Meilhaus Electronic Manual

ME-8200 Series

PCI-, PCI-Express-, CompactPCI- and USB-Versions

8/16 Opto-Isolated Inputs,

8/16 Opto-Isolated Outputs 16 TTL-I/Os

Imprint

Manual ME-8200 Series

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Content

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.

Please 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, please contact us immediately.

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

The descriptions in this manual concern PCI-, PCI-Express and CompactPCI-versions of the ME-8200 series, if not otherwise noted.

1.1   Important Notes

1.1.1   Use in Accordance with the Requirements

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

> a free PCI slot (PCI versions) or

> a free PCI Express slot (PCIe versions) or

> a free CompactPCI-slot (3 HE cPCI versions)

For information on how to install a plug-in board or connect a USB device, please read the manual of your PC.

Please note the instructions and specifications as presented in this manual (Appendix A, Specifications):

• Please ensure sufficient heat dissipation for the board within 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.

- The opto-isolated inputs and outputs achieve an electrical isolation of the application relative to PC ground.
- Note that the computer must be powered up prior to connecting signals by the external wiring of the board.
- As a basic principle, 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 while handling the board or while 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 both screws, otherwise proper operation of the board cannot be guaranteed.

1.1.2 Improper Application

PC plug-in boards for the PCI-, PCI-Express- or 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. As power supply for the USB models only an authorized power adaptor may be used.

Make sure that no contact with voltage-carrying parts can happen by the external wiring of the device. As a basic principle, all connections should only be made or removed in a powered-down state.

1.1.3 Unforeseeable Misapplications

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

1.1.4 Warning

The device was developed and produced in accordance to the EMC low-voltage directive 73/23/EWG. When putting the device into operation especially with voltages greater than 42 V please follow the appropriate standards, installation instructions and national safty standards. Meilhaus Electronic GmbH assumes no responsibility for damage in case of faulty installation, operation or handling.

1.2   Package Contents

We take great care to ensure your delivery is complete. Nonetheless, please check the list enclosed to verify the contents of your delivery. You should find included:

- Opto-isolated digital-I/O board for PCI-, PCI-Express- or CompactPCI-bus resp. opto-isolated digital-I/O box for USB.
- Manual in PDF format on CD/DVD (optional as printed version).
- Driver software on CD/DVD.
- 37-pin D-Sub male connector.
- Additional mounting bracket (PCI-, PCI-Express- and Compact-PCI-models).
- 25-pin D-Sub male connector.
- USB models: USB 1.1 connection cable (Plug type A to plug type B 1.8 m).

1.3   Performance Notes

The ME-8200 series is provided as a digital-I/O board for PCI-, PCI-Express- resp. CompactPCI-bus or as USB box (USB 1.1, USB 2.0 compatible).

Model	Opto-In	Opto-Out	TTL-I/Os	IRQ
ME-8200A cPCI/PCI/PCIe	8	8	16	-
ME-8200B cPCI/PCI/PCIe	16	16	16	-
ME-8200A USB	8	8	16	–
ME-8200B USB	16	16	16	–

Table 1: Model overview ME-8200 series

- **Opto-isolated digital inputs**: The ME-8200A provides 8 opto-isolated inputs (digital input port A) and ME-8200B provides 16 opto-isolated inputs (digital input port A and B). The inputs work within a voltage high level 2.5…32 V (specifications see page 22).
- **Opto-isolated digital outputs**: The ME-8200A provides 8 opto-isolated outputs (digital output port A) and the ME-8200B provides 16 opto-isolated outputs (digital output port A and B).

The outputs are of type "source" and designed for an output high level of 10.5 V to 32 V.

The max. output current is 0.7 A per channel (specifications see page 22). The output drivers are short circuit-proof and each channel has a current limiting. On demand, the output driver can send an interrupt to the PC if there is an overload state (exception: USB models, no interrupt possible).

For the output drivers an external supply with sufficient power must be provided.

- **Bit-pattern recognition**: As a special feature the PCI, PCI-Express and cPCI models offer the operation modes "Bit-Pattern Match" and "Bit-Pattern Change". They can be used in combination with an opto-isolated input port (8-bit-wide). On bit-pattern match resp. bit-pattern change of one or more bits an interrupt is initiated.
- The opto-isolated digital inputs as well as the opto-isolated digital outputs refer to separate ground potentials (GND_DI resp. GND_DO). The isolation voltage between input section and output section as well as to PC ground is 1 kVAC$_{RMS}$.
- The opto-isolated digital inputs of the ME-8200 series provide a transient voltage suppressor diode to clamp high-voltage, high-energy transients.
- Additionally to the opto-isolated I/Os all models come with 16 TTL-I/Os. These are organized as 2 bidirectional 8-bit-wide TTL ports. Connection is done by the 25-pin D-Sub female connector ST2. For PCI, PCI-Express and CompactPCI models an additional mounting bracket is included.
- A wide range of accessories can be found under: http://www.meilhaus.de/en/me-8200.htm.

1.4 System Requirements

The ME-series may be installed into any PC (Intel® Pentium® processor) with a free standard PCI-, PCI-Express- resp. CompactPCI-slot (32 bit, 33 MHz, 5 V). The board is supported by the Meilhaus Electronic Intelligent Driver System (ME-iDS).

1.5 Software Support

The ME-series is supported by the Meilhaus Electronic 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, 8.1, 10 and contains a 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 also note the corresponding README-files.

2   Starting up

Please read your computer's instruction manual 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 di-rectory on your computer (e. g. C:\Temp\Meilhaus\ME-iDS).

Use the Meilhaus Electronic Intelligent Driver System (ME-iDS) for programming your new data acquisition hardware. For installation and operation of the driver system, please follow the documenta-tion in electronic form included with the software package.

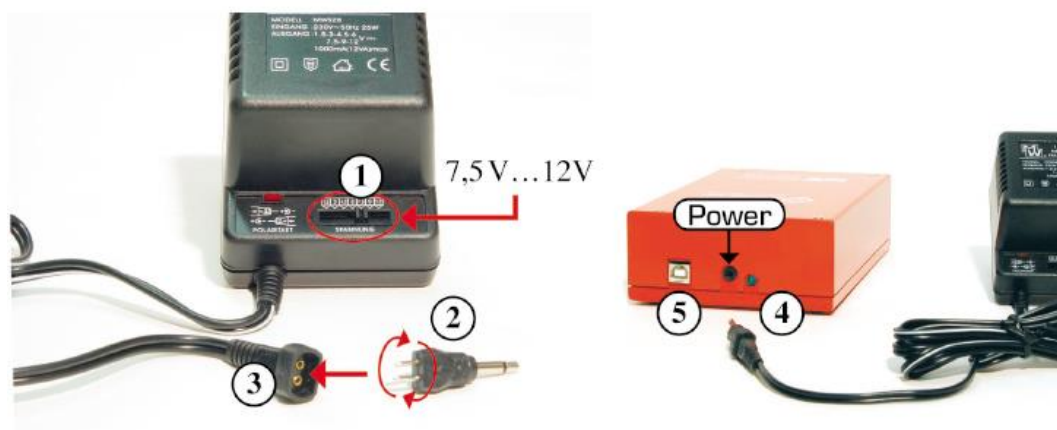## 2.2   Power Supply for USB Models

Diagram 1: Power supply for USB models

To start your USB box of the MEphisto series please note:

1. Set the slide switch ① of the included power supply between 7.5 V and 12 V.

2. Plug the adapter of type „3.5 mm male jack" ② into the twincontact connector ③ of the power supply cable. The polarity does not matter because the power supply input of the USB box („Power") provides a rectifier.

3. Plug the 3.5 mm male jack into the female „Power"-jack of the USB box ④.

4. Plug the USB connector (type B) into the USB jack ⑤ of the USB box.

5. If the ME-iDS driver system isn't installed yet, proceed with the driver installation before connecting the USB cable to the PC.

6. Connect the other edge of the USB cable with a free USB port of your computer (we recommend to use an USB port directly).

2.3   Power Supply for PCI-Express Models

Because of the PCI-Express slot drives not sufficient current for operation of the board, an additional supply is required via the PC power supply. For that purpose connect a free „MOLEX"-connector of the PC (also as used for power supply of drives) with the appropriate terminal of the board (see the following diagram).
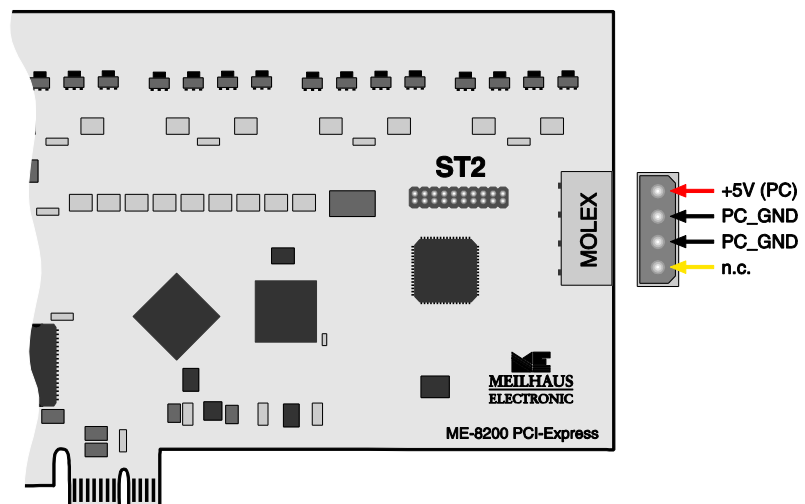
Diagram 2: Additional supply PCI-Express models

2.4   Test Program

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

3 Hardware

3.1 Block diagram
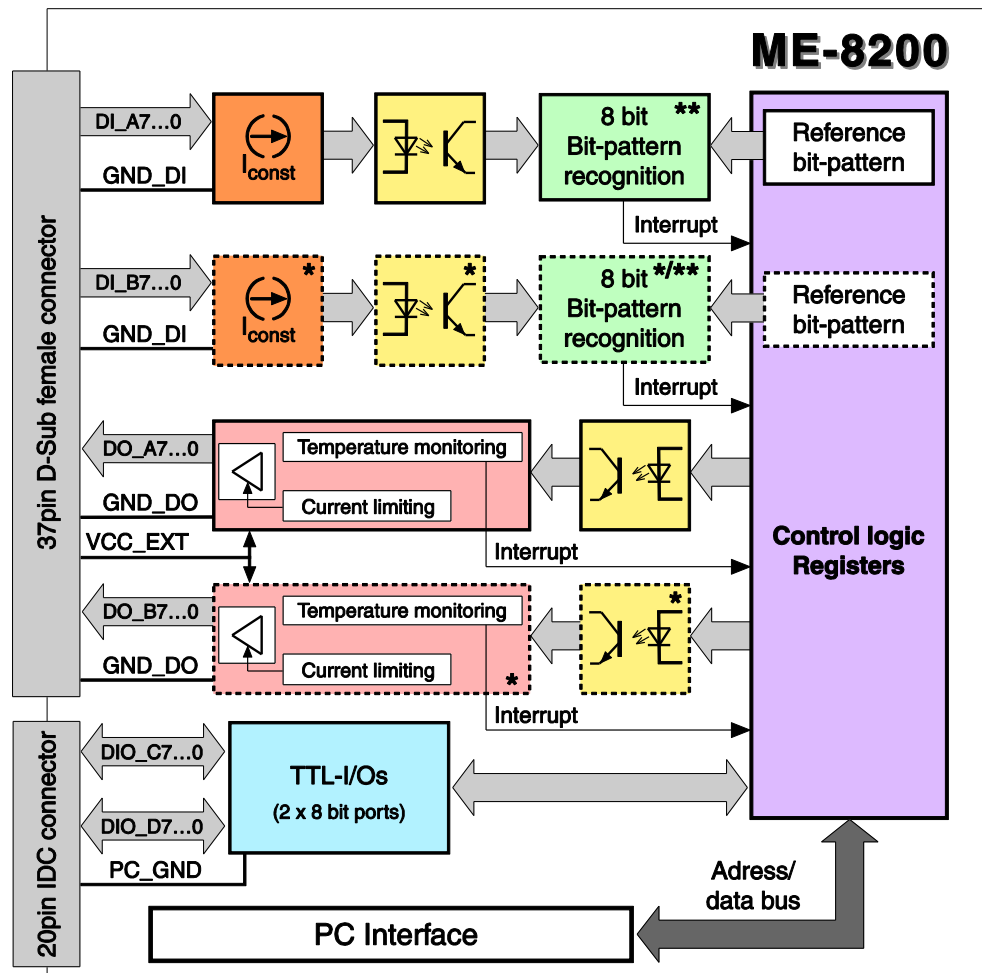
Diagram 3: Block diagram of ME-8200 series

All models: 8 opto-isolated digital inputs, 8 opto-isolated digital outputs, 16 bidirectional TTL-I/Os.

* **Additional on B-versions**: 8 opto-isolated digital inputs, 8 opto-isolated digital outputs

** Because of interrupt operation is not possible via the USB bus the bit-pattern comparators are only available for PCI-, PCI-Express- and cPCI-models, but not for the USB models.
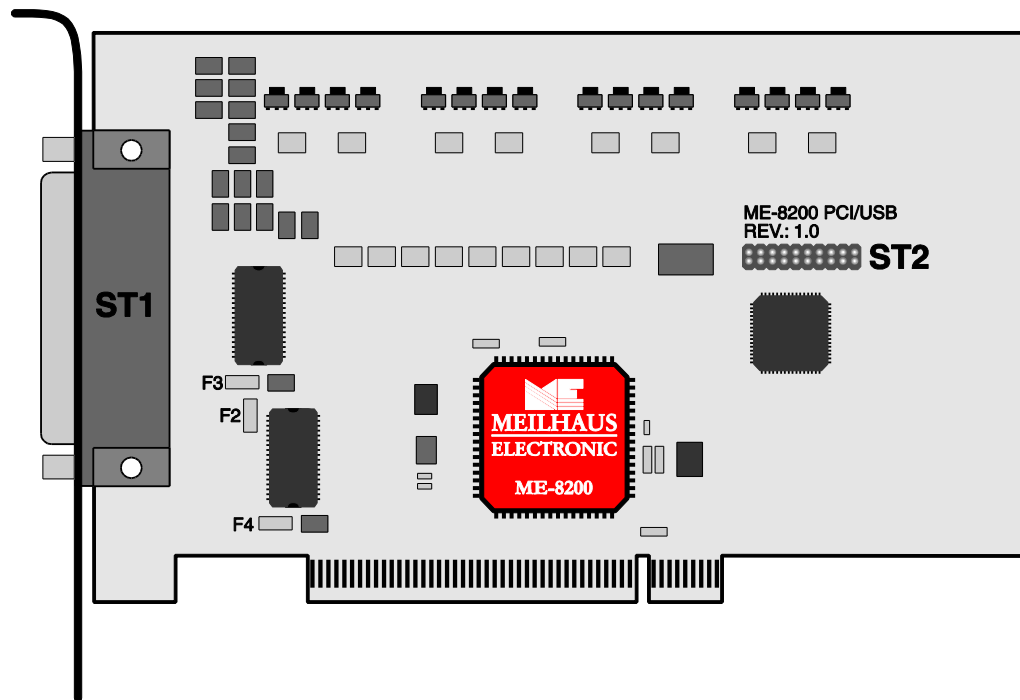
Diagram 4: ME-8200 PCl
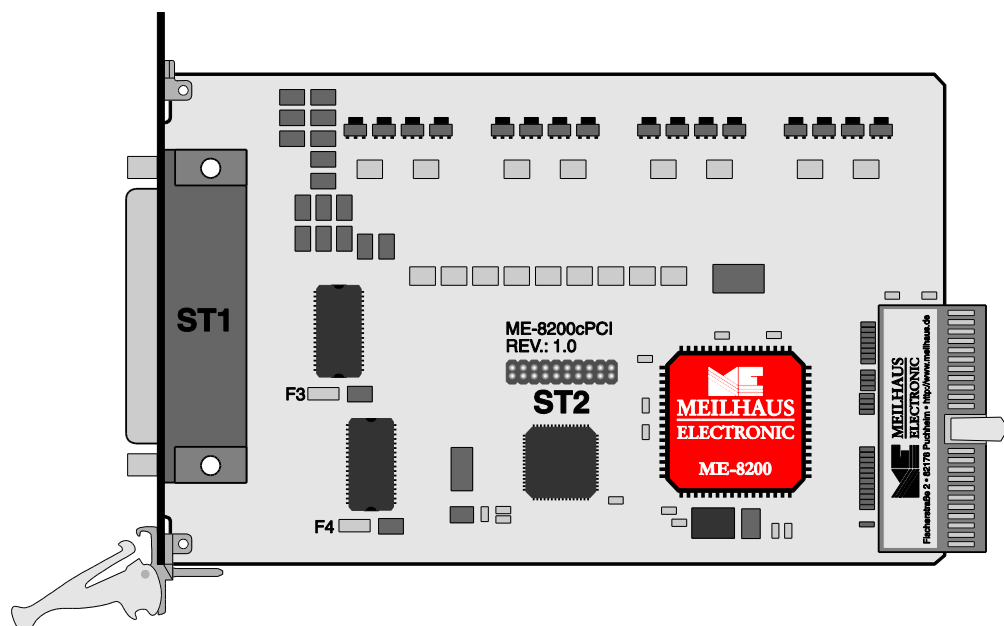
Diagram 5: ME-8200cPCl
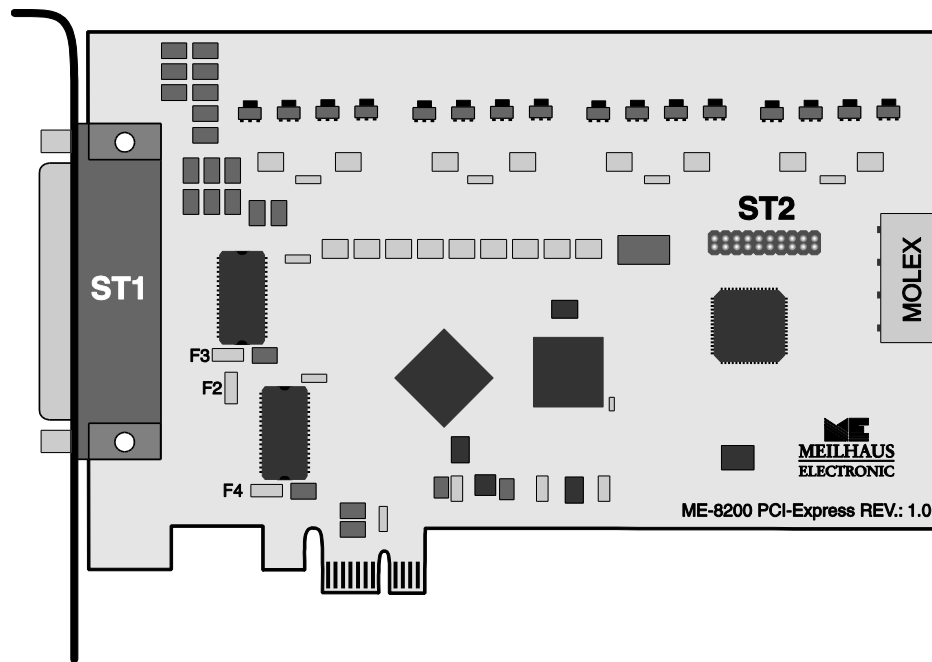
Diagram 6: ME-8200 PCIe

3.2 Digital I/O

The opto-isolated inputs and the opto-isolated outputs each refer to separate ground potentials (GND_DI resp. GND_DO). The isolation voltage between input section and output section as well as to PC ground is 1000 VAC$_{RMS}$.

3.2.1 Opto-Isolated Inputs

The models ME-8200A provide one opto-isolated 8-bit input port, the models ME-8200B provide two opto-isolated 8-bit input ports. The inputs are designed for an input high level of U$_{in,H}$ = 2.5...32 V. A ground reference to the external wiring must be done by pin 15 (GND_DI) of the 37-pin D-Sub connector ST1. If not connected the input lines indicate a logical „0". For programming please read chapter 4.1 "Digital-I/O Section" on page 18:

Diagram 7: Switching the opto-isolated inputs

For high-voltage protection the opto-isolated digital inputs of the ME-8200 series provide special zener diodes, so-called transient voltage suppressor diodes (TVS-diodes). These diodes can derive peak voltage pulses of U_{RWM} (Working Peak Reverse Voltage) higher than 36.8 V to ground (max. 600 W peak power dissipation at pulse width of 1 ms).

3.2.2 Opto-Isolated Outputs

The models ME-8200A provide one opto-isolated 8-bit output port, the models ME-8200B provide two opto-isolated 8-bit output ports. The 8 chann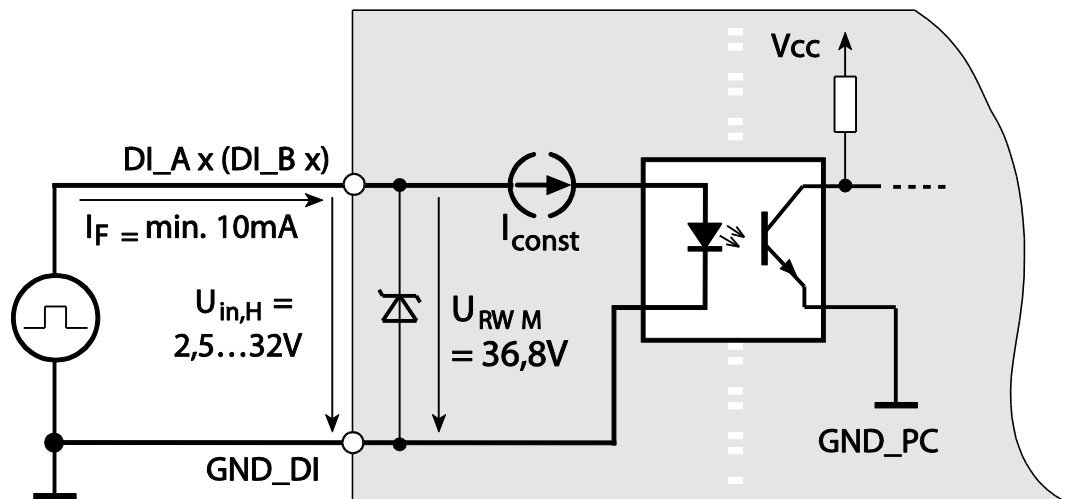els of each port are combined in one driver chip. The outputs are of type „source" and designed for a output high level of U_{out} = 10.5…32 V. By pin 21 (GND_DO) of the 37-pin D-Sub connector ST1 a ground reference to the external output-wiring must be made. For programming please read chapter 4.1 "Digital-I/O Section" on page 18.

The max. output current I_{out} is 0.7 A per channel. The output drivers are short-circuit-proof and provide a current limiting for each channel. Active current limitation combined with thermal shutdown and automatic restart, protect the chip against overload. In overload condition (T_{TSD} = typ. 175 °C) channel turns OFF and back ON automatically as soon as the junction temperature falls below the threshold of T_R = 135 °C.

Nevertheless, if a case temperature of typ. 130 °C is reached the overloaded channel is turned OFF and will restart only when case temperature has decreased down to T_{CR} = 110 °C. Non-overloaded

channels continue to operate normally. In overload state the output driver can send an interrupt to the PC (separately for each port). As an additional protection feature the device automatically turns OFF the complete port in case of ground pin disconnection. See page 22 for detailed specifications.

For supply of the output drivers an external power supply must be connected to the pins 1, 2 and 20 sourcing sufficient power (depending on application). In case of full-load it is specified for the ME-8200A of min. 5.7 A and for the ME-8200B: min. 11.3 A.
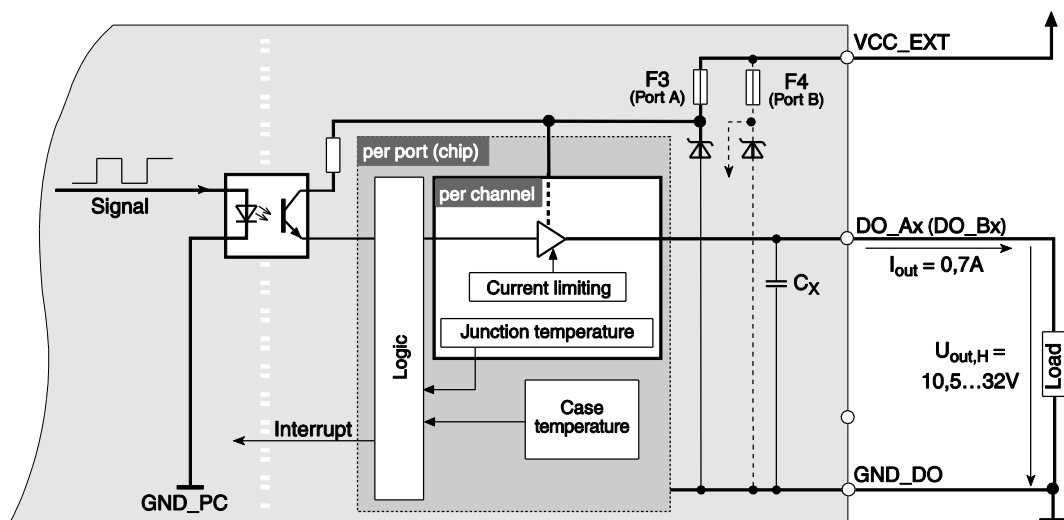
Diagram 8: Switching of the opto-isolated outputs

3.2.3 Bidirectional TTL-Ports

All models of the ME-8200 series provide two bidirectional 8-bit-wide TTL ports. The ports can be configured independently as input or output. After power-up, all ports are configured as input. For programming please read chapter 4.1 "Digital-I/O Section" on page 18.

Both ports DIO_A and DIO_B are available by the 25-pin D-Sub female connector ST2. With the PCI-, PCI-Express- and CompactPCI-models the additional mounting bracket ME-AKD25F/S is required (see pinout on page 27). With the USB models the D-Sub connector is already built into the box.
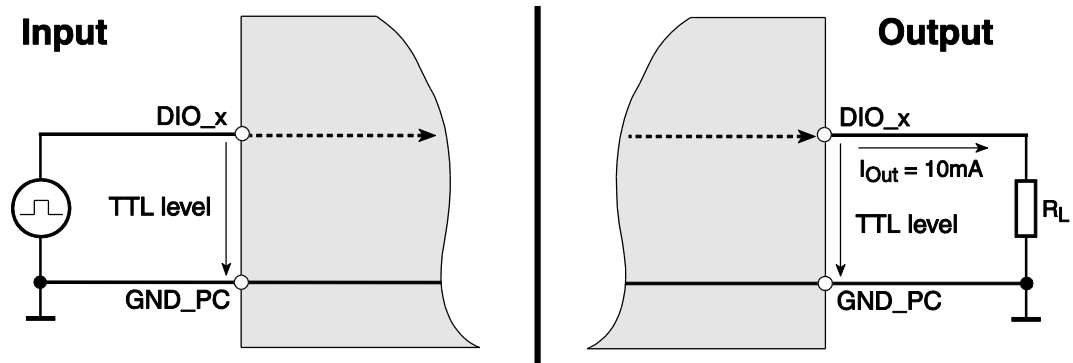
Input   **Output**

Diagram 9: Switching of the digital I/Os

Make sure that the voltage levels of the digital input/output wiring keep within the TTL level limits (see specifications on page 22) and that a reference to PC ground (GND_PC at ST2) be made. The maximum output current is $I_{Out} = I_{OL} = I_{OH} = 10$ mA.

4   Programming

For programming the device please use the Meilhaus Electronic In-
telligent Driver System (ME-iDS) included in your package. The ME-
iDS is a unique driver system covering different devices and operat-
ing systems. It supports Windows 2000 and higher and contains a
universal function library (API) for all common programming lan-
guages (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:
www.meilhaus.de/download/ME-iDS.

Further details regarding the assignment of the subdevices and de-
vice specific arguments can be found in the help file (help file format
under Windows, *.chm) which can be accessed 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 do not want to program your board with the ME-iDS you find
the last revision of the old function reference in the ME-8200 man-
ual Rev. 1.4 (see: www.meilhaus.com/download/ME-8200). Please
note, that we cannot support this driver anymore.

4.1   Digital-I/O Section

Each digital port of the ME-8200 series is considered to be an in-
dependent functional group (subdevice) in the Meilhaus Intelligent
Driver System (ME-iDS). These subdevices of a device are num-
bered always starting with „0". The assignment of the ports to the
subdevices can be found in the help file already mentioned (see ME-
iDS Control Center).

For wiring the digital ports please read chapter 3.2 on page 14.
The following operation modes are available:

4.1.1 Simple Input/Output

The input/output of single digital values is done in operation mode
„**Single**". Each digital port is accessed as a unique subdevice of
type ME_TYPE_DIO (Port DIO_A, DIO_B), ME_TYPE_DI (Port DI_A,

DI_B), ME_TYPE_DO (Port DO_A, DO_B), subtype ME_ SUB-TYPE_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, if not fixed by opto-isolation.
- Port width: bit or byte operation (8 bit).

After power-up, the bidirectional ports are configured for input.

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

4.1.2 Bit-Pattern Recognition

As a special feature the PCI-, PCI-Express- and cPCI-models offer the operation modes „bit-pattern match" and „bit-pattern change". This applies for the 8-bit-wide digital input ports A and B (only ME-8200B) of type ME_TYPE_DI.

Note: These operation modes cannot be used with USB models because of the Universal Serial Bus (USB) does not support interrupt function

4.1.2.1 Bit-Pattern-Match

In the „bit-pattern match"-mode, a bit-pattern written to the comparison register is compared to the bit-pattern on the corresponding input port. An interrupt is initiated when bit-pattern is matching (see diagram 11).

Diagram 10: Bit-pattern match

4.1.2.2 Bit-Pattern Change

In the „bit-pattern change"-mode, one or more input lines can be defined which should be monitored on toggling a bit. The respective bits of the corresponding mask register serve as a reference. If toggling (0 → 1 or 1 → 0) of at least one bit, masked with „1", an interrupt occurs (see diagram 12).

Bit-pattern change
at the 8bit input port

X	X	X	X	X	⇕	X	⇕

Interrupt ← | Bit-pattern change of a masked bit? | ✔ | or | ✔ |

Mask register | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |

    7   0

Diagram 11: Bit-pattern change

4.1.2.3 Order of Operation

Programming is done in operation mode „**Interrupt**". A digital port used for bit-pattern recognition must be of type ME_TYPE_DI. The following parameters can be configured by the functions *meI-OIrqStart()* and *meIOIrqWait()*:

- Determine subdevice with *meQuery...*functions.
- Interrupt channel: always „0".
- Interrupt source `<iIrqSource>` on bit-pattern match:
    - Bit-pattern match: ME_IRQ_SOURCE_DIO_PATTERN
    - Bit-pattern change: ME_IRQ_SOURCE_DIO_MASK
- Parameter `<iIrqEdge>` not relevant: ME_VALUE_NOT_USED.
- In parameter `<ilrqArg>` the appropriate reference bit-pattern is passed for the comparison register in the operation mode „bit-pattern match" resp. mask register in the operation mode
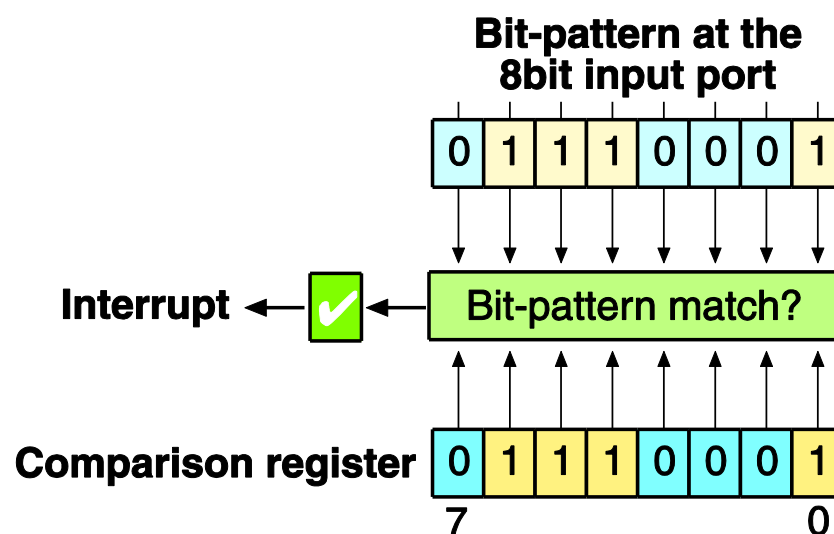
Example for bit-pattern change:

When passing the value 0xFF Hex in parameter `<iIrqArg>` of the function *meIOIrqStart()* all bits are monitored. If only single bits should be monitored (e.g. `<iIrqArg>` = 0x0F Hex for the 4 lower significant bits) a transition of a higher significant bit doesnot matter. Only toggling of a bit, which is set to „1" in parameter `<iIrqArg>` an interrupt is initated.

- The width of the reference can be determined by parameter `<iFlags>`.
- Analyzing the interrupt event is done by the function *meIOIrqWait()*.

Further details can be found in the chapter „Interrupt Operation" and in the description of the *meIOIrq...*functions in the ME-iDS manual.

5   Appendix

A   Specification

PC Interface

Bus system	PCI bus (32 bit, 33 MHz)
(depends on model)	CompactPCI bus (32 bit, 33 MHz, 5 V) PCI-Express x1, specification Rev. 2.0 USB 1.1 (USB 2.0 compatible)
Plug&Play-function	fully supported

Opto-Isolated Inputs

Conditions: T_A=25 °C

Number	ME-8200A: 1 x 8-bit digital input port ME-8200B: 2 x 8-bit digital input port
Type	opto-isolated digital inputs (uni-directional)
Input-voltage range	U_{in}= 0…32 V
Ground reference	separate grounds of the opto-isolated inputs (GND_DI)
Working peak reverse voltage	U_{RWM}=36.8 V
Isolation voltage U_{ISO}	max. 1.000 VAC_{rms} (f = 60 Hz, t = 60 s)
Operation modes	PCI/PCIe/cPCI models: input by bit or byte, per port: „Bit-pattern Match" and „Bit-pattern Change", USB models: input by bit or byte

Static Values

Conditions: V_{CC}=5 V± 10 %, T_A=25 °C

Parameter	Test Conditions	MIN	Type	MAX	Unit
$U_{in,H}$		2.50		32	V
$U_{in,L}$		0		2.20	V
R_{in}	U_{in}=24 V		4.3		kΩ
I_{in}	U_{in}=24 V		5.5	6	mA

Dynamic Values

Conditions: $V_{CC}=5\,V \pm 10\,\%$, $T_A=25\,°C$

Parameter	Test Conditions	MIN	Type	MAX	Unit
f_{in}	output switching 50 %, $U_{in}=10\,V$		10.5		kHz
$t_{pd,HL}$	$f_{in}=1\,kHz$, $U_{in}=10\,V$		36		µs
$t_{pd,LH}$	$f_{in}=1\,kHz$, $U_{in}=10\,V$		1.9		µs

Opto-Isolated Outputs

Conditions: $T_A=25\,°C$

Number	ME-8200A: 1 x 8 bit digital output port ME-8200B: 2 x 8 bit digital output port
Type	opto-isolated digital outputs (short-circuit-proof)
Output voltage range	$U_{out}= 0...32\,V$
Output current	max. 0.7 A with current limiting for each port depending on T_{TSD}, T_R and T_{CR} (see table „Protections")
Ground reference	separate grounds of the opto-isolated outputs (GND_DO)
Isolation voltage U_{ISO}	max. 1.000 VAC_{rms}
Operation modes	output by bit or byte

Power Section

Conditions: VCC_EXT$=10.5...32\,V$, $T_J=-40...+100\,°C$

Parameter	Test Conditions	MIN	Type	MAX	Unit
VCC EXT		10.5		32	V
U_{USD} (under-voltage shutdown)		7		10.5	V
R_{ON} (ON state resistance)	$I_{out}=0.5\,A$; TJ$=25\,°C$ $I_{out}=0.5\,A$		150	185 280	mΩ mΩ

I_S (supply current)	OFF state: VCC_EXT=24 V; T_{CASE}=25 °C			150	μA
	ON-state: (all channels); VCC_EXT=24 V; T_{CASE}=100 °C			12	mA
$I_{L(off)}$ (OFF-state output current)	$U_{in}=U_{out}$=0 V	0		5	μA
$U_{out(off)}$ (OFF-state output voltage)	U_{in}= 0 V; I_{out}=0 A			3	V
$t_{d(VCCon)}$ (power-on delay time)	VCC_EXT on rising to U_{out}		1		ms

Switching

Conditions: VCC_EXT=24 V

Parameter	Test Conditions	MIN	Type	MAX	Unit
t_{on} (turn-on time)	R_L=48 Ω, from 80 % U_{out}		50	100	μs
t_{on} (turn-off time)	R_L=48 Ω, to 10 % U_{out}		75	150	μs
$dU_{out}/dt_{(on)}$ (turn-on voltage slope)	R_L=48 Ω, from U_{out}= 2.4 V to 19.2 V		0.7	185 280	mΩ mΩ
$dU_{out}/dt_{(off)}$ (turn-off voltage slope)	R_L=48 Ω, from U_{out}= 21.6 V to 2.4 V		1.5		V/μs

Protections

Parameter	Test Conditions	MIN	Type	MAX	Unit
T_{CSD} (case shut-down temperature)		125	130	135	°C
T_{CR} (case reset temperature)		110			°C
T_{TSD} (junction shut-down temperature)		150	175	200	°C
T_R (junction reset temperature)		135			°C

I_{lim} (DC short-circuit current)	VCC_EXT=24 V R_{LOAD}=10 mΩ	0.7		1.7	A

Bidirectional Digital I/Os (TTL)

Conditions: T_A=25 °C

Number	2 x 8-bit digital-I/O ports
Type	TTL (bidirectional)
Ground reference	PC ground (GND_PC)
Operation modes	input/output by bit, byte or word

Static Values

Conditions: T_A=25 °C

Parameter	Test conditions	MIN	Type	MAX	Unit
$U_{in,H}$	VCC=5 V	2.0			V
$U_{in,L}$	VCC=5 V	0		0.8	V
I_{in}			±1		μA
$U_{out,H}$	I_{out} =-24 mA	2.4			V
$U_{out,L}$	I_{out} =24 mA			0.5	V
I_{out}				±24	mA

General Information

PCI-/PCIe-/cPCI-Models

Power consumption at +5 V	ME-8200A/B PCI/PCIe/cPCI: typ. 300 mA (without external load)
Physical size (without mounting bracket and connectors)	ME-8200A/B PCI: 174 mm x 98 mm ME-8200A/B PCIe: 167.65 mm x 111.15 mm ME-8200A/B cPCI: 3 U CompactPCI board
Connectors	37-pin D-Sub female ST1; 25-pin D-Sub female ST2 (via additional mounting bracket)
Certification	CE

USB Models

External supply:	power adapter (7.5 V/800 mA)
Power consumption at + 7.5 V	ME-8200A/B USB: typ. 350 mA (without external load) ME-8200B USB: typ. 650 mA (without external load)
Fuse F1	fuse socketed (only USB models), type: Littelfuse TR5/370 1 AT
Physical size (with connectors)	185 mm x 114 mm x 54 mm (L x W x H)
Connectors	37-pin D-Sub female ST1; 25-pin D-Sub female ST2; USB connector (Type B) 3.5 mm jack for power supply

Common Specs

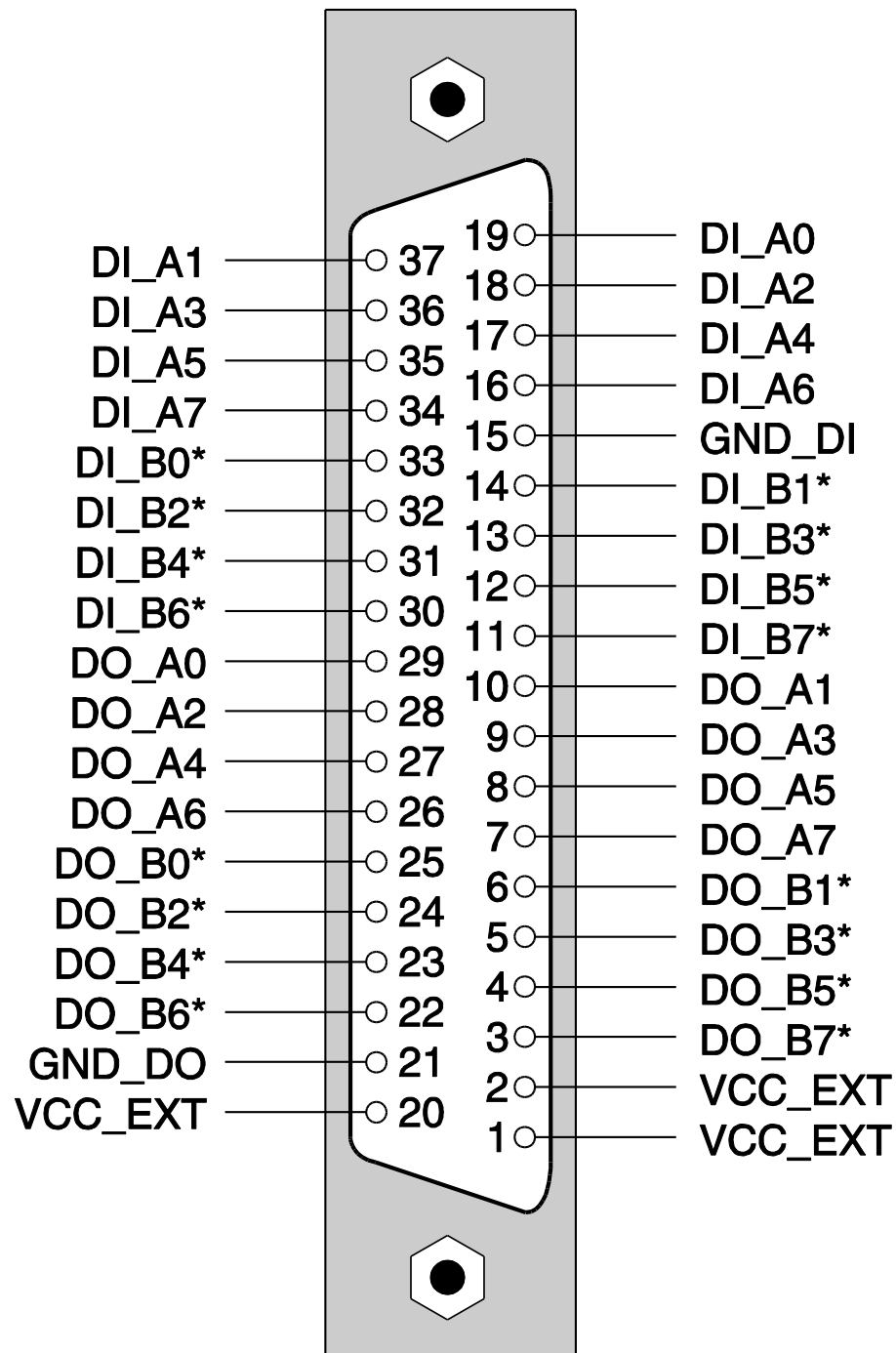|	
Fuse F3	SMD fuse; type: Littelfuse 451 8 AT
Fuse F4	SMD fuse, type: Littelfuse 451 8 AT
Storage temperature	-40...100 °C
Relative humidity	20...55 % (non-condensing)

B   Pinout

B1 Pinout D-Sub Connector (ST1)

Left	Pin	Pin	Right
DI_A1	37	19	DI_A0
DI_A3	36	18	DI_A2
DI_A5	35	17	DI_A4
DI_A7	34	16	DI_A6
DI_B0*	33	15	GND_DI
DI_B2*	32	14	DI_B1*
DI_B4*	31	13	DI_B3*
DI_B6*	30	12	DI_B5*
DO_A0	29	11	DI_B7*
DO_A2	28	10	DO_A1
DO_A4	27	9	DO_A3
DO_A6	26	8	DO_A5
DO_B0*	25	7	DO_A7
DO_B2*	24	6	DO_B1*
DO_B4*	23	5	DO_B3*
DO_B6*	22	4	DO_B5*
GND_DO	21	3	DO_B7*
VCC_EXT	20	2	VCC_EXT
		1	VCC_EXT

Diagram 12: Pinout of the 37-pin D-Sub female connector

*The pins DI-B7...0 and DO_B7...0 are not connected on the ME-8200A.

B2   Auxiliary Connector (ST2)

Note: For the PCI-, PCI-Express- and CompactPCI-models an extra mounting bracket with an adapter cable from 20-pin IDC connector to 25-pin D-Sub female connector is required (comes with the board). The USB models 25-pin D-Sub female connector uses the same pinout.
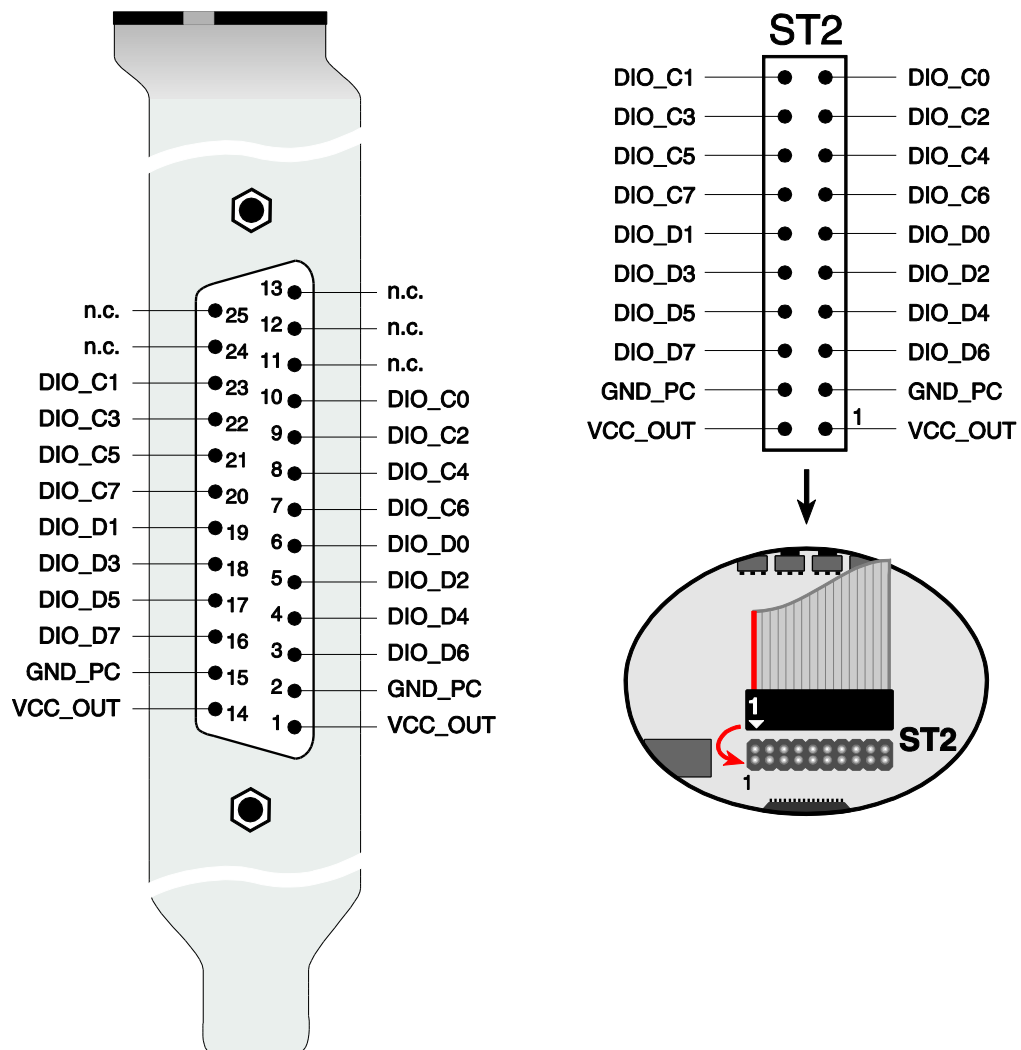

Diagram 13: Auxiliary connector ST2 for ME-8200 (top view)

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 high-quality connector cables with single-shielded lines per channel.

For further accessories please refer to the current Meilhaus Electronic catalog and the internet:
www.meilhaus.de/en/pc-boards/accessories/

D   Technical Questions

D1   Hotline

Should you have questions or inquiries concerning your Meilhaus device, please contact us:

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In case you need to return a board for repair purposes, we strongly ask you attach a detailed description of the error as well as information regarding your computer/system and the software used. Please register online using our RMA process:
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