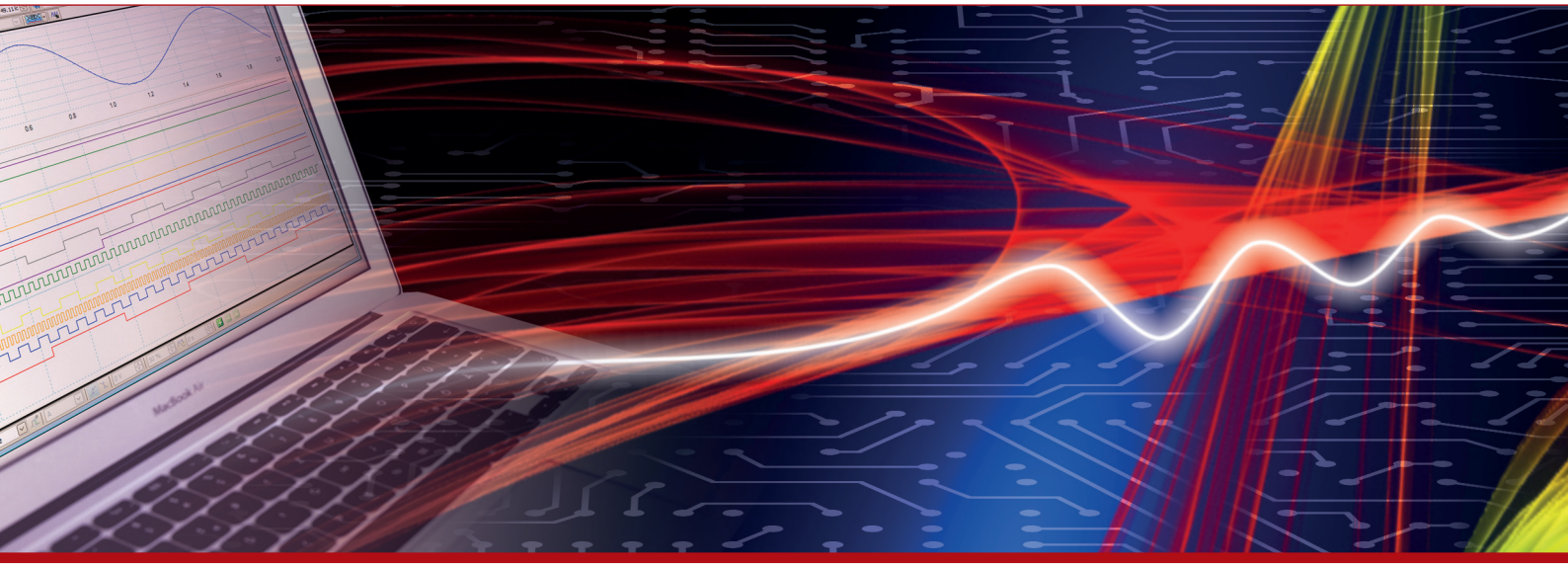
Product Datasheet - Technical Specifications



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ME-5001 Digital-I/O Add-on Board for ME-5000 series

- Additional channels for ME-5000 cobalt series, saves PC ressources:

  48 I/O channels (6 ports with 8 bit, single operation)...

  * ...as frequency output channels: 8 of the outputs (up to 5 MHz).
  * ...for frequency measurmenet: 8 of the inputs (up to 5 MHz).
- Bit change: All inputs interrupt capable.
- 3.3 V/5 V switching: 4 of the 6 ports.
- Port terminator on/off: 4 of the 6 ports
- Connectors: 25-pin D-sub female connector, on-board pin-field.
- Firmware configuration and variable channels.
- Uses one slot space, doesn't use the bus connector. Saves PC ressources!
- For use with ME-5100, ME-5810A, ME-5810A/S.

  Cannot be used with ME-5810B, ME-5810B/S, ME-5261, ME-5265, ME-5284.

Model	Digital-I/O	Standard firmware functions	Bus platform
ME-4610 PCI	48 (6x 8 bit)	Single-Digital-I/O, Frequency measurement (8 of the channels, 5 MHz each), frequency output (8 of the channels, 5 MHz each), all inputs interrupt capable (bit-change)	PCI-Express*
ME-5001 cPCI	48 (6x 8 bit)		3 HE CompactPCI/PXI*

* Add-on card, uses one slot space, doesn't use bus/PC ressources.

Specification

PC Interface

PCI-Express bus	32 bit, 33 MHz, 3.3 V, PCI-Express x 1 specification version 2.0
CompactPCI bus	32 bit, 33 MHz, 5 V, PICMG 2.0 R3.0
Plug&Play	is fully supported

Digital Input/Output

Measured Quantity/Criterion	**Condition/ Explanation**	**Value**
Number Ports	subdevice 0...5	48 bits (6 x 8-bit bidirectional)
Operation modes	single	software-triggered reading/writing
	interrupt	monitoring the digital ports for a change in the bit-pattern
External trigger inputs		DIO_0..47
External trigger edges		rising, falling, any
Output level: U_{OL}	at I_{OUT} = 24 mA	max. 0.5 V
$U_{OH\ 3,3V}$	at I_{OUT} = -24 mA	min. 2.4 V
$U_{OH\ 5V}$	at I_{OUT} = -24 mA	min. 2.4 V
Input level: U_{IL}	at Vcc =3.3 V or 5 V	max. 0.8 V
$U_{IH\ 3,3V}$	at Vcc = 3.3 V	min. 2 V
$U_{IH\ 5V}$	at Vcc = 5 V	min. 2 V
Input current:	I_{IN}	±1 µA
Output current: I_{OUT}	per pin	max. 24 mA
Reference ground		PC ground (GND_PC)

Frequency Input/Output

Availability	alternative subdevice configuration via ME-iDC
Signal form	rectangular

Frequency Measuring Channels

Measured Quantity/Criterion	**Condition/Explanation**	**Value**
Reference ground		PC ground (GND_PC)
Number of channels	(FI_0...7)	8 inputs (TTL)
Input level		see digital I/O
Input current		see digital I/O
Period (T)	$T_{min.} = T_{min.asym.} = T_{min.sym.}$ $T_{max.asym}$ $T_{max.sym}$	181.$\overline{81}$ ns (5.5 MHz) 32.5 s (0.03 Hz) 65 s (0.015 Hz)
Duty cycle	variable, depending on T	measurable in steps of 1 tick
Resolution	1 tick	15.$\overline{15}$ ns
Accuracy		±15.$\overline{15}$ ns
Operating modes		single

Pulse Generator Channels

Measured Quantity/Criterion	**Condition/Explanation**	**Value**
Reference ground		PC ground (GND_PC)
Number of channels	(FO_0..7))	8 outputs (TTL)
Output level		see digital I/O
Period (T)	$T_{min.} = T_{min.asym.} = T_{min.sym.}$ $T_{max.asym}$ $T_{max.sym}$	181.$\overline{81}$ ns (5.5 MHz) 32.5 s (0.03 Hz) 65 s (0.015 Hz)
Duty cycle	variable, depending on T	adjustable in steps of 1 tick
Resolution	1 tick	15.$\overline{15}$ ns
Accuracy		±15.$\overline{15}$ ns
Operating modes		single

Interrupt

Measured Quantity/Criterion	**Condition/ Explanation**	**Value**
Interrupt sources	passed directly to the PC	bit-pattern change

General Data

Measured Quantity/Criterion	**Condition/ Explanation**	**Value**
Power supply	via base board	3.3 V/5 V
Current consumption	additional to base board	0.5…0.9 A (full load)
Board dimensions (without mounting bracket and connector)	base board requires its own slot	120 mm x 100 mm
Connections	ST1	25-pin D-Sub female socket
	ST2	20-pin IDC socket (opt. 25-pin D-Sub, see accessories)
	ST3	20-pin IDC socket (opt. 25-pin D-Sub, see accessories)
Operating temperature		0…70 °C
Storage temperature		-40…100 °C
Air humidity		20…55 % (non-condensing)

Certification	CE

Pinout

Legend for pinouts:

Pin-name	Function
DIO_0...7	digital input/output (subdevice 0)
DIO_8...15	digital input/output (subdevice 1)
DIO_16...23	digital input/output (subdevice 2)
DIO_24...31	digital input/output (subdevice 3)
DIO_32...39	digital input/output (subdevice 4)
DIO_40...47	digital input/output (subdevice 5)
FI_0...7	frequency measuring inputs (alternative configuration)
FO_0...7	pulse generator outputs (alternative configuration)
VCC_OUT	V_{CC} output (+5 V from PC)
GND_PC	common ground (=PC ground)
n.c.	pin reserved for extensions

25-pin D-Sub (ST1)

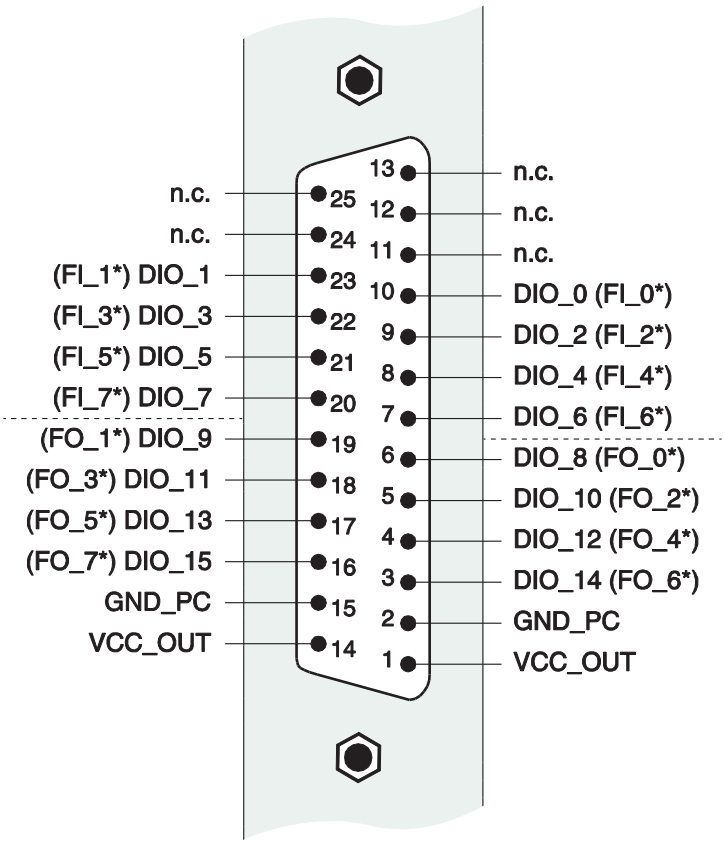

Diagram 11: 25-pin D-sub socket ME-5001 (ST1)

The digital I/Os of ST1 are assigned to subdevice 0 and 1.

Use as a frequency measuring input (FI_*x) or pulse generator output (FO_*x*) is only possible after appropriate configuration using ME-iDC. The other pins of the relevant digital subdevice can then no longer be used for digital input/output.

Additional Sockets (ST2/ST3)

For adaption from ST2 (DIO_16...31) resp. ST3 (DIO_32..47) to a 25-pin D-Sub female connector one resp. two optional mounting brackets are required. Use type ME-AK-D25F/S for PCI-Express slots resp. ME-AK-D25F/S (cPCI) for CompactPCI slots.

Please note: When plugging on the flat ribbon cable, make sure that pin 1 of the flat ribbon cable (red marked line) is connected on to the IDC-socket ST2 resp. ST3 as shown in diagram 12.

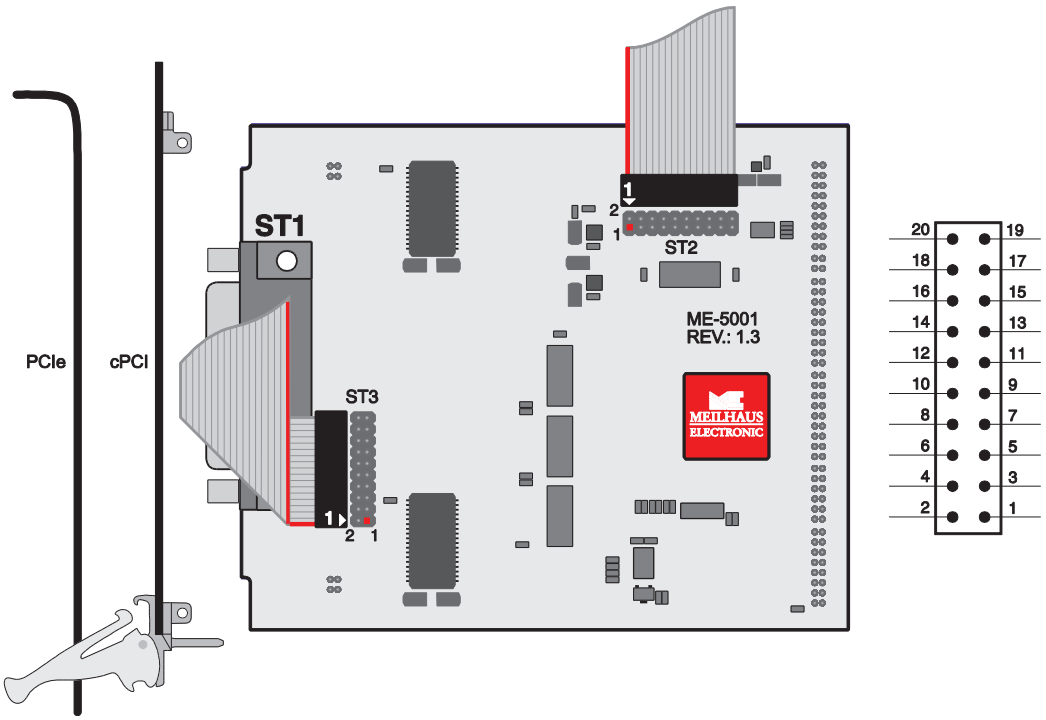

Diagram 12: Connecting the additional sockets ST2/ST3

20-pin IDC socket for ST2 and ST3

Pin	Labeling (ST2/3)	Pin	Labeling (ST2/3)
20	DIO_17/33	19	DIO_16/32
18	DIO_19/35	17	DIO_18/34
16	DIO_21/37	15	DIO_20/36
14	DIO_23/39	13	DIO_22/38
12	DIO_25/41	11	DIO_24/40
10	DIO_27/43	9	DIO_26/42
8	DIO_29/45	7	DIO_28/44

6	DIO_31/47	5	DIO_30/46
4	GND_PC	3	GND_PC
2	VCC_OUT	1	VCC_OUT