaus Intelligent Driver System (ME-iDS). The ME-iDS is a unique driver system covering different devices and operating systems. It supports Windows 2000/XP/Vista and Windows 7 as well as Linux systems with kernel 2.6 and contains an universal function library (API) for all common programming languages.

A detailed description of the functions can be found in the ME-iDS manual on the CD/DVD enclosed.

Please read also the notes in the appropriate read-me files.

2 Starting up

Please read your computer manual instructions on how to install new hardware components **before installing the board**.

2.1 Software-Installation

- **Installation under Windows**

The following basic procedure should be used:

If you have received the driver software as an archive file please un-pack the software **before installing the board**. First choose a directory on your computer (e. g. C:\Meilhaus).

We recommend to operate your new data acquisition hardware using the Meilhaus Intelligent Driver System (ME-iDS). For installation and operation of the driver system please follow the documentation in electronic form included with the software package.

If you want to operate the hardware with the older single driver for the appropriate device family, first plug-in the board into your computer and install the driver software second. This order of operation is important to guarantee the Plug&Play operation under Windows 95*/98/Me/2000/XP. Windows 95 and NT 4.0 need an analogous order of operation however the installation procedure differs slightly.

**If the Windows version is supported by the appropriate board type (see readme files).*

- **Installation under Linux**

Note the installation instructions included with archive file of the appropriate driver.

2.2 Test Program

For simple testing of the board use the appropriate test program provided with the ME-iDS.

3 Hardware

3.1 Block Diagram

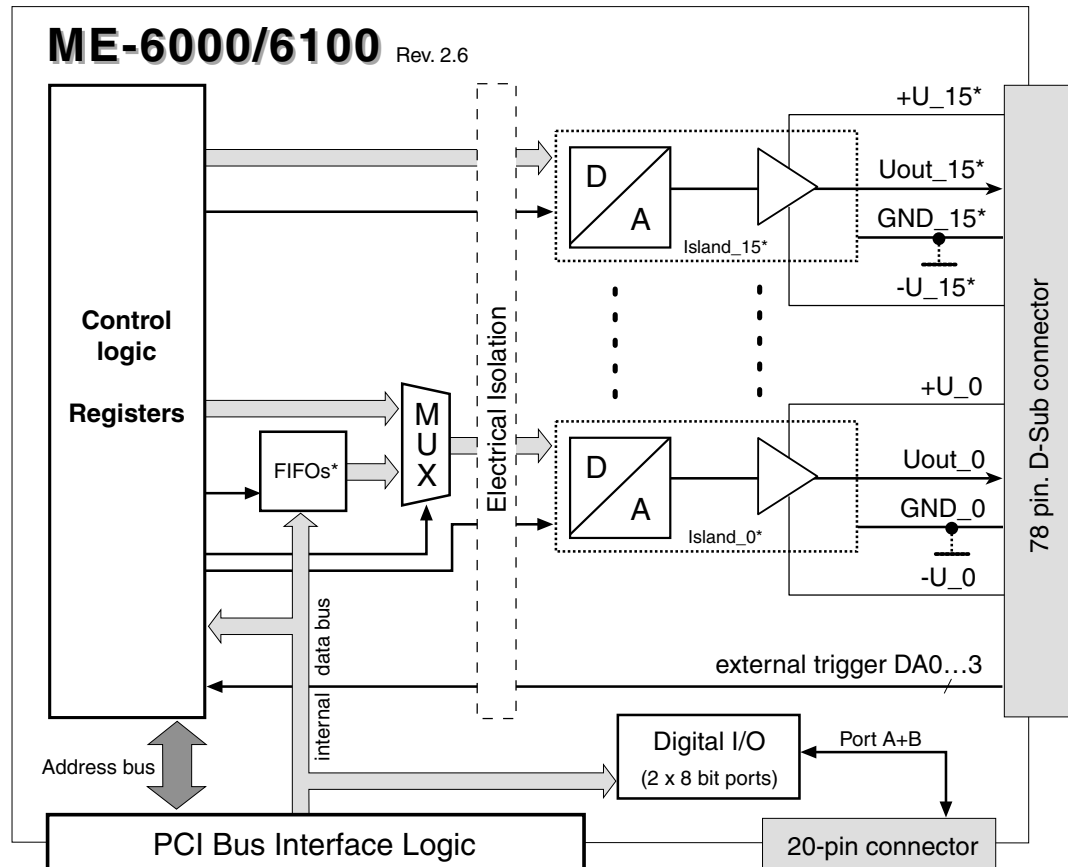


Diagram 1: Block diagram of ME-6000/6100

- ME-6000/4:** 4 D/A channels $\pm 10V$ (Uout_0...3), 16 DIOs
- ME-6000/8:** 8 D/A channels $\pm 10V$ (Uout_0...7), 16 DIOs
- ME-6000/16:** 16 D/A channels $\pm 10V$ (Uout_0...15), 16 DIOs
- ME-6100/4:** 4 D/A channels $\pm 10V$ (Uout_0...3) with FIFO, 16 DIOs
- ME-6100/8:** 8 D/A channels $\pm 10V$ (Uout_0...7), 4 of them with FIFO (Uout_0...3), 16 DIOs
- ME-6100/16:** 16 D/A channels $\pm 10V$ (Uout_0...15), 4 of them with FIFO (Uout_0...3), 16 DIOs

* Depending on the version not all functional groups available.

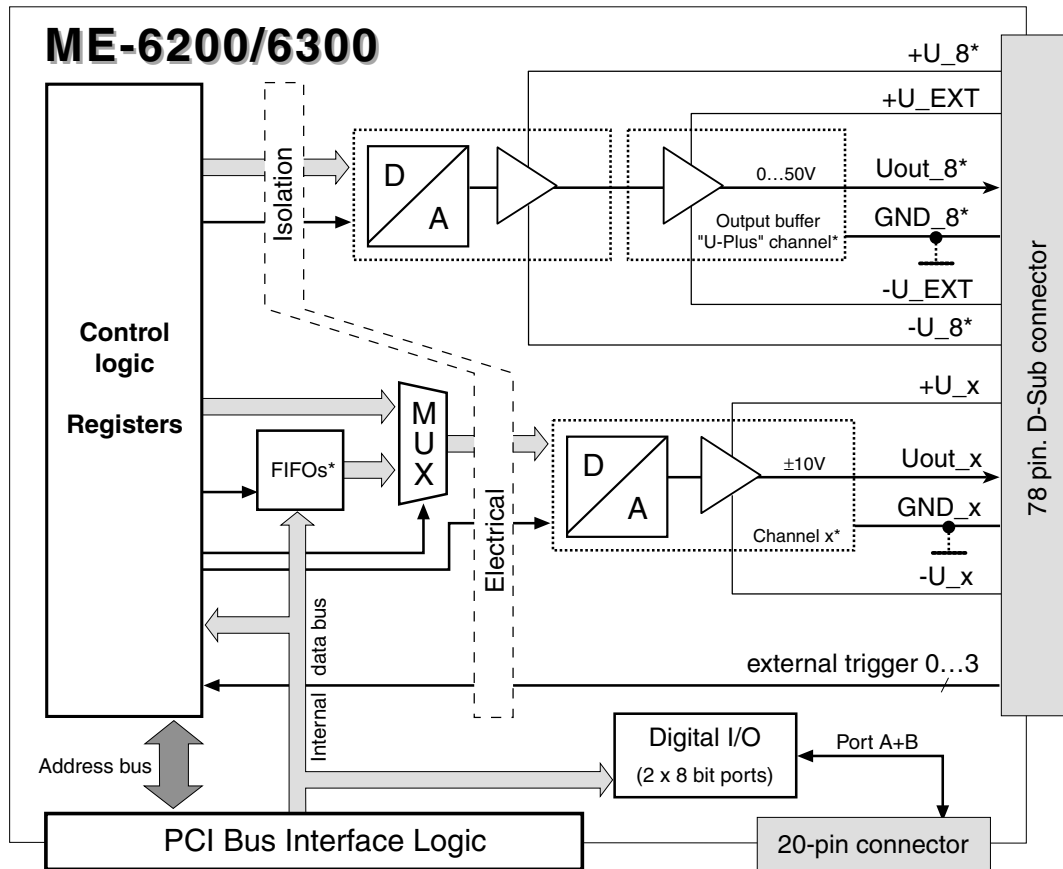


Diagram 2: Blockschaltbild der ME-6200/ME-6300

- ME-6200/5:** 4 D/A channels $\pm 10V$ ($x=0\dots 3$), 1 „U-Plus“ channel (Uout_8), 16 DIOs
- ME-6200/9:** 8 D/A channels $\pm 10V$ ($x=0\dots 7$), 1 „U-Plus“ channel (Uout_8), 16 DIOs
- ME-6300/5:** 4 D/A channels $\pm 10V$ ($x=0\dots 3$) with FIFO, 1 „U-Plus“ channel (Uout_8), 16 DIOs
- ME-6300/9:** 8 D/A channels $\pm 10V$ ($x=0\dots 7$), 4 of them with FIFO, 1 „U-Plus“ channel (Uout_8), 16 DIOs

* Depending on the version not all functional groups available.

3.2 D/A Section

Depending on model the boards of the ME-6000 series provide up to 16 analog output channels. Each channel has its own serial 16 bit D/A converter and converts up to 500 kS/s.

The standard D/A channels can output in the range from -10V to +10V-1LSB.

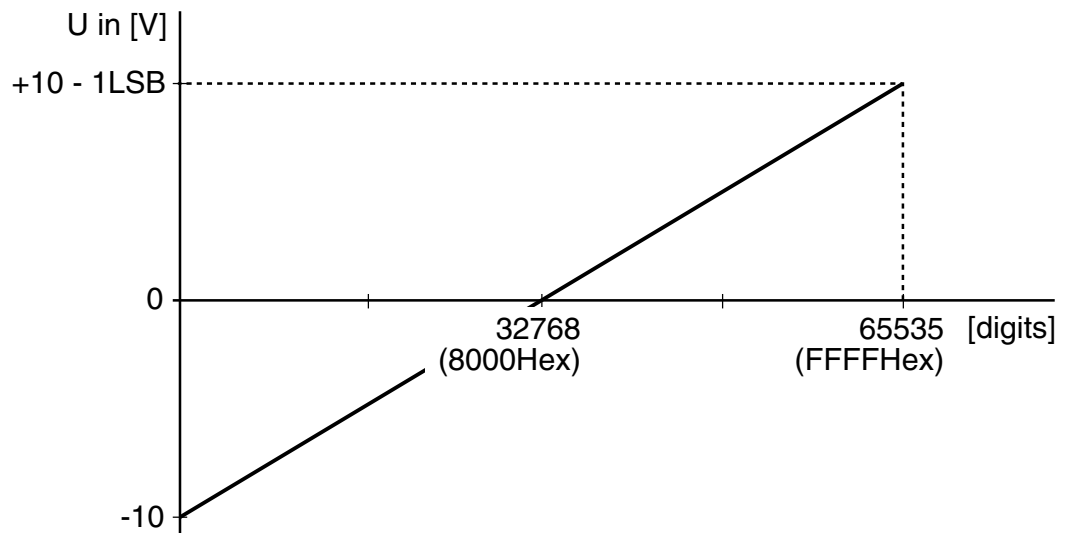


Diagram 3: Characteristic for standard D/A channels

The output voltage range of the „U-Plus“ channels (ME-6200/ME-6300) is from 0V to +50V-1LSB if the standard output buffer is used.

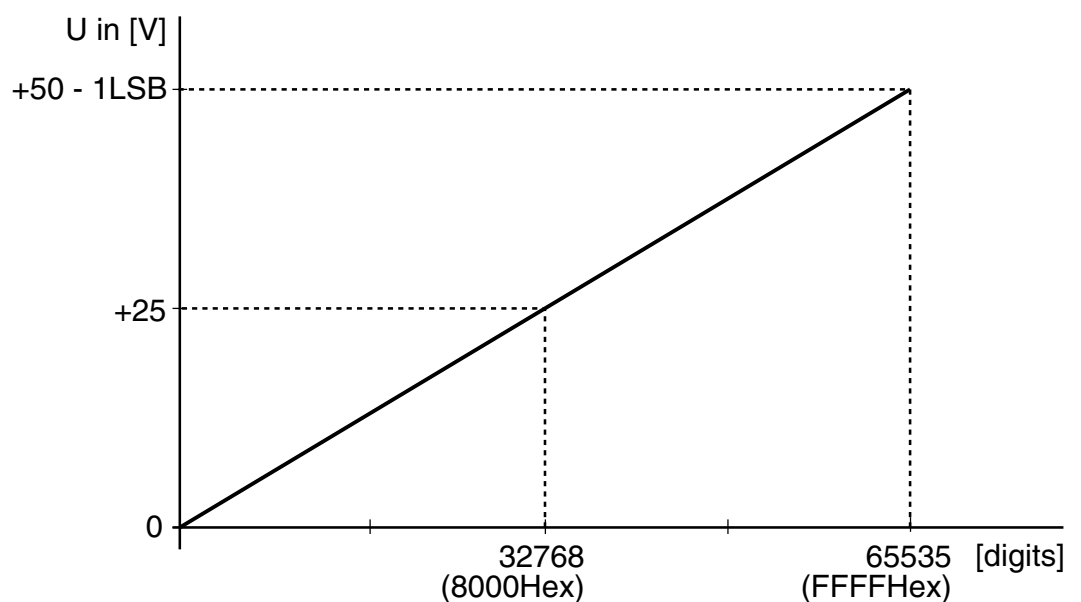


Diagram 4: Characteristic for „U-Plus“ channels

3.2.1 Notes for Wiring

Attention:

After power up the standard D/A channels output -10 V. After starting the driver the output value changes to 0 V. To guarantee a defined power up condition please start your host computer first and do not power up your external wiring until the driver started.

The „U-Plus“ channel of the ME-6200/6300 outputs 0 V immediately after power up.

Important Note!

Make sure that a reference from the external wiring to PC ground is made. The pins +U_0...15 and -U_0...15 are only required, if the one of the options „Island Channels“ or „High Current“ (HC) will be used; else they must be **not connected!**

3.2.2 Electrical Isolation

All D/A channels of the board are electrically isolated by optocouplers from PC-GND. I.e. GND_0...15 are connected with each another and have a common ground reference (ISO_GND). On the ME-6100/6300 also the external trigger inputs are opto-isolated.

The output current I_{\max} per channel depends of the number of assembled resp. used channels (see table below).

Channels	I_{\max}	Channels	I_{\max}
4	$\pm 15\text{mA}$	12	$\pm 10\text{mA}$
8	$\pm 15\text{mA}$	16	$\pm 3\text{mA}$

Table 3: Max. Ausgangsstrom

Note, the output current per channel may not exceed $\pm 15\text{ mA}$! The pins for the external $\pm 15\text{V}$ power supply (+U_x and -U_x) are driven internally and **may be not connected externally!**

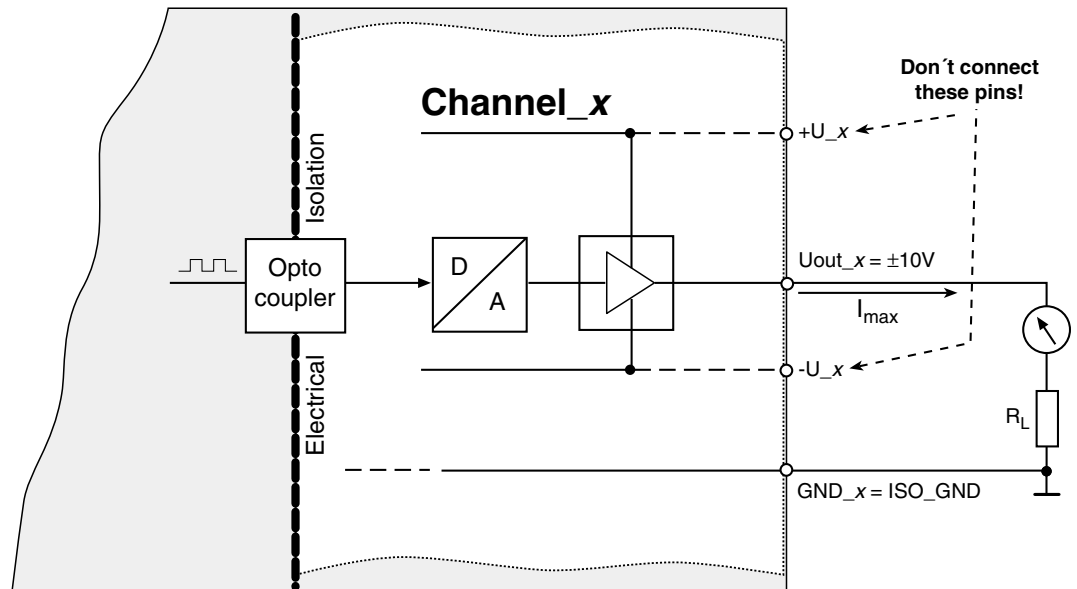


Diagram 5: Electrical isolation of all channels

3.2.3 Island Channels

With the „p“-option („Island Channels“) all the D/A channels use independent ground levels and supply pins. I.e. you have to connect the ground reference of each channel (GND_0...15) with the appropriate GND of your external application. Further on every island channel requires an independent, symmetrical power supply of $\pm 15\text{ V}$ ($\pm 22\text{mA}$ per channel for $I_{\text{max}} = \pm 15\text{mA}$). If you use a high end, low noise power supply, you can realize excellent accuracies better $\pm 1\%$.

The external trigger inputs (AO_TRIG_0...3) are also included with the „islands“.

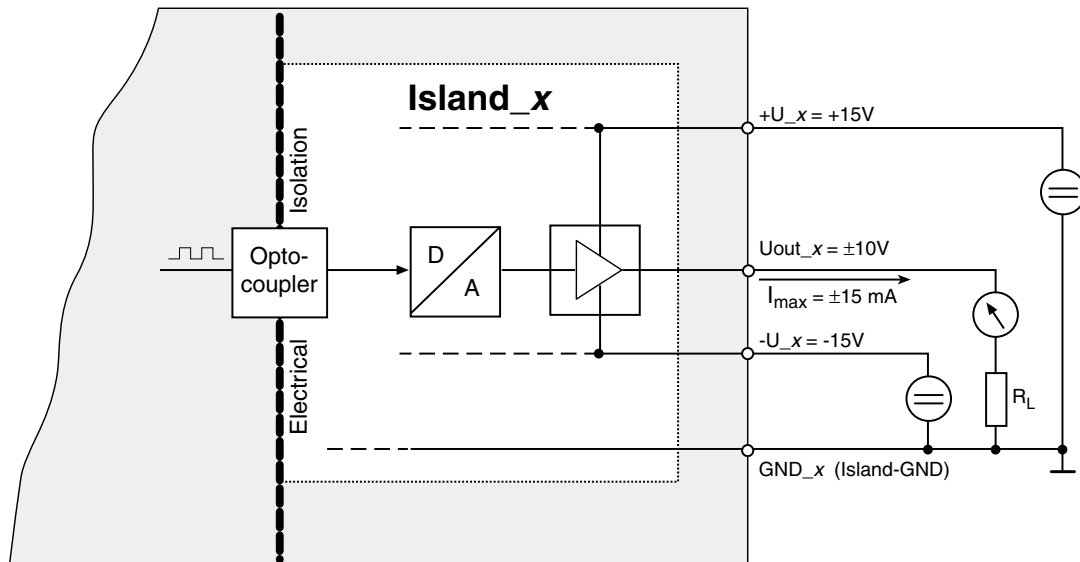


Diagram 6: Island Channels

3.2.4 Option „High Current“

The option „**High Current**“ (HC) can be combined with the board versions without „island channels“. It gives you the possibility to increase the output current per channel to $I_{\max} = \pm 15\text{mA}$. This requires an external, low noise power supply of $\pm 15\text{V}$ ($\pm 22\text{mA}$ per channel for $I_{\max} = \pm 15\text{mA}$) and a change to your hardware – please contact our service department (see page 36).

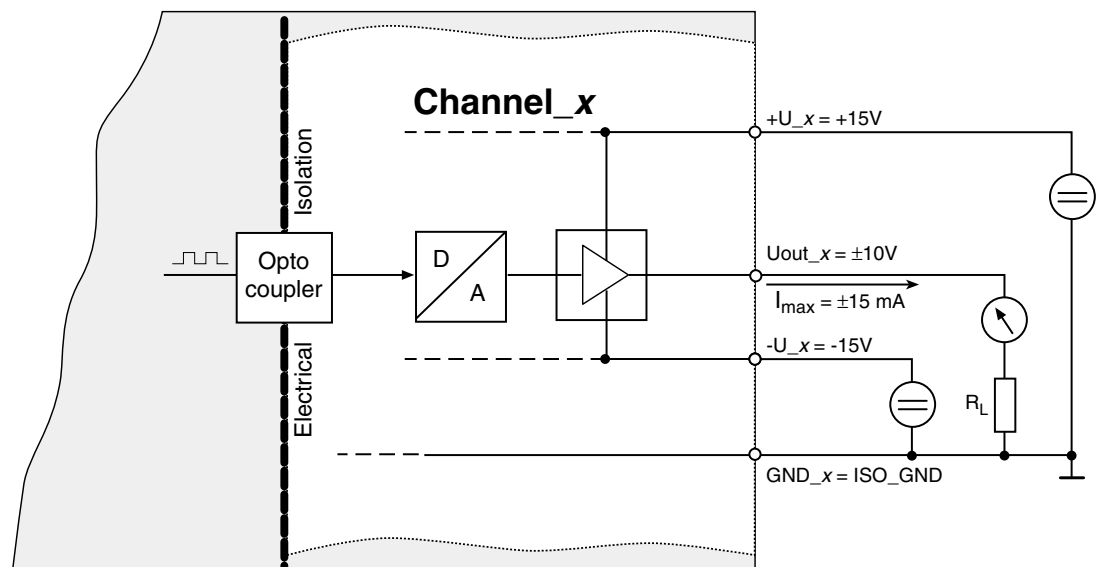


Diagram 7: Wiring of the outputs with the option „High Current“ (with electrical isolation)

3.2.5 External Trigger D/A Section

The D/A channels 0...3 can be started by an external trigger signal (AO_TRIG_x). Depending on the selected option (RISING, FALLING or BOTH) the conversion will be started on the matching edge. The option „BOTH“ means either rising **or** falling edge.

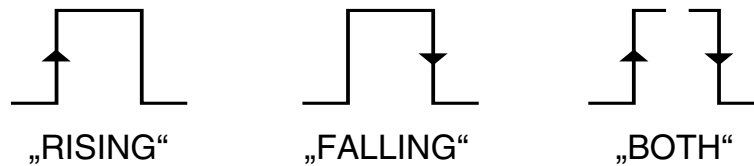


Diagram 8: Trigger edges

It is important that the voltage levels of the external trigger input wiring be within the specified limits (see specifications on page 27) and that a reference to ground (GND_x) be made.

The opto-isolated trigger inputs work with a high level of +5V. For low level a current I_F of $7,5 \text{ mA} \leq I_F \leq 10 \text{ mA}$ must be driven against ground (GND_x).

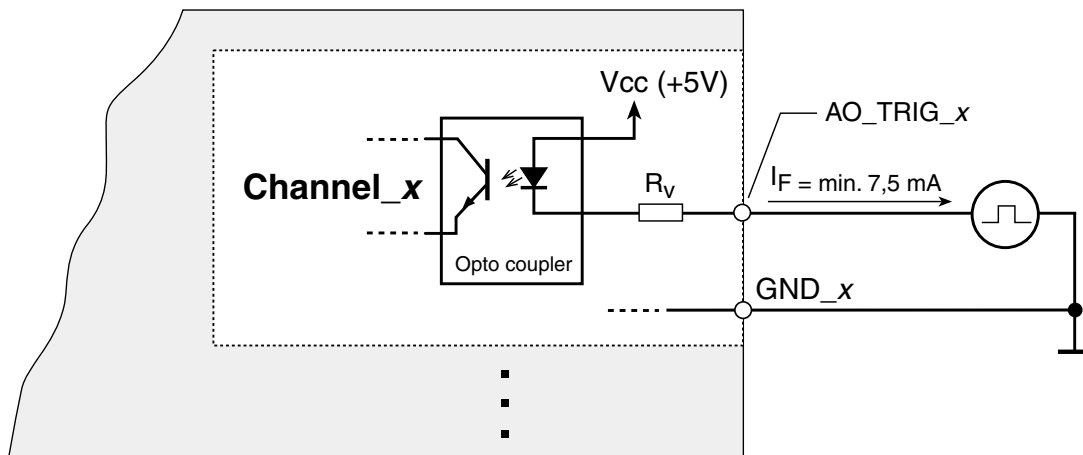


Abb. 9: Wiring of the D/A trigger inputs

Note: By appropriate programming one or multiple channels (up to 16 channels depending on model) can be started from any trigger input.

3.3 Digital I/O Section

All boards of type ME-6000/6100 with hardware version 2.6 or higher as well as all boards of type ME-6200/6300 provide two TTL ports with 8 bits each. Each port can be configured independently as input or output. After power up, all ports are set to input. For more information about programming refer to chapter 4.2 "Digital I/O Section" on page 26.

The both ports A and B, are available on the 20pin flat connector ST2 or can be routed to an additional mounting bracket (ME-AK-D25F/S) with a D-sub 25 female connector.

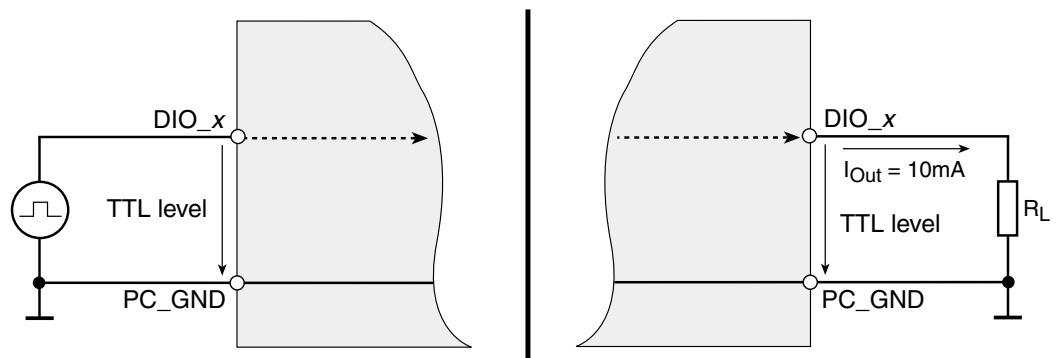


Diagram 10: Wiring of the digital inputs (left) and outputs (rights)

It is important that the voltage levels of the digital input/output wiring be within the TTL level limits (see specifications on page 27) and that a reference to PC ground (PC_GND) be made. The maximum output current is $I_{Out} = I_{OL} = I_{OH} = 10 \text{ mA}$.

4 Programming

For programming the device you find the Meilhaus Intelligent Driver System (ME-iDS) included with your package. The ME-iDS is a unique driver system covering different devices and operating systems. It supports Windows 2000 and higher as well as Linux systems with kernel 2.6 and higher and contains an universal function library (API) for all common programming languages (the extent of the current software support can be found in the readme files of the ME-iDS).

A detailed description of the functions can be found in the ME-iDS manual (see CD/DVD enclosed or online under: www.meilhaus.com/download). Further details regarding to the assignment of the subdevices and device specific arguments can be found in the help file (help file format under Windows, *.chm) which can be called via the „ME-iDS Control Center“ in the info area of the task bar (as a rule in the lower right corner of the screen) or via the Windows start menu.

If you don't want to program your board with the ME-iDS you find the last revision of the old function reference in the ME-6000 manual Rev. 2.1 (see: www.meilhaus.com). Please note, that we cannot support this driver anymore.

4.1 D/A Section

4.1.1 Single Value Output

ME-6000/6200	ME-6100/6300
✓	✓

The output of a single value is done in operation mode „**Single**“. Each D/A channel is accessed as a subdevice of type ME_TYPE_AO, subtype ME_SUBTYPE_SINGLE. Note the order of operation as described in the ME-iDS manual. The following parameters can be configured by the functions *meIOSingleConfigO* and *meIOSingleO*:

- Determine Subdevice with *meQuery...* functions.
- Channel number: always „0“
- Output voltage range: $\pm 10\text{V}$.
- Trigger channel: optional synchronous start of several channels.
- Trigger type: per software or external digital trigger.
- Trigger edge: trigger event on falling, rising or any edge.
- Time-Out: in case the external trigger signal does not occur.

4.1.2 Timer Controlled Output

ME-6000/6200	ME-6100/6300
–	✓

Programming of timer controlled output is done in operation mode „**Streaming**“. Each D/A channel is accessed as a subdevice of type ME_TYPE_AO, subtype ME_SUBTYPE_STREAMING. Note the order of operation as described in the ME-iDS manual. The following parameters can be configured by the functions *meIOStreamConfig()*:

- Determine subdevice with *meQuery...* functions (capable for streaming operation).
- Channel number: always „0“
- Output voltage range: $\pm 10V$.
- Trigger channel: optional synchronous start of several channels.
- Trigger type: per software or external digital trigger.
- Trigger edge: trigger event on falling, rising or any edge.
- A programmable counter serves as timer which is configured by the trigger structure *meIOStreamTrigger*. The 32 bit counter uses a 33MHz base frequency. This results in a period of 30.30ns, which is the smallest time unit available. This will be referred to as “1 Tick” in the following sections. The functions *meIOStreamFrequencyToTicks()* and *meIOStreamTimeToTicks()* offer a convenient way to convert the frequency resp. the period in ticks to program the timer. Sample rates between 500 kS/s and 0.5 samples per minute can be set.

4.2 Digital I/O Section

All ME-6000/6100 PCI with hardware version 2.6 and higher as well as all CompactPCI boards provide two 8 bit wide digital I/O ports (A, B). Each port is considered as a unique subdevice in the Meilhaus Intelligent Driver System (ME-iDS) and can be independently configured as input or output. On power up, all ports are set to input. The assignment of the ports to the subdevices can be found in the ME-iDS help file (see ME-iDS Control Center).

For wiring the digital ports please read chapter 3.3 on page 21.

The following operation modes are possible:

4.2.1 Simple Input/Output

ME-6000/6200	ME-6100/6300
✓	✓

The input/output of single digital values is done in operation mode „**Single**“. Each digital port is accessed as a subdevice of type ME_TYPE_DIO, subtype ME_SUBTYPE_SINGLE. Note the order of operation as described in the ME-iDS manual. The following parameters can be configured by the functions *meIOSingleConfig()* and *meIOSingle()*:

- Determine Subdevice with *meQuery...* functions.
- Port direction: input or output.
- Port width: bit or byte operation (8 bit).

Note: Ports defined as output can also be read back!

Appendix

A Specifications

(Ambient temperature 25°C)

PC Interface

Standard PCI resp. CompactPCI bus (32 bit, 33MHz, 5V);
 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	±10 V
Output current	Without external power supply: depends on the number of assembled resp. used channels:

Channels	I _{max} per channel
4	15mA
8	15mA
12	10mA
16	3mA

With external power supply (±15V) only in connection with the options „Island channels“ and „High Current“: max. ±15mA per channel

Ext. power supply	±15 V (optional); current per channel: 7mA + load (max. ±15mA)
Settling time (DAC)	max. 2µs at full scale (-10V → +10V)
Total accuracy:	
„With electrical isolation“	max. ±20mV
„With island channels“	max. ±10mV
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 each another)
D/A-FIFOs	8k values per channel
Sample rate	max. 500kS/s
D/A Timer	programmable from 2 μ s up to 130s in steps of 30.30ns

External Trigger (channel 0..3)

Voltage level	typ. 5V
Input current I_F	$7,5\text{mA} \leq I_F \leq 10\text{mA}$
Reference to ground	Ground (GND_x)
Delay time	max. 80ns

Electrical Isolation, Island Channels (optional)

Overvoltage protection	max. 500V
------------------------	-----------

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

Output line	Uout_8
Voltage range	0..50V
Output current	max. 20mA
Offset error	typ. $\pm 5\text{mV}$; max. $\pm 20\text{mV}$
Gain error	$\pm 0,16\%$
Settling time	max. 25 μ s at full-scale (0 \rightarrow 50V) with 20mA load

Digital-I/Os

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

General Information

Power consumption at +5V (16 D/A channels; without ext. load):	
„With electrical isolation“	max. 3,6A
„With island channels“	max. 1,2A
Load for VCC_OUT	max. 200mA
Physical size PCI	PCI: 174 mm x 99 mm (without mounting bracket and connector)
Physical size CompactPCI	3 U CompactPCI board

Connectors	78pin D-Sub female connector (ST1); 20pin IDC connector (ST2)
Operating temperature	0...70°C
Storage temperature	-40...100 °C
Relative humidity	20...55% (non condensing)

CE Certification

EMC Directive	89/336/EMC
Emission	EN 55022
Noise immunity	EN 50082-2

B 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 ±15V power supply. In all other cases these pins output ±15V and it is not permitted to connect them. **The hardware will be irreversible damaged!**

Uout _x	Analog output channels
+U _x	+15V power supply; only with the options „High Current“ (HC) and „Island Channels“.
-U _x	-15V power supply; only with the options „High Current“ (HC) and „Island Channels“.
AO_TRIG _x	Digital trigger input for each D/A channels 0...3
DIO_A _x	Digital-I/O port A
DIO_B _x	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“ additionally the grounds of the single D/A channels are isolated from each another.
PC_GND	PC ground for the digital-I/O section
VCC_OUT	V _{CC} output (+5V from PC) max. 200mA load
+U_EXT	ME-6200/6300 optional: pins for the positive supply for the output buffer of the „U-Plus“ channel (Uout ₈).
-U_EXT	ME-6200/6300 optional: pins for the negative supply for the output buffer of the „U-Plus“ channel (Uout ₈).
n.c.	Pin not connected

B1 D-Sub Connector (ST1)

B1.1 ME-6000/6100

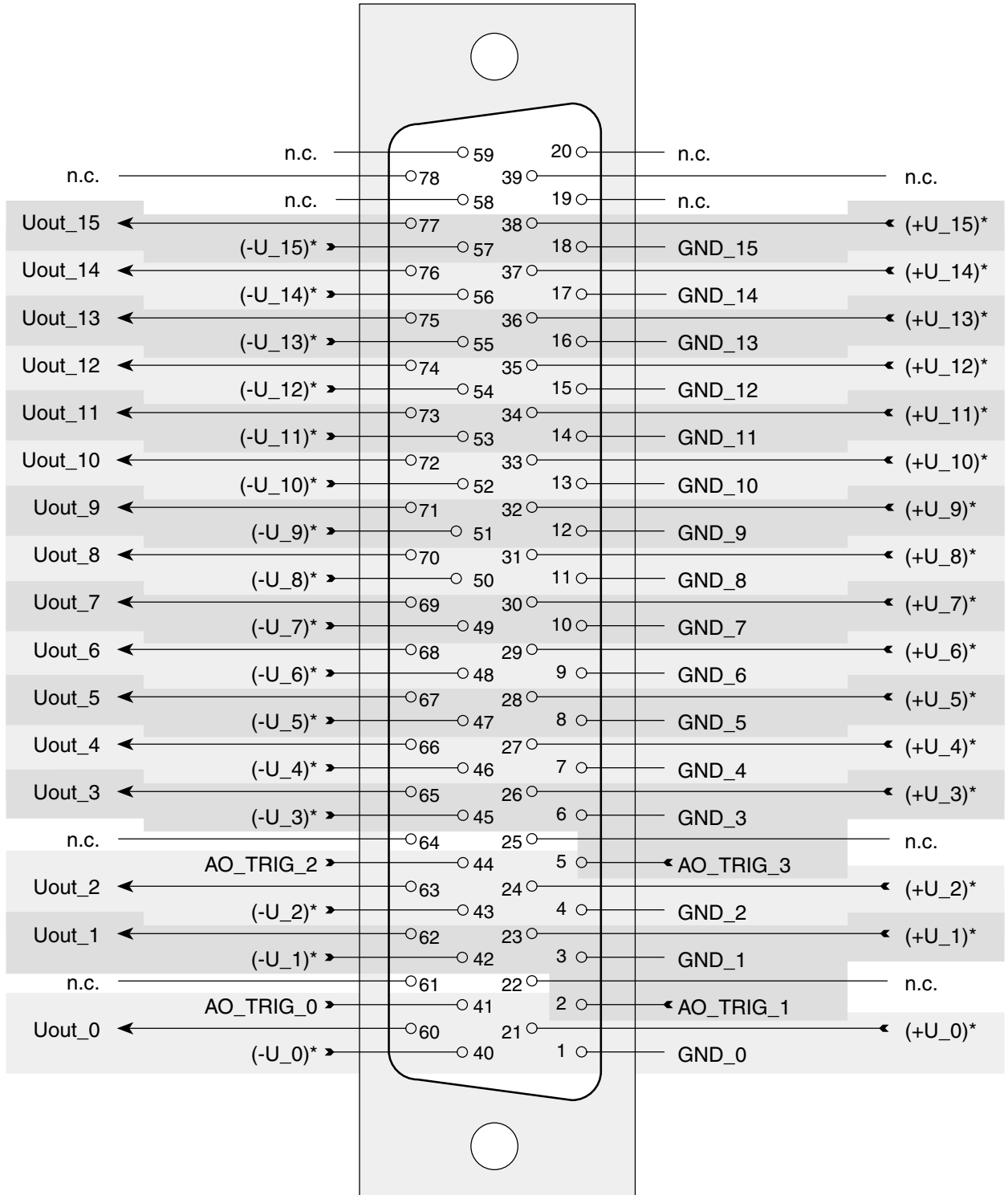


Diagram 11: Pinout of the 78pin D-Sub female connector

*** Note the warning on page 31!**

B1.2 ME-6200/6300

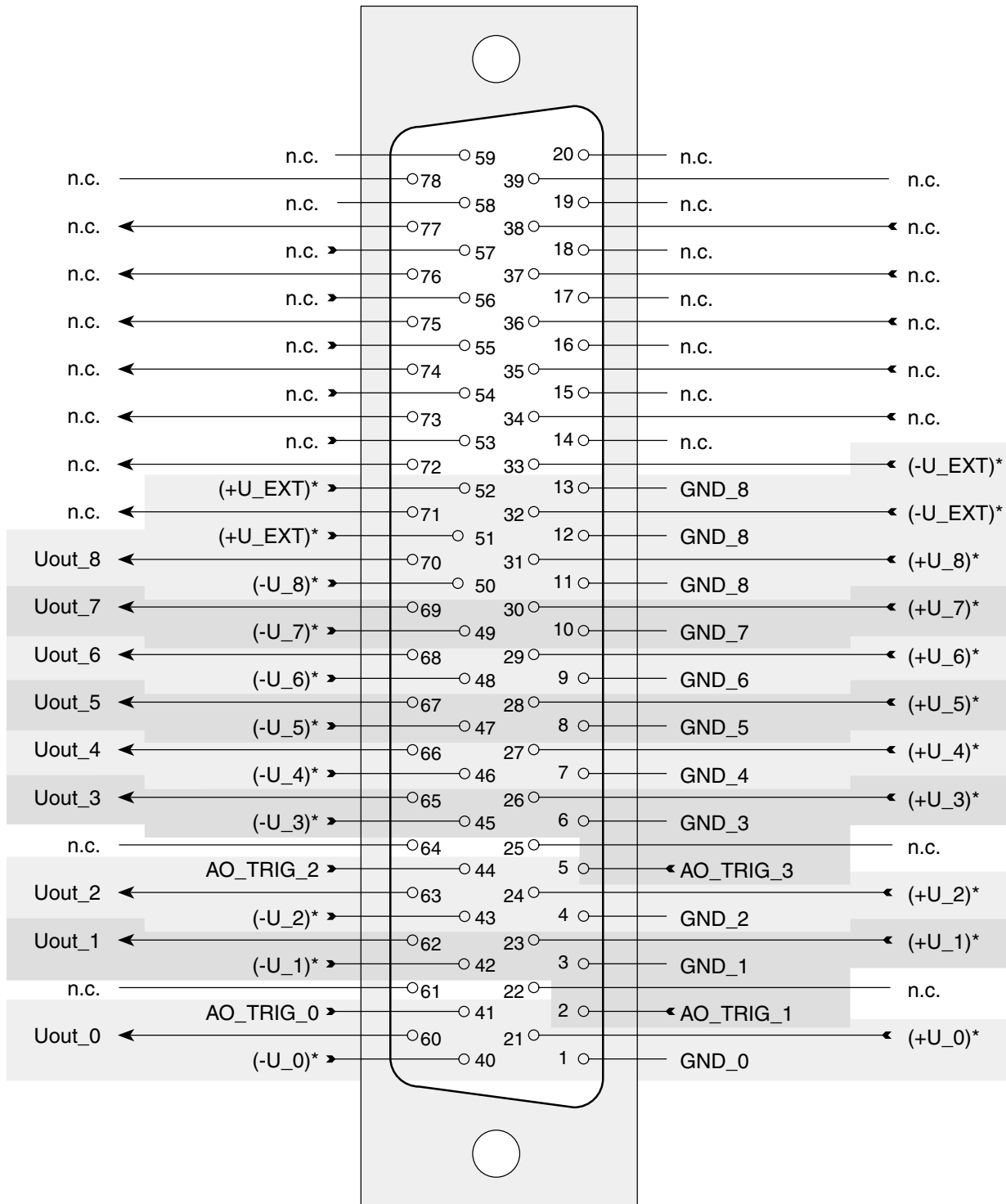


Abb. 12: Belegung der 78poligen Sub-D-Buchse

*** Note the warning on page 31!**

B2 Auxiliary Connector (ST2)

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

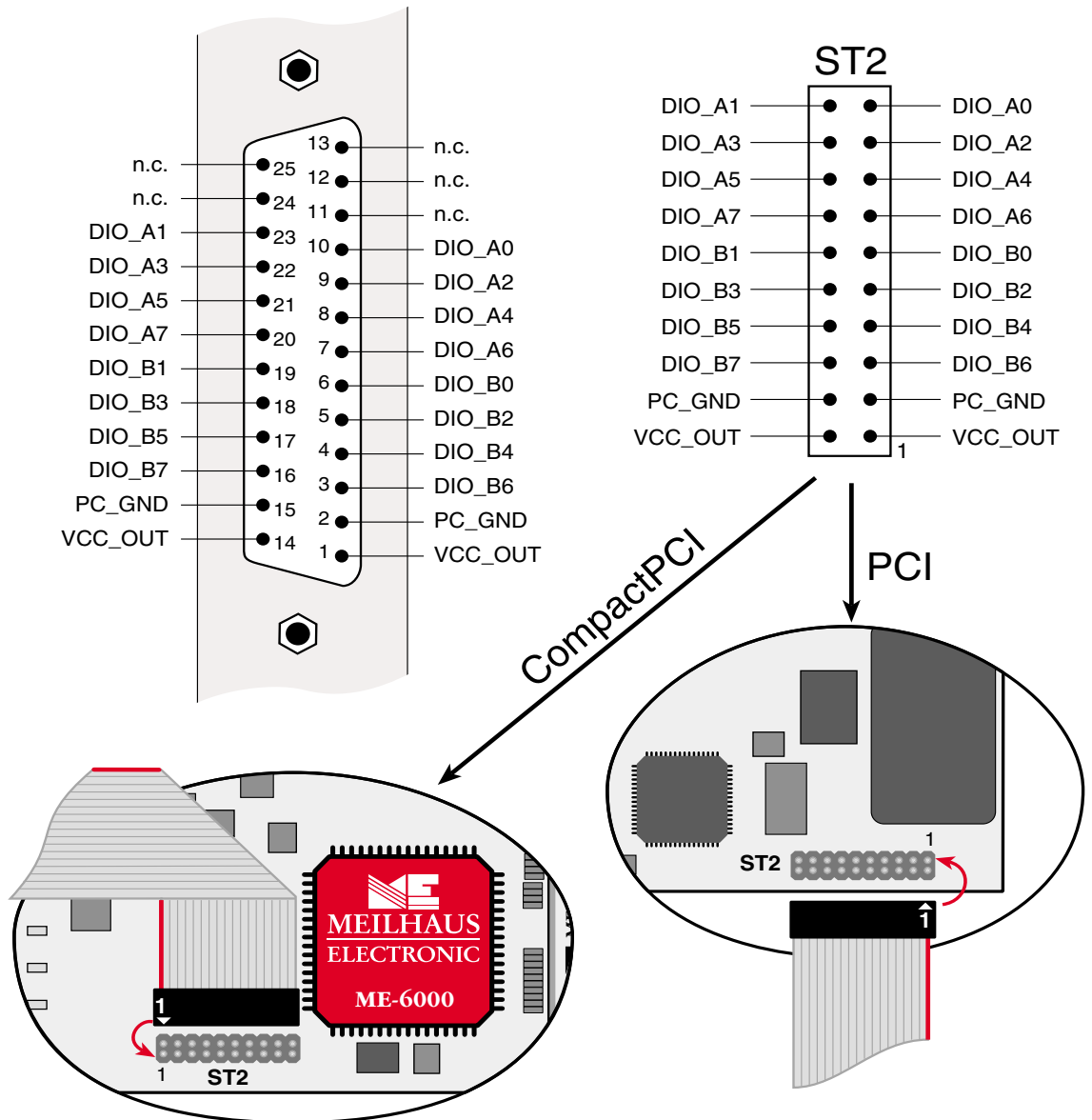


Diagram 13: Auxiliary connector ST2 for ME-6000 series (top view)

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.

C Accessories

We recommend to use a high quality connector cable with single shielded lines per channel. As accessory we provide the special connector cable ME-AK-D78/6000M-OE (length: 1m).

ME-AK-D78/6000M-OE

Special connector cable from 78pin D-Sub male connector to 16 single shielded lines with open end. **Note the warning on p. 31!**

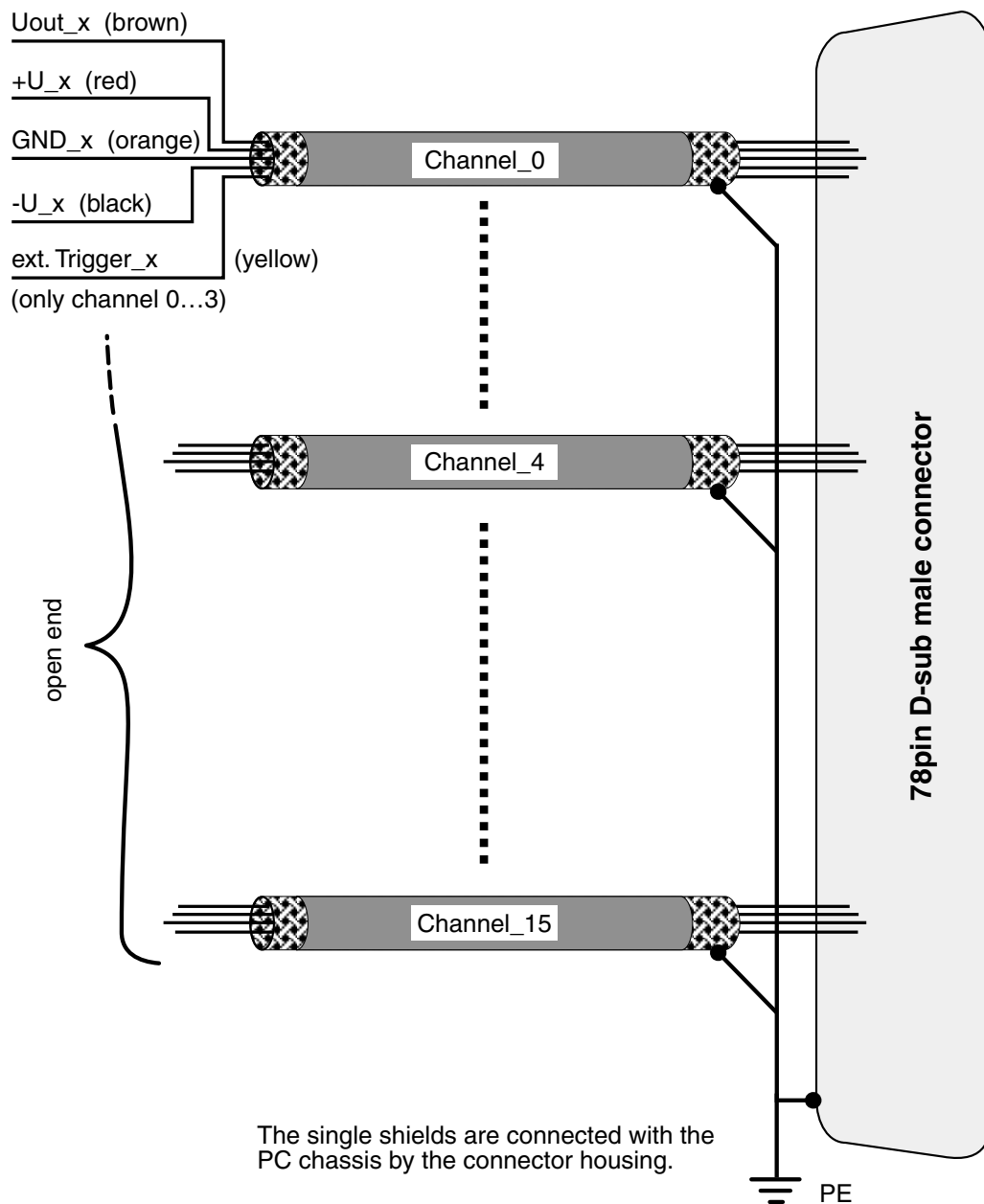


Diagram 14: Special cable for ME-6000 series

ME-63Xtend Series

External relay and digital I/O boards (DIN rail mounting possible). Connection by ST2 with additional mounting bracket ME AK-D25F/S and special connection cable ME AK-D2578/4000.

ME-UB Series

Desktop relay and digital I/O boxes. Connection by ST2 with additional mounting bracket ME AK-D25F/S and special connection cable ME AK-D2515/4000.

ME AK-D25/HQ/1

High quality cable with different lengths. 25-pin D-sub male to female, 1:1 contacted. With metal housing, line diameter 40 x 0.25 mm². Max. current load 1.4 A per line; load on 20 lines: 2 A.

For further information on accessories please refer to the current Meilhaus catalog.

D Technical Questions

D1 Hotline

If you should have any technical questions or problems that can be put down to your Meilhaus device, please send a fax to our hotline:

Fax hotline: + 49 (0) 89/89 01 66 28

eMail: support@meilhaus.de

Please give a full description of the problems and as much information as possible, including operating system information.

D2 Service address

If a technical error should occur with your device please contact us at the following address:

Meilhaus Electronic GmbH

Service Department

Fischerstraße 2

D-82178 Puchheim/Germany

If you want to send back a device to be repaired it is strictly necessary to request for a RMA number and to follow the notes to deal with the RMA process. Please attach a detailed error description of the problem, including information about operating system and application software!

D3 Driver Update

The current driver versions for Meilhaus devices and our manuals in PDF format are available under www.meilhaus.com.

E **Index**

A

Accessories 34
Adapter Cable 33
Appendix 27

B

Block Diagram 13

D

D/A Section
 Hardware Description 15
 Programming 24
Digital I/O
 Hardware Description 21
 Programming 26
 Switching 21
Driver Update 36
D-Sub connector 31

E

Electrical Isolation 16

F

Features 8

H

Hardware Description 13
 Electrical Isolation 16
 High Current Option 19
 Island Channels 18

I

Important Notes 5
Introduction 5
Island Channels 18

M

Model Overview 8

O

Operation Modes
 Simple Input/Output 26
 Single (Output) 24
 Stream Output 25

P

Package contents 7
Pinout 30
Programming 23
 D/A Section 24
 Digital I/O Section 26

S

Service and Support 36
Software Support 10
Specifications 27
System Requirements 10

T

Trigger edges 20
Trigger external 20

