

Product Datasheet - Technical Specifications



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ME-8200 Opto-Isolated Digital-I/O/ Board

- PC plug-in board for isolated digital data acquisition.
- 8 or 16 opto inputs and 8 or 16 opto outputs.
 Level up to 32 V. Isolation up to 1 kV.
 Outputs source, option „S“: Sink.
 Load up to 700 mA.
 Inputs with overvoltage protection/transient diode. Short circuit proof.
- Outputs defined during PC power-on.
- 16 additional TTL digital-I/O lines (2x 8 bit ports), expandable with relays/optoisolation.
- Interrupt control:
 Can be used for monitoring status changes (bit-change).
 Bitpattern comparison, 8 bit or 16 bit (interrupt on comparison positive).
 Interrupt on thermic load.
 Every input can be selected as interrupt source via mask register.
- PC DAQ board for PCI, PCI-Express or 3 U CompactPCI/PXI.

Model	Digital-I/O	Opto-I/O	Interrupt	Bus platform
ME-8200A PCIe	16 TTL-I/O	8 inputs (24 V), 8 outputs (up to 32 V)	Bitpattern comparison: Interrupt on comparison positive. bit-change: Interrupt on input status change. Interrupt on thermic load.	PCI-Express
ME-8200A PCI	16 TTL-I/O	8 inputs (24 V), 8 outputs (up to 32 V)		StandardPCI
ME-8200A cPCI	16 TTL-I/O	8 inputs (24 V), 8 outputs (up to 32 V)		3 HE CompactPCI
ME-8200B PCIe	16 TTL-I/O	16 inputs (24 V), 16 outputs (up to 32 V)		PCI-Express
ME-8200B PCI	16 TTL-I/O	16 inputs (24 V), 16 outputs (up to 32 V)		StandardPCI
ME-8200B cPCI	16 TTL-I/O	16 inputs (24 V), 16 outputs (up to 32 V)		3 HE CompactPCI

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: $T_A=25\text{ °C}$

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	$U_{in} = 0 \dots 32\text{ V}$
Ground reference	separate grounds of the opto-isolated inputs (GND_DI)
Working peak reverse voltage	$U_{RWM} = 36.8\text{ V}$
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: $V_{CC}=5\text{ V} \pm 10\%$, $T_A=25\text{ °C}$

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

Dynamic Values

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

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

Opto-Isolated Outputs

Conditions: $T_A=25\text{ }^\circ\text{C}$

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	$U_{out}=0\dots32\text{ V}$
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: $V_{CC_EXT}=10.5\dots32\text{ V}$, $T_J=-40\dots+100\text{ }^\circ\text{C}$

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)	$I_{out}=0.5\text{ A}$; $T_J=25\text{ }^\circ\text{C}$ $I_{out}=0.5\text{ A}$		150	185 280	m Ω m Ω

I_s (supply current)	OFF state: VCC_EXT=24 V; T _{CASE} =25 °C ON-state: (all channels); VCC_EXT=24 V; T _{CASE} =100 °C			150 12	μ A mA
$I_{L(off)}$ (OFF-state output current)	$U_{in}=U_{out}=0$ V	0		5	μ A
$U_{out(off)}$ (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)	$R_L=48 \Omega$, from 80 % U_{out}		50	100	μ s
t_{off} (turn-off time)	$R_L=48 \Omega$, to 10 % U_{out}		75	150	μ s
$dU_{out}/dt_{(on)}$ (turn-on voltage slope)	$R_L=48 \Omega$, from $U_{out}=2.4$ V to 19.2 V		0.7	185 280	m Ω m Ω
$dU_{out}/dt_{(off)}$ (turn-off voltage slope)	$R_L=48 \Omega$, from $U_{out}=21.6$ V to 2.4 V		1.5		V/ μ s

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
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Bidirectional Digital I/Os (TTL)

Conditions: $T_A=25\text{ °C}$

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: $T_A=25\text{ °C}$

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
$U_{out,H}$	$I_{out} = -24\text{ mA}$	2.4			V
$U_{out,L}$	$I_{out} = 24\text{ mA}$			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)

Pinout

Pinout D-Sub Connector (ST1)

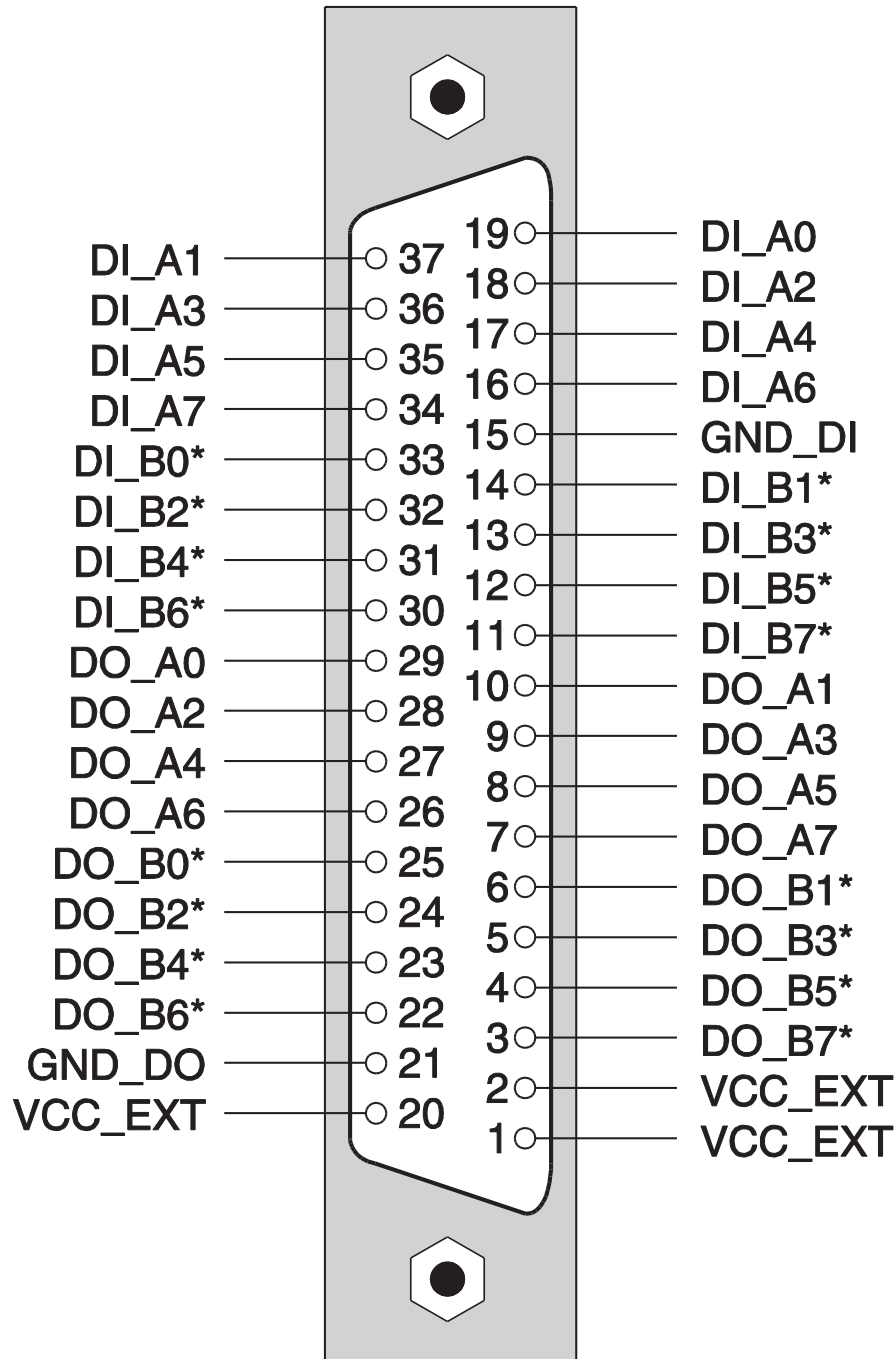


Diagram 12: Pinout of the 37-pin D-Sub female connector

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

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.

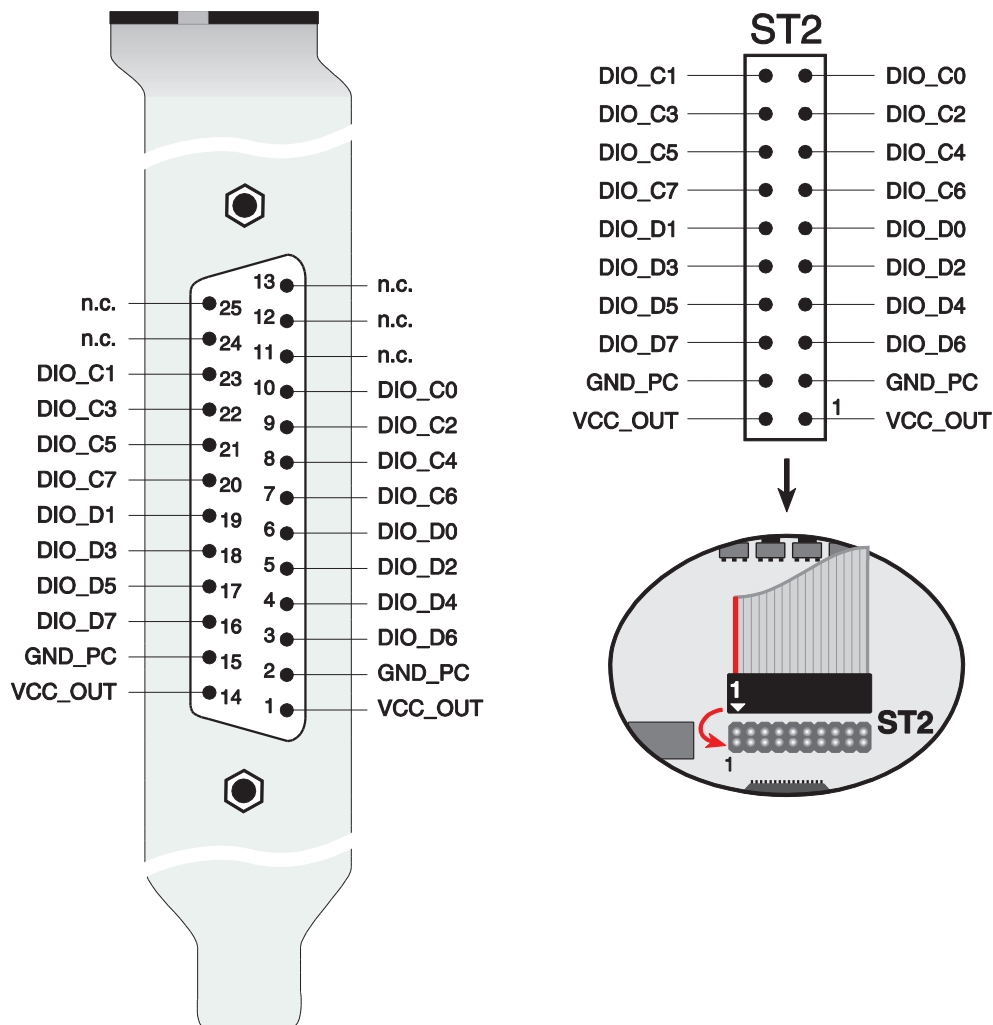


Diagram 13: Auxiliary connector ST2 for ME-8200 (top view)

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.