

F602 - 3U CompactPCI Express Side Card

The F602 is a 4HP CompactPCI® Express extension card for 3U Intel®-based CompactPCI® single-board computers such as F14 and further boards of the Intel® low power family. That way, these CPU boards can be used both as system-slot cards in a CompactPCI® environment and as system-slot cards on a CompactPCI® Express backplane.

The F602 supports 4 PCI Express® links with 1 lane each to the backplane via its XJ2 and XJ3 connectors. In a standard 8-slot hybrid backplane from Schroff® the CompactPCI® Express single-board computer sits in the middle, with the possibility to plug another three legacy CompactPCI® cards to the left and three CompactPCI® Express cards to the right.

In addition to the CompactPCI® Express functionality the F602 provides one USB 2.0, one COM (RS232, RS422/485, with or without optical isolation via SA-Adapter™) and one DVI port at its front panel.

On top of that an onboard 2.5" SATA hard-disk slot is available on the F602.

The F602 is directly plugged to the right side of the respective single-board computer. A robust connector makes for high mechanical stability. It is delivered with an 8HP front panel, replacing the 4HP front panel of a 3U single-board computer and thus resulting in a solid one-piece front panel.

Technical Data

CompactPCI® Express

- Compliance with CompactPCI® Express PICMG EXP.0 R1.0 Specification
- CompactPCI® Express connector XP1 for power supply
- CompactPCI® Express connectors XJ2 and XJ3 for 4 CompactPCI® Express links with 1 lane each
 - CPU board F14 only supports 2 or 3 CompactPCI® Express links with 1 lane each
- CompactPCI® Express connector XJ4 for control signals and ground

I/O

- DVI
 - One DVI-D connector at front panel
 - SDVO PanelLink transmitter
 - Maximum resolution: 1600 x 1200 pixels
 - 60Hz refresh rate
 - Dual monitor support
- USB
 - One USB 2.0 port
 - Series A connector at front panel
 - UHCI implementation
 - Data rates up to 480Mbits/s
 - High current up to 1A
- UART
 - One at front panel
 - Physical interface using SA-Adapter™ via 10-pin connector
 - RS232..RS422, isolated or not
 - Only full duplex operation for RS422
 - Data rates up to 1 Mbit/s
 - FIFO receive and transmit buffers for high data throughput
 - Handshake lines: full support; lines depend on SA-Adapters™

Mass Storage

- Serial ATA (SATA)
 - One port for onboard 2.5" hard-disk drive
 - Transfer rates up to 150MB/s (depends on hard disk)
 - RAID level 0/1 support (depends on CPU board)

Electrical Specifications

- Supply voltage/power consumption:
 - +5V (-3%/+5%), tbd typ. (w/o hard disk)
 - +3.3V (-3%/+5%), tbd typ. (w/o hard disk)

Mechanical Specifications

- Dimensions: conforming to CompactPCI® specification for 3U boards
- Mountable on right side of the CPU
- Weight: 150g (w/o hard disk)

Environmental Specifications

- Temperature range (operation):
 - 0..+60°C up to -40..+85°C (depending on hard disk; please refer to the hard disk specifications for possible limits)
 - Airflow: min. 10m³/h
- Temperature range (storage): -40..+85°C
- Relative humidity (operation): max. 95% non-condensing
- Relative humidity (storage): max. 95% non-condensing
- Altitude: -300m to + 3,000m
- Shock: 15g/11ms
- Bump: 10g/16ms
- Vibration (sinusoidal): 2g/10..150Hz
- Conformal coating on request

MTBF

- MTBF: 1,861,103h @ 40°C according to IEC/TR 62380 (RDF 2000)

Safety

- PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers

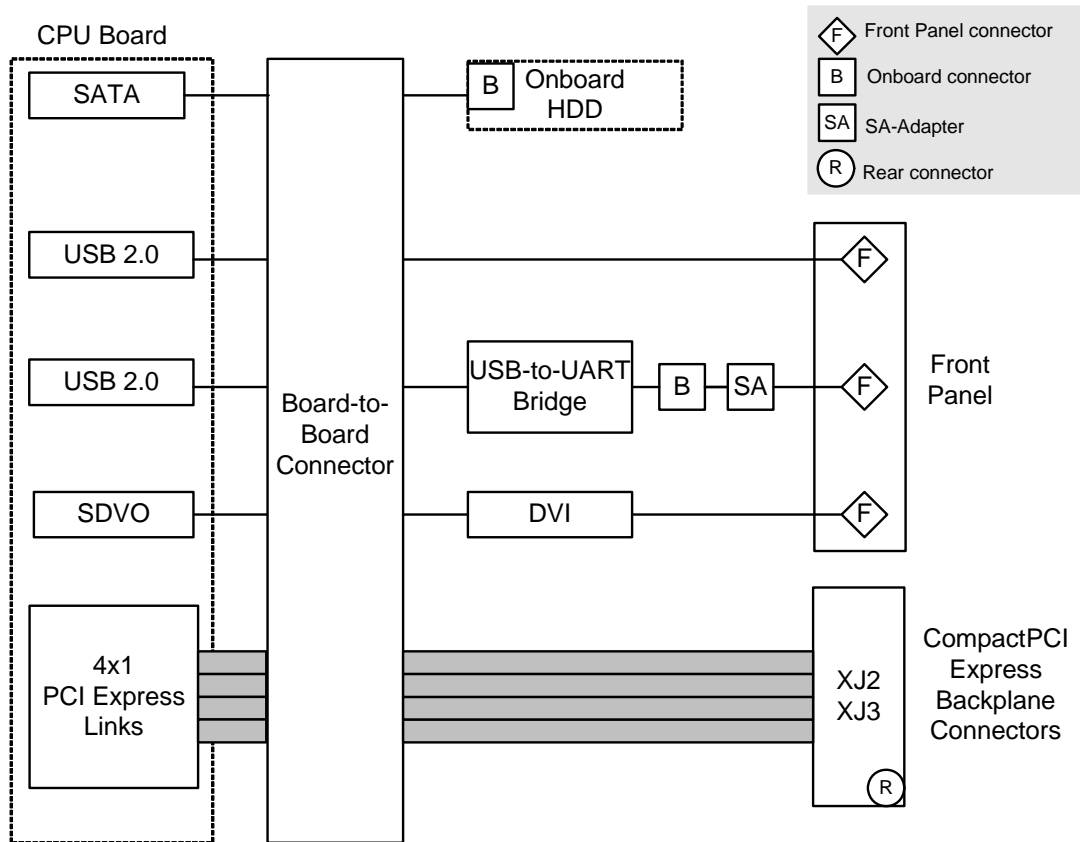
EMC

- Tested according to EN 55022 (radio disturbance), IEC1000-4-2 (ESD) and IEC1000-4-4 (burst)

Software Support

- Driver software can be found in the data sheet of the CPU board that you use.

Block Diagram



Configuration Options

Mass storage

- CompactFlash® interface instead of SATA hard disk
 - Via AD95 adapter

Operation Temperature

- 0..+60°C
- -40..+85°C

**Please note that some of these options may only be available for large volumes.
Please ask our sales staff for more information.**



For available standard configurations see [online data sheet](#).

Product Safety



Electrostatic Discharge (ESD)

Computer boards and components contain electrostatic sensitive devices. Electrostatic discharge (ESD) can damage components. To protect the board and other components against damage from static electricity, you should follow some precautions whenever you work on your computer.

- Power down and unplug your computer system when working on the inside.
- Hold components by the edges and try not to touch the IC chips, leads, or circuitry.
- Use a grounded wrist strap before handling computer components.
- Place components on a grounded antistatic pad or on the bag that came with the component whenever the components are separated from the system.
- Store the board only in its original ESD-protected packaging. Retain the original packaging in case you need to return the board to MEN for repair.

About this Document

This user manual describes the hardware functions of the board, connection of peripheral devices and integration into a system. It also provides additional information for special applications and configurations of the board.

The manual does not include detailed information on individual components (data sheets etc.). A list of literature is given in the appendix.

History

Issue	Comments	Date
E1	First issue	2007-04-18
E2	General update, minor errors corrected	2010-03-30

Conventions



This sign marks important notes or warnings concerning proper functionality of the product described in this document. You should read them in any case.

italics

Folder, file and function names are printed in *italics*.

bold

Bold type is used for emphasis.

monospace

A monospaced font type is used for hexadecimal numbers, listings, C function descriptions or wherever appropriate. Hexadecimal numbers are preceded by "0x".

hyperlink

Hyperlinks are printed in blue color.



The globe will show you where [hyperlinks](#) lead directly to the Internet, so you can look for the latest information online.

IRQ#
/IRQ

Signal names followed by "#" or preceded by a slash ("/") indicate that this signal is either active low or that it becomes active at a falling edge.

in/out

Signal directions in signal mnemonics tables generally refer to the corresponding board or component, "in" meaning "to the board or component", "out" meaning "coming from it".



Vertical lines on the outer margin signal technical changes to the previous issue of the document.

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1 Getting Started

This chapter gives an overview of the board and some hints for first installation in a system.

1.1 Map of the Board

Figure 1. Map of the board—front panel

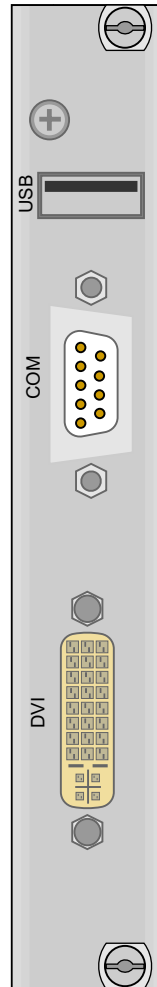
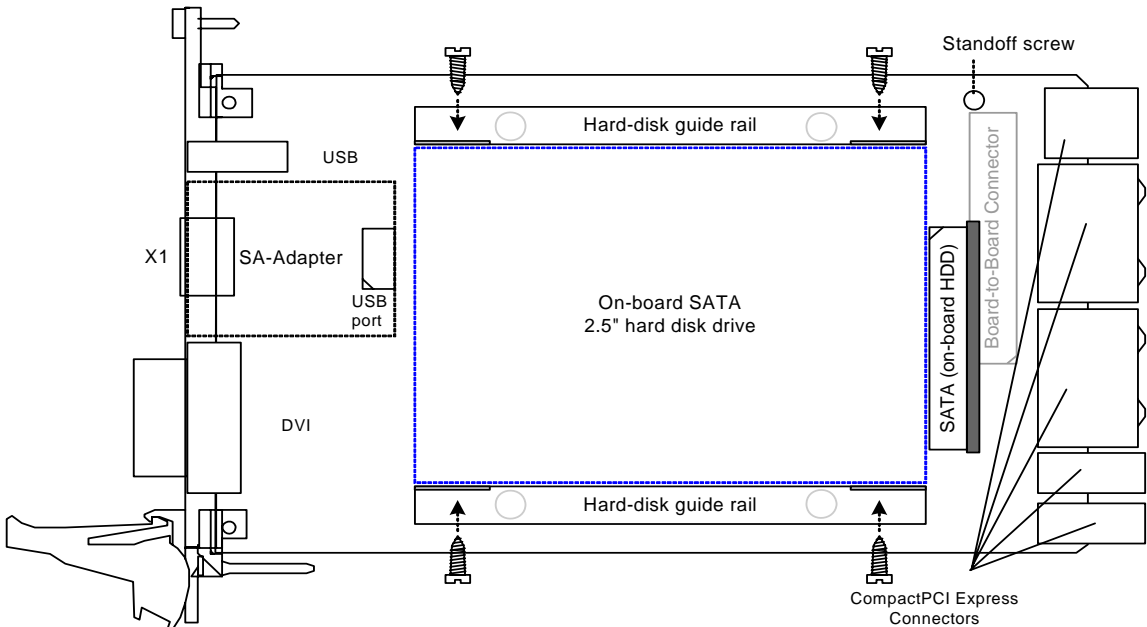


Figure 2. Map of the board – top view



1.2 Configuring the Hardware



You should check your hardware requirements before attaching the F602 to a CPU board, since most modifications are only possible when the boards are disconnected. You should also stick to the following order.

The following check list gives an overview on what you might want to configure.

- SATA hard disk on board

You can easily install a 2.5" SATA hard disk. MEN offers a suitable hard disk. Installation material is already supplied with F602.

See MEN's [website](#) for ordering information.



Refer to [Chapter 2.6.1.1 Installing a Hard Disk on page 30](#) for a detailed installation description.

- SA-Adapter on board

The board is shipped without SA-Adapter installed. To use the UART, you can install an SA-Adapter directly on the board.

See MEN's [website](#) for ordering information.



Refer to [Chapter 2.5.1.1 Installing SA-Adapter Directly on F602 on page 25](#) for a detailed installation description.

- CompactFlash instead of hard disk

The hard disk can be exchanged for a CompactFlash on a special adapter card.

See MEN's [website](#) for ordering information.



Refer to [Chapter 2.6.1.2 Installing CompactFlash Adapter on page 33](#) for a detailed installation description.

1.3 Integrating the Board into a System

The F602 is suited as a side card for different MEN CPU boards. If you are not sure if your CPU board is supported, please check the CPU's data sheet.

If the F602 can be used with your CPU, attach it to the CPU board as is described in the CPU board's user manual.

1.4 Installing Driver Software

For a detailed description on how to install driver software please refer to the respective documentation.



You can find any driver software available for download on MEN's [website](#).

2 Functional Description

2.1 Power Supply

The board is supplied with +5V, +3.3V and +12V via the CPU board (board-to-board connector) and via the CompactPCI Express backplane connector XP1.

2.2 Board-to-Board Connector

The F602 side card is attached to a CPU board using a board-to-board connector. This connector supports special I/O functions from the CPU.

The board-to-board connector is located at the bottom side of the board, so that the F602 can be attached to the right side of a CPU board.

The board-to-board connector on F602 supports the following interfaces:

- Four PCI Express links with one lane each
- One SATA channel
- One USB
- One USB-to-UART interface
- One SDVO-to-DVI bridge



See MEN's [website](#) for available board versions.

2.2.1 Connection

Connector types:

- 114-pin matched impedance plug connector, MICTOR 0.64 mm grid
- Mating connector:
114-pin matched impedance receptacle connector, MICTOR 0.64 mm grid

Table 1. Pin assignment of the 114-pin board-to-board connector, pins 1..38

	1	GND	GND	2	GND
	3	SATA_TX+		4	-
	5	SATA_TX-		6	-
	7	GND		8	GND
	9	SATA_RX+		10	-
	11	SATA_RX-		12	-
	13	GND		14	GND
	15	PCIE1_TX+		16	PCIE3_TX+
	17	PCIE1_TX-		18	PCIE3_TX-
	19	GND		20	GND
	21	PCIE1_RX+		22	PCIE3_RX+
	23	PCIE1_RX-		24	PCIE3_RX-
	25	GND		26	GND
	27	PCIE0_TX+		28	PCIE2_TX+
	29	PCIE0_TX-		30	PCIE2_TX-
	31	GND		32	GND
	33	PCIE0_RX+		34	PCIE2_RX+
	35	PCIE0_RX-		36	PCIE2_RX-
	37	GND		38	GND

Table 2. Pin assignment of the 114-pin board-to-board connector, pins 39..76

	39	+3.3V	+5V	40	+3.3V
	41	USB_2_3_OC#		42	-
	43	-		44	-
	45	GND		46	-
	47	USB_D3-		48	-
	49	USB_D3+		50	-
	51	GND		52	GND
	53	USB_D2-		54	PCIE_WAKE#
	55	USB_D2+		56	PLT_RST#
	57	GND		58	LINKCAP
	59	-		60	SMB_CLK
	61	-		62	SMB_DATA
	63	GND		64	GND
	65	-		66	SDVOCTRL_CLK
	67	-		68	SDVOCTRL_DATA
	69	GND		70	GND
71	PCIE_CLK_A_REF+	72	-		
73	PCIE_CLK_A_REF-	74	-		
75	GND	76	GND		

Table 3. Pin assignment of 114-pin board-to-board connector, pins 77..114

	77	GND	GND	78	GND
	79	-		80	-
	81	-		82	-
	83	GND		84	GND
	85	SDVOB_BLUE-		86	-
	87	SDVOB_BLUE+		88	-
	89	GND		90	GND
	91	SDVOB_GREEN-		92	-
	93	SDVOB_GREEN+		94	-
	95	GND		96	GND
	97	SDVOB_RED-		98	-
	99	SDVOB_RED+		100	-
	101	GND		102	GND
	103	SDVOB_CLK-		104	-
	105	SDVOB_CLK+		106	-
	107	GND		108	GND
109	SDVOB_INT-	110	-		
111	SDVOB_INT+	112	-		
113	GND	114	GND		

Table 4. Signal mnemonics of 114-pin board-to-board connector

	Signal	Direction	Function
Power	+3.3V	in	+3.3V power supply
	+5V	in	+5V power supply
	GND	-	Digital ground
SATA	SATA_RX+, SATA_RX-	out	Differential pair of SATA receive lines, port 0
	SATA_TX+, SATA_TX-	in	Differential pair of SATA transmit lines, port 0
PCI Express	PCIE_CLK_A_REF +, PCIE_CLK_A_REF-	in	Reference clock A 100 MHz
	PCIE0_RX+, PCIE0_RX-	out	Differential pair of PCIe receive lines, port 0
	PCIE0_TX+, PCIE0_TX-	in	Differential pair of PCIe transmit lines, port 0
	PCIE1_RX+, PCIE1_RX-	out	Differential pair of PCIe receive lines, port 1
	PCIE1_TX+, PCIE1_TX-	in	Differential pair of PCIe transmit lines, port 1
	PCIE2_RX+, PCIE2_RX-	out	Differential pair of PCIe receive lines, port 2
	PCIE2_TX+, PCIE2_TX-	in	Differential pair of PCIe transmit lines, port 2
	PCIE3_RX+, PCIE3_RX-	out	Differential pair of PCIe receive lines, port 3
	PCIE3_TX+, PCIE3_TX-	in	Differential pair of PCIe transmit lines, port 3
	PCIE_WAKE#	out	Wake signal from PCIe device to wake F602 from sleep state
USB	USB_D[2]+, USB_D[2]-	in/out	Differential pair of USB lines, port 2
	USB_D[3]+, USB_D[3]-	in/out	Differential pair of USB lines, port 3
	USB_OC23#	out	USB overcurrent, ports 2 and 3

	Signal	Direction	Function
Serial Digital Video Output (SDVO)	SDVOB_BLUE+, SDVOB_BLUE-	in	Serial digital video B blue data, differential pair
	SDVOB_GREEN+, SDVOB_GREEN-	in	Serial digital video B green data, differential pair
	SDVOB_RED+, SDVOB_RED-	in	Serial digital video B red data, differential pair
	SDVOB_CLK+, SDVOB_CLK-	in	Serial digital video B clock, differential pair
	SDVOB_INT+, SDVOB_INT-	out	Serial digital video B input interrupt, differential pair
	SDVOCTRL_CLK	in/out	I2C based control signal (clock) for SDVO device
	SDVOCTRL_DATA	in/out	I2C based control signal (data) for SDVO device
Other	LINKCAP	out	LINKCAP indicates how the CompactPCI Express backplane system slot is routed (2-Link combined or 4-Link configuration).
	PLT_RST#	in	Platform reset (global reset)
	SMB_CLK	in	System management bus clock
	SMB_DATA	in/out	System management bus data

2.3 DVI Connector

The F602 provides one DVI-D single link interface on a DVI connector.

Connector types:

- Combined analog and digital DVI-I receptacle connector
- Mating connector:
Combined analog and digital plug connector

Table 5. Pin assignment of DVI-I receptacle connectors

	17	TX0-	9	TX1-	1	TX2-
	18	TX0+	10	TX1+	2	TX2+
	19	GND	11	GND	3	GND
	20	-	12	-	4	-
	21	-	13	-	5	-
	22	GND	14	DDCPOW	6	DDCL
	23	TXC+	15	GND	7	DDCA
	24	TXC-	16	DVIHP	8	-
		c3	-	-	c1	
		c5	-	-		
	c4	-	-	c2		

Table 6. Signal mnemonics of DVI connectors

Signal	Direction	Function
DDCA	out	Display Data Channel data
DDCL	out	Display Data Channel clock
DDCPOW	out	Display Data Channel Power, +5V; current-limited to 1.5A by a fuse ¹
DVIHP	in	DVI hot plug detect
GND	-	Digital ground
TX[0..2]+, TX[0..2]-	out	Transmit data lines (TMDS), differential pairs
TXC+, TXC-	out	TX clocks (TMDS clock), differential pair

¹ The DVI fuse used on F602 is a PolyFuse and therefore needs no maintenance

2.4 USB Interface

The USB interface is controlled by the CPU via the board-to-board connector and accessible at a connector at the front panel.

The USB interface supports UHCI. The two interfaces support a maximum current of 1A before switching off.

Connector types:

- 4-pin USB Series A receptacle according to Universal Serial Bus Specification Revision 1.0
- Mating connector:
4-pin USB Series A plug according to Universal Serial Bus Specification Revision 1.0

Table 7. Pin assignment of USB front-panel connector


	1	+5V
	2	USB_D-
	3	USB_D+
	4	GND

Table 8. Signal mnemonics of USB front-panel connector

Signal	Direction	Function
+5V	out	+5 V power supply
GND	-	Digital ground
USB_D+, USB_D-	in/out	USB lines, differential pair

2.5 UART Interface

The F602 provides one UART interface that is controlled using an USB port from the CPU board. Physical interfaces from RS232 to RS485—isolated or not—are implemented using an SA-Adapter via a 10-pin on-board connector. Data rates up to 1 Mbit/s are possible.

By standard, F602 comes with an on-board 10-pin connectors for direct connection of an SA-Adapter at the front panel.



You can find more information on MEN SA-Adapters on MEN's [website](#).

Table 9. Signal mnemonics of UART interfaces

Signal	Direction	Function
+5V	out	+5V power supply
CTS#	in	Clear to send
DCD#	in	Data carrier detect
DSR#	in	Data set ready
DTR#	out	Data terminal ready
GND	-	Digital ground
RI#	in	Ring indicator
RTS#	out	Request to send
RXD	in	Receive data
TXD	out	Transmit data

2.5.1 Connection via 10-pin SA-Adapter Connector

The F602 provides a 10-pin connector that allows direct connection to MEN SA-Adapters. See [Figure 2, Map of the board – top view, on page 14](#).

Connector types:

- 10-pin IDC receptacle, 2.54mm pitch
- Mating connector:
10-pin low-profile plug

Table 10. Pin assignment of 10-pin SA-Adapter UART connector

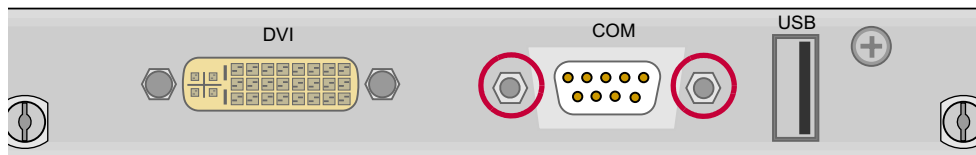
	9	DCD#	10	RI#
	7	DSR#	8	CTS#
	5	DTR#	6	RTS#
	3	TXD	4	RXD
	1	GND	2	+5V

2.5.1.1 Installing SA-Adapter Directly on F602

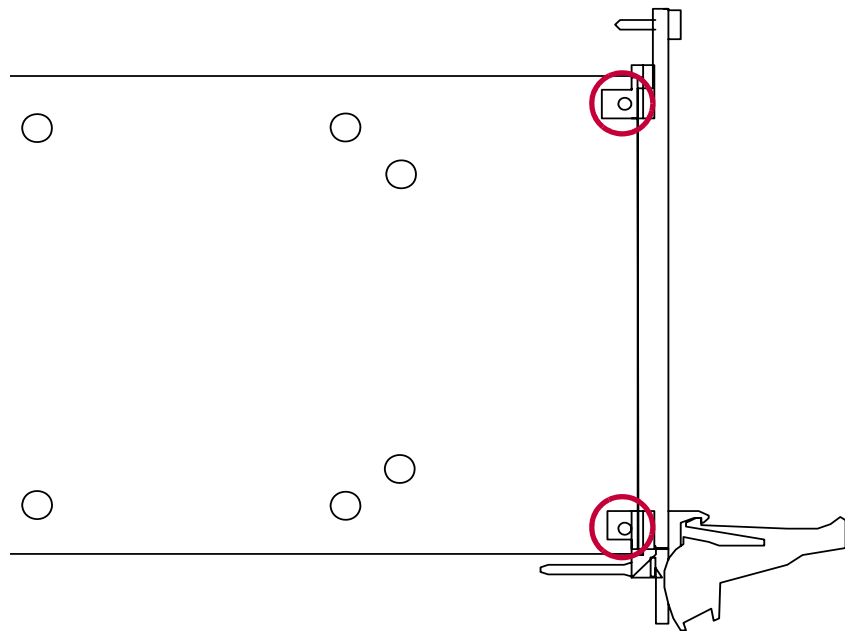
You can install the SA-Adapter directly on the F602 like a mezzanine module, with the I/O connector at the front.

Perform the following steps to install an SA-Adapter:

- Make sure that the adapter matches the standard dimensions for SA-Adapters. (See also installation hints in the adapter’s user manual.)
- If your F602 is already attached to a CPU board: Power down your system and remove the F602 from the system together with the attached CPU, and disconnect the two boards as described in the CPU board’s user manual. It is not necessary to remove an on-board SATA hard disk, if installed.
- Remove the respective blind connector from the front panel: Loosen and remove the screws highlighted in red.



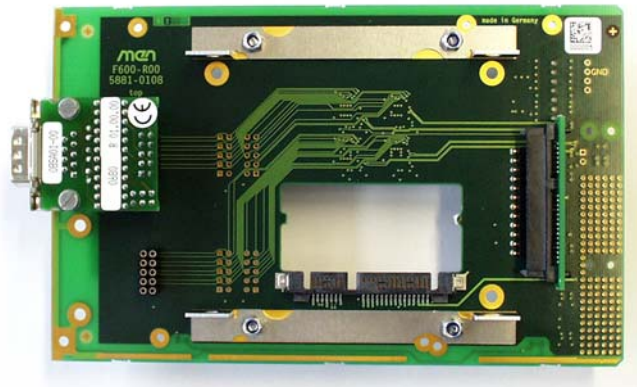
- ☑ Remove the front panel: Loosen and remove the front-panel mounting screws at the bottom side of the board, highlighted in red.



- ☑ Remove the front panel screws of the SA-Adapter.

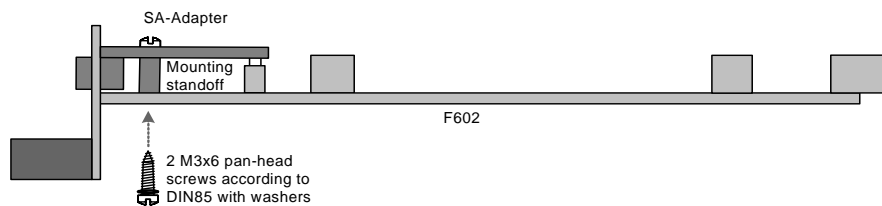


- ☑ The SA-Adapter is plugged on the F602 with the component sides of the PCBs facing each other. Plug the SA-Adapter into the respective slot, and push it down carefully.



Picture shows a similar board

- ☑ Reinstall the front panel: Place the front panel back over the SA-Adapter connector. Put back and fasten the front-panel mounting screws removed before.
- ☑ Screw the SA-Adapter tightly to the F602 using the front-panel screws removed before and two pan-head screws of type M3x6 according to DIN85 with washers.



2.6 Serial ATA (SATA)

The F602 supports one serial ATA (SATA) interface controlled by the CPU board. You can connect a 2.5" hard-disk drive directly on the board.

The SATA interfaces support transfer rates up to 150 MB/s.

Note: As an option a CompactFlash can be connected to the SATA interface via a CompactFlash adapter card instead of the hard disk (see [Chapter 2.6.1.2 Installing CompactFlash Adapter on page 33](#)).

Table 11. Signal mnemonics of SATA connectors

Signal	Direction	Function
+12V	out	+12V power supply
+3.3V	out	+3.3V power supply
+5V	out	+5V power supply
GND	-	Digital ground
SATA_RX+, SATA_RX-	in	Differential pair of SATA receive lines
SATA_TX+, SATA_TX-	out	Differential pair of SATA transmit lines

2.6.1 On-Board Hard-Disk Connector (SATA)

Connector type:

- 7- & 15-pin SATA receptacle connector, 1.27mm pitch

Table 12. Pin assignment of SATA connector for on-board hard disk

	S1	GND	
	S2	SATA_TX+	
	S3	SATA_TX-	
	S4	GND	
	S5	SATA_RX-	
	S6	SATA_RX+	
	S7	GND	
	Key and spacing, separate signal and power segments		
	P1	+3.3V	
	P2	+3.3V	
	P3	+3.3V	
	P4	GND	
	P5	GND	
	P6	GND	
	P7	+5V	
P8	+5V		
P9	+5V		
P10	GND		
P11	GND		
P12	GND		
P13	-		
P14	-		
P15	-		

2.6.1.1 Installing a Hard Disk

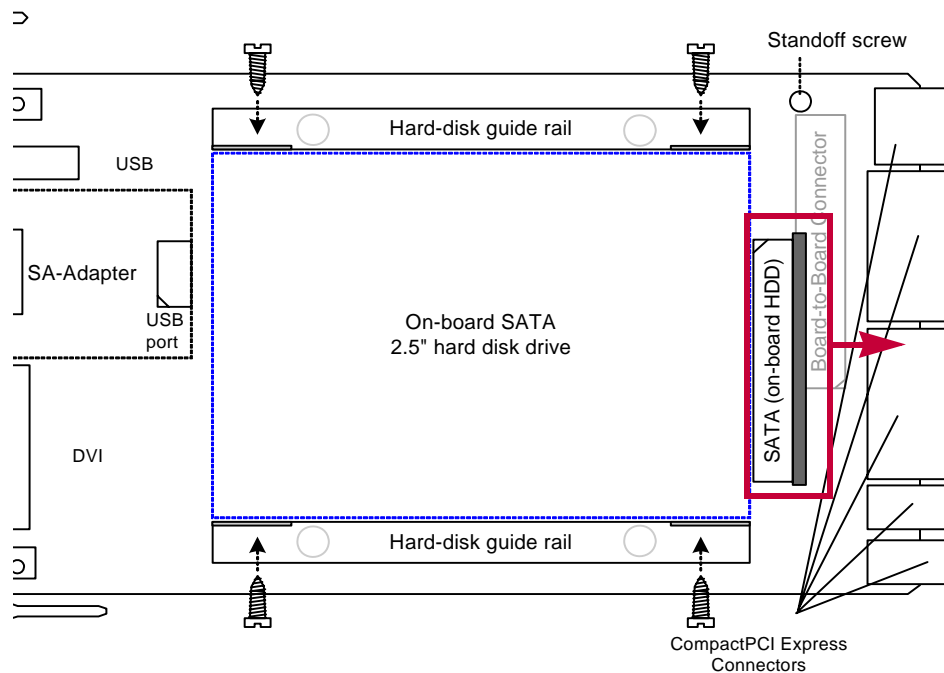
MEN offers a 2.5" hard-disk drive for on-board installation. With a hard disk installed, the board still needs only one slot in the system.
See also [Figure 2, Map of the board – top view, on page 14](#).



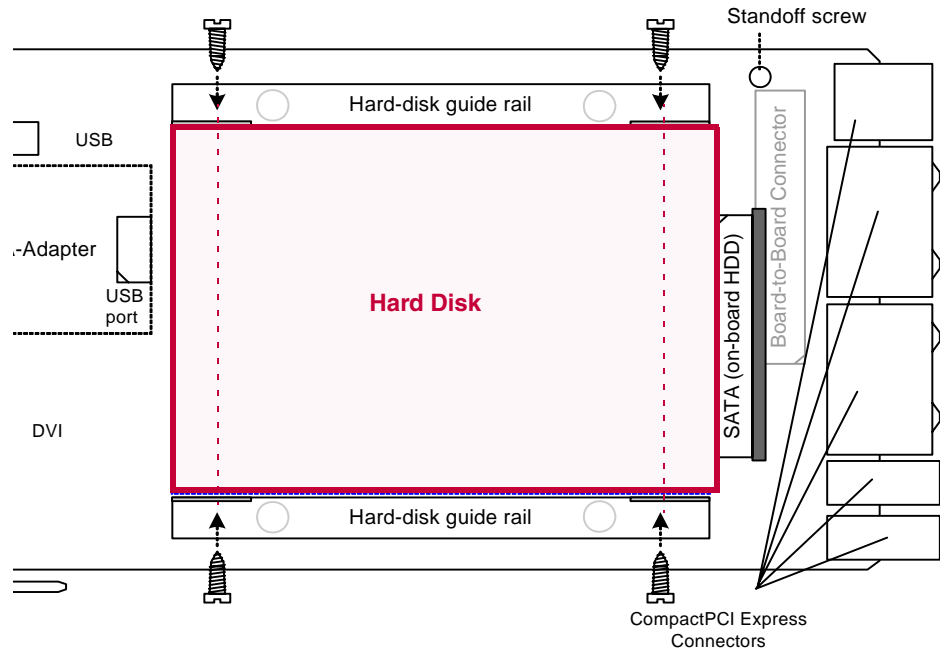
Please see MEN's [website](#) for ordering options.

Perform the following steps to install a hard disk:

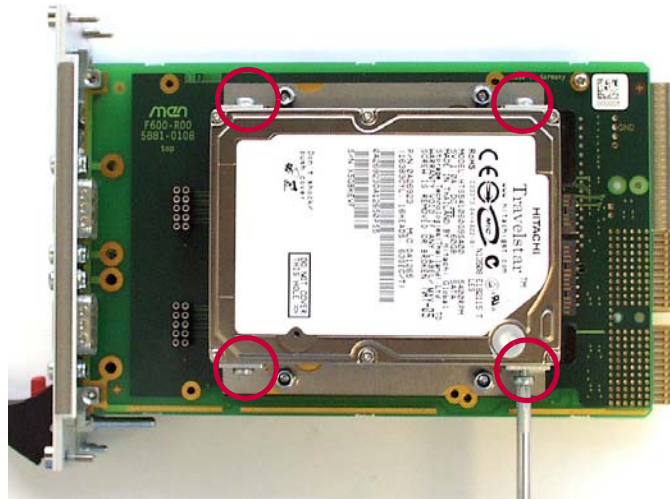
- ☑ If your F602 is already attached to a CPU board: Power down your system and remove the F602 from the system together with the attached CPU. It is not necessary to deinstall the F602 from the CPU board.
- ☑ Push the SATA connector to the right to make way for the hard disk.



- ☑ Place the hard disk in the designated space between the guide rails. Align the four mounting holes on the hard disk's sides with the holes in the guide rails.

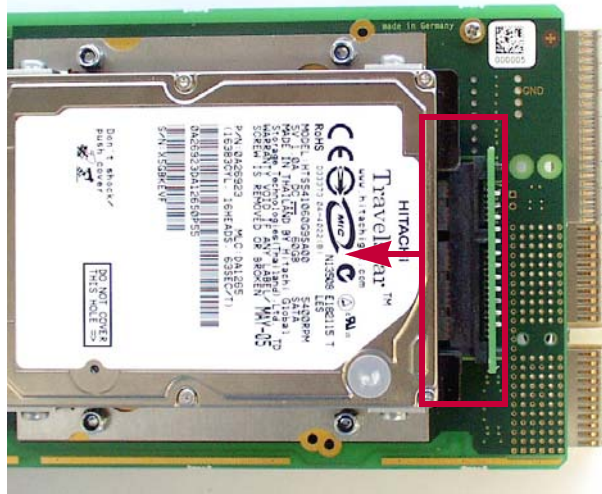


- ☑ Fasten the hard disk at the guide rails, using the four screws supplied with F602.



Picture shows a similar board

- ☑ Reinstall the SATA connector. Make sure to match the pins correctly. Push the connector towards the hard disk until it sits firmly in its place.

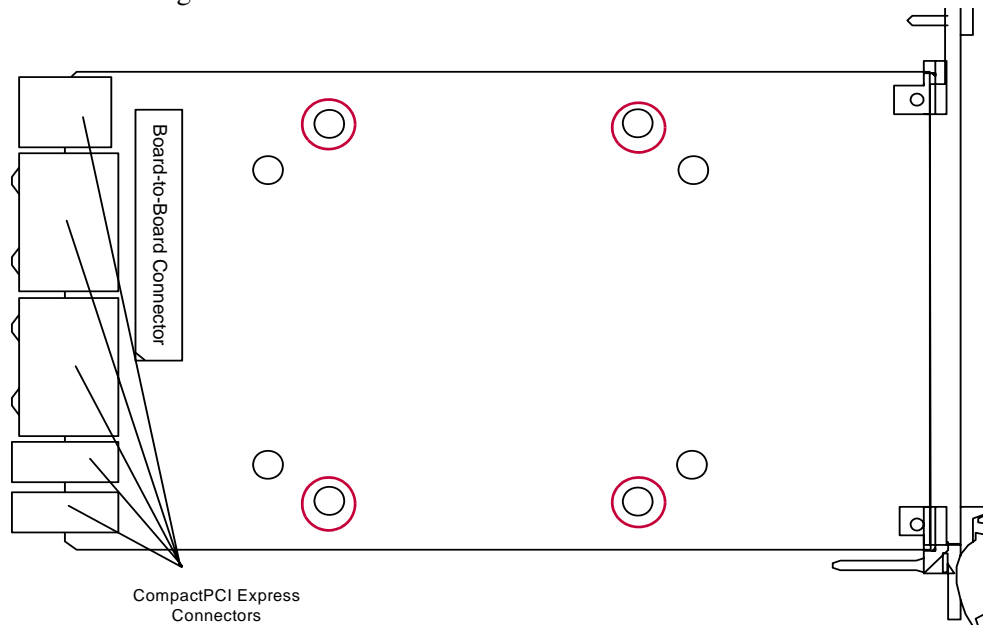


Picture shows a similar board

2.6.1.2 Installing CompactFlash Adapter

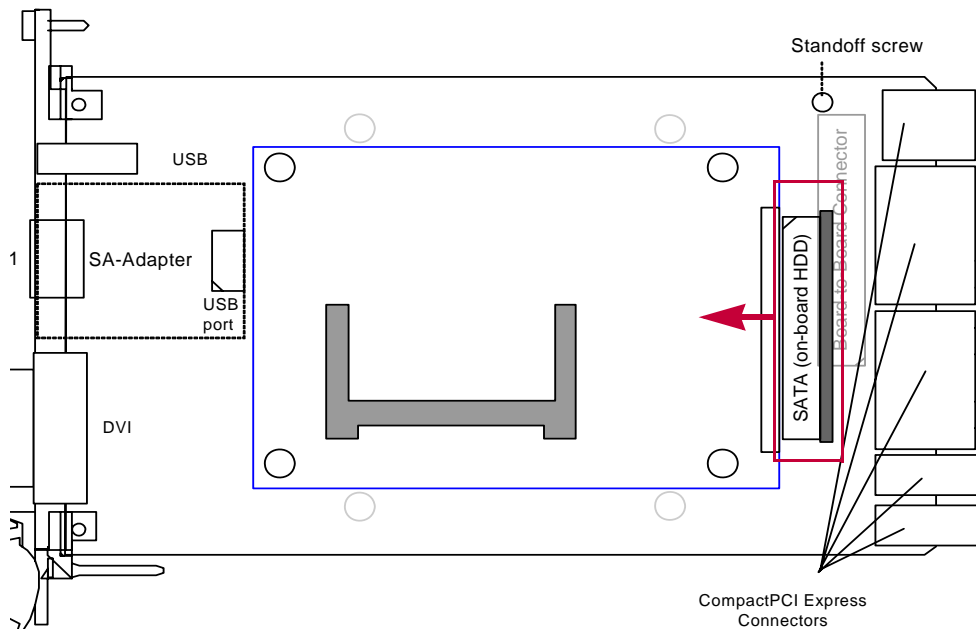
Perform the following steps to install the adapter for the second CompactFlash:

- ☑ If your F602 is already attached to a CPU board: Power down your system and remove the F602 from the system together with the attached CPU. Deinstall the F602 from the CPU board.
- ☑ Remove the hard disk and the hard disk guide rails if a hard disk is already installed on the F602. To remove the guide rails loosen the screws indicated in the drawing on the bottom side of the board.

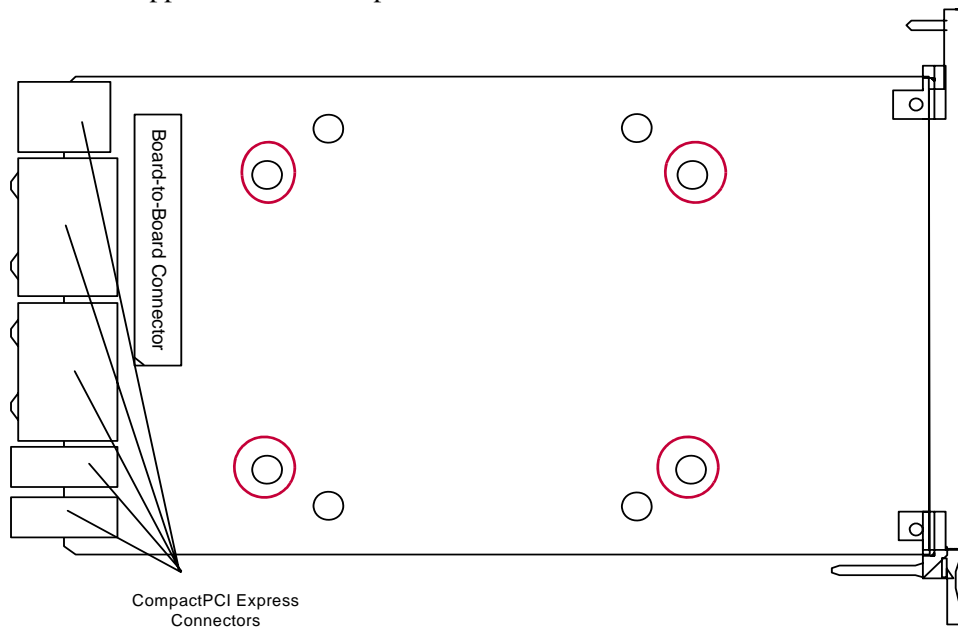


- ☑ Push the SATA connector to the right to make way for the CompactFlash adapter.

- ☑ Plug together the SATA connectors of the adapter and the F602. Make sure to match the pins correctly. Push the connector of the F602 towards the adapter until it sits firmly in its place



- ☑ Fasten the adapter card to the F602 at the bottom side of F602 using the four screws supplied with the adapter.



- ☑ Insert a CompactFlash card into the CompactFlash holder on the adapter as indicated by the arrow on top of the card.

2.7 CompactPCI Express Interface

2.7.1 PCIExpress

PCI Express (PCIe) succeeds PCI and AGP and offers higher data transfer rates.

As opposed to the PCI bus, PCIe is no parallel bus but a serial point-to-point connection. Data is transferred using so-called lanes, with each lane consisting of a line pair for transmission and a second pair for reception. Individual components are connected using switches.

PCIe supports full-duplex operation and uses a clock rate of 1.25 GHz DDR. This results in a data rate of max. 250 MB/s per lane in each direction. (The standard PCI bus with 32 bits/33 MHz only allows a maximum of 133 MB/s.)

If you use only one lane, you speak of a PCIe x1 link. You can couple several lanes to increase the data rate, e.g. x2 with 2 lanes up to a x32 link using 32 lanes.

In terms of software, most operating systems can handle PCI Express boards just as well as the old PCI.

2.7.2 CompactPCI Express Backplane Connectors

The system slot and board of a CompactPCI Express backplane can have up to 24 lanes and up to four links of PCI Express for up to 6 Gigabytes/second system bandwidth per direction. Peripheral slots and boards can have up to 16 lanes of PCI Express for up to 4 Gigabytes/second bandwidth per direction.

On CompactPCI Express boards the CompactPCI J1 and J2 connectors are replaced with four connectors. The bottom connector (XP1) provides the board's power supply; the second and third connectors (XJ2 and XJ3) provide the PCIe differential pairs for multiple PCIe buses to be routed from the board to the backplane. The top connector (XJ4) provides specialized I/O signals. The F602 provides four PCI Express links from the CPU board on the CompactPCI Express backplane connectors.

Power supply connector XP1

Table 13. Pin assignment of the two 3-pin power supply connectors XP1 (board revisions <R00.03.xx)



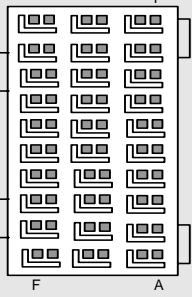
	A	GND
	B	3.3V
	C	5V
	D	-
	E	12V
	F	12V
	G	GND

Table 14. Pin assignment of 7-pin power supply connector XP1 (board revisions R00.03.xx and higher)

	G	GND
	F	12V
	E	12V
	D	GND
	C	5V
	B	3.3V
	A	GND

Signal connector XJ2

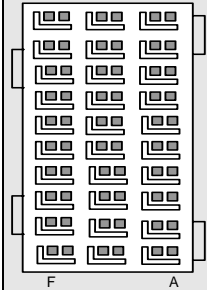
Table 15. Pin assignment of CompactPCI Express connector XJ2

	A	B	ab	C	D	cd	E	F	ef	
	1	-	-	GND	-	-	GND	-	-	GND
	2	-	-	GND	-	-	GND	-	-	GND
	3	PCIE3_ TX+	PCIE3_ TX-	GND	PCIE3_ RX+	PCIE3_ RX-	GND	-	-	GND
	4	-	-	GND	-	-	GND	-	-	GND
	5	-	-	GND	-	-	GND	-	-	GND
	6	-	-	GND	-	-	GND	-	-	GND
	7	-	-	GND	-	-	GND	-	-	GND
	8	-	-	GND	-	-	GND	-	-	GND
	9	-	-	GND	-	-	GND	-	-	GND
	10	-	-	GND	-	-	GND	-	-	GND

Signal connector XJ3

Table 16. Pin assignment of CompactPCI Express connector XJ3

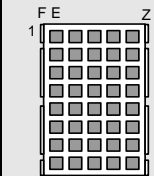
	A	B	ab	C	D	cd	E	F	ef
1	-	-	GND	-	-	GND	-	-	GND
2	-	-	GND	-	-	GND	Link-CAP	-	GND
3	SMB_DAT	SMB_CLK	GND	CLK3_REF+	CLK3_REF-	GND	CLK1_REF+	CLK1_REF-	GND
4	-	PLT_RST	GND	CLK2_REF+	CLK2_REF-	GND	CLK0_REF+	CLK0_REF-	GND
5	PCIE0_TX+	PCIE0_TX-	GND	PCIE0_RX+	PCIE0_RX-	GND	-	-	GND
6	-	-	GND	-	-	GND	-	-	GND
7	-	-	GND	-	-	GND	PCIE1_TX+	PCIE1_TX-	GND
8	-	-	GND	-	-	GND	PCIE1_RX+	PCIE1_RX-	GND
9	-	-	GND	-	-	GND	-	-	GND
10	PCIE2_TX+	PCIE2_TX-	GND	PCIE2_RX+	PCIE2_RX-	GND	-	-	GND



Signal connector XJ4

Table 17. Pin assignment of CompactPCI Express connector XJ4

	Z	A	B	C	D	E	F
1	GND	-	-	-	-	-	GND
2	GND	5Vaux	GND	-	PCIE_WAKE#	-	GND
3	GND	-	-	-	-	-	GND
4	GND	-	-	-	-	-	GND
5	GND	-	-	-	-	-	GND
6	GND	-	-	-	-	-	GND
7	GND	-	-	-	-	-	GND
8	GND	-	-	-	-	-	GND



3 Appendix

3.1 Literature and Web Resources

- F602 data sheet with up-to-date information and documentation:
www.men.de

3.1.1 SATA

- Serial ATA International Organization (SATA-IO)
www.serialata.org

3.1.2 CompactFlash

- CompactFlash Association:
www.compactflash.org

3.1.3 USB

- USB:
Universal Serial Bus Specification Revision 1.0; 1996; Compaq, Digital Equipment Corporation, IBM PC Company, Intel, Microsoft, NEC, Northern Telecom
www.usb.org

3.1.4 DVI

- Digital Visual Interface Revision 1.0
www.ddwg.org

3.2 Finding out the Board's Article Number, Revision and Serial Number

MEN user documentation may describe several different models and/or hardware revisions of the F602. You can find information on the article number, the board revision and the serial number on two labels attached to the board.

- **Article number:** Gives the board's family and model. This is also MEN's ordering number. To be complete it must have 9 characters.
- **Revision number:** Gives the hardware revision of the board.
- **Serial number:** Unique identification assigned during production.

If you need support, you should communicate these numbers to MEN.

Figure 3. Labels giving the board's article number, revision and serial number

