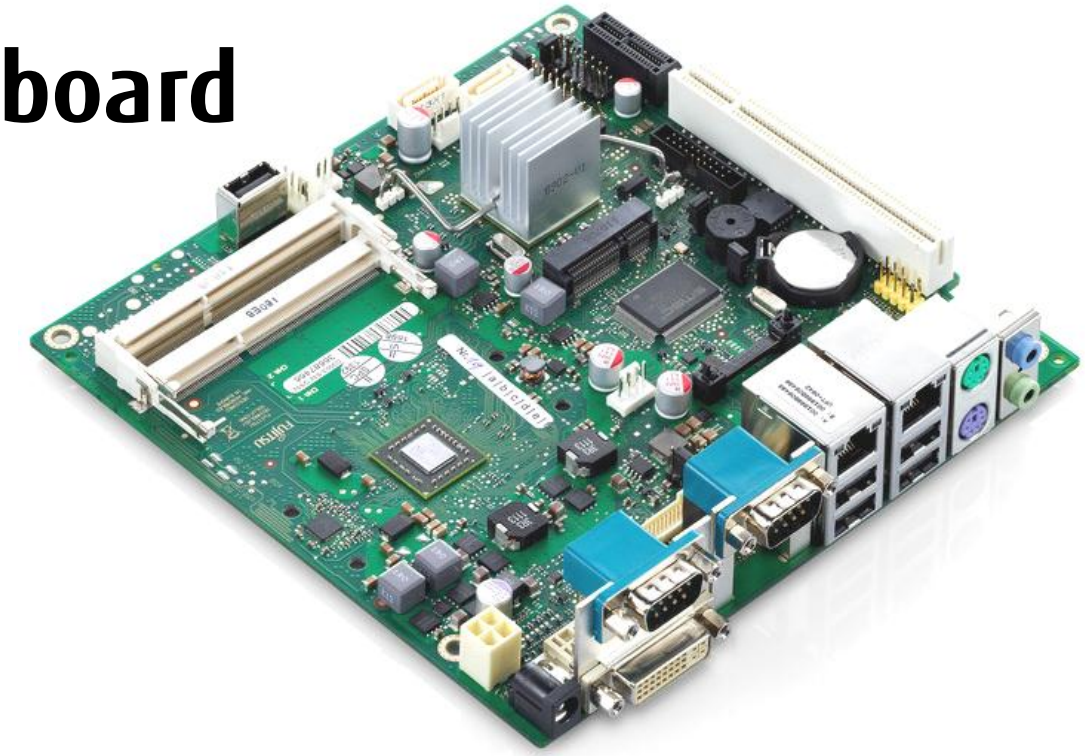
TechNotes V3.1

Mini-ITX Industrial Mainboard

D3003-S



(10/2013)

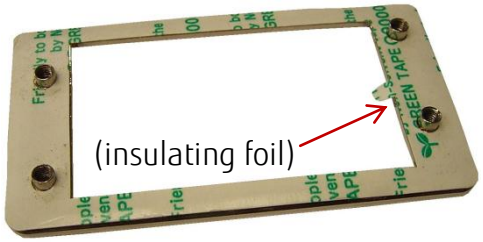
Content

1 Safety Instructions

Do not connect or disconnect any cables or modules to or from any onboard connectors (except for the rear I/O connectors) until the mainboard is completely powered down.

Any damage caused to the mainboard by misuse of the onboard connectors is excluded from the standard warranty. Fujitsu Technology Solutions cannot be held liable for any damage that results from incorrect use of any onboard connectors.

The system integrator is fully responsible for the usage of appropriate connectors and cables in order to fulfill the technical requirements (electrical contact, durability, power/current levels, signal integrity etc.)



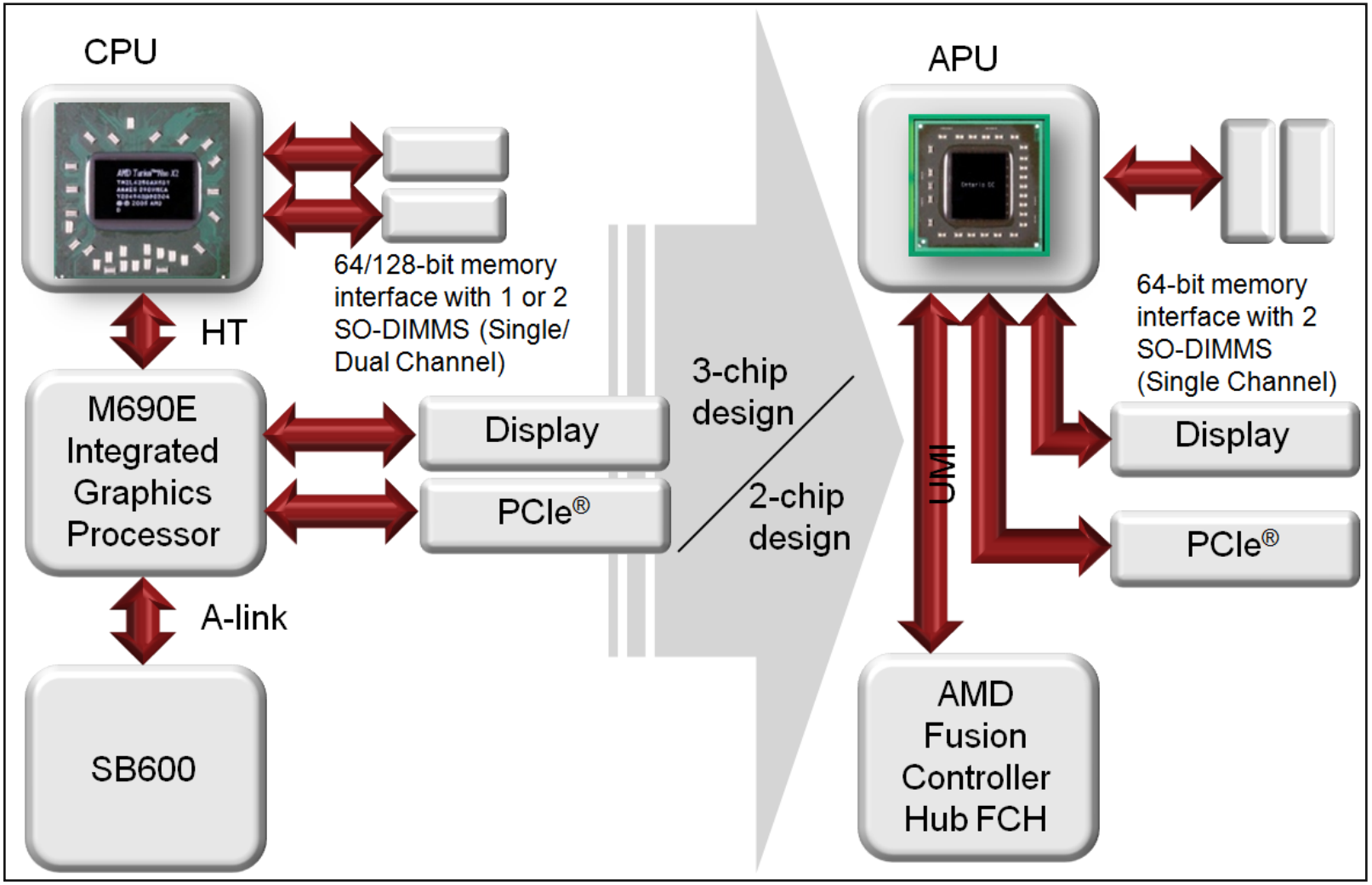
Heatsink Backplate

Important Note:

Insulating foil of backplate must NOT be removed,
otherwise mainboard may be damaged due to possible shortcut.

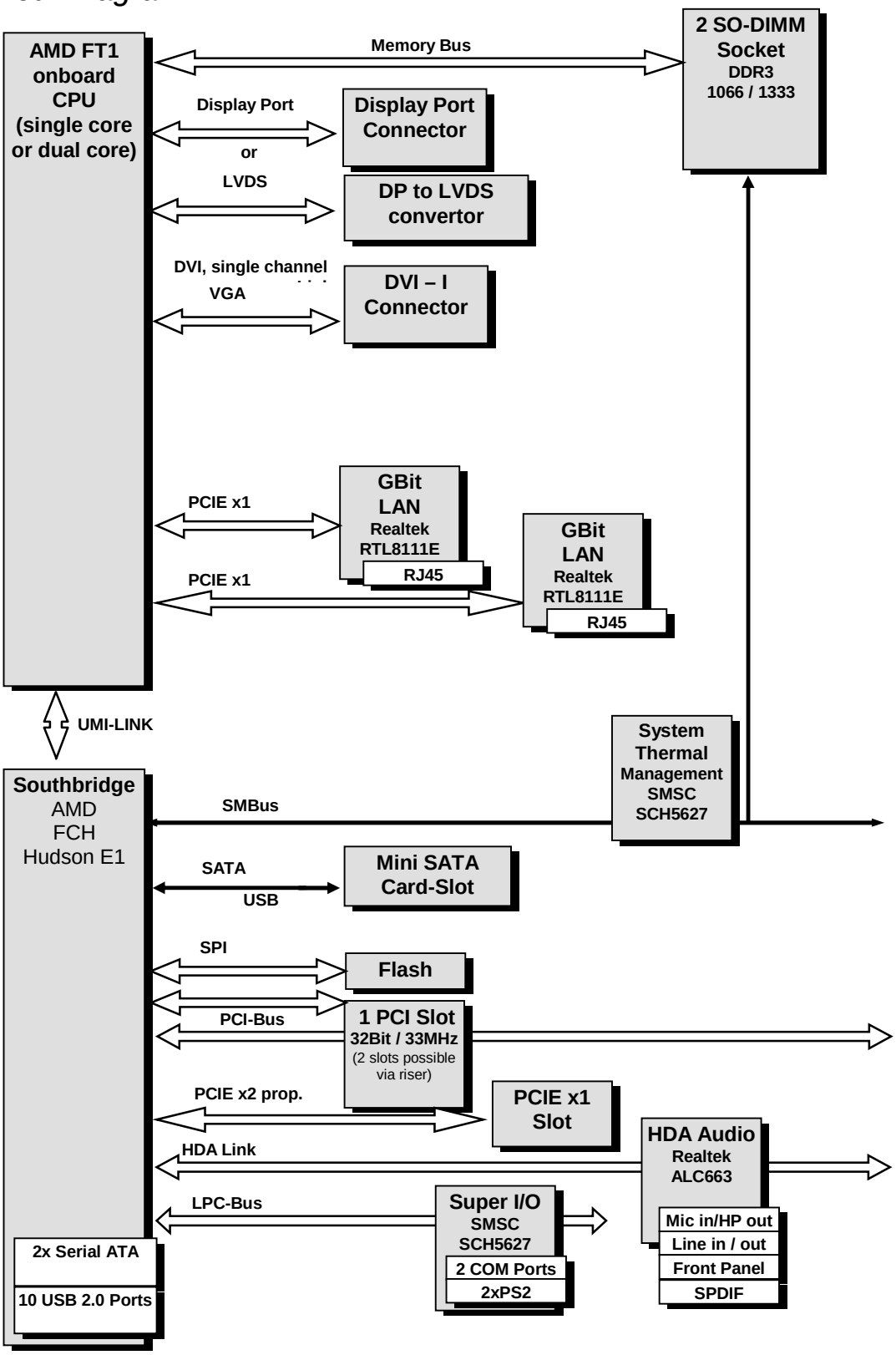
2 Feature Overview D3003-S

2.1 Architecture Overview



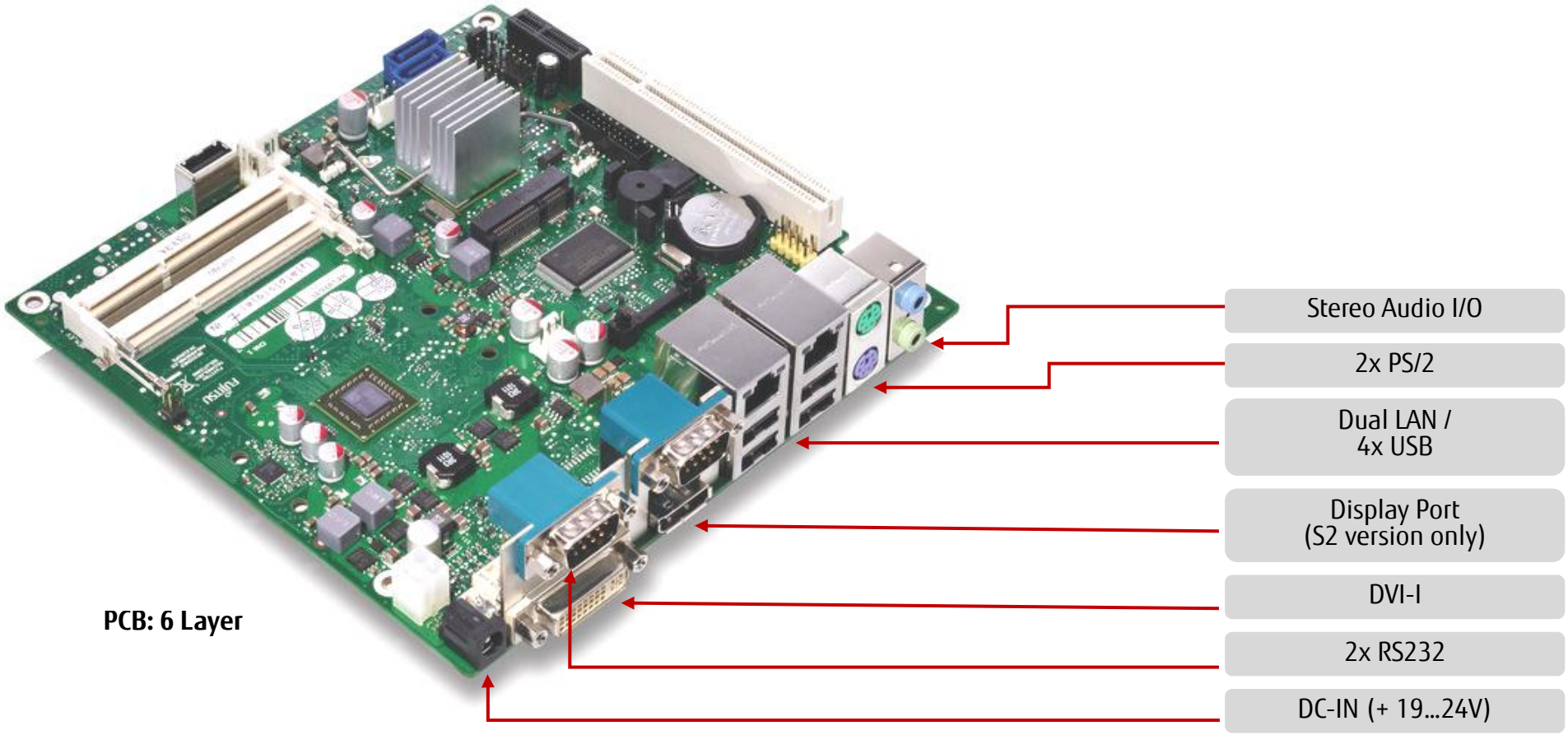
Feature Overview D3003-S

2.2 Block Diagram



Feature Overview D3003-S

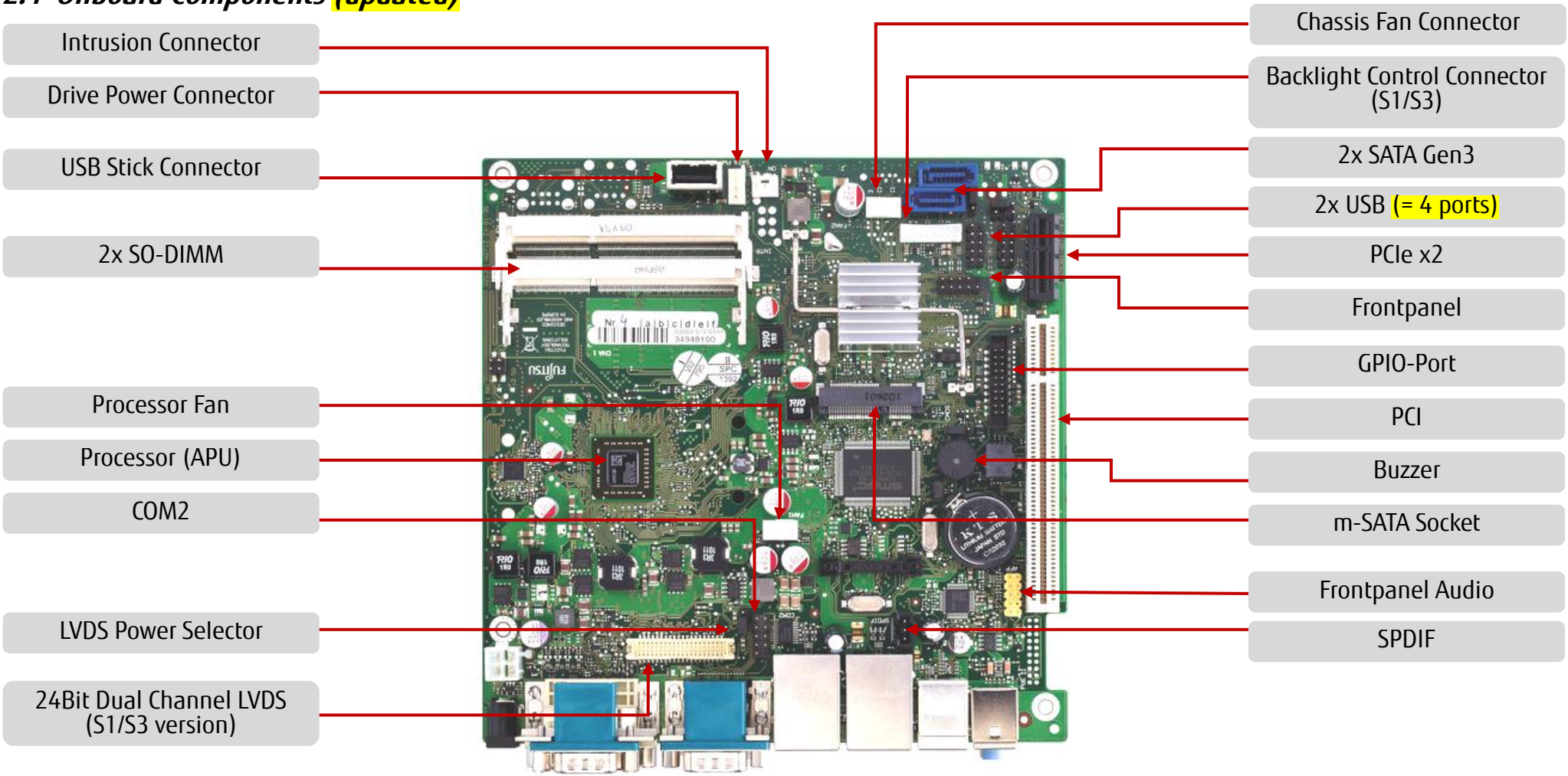
2.3 External Connectors D3003-S



PCB: 6 Layer

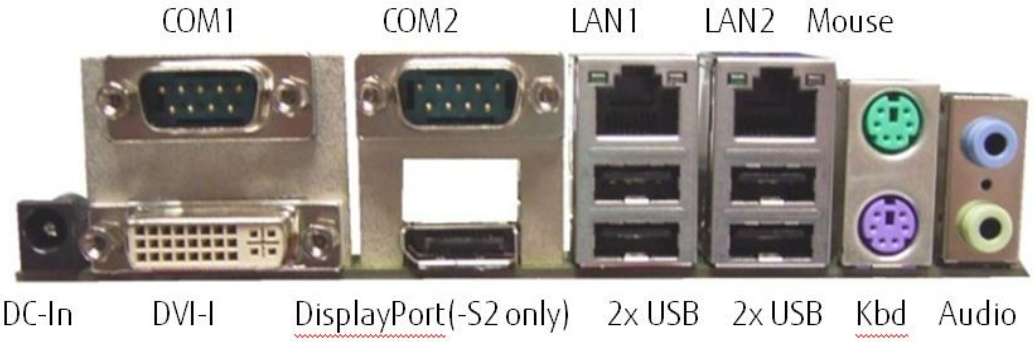
Feature Overview D3003-S

2.4 Onboard Components (updated)



Feature Overview D3003-S

2.5 I/O-Shield



Spring Steel Sheet

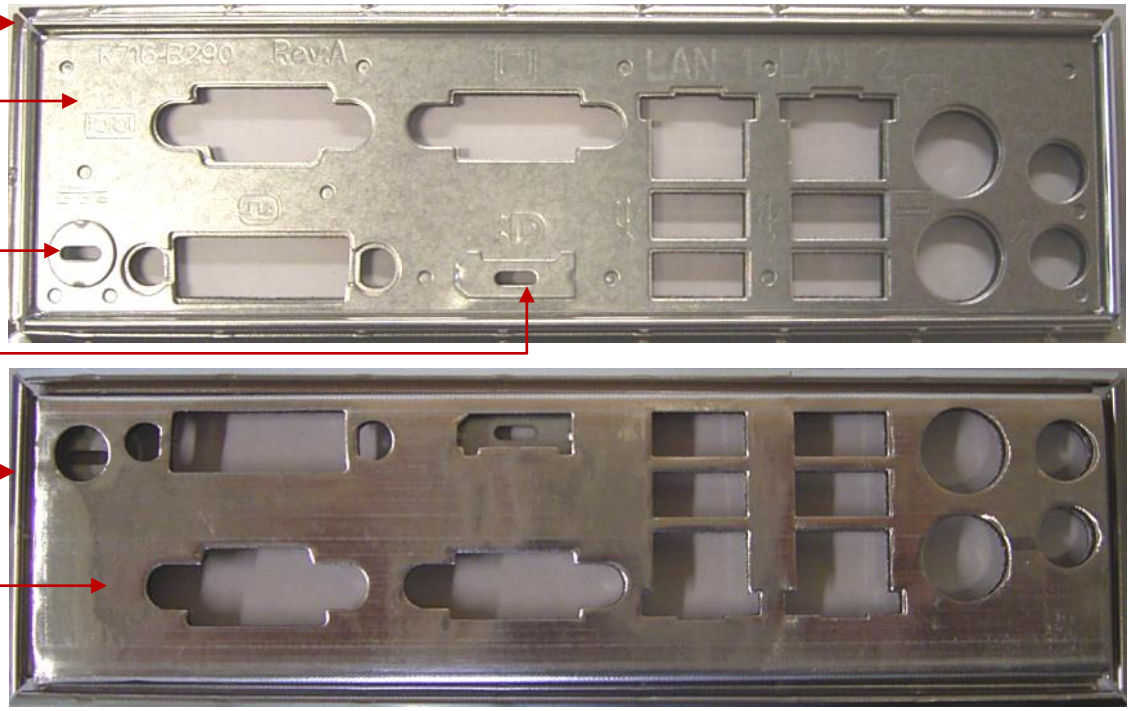
Enforcement Sheet

Removable Cover

Removable Cover (DisplayPort)

Spring Steel Sheet

Gasket = Foam with Aluminium



(front view)

(rear view)

FTS IO-Shield: Best-in-class steadiness and EMI/ESD protection

Feature Overview D3003-S

I/O-Shield

Apparatus to evaluate and specify insertion force of FTS I/O shield.

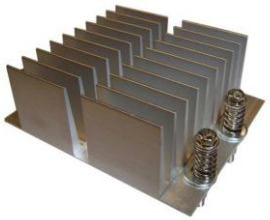
Nominal force: ~ 75 N
for specified ATX IO "letterbox"

Note: ATX Chassis "letterbox" for I/O shield:
Nom. size = 158.75 x 44.45mm
Tolerance = +/- 0.2mm

Feature Overview D3003-S

2.6 Heatsink Installation Notes (new)

FTS offers a passive heatsink for D3003-S1 and an active heatsink for D3003-S2/S3:



One of the following mounting backplates is included:

(V26898-B883-V10)

(V26898-B883-V100)

Recommended torque for heatsink screws: 0.6Nm

Assembly Notes:

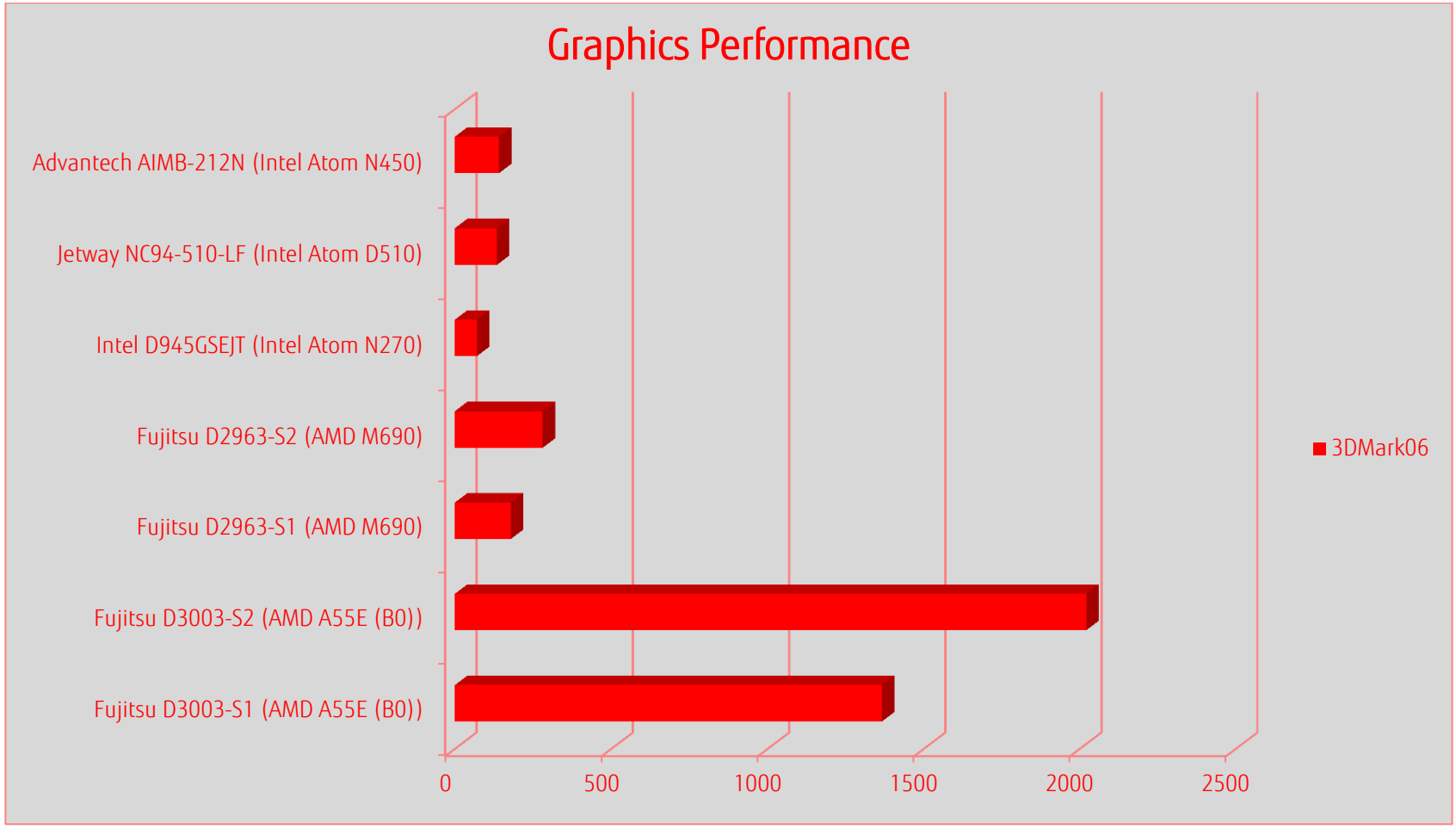
- Hold the heatsink with one hand so that it doesn't tilt while tightening the screws
- Screw in all 4 screws only a little bit, so that they hold the heat sink in place. Start with one screw and then continue with the one across. All the time keep holding the heat sink straight with one hand.
- Now fully tighten the screws, again starting with one and then continuing with the one across. All the time keep holding the heat sink straight with one hand.

Important Note:

Insulating foil of backplate –B883-V100 must NOT be removed, otherwise the mainboard may be damaged due to possible shortcut.

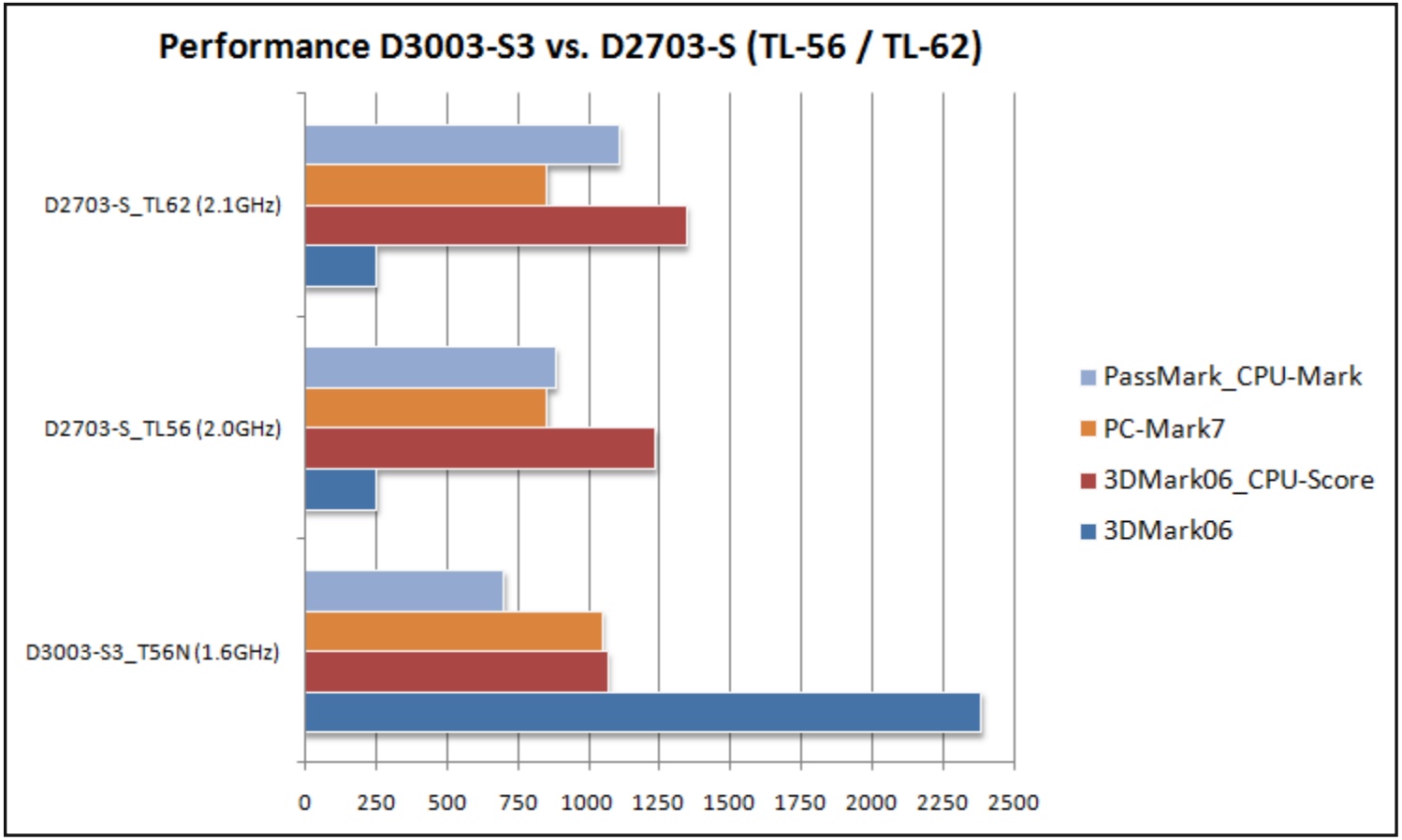
3 Benchmarks

3.1 Graphics Performance 3DMark06



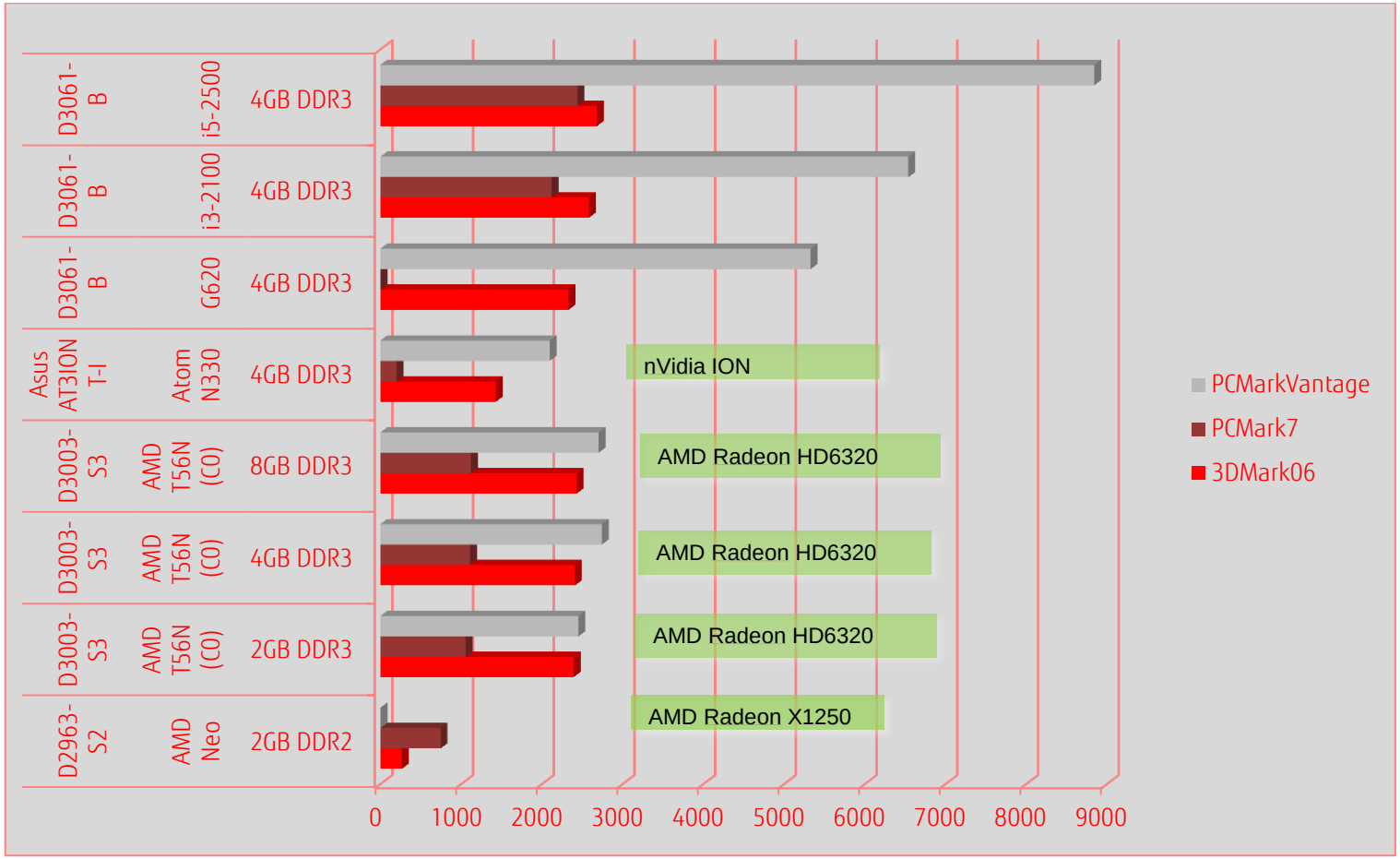
Benchmarks

3.2 Comparison D3003-S vs. D2703-S



Benchmarks

3.3 Performance PCMark



Benchmarks

3.4 HD Video Playback

D3003-S

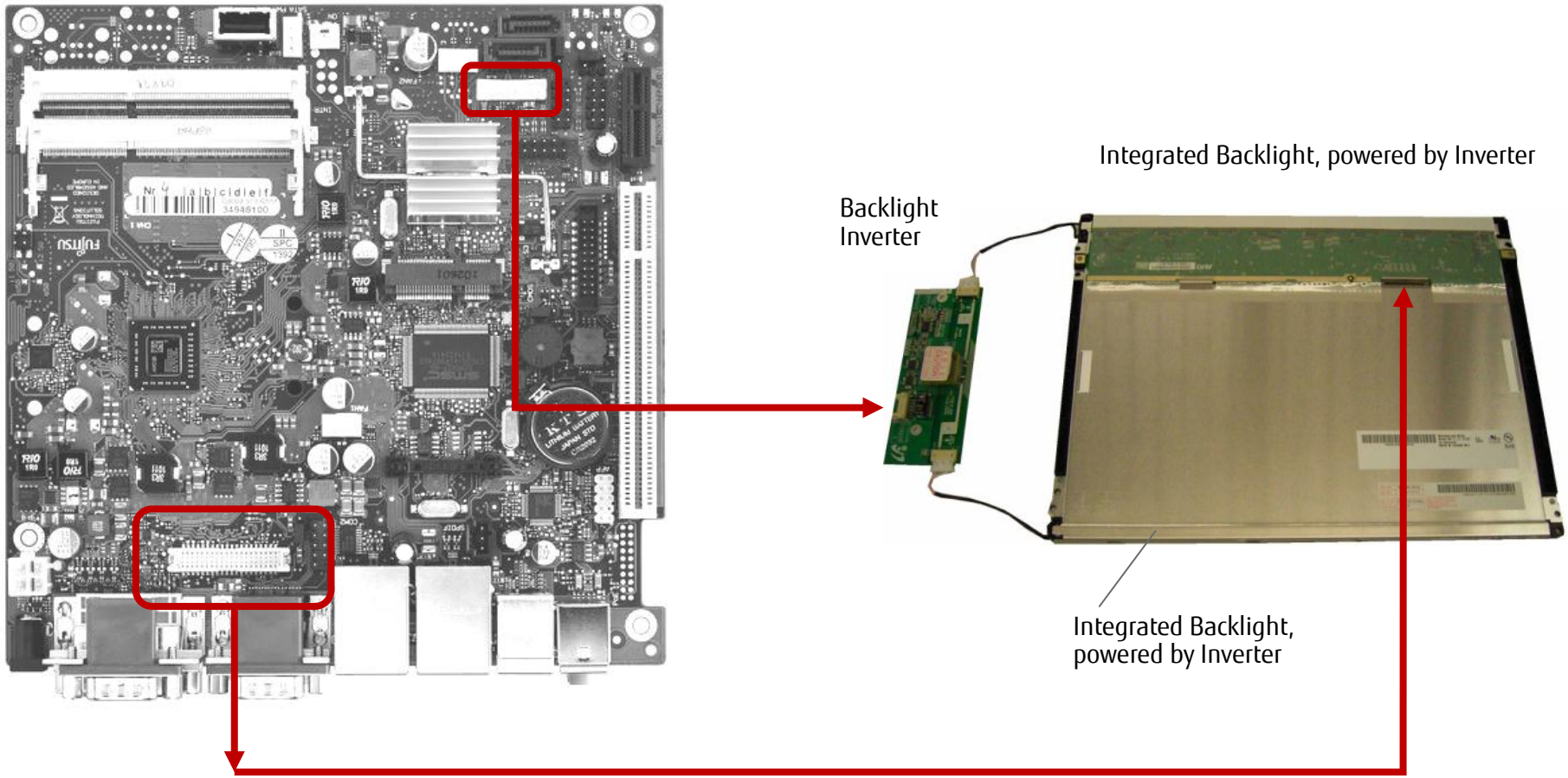
HD content (smoothly)
~25-30% CPU load

Intel® Atom N450

HD content (not fluent)
100% CPU load

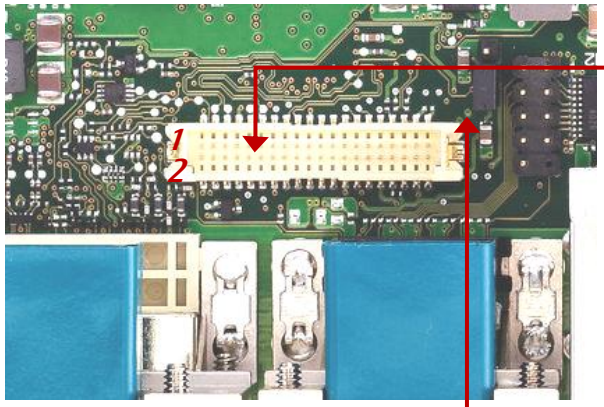
4 Display Options

4.1 LVDS Display & Backlight Inverter



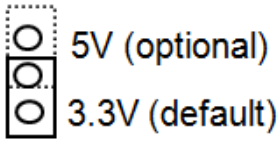
Display Options

4.2 LVDS Connector details



LVDS Connector: Hirose DF13-40 (or compatible)

LVDS operating voltage selector jumper



Pin	Signal
1	VCC 5V
2	Power LVDS
3	VCC 3.3V

Note: LVDS pinning is compatible to D2703-S and D2963-S

PIN	SIGNAL	SIGNAL	PIN
2	Ground	Ground	1
4	LVDS_H3+ (EVEN_3+)	LVDS_L3+ (ODD_3+)	3
6	LVDS_H3- (EVEN_3-)	LVDS_L3- (ODD_3-)	5
8	Ground	Ground	7
10	LVDS_H2+ (EVEN_2+)	LVDS_L2+ (ODD_2+)	9
12	LVDS_H2- (EVEN_2-)	LVDS_L2- (ODD_2-)	11
14	Ground	Ground	13
16	LVDS_H1+ (EVEN_1+)	LVDS_L1+ (ODD_1+)	15
18	LVDS_H1- (EVEN_1-)	LVDS_L1- (ODD_1-)	17
20	Ground	Ground	19
22	LVDS_H0+ (EVEN_0+)	LVDS_L0+ (ODD_0+)	21
24	LVDS_H0- (EVEN_0-)	LVDS_L0- (ODD_0-)	23
26	Ground	Ground	25
28	LVDS_CLK_H+ (CLK_EVEN+)	LVDS_CLK_L+ (CLK_ODD+)	27
30	LVDS_CLKH- (CLK_EVEN-)	LVDS_CLK_L- (CLK_ODD-)	29
32	Ground	Ground	31
34	DDC-Data	DDC-Clock	33
36	LCD-Power [1)]	LCD-Power [1)]	35
38	Ground	LCD-Power [1)]	37
40	LCD_Power_Enable	Ground	39

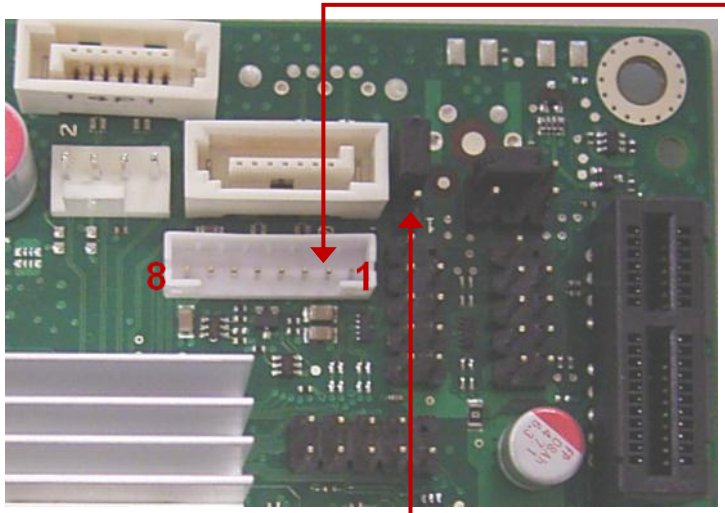
1) selectable via Jumper

max. load: 1A per pin!

Display Options

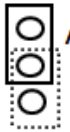
4.3 Backlight Inverter Connector Details

Backlight Inverter Connector: JST PHR-8



Ground	GND	1
Ground	GND	2
Backlight Brightness CTRL	0-4V or PWM	3
Power 5V	VCC	4
Power 5V	VCC	5
Backlight On/Off Control	BL On/Off	6
Power 12V	+12V	7
Power 12V	+12V	8

LVDS Backlight Brightness Control Jumper
(Select analog or PWM output)



Analog (default)
PWM(optional)

Pin	Signal
3	Analog
2	BI Brightn. Contr.
1	PWM

Backlight Brightness Control:
Provides a variable DC voltage between 0V and 4V via an RC filter (10kOhm / 20uF; buffered output).
Alternatively a PWM control is available, please see related jumper setting.
Basically the brightness level can be selected by BIOS Setup,but it is also accessible from Windows or Linux OS.
→ Related AMD Display Library SDK is available here:
http://developer.amd.com/sdks/ADLSDK/Pages/default.aspx

Link to "brightness demo tool" based on SDK:
ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/IndustrialTools_D3003-S/AMD_Display-Library-SDK/
If this control signal is used, the system integrator is responsible for the implementation of a backlight converter that fits to the control output voltage range.

Backlight On/Off Control:
Active High, 3.3V Note: Polarity can be changed via BIOS Setup

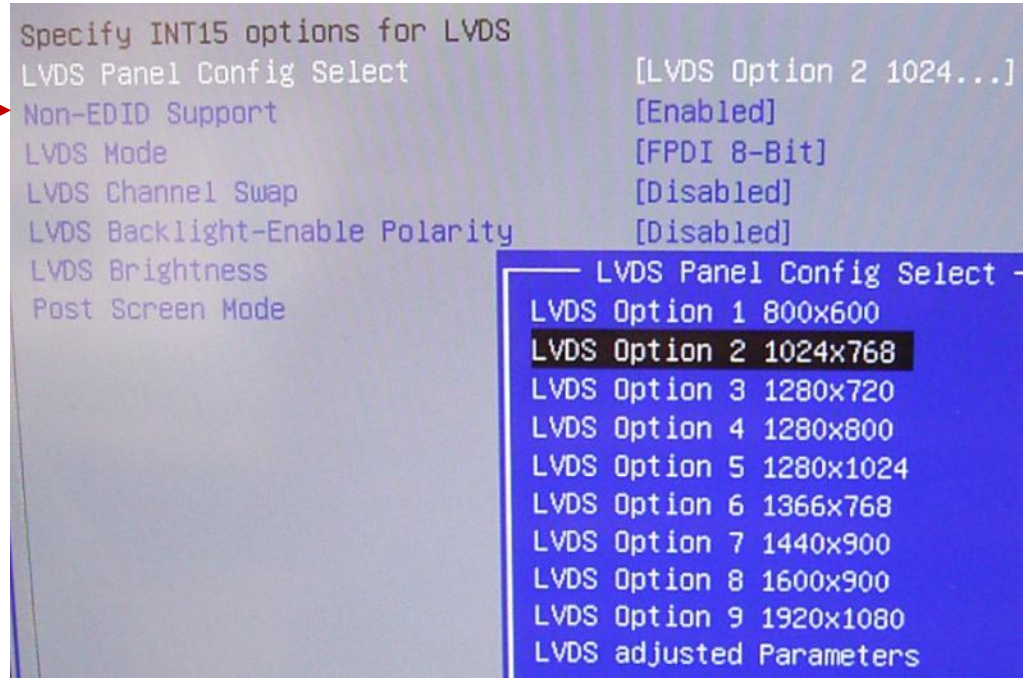
Display Options

4.4 LVDS Timing & Screen Resolution

There are 9 default LVDS settings available
→ BIOS Setup – Advanced – North Bridge LVDS Config Select

Note: Option 10 (LVDS adjusted Parameters) becomes visible after running the "LVDS Tool" for implementing customized LVDS settings once.

Important note:
"Non-EDID Support" must be set to <Enabled> for standard LVDS displays w/o DDC (EDID) interface!



But: During Linux installation (e.g. Ubuntu 11.04) Non-EDID Support should be set to <Disabled> (= no LVDS available); after the installation is finished and the AMD graphics driver (see link below) has been installed, Non-EDID Support can be set to <Enabled> again.
http://support.amd.com/de/gpudownload/linux/Pages/radeon_linux.aspx

Display Options

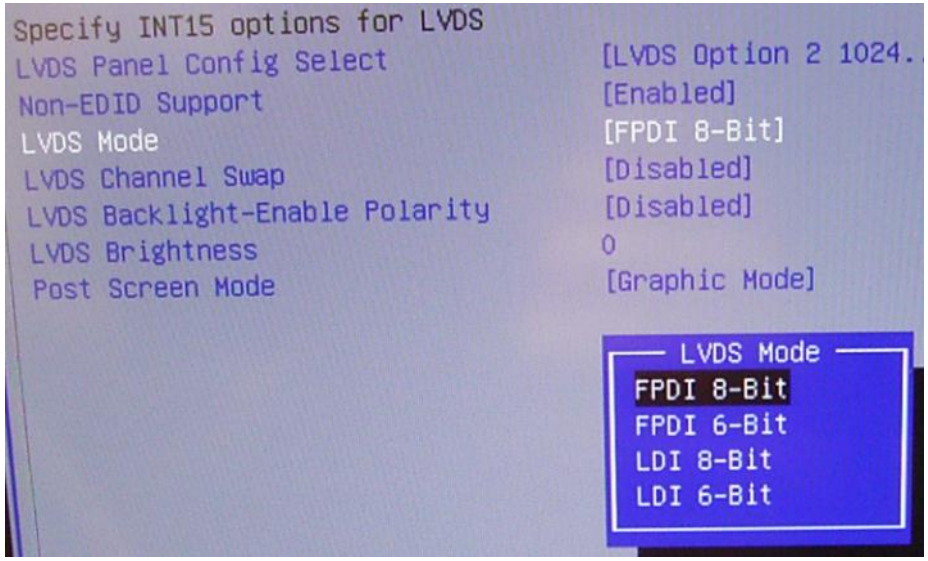
LVDS Timing & Screen Resolution

LVDS Mode:
The correct mode must be set for the attached LVDS panel.

Note: This setting is also required if customized LVDS timings are implemented (LVDS tool)!

LVDS Brightness:
Set the level for the „Backlight Brightness Pin".
Typical voltage level (analog mode):

BIOS-Setting	Voltage Level
0	0V
15	0V
45	0.2V
75	0.7V
105	1.2V
135	1.8V
165	2.3V
195	2.9V
225	3.5V
255	4.0V



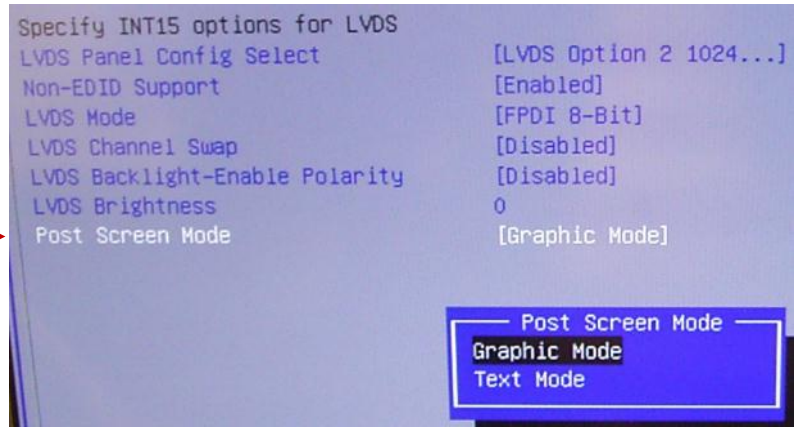
Display Options

LVDS Timing & Screen Resolution

POST Screen Mode:

Default setting = Graphic Mode (800 x 600).

For panels < 800 x 600 mode should be changed to <Text Mode> in order to enable full BIOS POST screen resp. full BIOS Setup screen (otherwise some portion of the screen may be cut off)



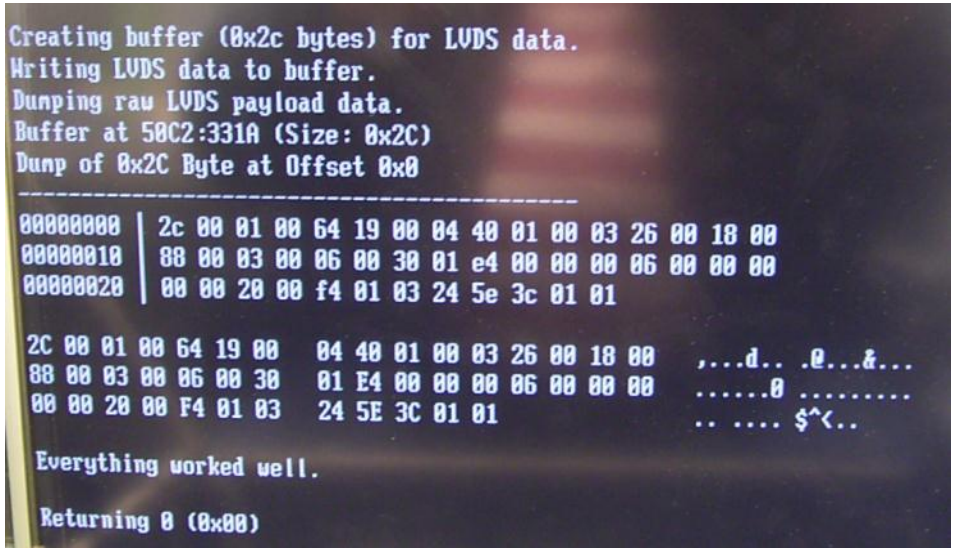
Display Options

4.5 LVDS Tool

The LVDS tool (DOS-based) allows to flash specific LVDS settings to the system BIOS of D3003-S.

The LVDS tool needs a panel-specific EDID configuration file based on the spec data of the LVDS panel.

Note: Sample configuration EDID files are available in the LVDS Tool kit.
For adjusting EDID files the "Phoenix EDID tool" Is required (see link below).



(Sample screen message after running LVDS tool)

Download-Link for LVDS Tool (D3003-S only):
ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/IndustrialTools_D3003-S/LVDS-Tool/

Display Options

4.6 LVDS Cabling Reference

Sample cabling diagrams for following LVDS displays & related inverters are available:

Display Size	TFT	Pixel	Inverter
10.4"	NEC NL6448BC33-63D	640 x 480	NEC 104PW201
12.1"	AUO G121SN01-V0	800 x 600	Green-C&C GH093A-ROHS
12.1"	LG-Philips LB121S03-TL01	800 x 600	Green-C&C GH001HB-ROHS
15"	Sharp LQ150X1LW71N	1024 x 768	TDK CXA-0349
15"	AUO G150XG01V0	1024 x 768	Green-C&C GH001A-ROHS
17"	AUO M170EG01-VD	1280 x 1024	Green-C&C GH053A-ROHS
19"	Sharp LQ190E1LW01	1280 x 1024	Power Systems PS-DA0412-05
19"	AUO M190EG01	1280 x 1024	GH053(A1)-ROHS

ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/Documentation_D3003-S/LVDS_Cabling-Samples

Display Options

4.7 LVDS Sample Cabling for AuO-G150

FSC D2703-S; Hirose DF13-40, straight, SMT LVDS-Connector				AUO-G150XG01; DF-14H-20P-1.25H (Hirose) or CWY20G-A0D1T (PTWO)	
SIGNAL	SYMBOL	PIN		Pin No.	Symbol
Ground	GND	1			
Ground	GND	2		20	GND
LVDS_Out3+ (ODD_3+)	LO3+	3		18	RxIN3+
LVDS_Out7+ (EVEN_3+)	LO7+	4			
LVDS_Out3- (ODD_3-)	LO3-	5		17	RxIN3-
LVDS_Out7- (EVEN_3-)	LO7-	6			
Ground	GND	7		3	GND
Ground	GND	8		4	GND
LVDS_Out2+ (ODD_2+)	LO2+	9		12	RxIN2+
LVDS_Out6+ (EVEN_2+)	LO6+	10			
LVDS_Out2- (ODD_2-)	LO2-	11		11	RxIN2-
LVDS_Out6- (EVEN_2-)	LO6-	12			
Ground	GND	13			
Ground	GND	14		7	GND
LVDS_Out1+ (ODD_1+)	LO1+	15		9	RxIN1+
LVDS_Out5+ (EVEN_1+)	LO5+	16			
LVDS_Out1- (ODD_1-)	LO1-	17		8	RxIN1-
LVDS_Out5- (EVEN_1-)	LO5-	18			
Ground	GND	19			
Ground	GND	20	↔	10	GND
LVDS_Out0+ (ODD_0+)	LO0+	21		6	RxIN0+
LVDS_Out4+ (EVEN_0+)	LO4+	22			
LVDS_Out0- (ODD_0-)	LO0-	23		5	RxIN0-
LVDS_Out4- (EVEN_0-)	LO4-	24			
Ground	GND	25			
Ground	GND	26		13	GND
LVDS_CLK1+ (CLK_ODD+)	CLK1+	27		15	CKIN+
LVDS_CLK2+ (CLK_EVEN+)	CLK2+	28			
LVDS_CLK1- (CLK_ODD-)	CLK1-	29		14	CKIN-
LVDS_CLK2- (CLK_EVEN-)	CLK2-	30			
Ground	GND	31		16	GND
Ground	GND	32		19	GND
DDC-Clock	DDCCLK	33			
DDC-Data	DDCDATA	34			
LCD-Power [1]	+3.3V / +5V	35		1	VDD
LCD-Power [1]	+3.3V / +5V	36		2	VDD
LCD-Power [1]	+3.3V / +5V	37			
Ground	GND	38			
Ground	GND	39			
LCD_PowerOn	LCD_On	40			

1) selectable via Jumper

Cable Length: 500mm

LVDS-Connector AuO_G150 based on Panel Datasheet

DF-14H-20P-1.25H (Hirose) or CWY20G-A0D1T (PTWO)		
Pin No.	Symbol	Description
1	VDD	Power Supply, 3.3V (typical)
2	VDD	Power Supply, 3.3V (typical)
3	VSS	Ground
4	VSS	Ground
5	Rin0-	- LVDS differential data input (R0-R5, G0)
6	Rin0+	+ LVDS differential data input (R0-R5, G0)
7	VSS	Ground
8	Rin1-	- LVDS differential data input (G1-G5, B0-B1)
9	Rin1+	+ LVDS differential data input (G1-G5, B0-B1)
10	VSS	Ground
11	Rin2-	- LVDS differential data input (B2-B5, HS, VS, DE)
12	Rin2+	+ LVDS differential data input (B2-B5, HS, VS, DE)
13	VSS	Ground
14	ClkIN-	- LVDS differential clock input
15	ClkIN+	+ LVDS differential clock input
16	VSS	Ground
17	Rin3-	NC
18	Rin3+	NC
19	VSS	Ground
20	NC	Please "floating" and don't connect to ground.

LVDS-Extension für Philips LM150X08

LCD (CN1):DF14H-20P-1.25H (Hirose)

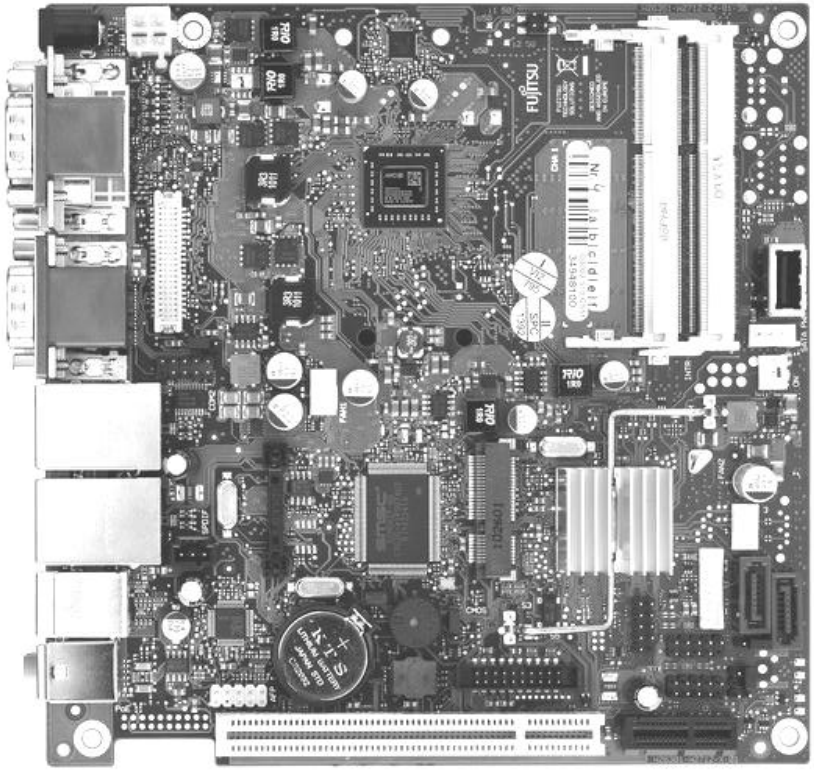
Pin No	Symbol
1	VLCD
2	VLCD
3	GND
4	GND
5	RXIN0-
6	RXIN0+
7	GND
8	RXIN1-
9	RXIN1+
10	GND
11	RXIN2-
12	RXIN2+
13	GND
14	RXCLK IN-
15	RXCLK IN+
16	GND
17	RXIN3-
18	RXIN3+
19	GND
20	GND

Symbol	Parameter	Min	Typ	Max	Unit	Condition
VDD	LCD Drive Voltage	3.0	3.3	3.6	[V]	
IDD	LCD Drive Current	-	1.0	1.3	[A]	VDD=3.3V, All Black Pattern
PDD	LCD Drive power consumption	-	3.3	4.3	[Watt]	VDD=3.3V, All Black Pattern
VDDns	Allowable LCD Drive Ripple Noise	-	-	100	[mV] p-p	

Display Options

4.8 DisplayPort Output (D3003-S2 only)

DisplayPort Monitor

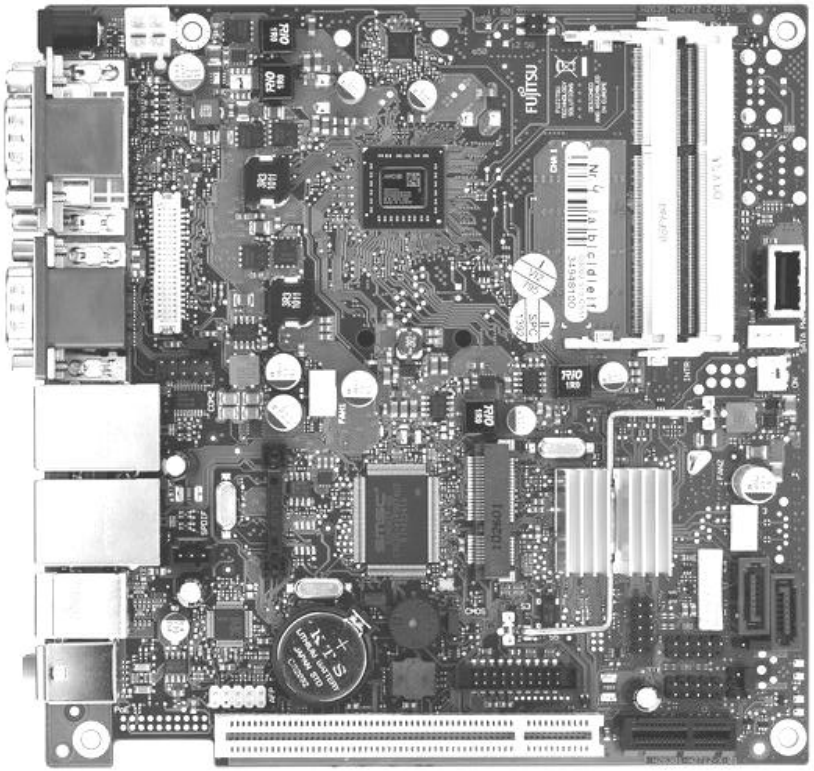


max. DP screen resolution:
2560x1600 @60Hz / 30bpp (dual core)

Display Options

4.9 DVI Output

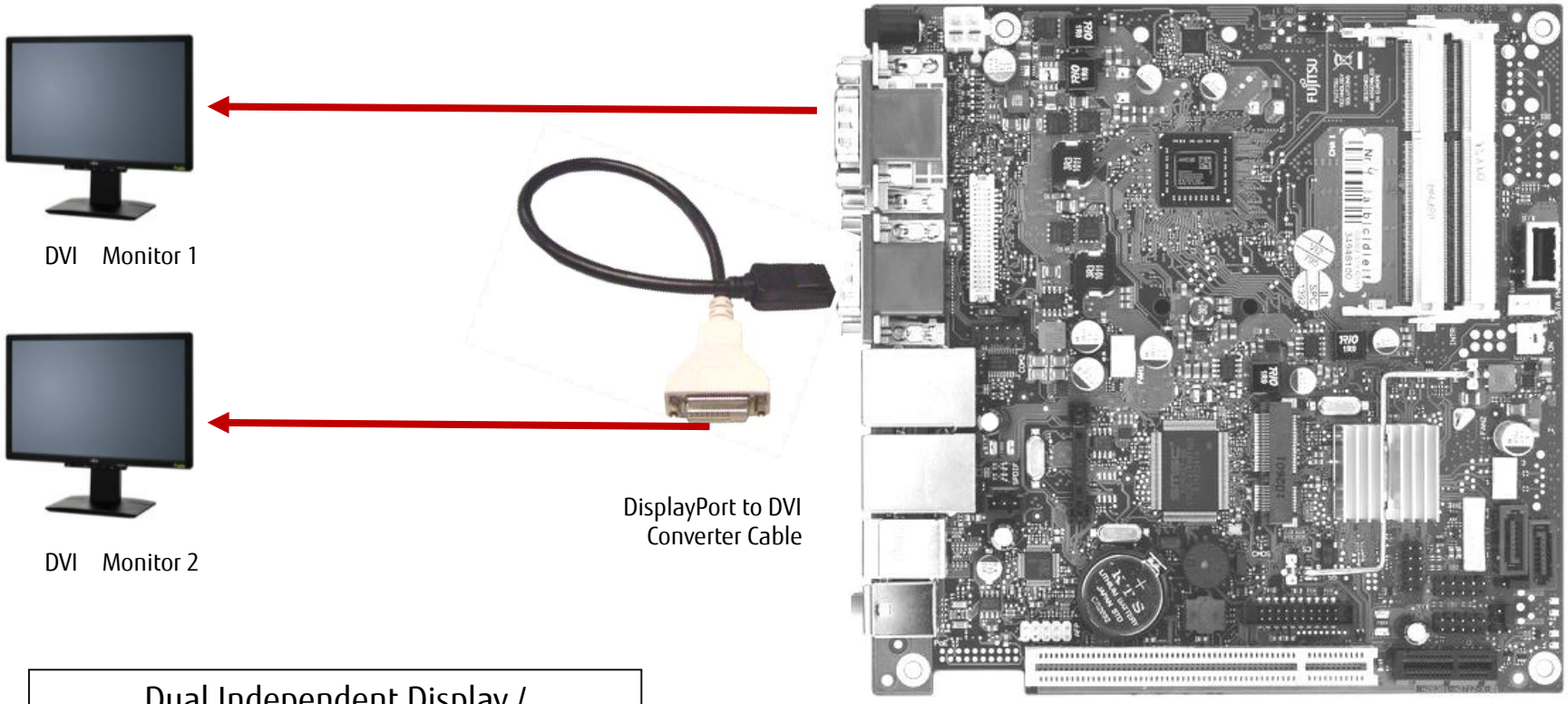
DVI Monitor



max. DVI screen resolution:
1600 x 1200 @ 60Hz / 24bpp (Single Link, 162MHz, standard timings)
1920 x 1200 @ 60Hz / 24 bpp (Single Link, 154MHz, reduced blanking timings)
Note: Dual Link DVI is not supported!

Display Options

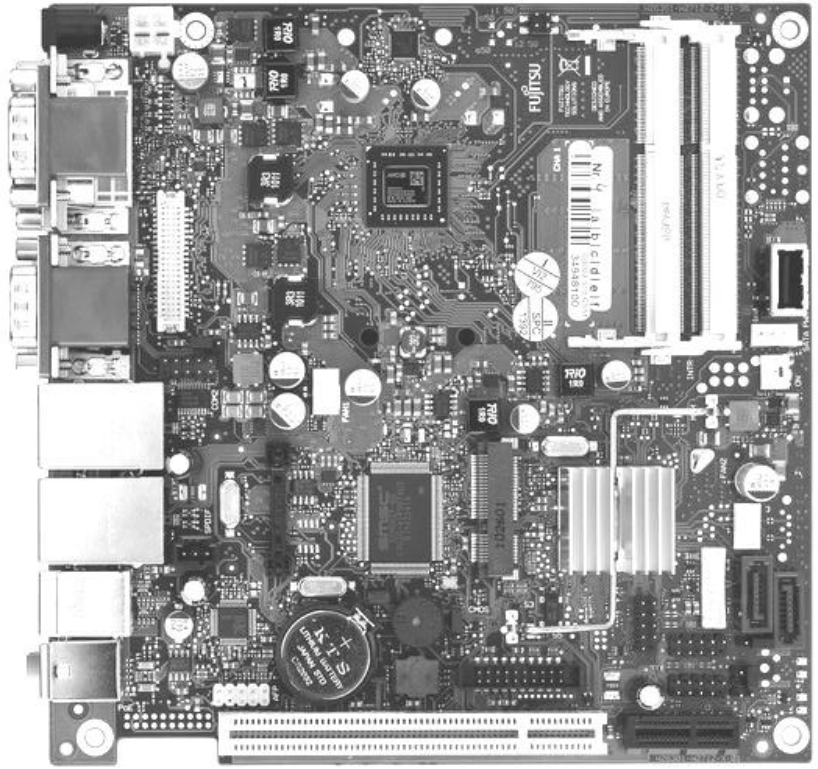
4.10 Dual-DVI Output (D3003-S2 only)



Dual Independent Display /
Extended Desktop

Display Options

4.11 VGA Output



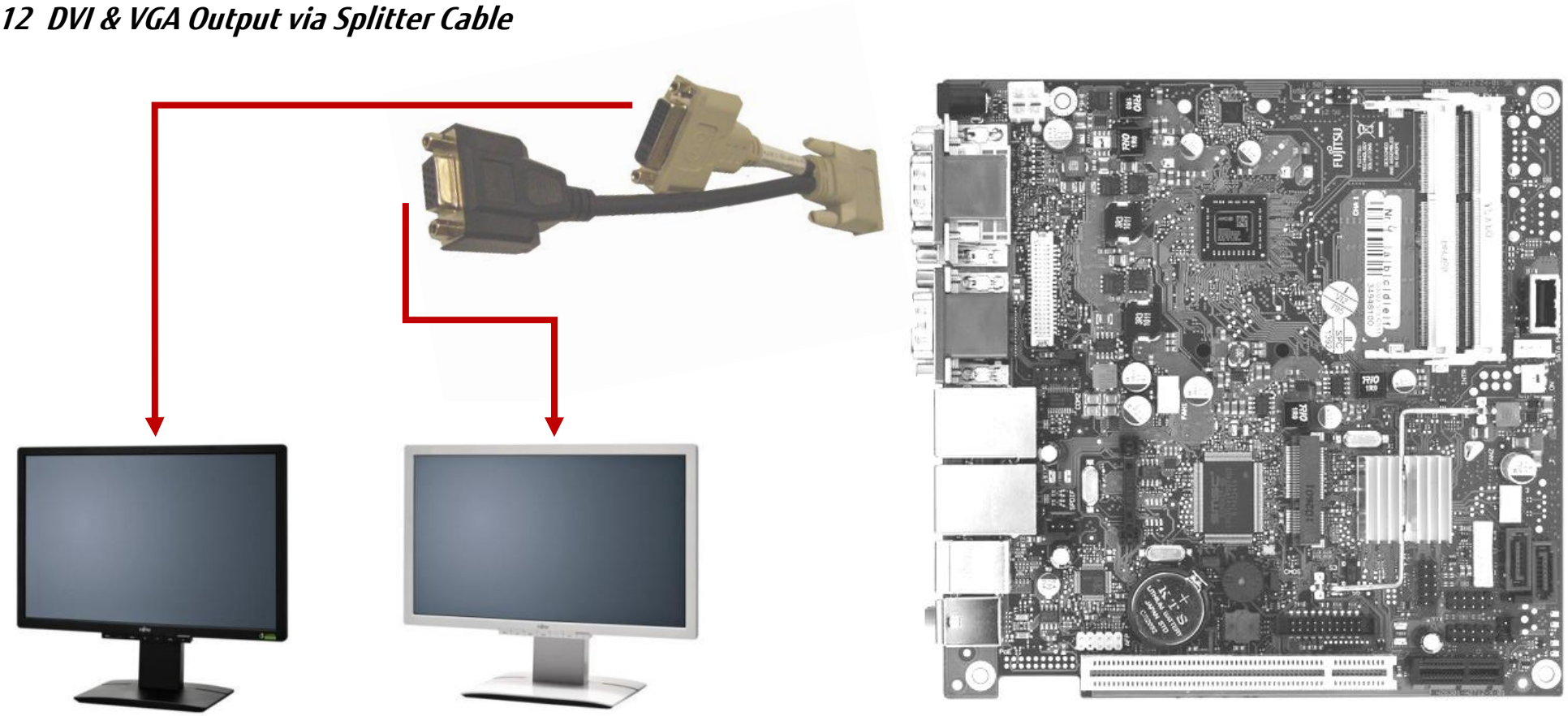
Analog (VGA) Monitor
via DVI/VGA interface connector

max. VGA screen resolution:

2560x1600 / 30bpp for Dual Core CPU
1920x1200 / 30bpp for Single Core

Display Options

4.12 DVI & VGA Output via Splitter Cable



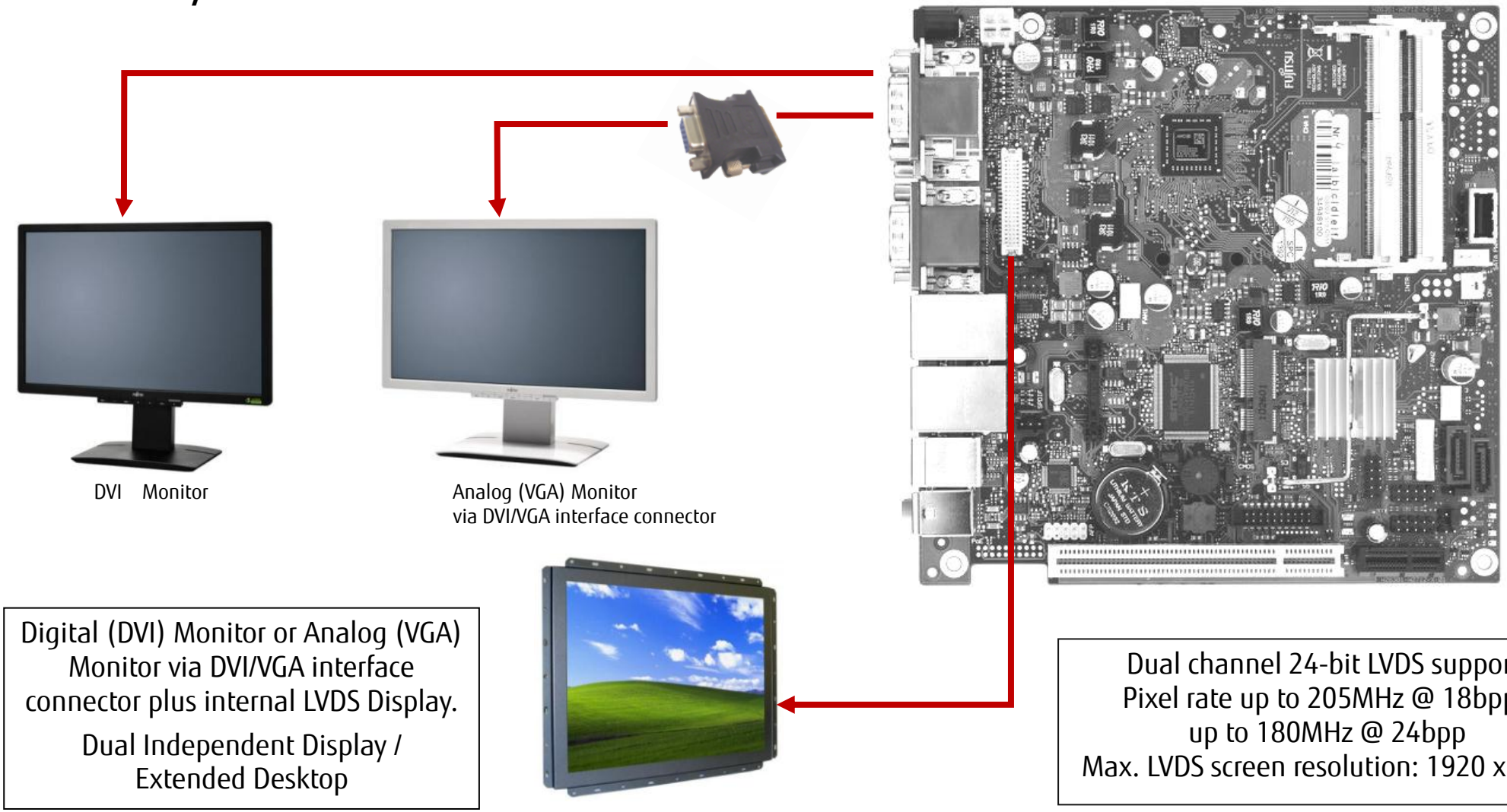
DVI Monitor

Analog (VGA) Monitor

Analog (VGA) Monitor and Digital (DVI) Monitor
via DVI/VGA splitter cable with Dual Independent Display / Extended Desktop
Note: → VGA: No DDC support via splitter cable possible

Display Options

4.13 DVI or VGA plus LVDS



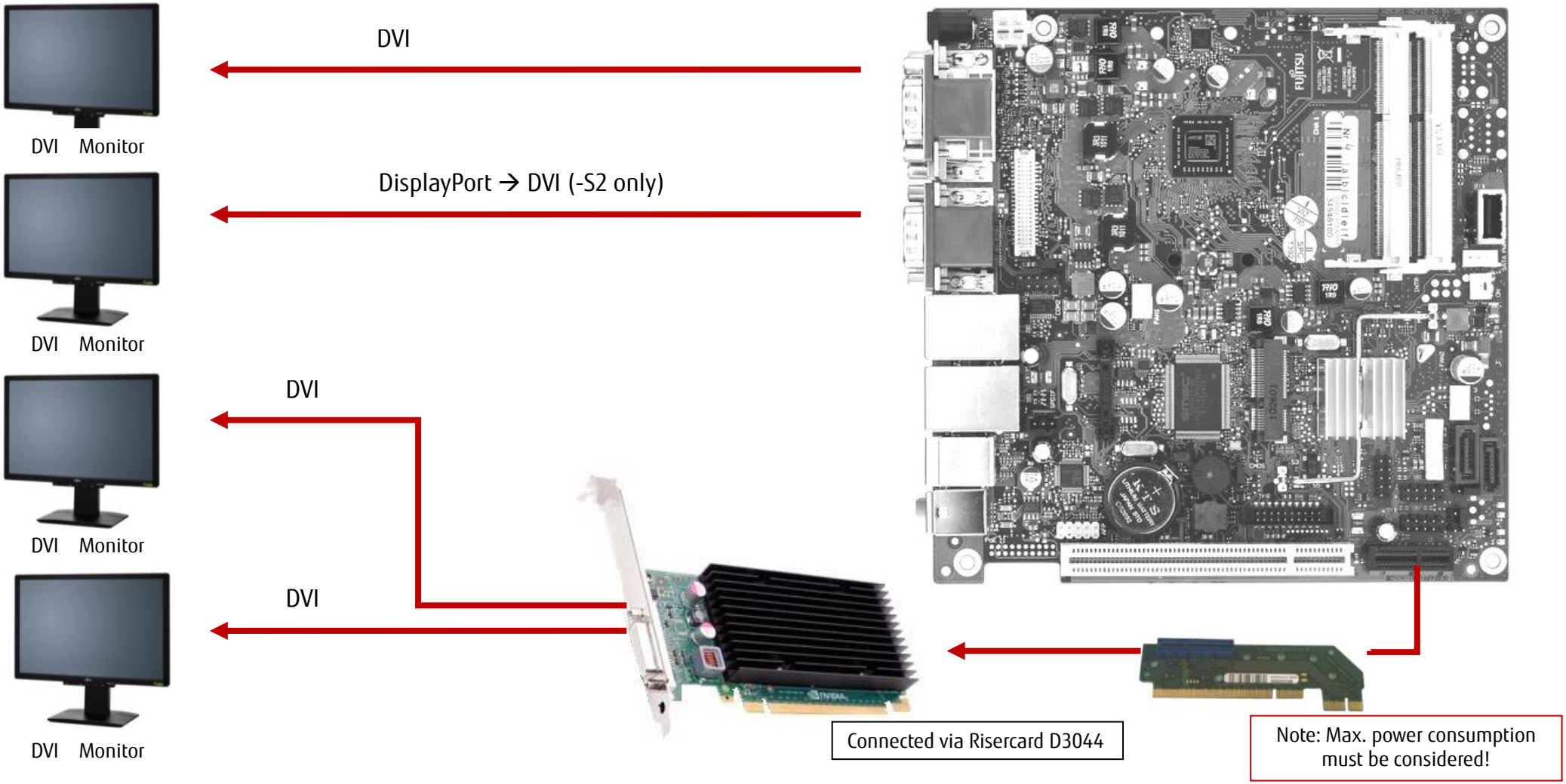
Digital (DVI) Monitor or Analog (VGA) Monitor via DVI/VGA interface connector plus internal LVDS Display.

Dual Independent Display / Extended Desktop

Dual channel 24-bit LVDS support.
Pixel rate up to 205MHz @ 18bpp / up to 180MHz @ 24bpp
Max. LVDS screen resolution: 1920 x 1200

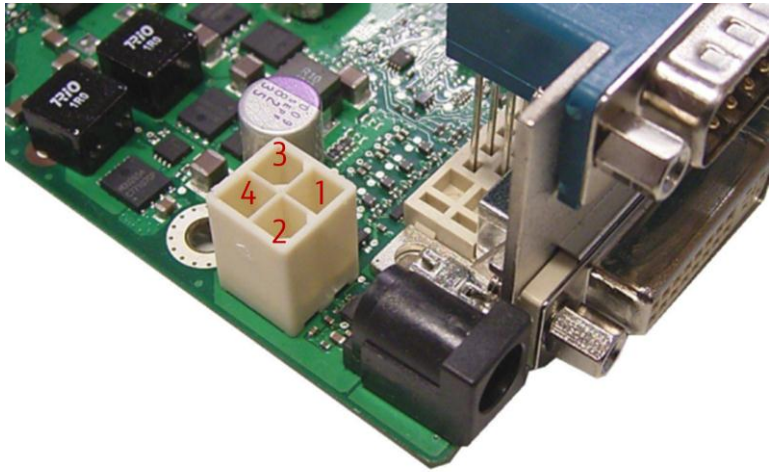
Display Options

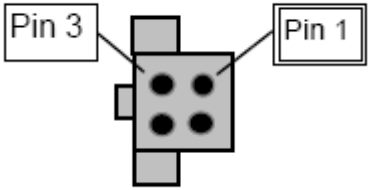
4.14 Internal & External graphics use in parallel (up to four displays)



5 Power Supply Features

5.1 19-24V DC Onboard Connector





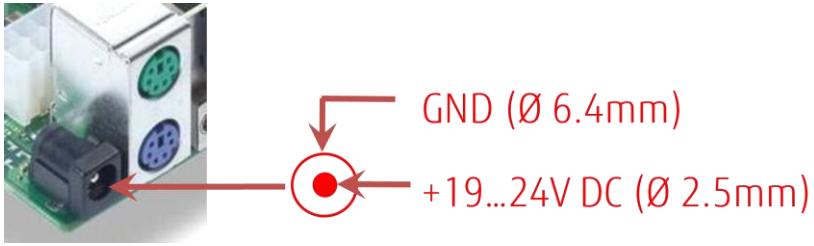
Pin 1, 2: GND

Pin 3, 4: +19...24V DC-In

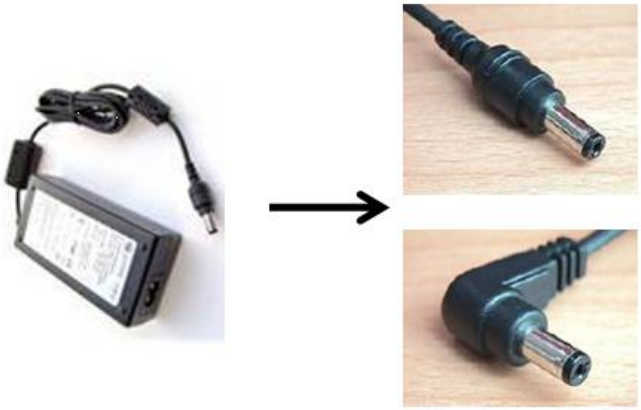
Power Supply Features

5.2 19-24V External DC Plug

19...24V DC via external connector (AC adapter)



Appropriate DC plug for external AC adapter:

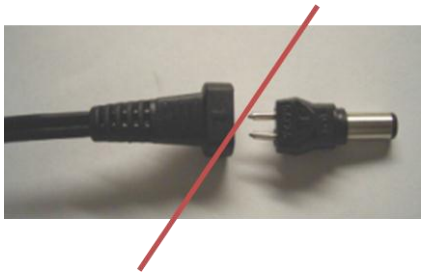


Ø 2.5mm / 5.5mm

contact length ~ 10-11mm

Angle plug or straight plug

Note: "Universal Plug" not allowed due to possible polarity mismatch!



Power Supply Features

5.3 Requirements for 19-24V operation

Requirements for 19-24V operation

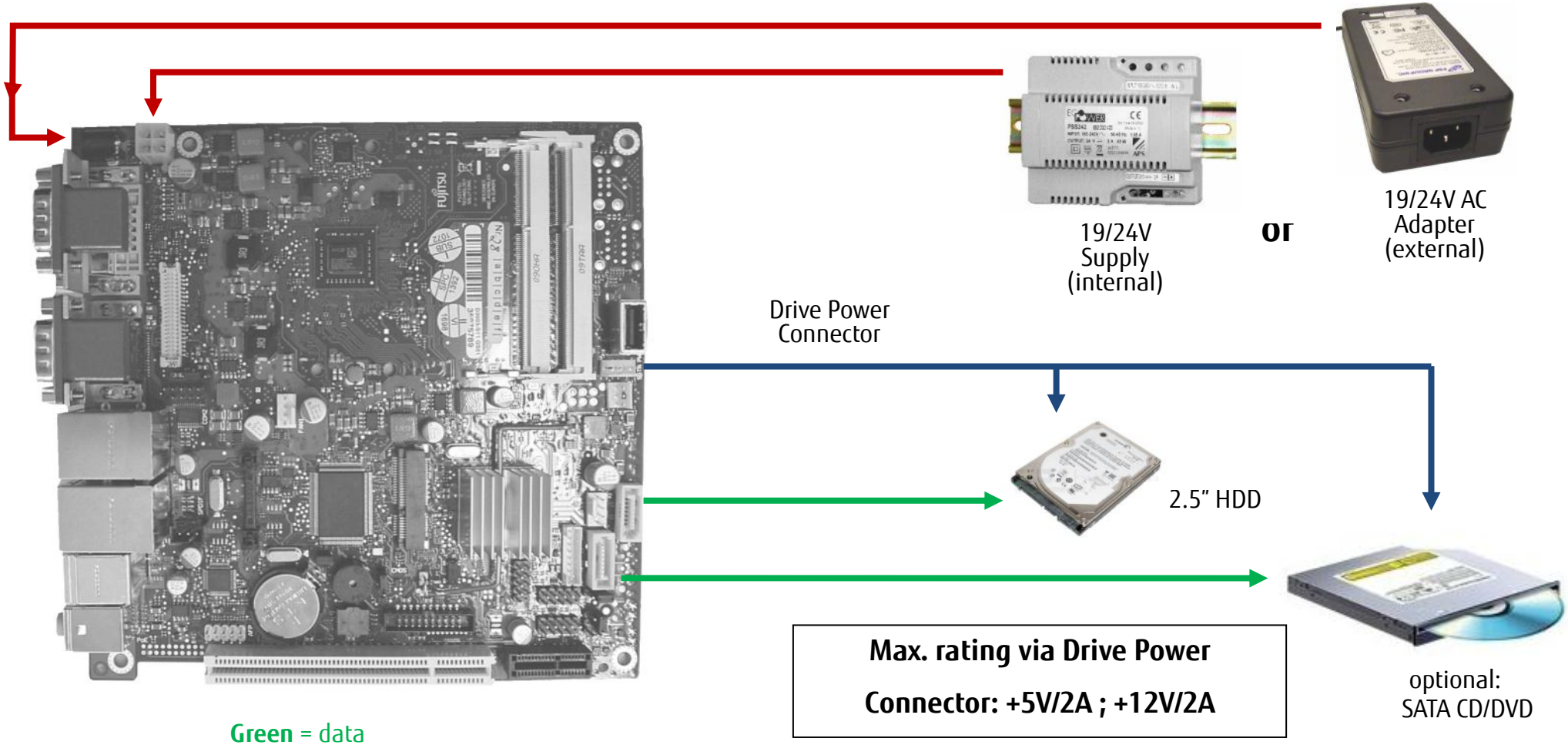
Nominal operating range 19 - 24V
Max. operating range (19V -15%) - (24V +10%)
Ripple / noise max. 400mV (PP)
Max. input current: 5A
The DC power supply input provides
a capacitive load of 700µF which has to be
covered by the AC adapter respectively the
DC source during power ramp-up.

Limited mainboard output current:

The max. mainboard output power
available via PCI/PCIe- connector, USB-
connectors, GPI/O, backlight-connector, and drive power
connector is limited!
Max. overall output current:
+3.3V / 5A
+5V / 4.5A
+12V / 2.5A
-12V / 0.1A

Power Supply Features

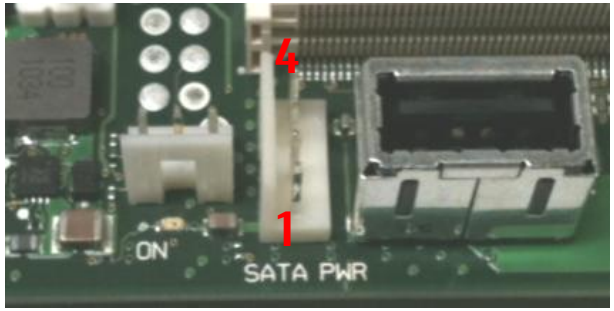
5.4 Power option for internal devices



Green = data
BLUE = power

Power Supply Features

5.5 Drive Power Connector (corrected)



Drive Power Connector
(Pin count corrected!)

1	VCC (+5V)	max. 2A
2	GND	
3	GND	
4	+12V	max. 2A

Note:
Onboard connector is compliant to standard floppy power supply connector.

Power Supply Features

5.6 Fujitsu Drive Power Cable

Connector 1
(to mainboard)

171822-4 AMP
or equivalent

Connector 2
(for SATA harddisk 2.5“ / 3.5“)

15 1
COMAX C1212K32
or equivalent

Connector 3
(for slimeline SATA optical drive)

6 5 4 3 2 1
Molex SD-47328-100
or equivalent

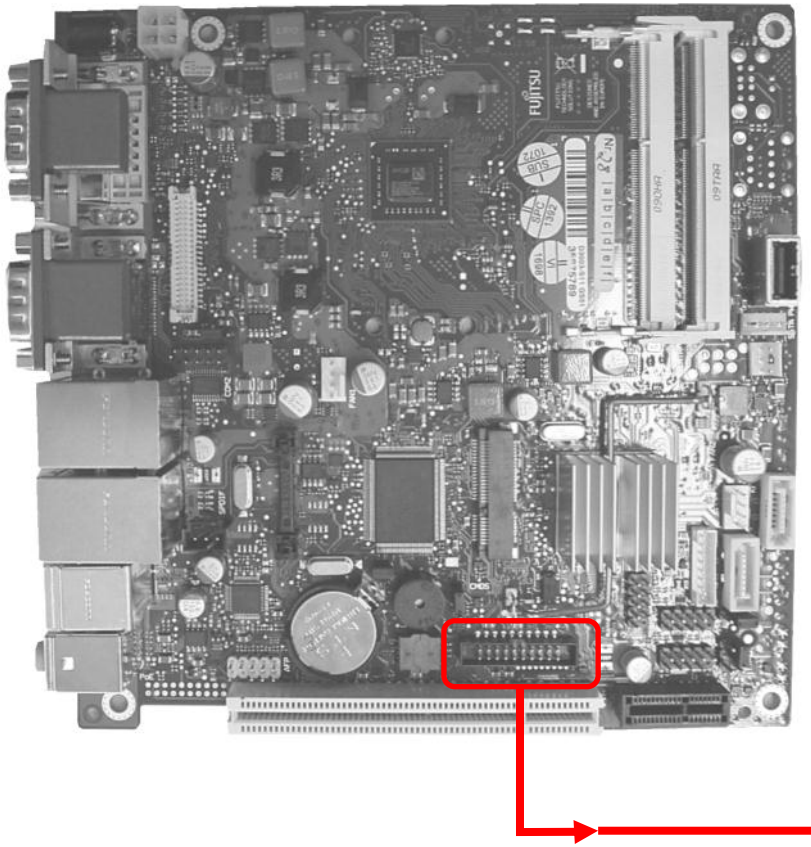
Note:
overall max. current via connector 1 limited to
+5V / 2A and
+12V / 2A

connector pinning			
Conn. 1	**Conn. 2**	**Conn. 3**	**Note**
1	7, 8, 9	2, 3	**+5V, red**
2	4, 5, 6	5, 6	**GND, black**
3	10, 11, 12		**GND, black**
4	13, 14, 15		**+12V, yellow**

Cable Ordercode:
S26361-F5000-K001
(Previous ordercode: T26139-Y1500-V700)

Power Supply Features

5.7 Additional Power Output via Feature Connector



Feature Connector provides additional power for internal devices:

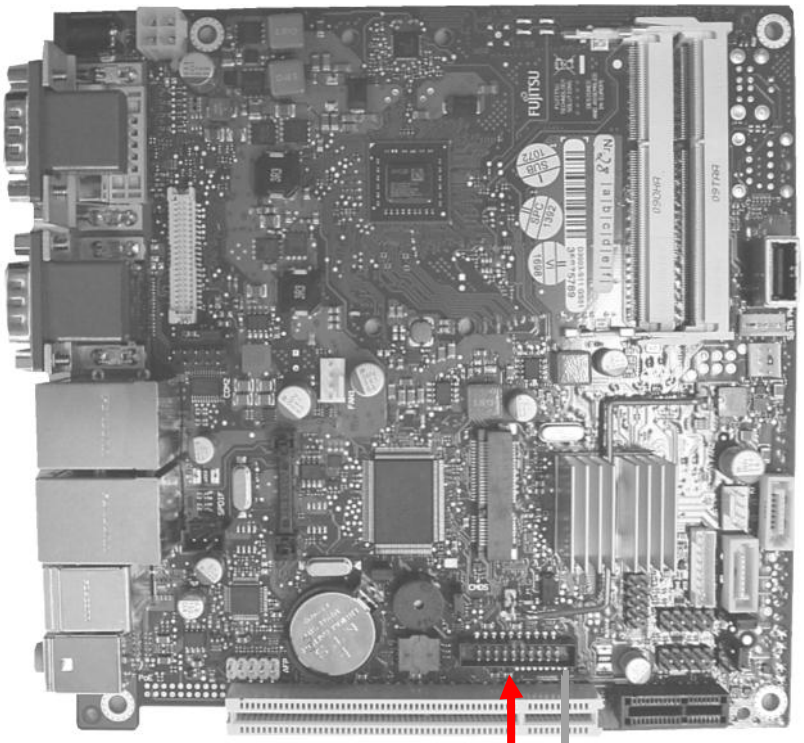
3.3V	5V
12V	5V aux

max. 1.5 A per pin!

Limited mainboard output current:
The max. mainboard output power available via PCI/PCIe- connector, USB-connectors, GPI/O, backlight-connector, and drive power connector is limited!
Max. overall output current:
+3.3V / 5A
+5V / 4.5A
+12V / 2.5A
-12V / 0.1A

6 Internal Connectors

6.1 Optional Devices via Feature Connector



Feature Connector

8 bit 3.3V General Purpose Input/Output (GPIO) in order to attach any digital device (sample picture) or just some LEDs.

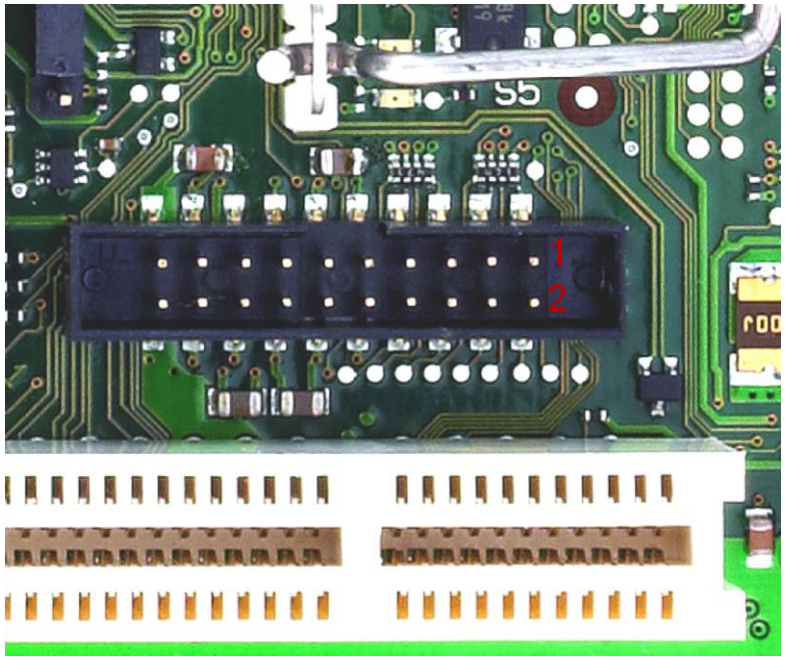
Feature Connector provides additional power for internal devices (3.3V; 5V; 12V; 5Vaux; max. 1.5A per pin!)

Limited mainboard output current:
The max. mainboard output power available via PCI/PCIe- connector, USB-connectors, GPI/O, backlight-connector, and drive power connector is limited!
Max. overall output current:

+3.3V / 5A
+5V / 4.5A
+12V / 2.5A
-12V / 0.1A

Internal Connectors

6.2 Feature Connector Details



Limited mainboard output current:
The max. mainboard output power available via PCI/PCIe- connector, USB-connectors, GPI/O, backlight-connector, and drive power connector is limited!

Max. overall output current:
+3.3V / 5A
+5V / 4.5A
+12V / 2.5A
-12V / 0.1A

Feature Connector: CompuPack R-DRK2-20-S3-SMT

1	GPI/O_0	GPI/O_1	2
3	GPI/O_2	GPI/O_3	4
5	GPI/O_4	GPI/O_5	6
7	GPI/O_6	GPI/O_7	8
9	VCC_3.3V	GND	10
11	VCC_3.3V	VCC_5Vaux	12
13	reserved	GND	14
15	reserved	GND	16
17	GND	VCC_5V	18
19	VCC_12V	VCC_12V	20

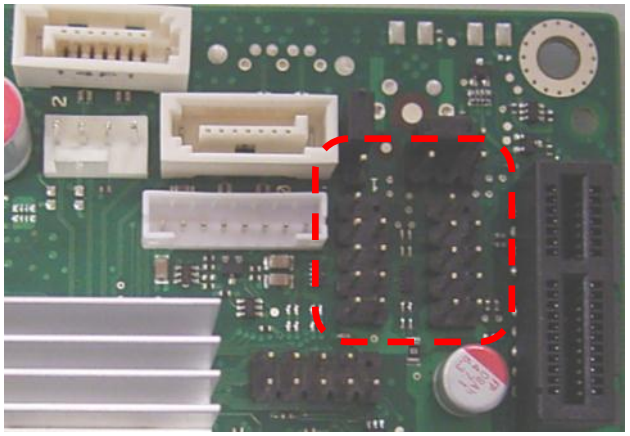
Note: Current max. 1.5 A per power pin!

Parameter	Range
GPI/O Input Low Voltage	-0.5V … 0.8V
GPI/O Input High Voltage	2V … 3.3V
GPI/O Output Low Voltage	max. 0.7V
GPI/O Output High Voltage	min. 2.5V
Note: max. load per GPI/O pin: 10mA (overall current for all GPI/O pins must be < 85mA) **Each GPI/O pin has an integrated serial resistor of 150 Ohm**	

GPIO access is provided via the SM-Bus controller PCA9554A
ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/Documentation_D3003-S/Specification/GPIO_Chip_PCA9554a.pdf
Note: SM-Bus address: 0x78h (8-bit)
For Windows OS, the FTS BMC API provides easy access to the GPIO:
ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/IndustrialTools_D3003-S/BMC_Management-Controller-API/

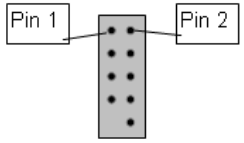
Internal Connectors

6.3 Internal USB Ports

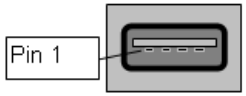


Pin	Signal
1	VCC AUX
3	Data negative Port X
5	Data positive Port X
7	GND
11	Key

Pin	Signal
2	VCC AUX
4	Data negative Port Y
6	Data positive Port Y
8	GND
10	NC



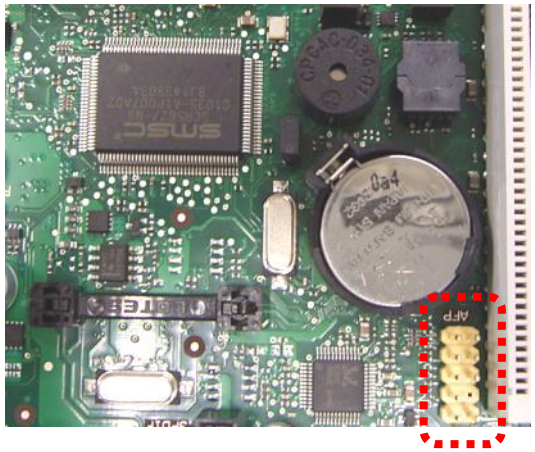
Pin	Signal
1	VCC auxiliary (polyswitch fused and power supervision with over current detection)
2	Data negative
3	Data positive
4	GND



Note: External USB sticks may cause EMI/ESD issues. This can be avoided by using the internal USB port for the affected stick!

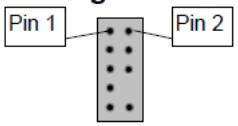
Internal Connectors

6.4 Internal Audio Ports – Frontpanel Audio



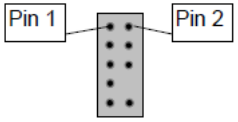
Note: Operating mode (High Definition Audio or Legacy Audio) selectable in BIOS Setup

High Definition Audio Front Panel Connector



Pin	Signal Assignment	Type	ioh/iol	Pull U/D	Comment	Pin	Signal Assignment	Type	ioh/iol	Pull U/D	Comment
1	HDA Port 1Left	AI/AO	-	-		6	Jack Sense Port 1	-	-	-	
2	Analog GND	A Pwr	-	-		7	AGND	A Pwr	-	-	
3	HDA Port 1Right	AI/AO	-	-		8	Key	-	-	-	
4	FP Presence Detect	-	-	PU4k7		9	HDA Port 2 Right	AI/AO	-	-	
5	HDA Port 2 Left	AI/AO	-	-		10	Jack Sense Port 2	-	-	-	

Audio Front Panel Connector



Pin	Signal Assignment	Type	ioh/iol	Pull U/D	Comment	Pin	Signal Assignment	Type	ioh/iol	Pull U/D	Comment
1	Mic Right	AI/AO	-	-		6	reserved	-	-	-	Don't use
2	Analog GND	A Pwr	-	-		7	AGND	A Pwr	-	-	
3	Mic Left	AI/AO	-	-		8	Key	-	-	-	
4	reserved	-	-	PU4k7	Don't use	9	HPout Left	AI/AO	-	-	
5	HPout Right	AI/AO	-	-		10	reserved	-	-	-	Don't use

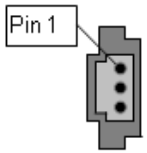
Note: In case of using this connector in AC97/Legacy mode take care for pin 7. This pin is tied to GND. HP_ON# signaling on this pin is not supported.

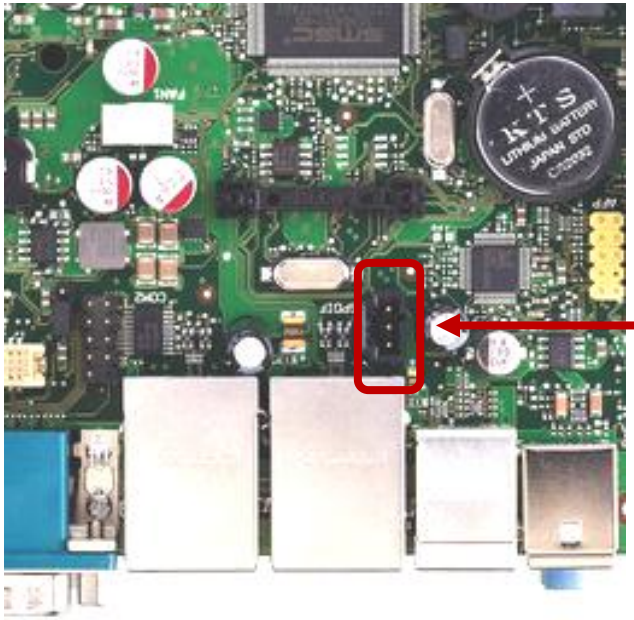
Internal Connectors

6.5 Internal Audio Ports - SPDIF

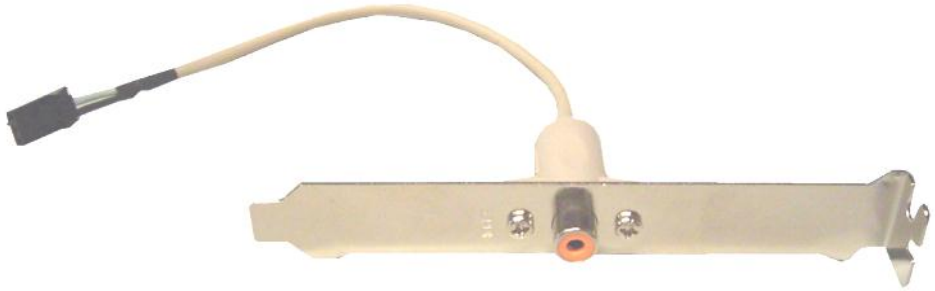
Internal S/PDIF Connector

Pin	Signal
1	VCC
2	SPDIF out
3	GND





Internal SPDIF - connector

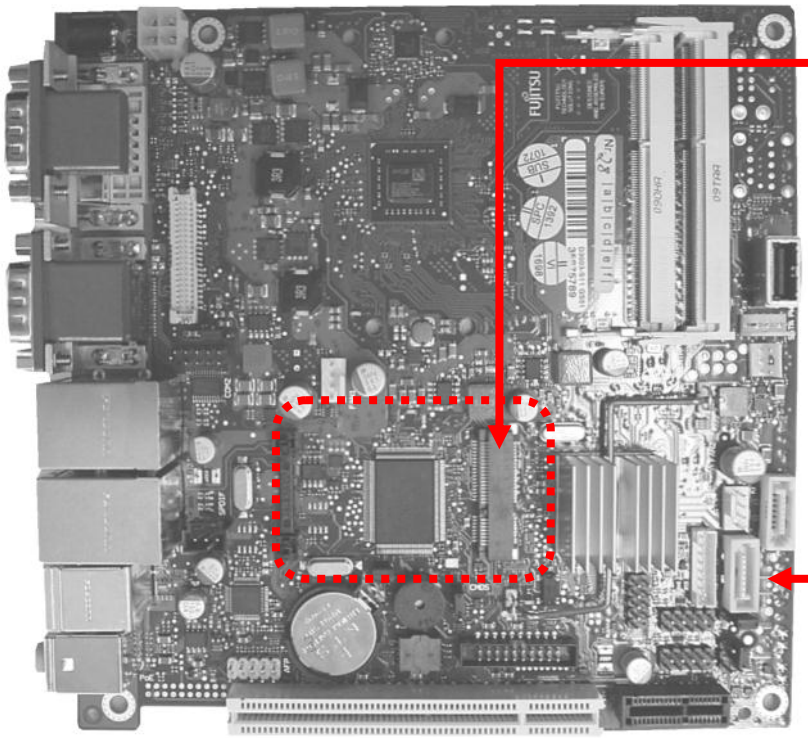


Sample S/PDIF Connector Bracket

Note:
Standard connector bracket should directly connect to SPDIFout and GND pins (no signal converter required)

Internal Connectors

6.6 m-SATA / SATA

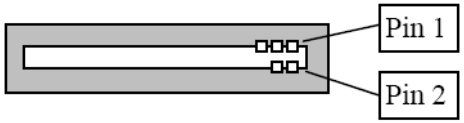


Fullsize m-SATA socket
Supports modules with SATA interface or USB interface.
Note: Mini-PCI-Express is NOT supported by this interface!

Two SATA 3.0 connectors (up to 6Gb/s)
Layout prepared for SATA DOM (powered via external power cable only!)

Internal Connectors

6.7 m-SATA Pinout



Pin	Signal Assignment	Type	ioh/ iol	Pull U/D	Comment
1	RSVD				
3	RSVD				
5	RSVD				
7	RSVD				
9	GND				
11	RSVD				
13	RSVD				
15	GND				
17	RSVD				
19	RSVD				
21	GND				
23	Transmit data positive				
25	Transmit data negative				
27	GND				
29	GND				
31	Receive data negative				
33	Receive data positive				
35	GND				
37	GND				
39	+3.3V				
41	+3.3V				
43	GND				
45	GND				
47	RSVD				
49	RSVD				
51	MSATA Present low				

Pin	Signal Assignment	Type	ioh/ iol	Pull U/D	Comment
2	+3.3V				
4	GND				
6	+1.5V				
8	RSVD				
10	RSVD				
12	RSVD				
14	RSVD				
16	RSVD				
18	GND				
20	RSVD				
22	RSVD				
24	+3.3V				
26	GND				
28	+1.5V				
30	SMBus clock				
32	SMBus data				
34	GND				
36	USB data negative				
38	USB data positive				
40	GND				
42	RSVD				
44	RSVD				
46	RSVD				
48	+1.5V				
50	GND				
52	+3.3V				

Internal Connectors

6.8 mSATA/USB MiniCard Applications

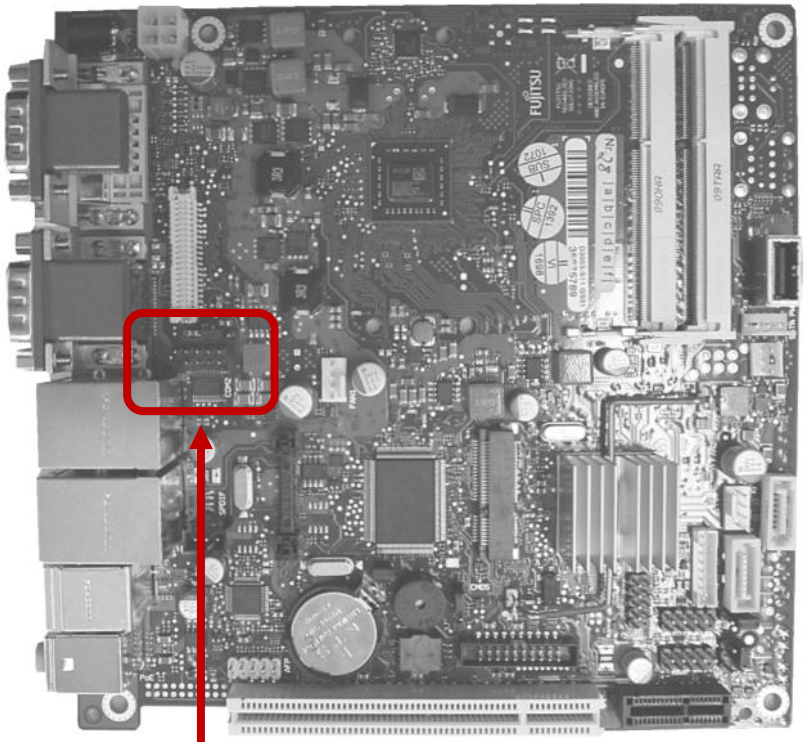
- USB WLAN (e.g. DeLock, AzureWave)

- USB 3G

- Intel mSATA SSD
  40GB / 80GB

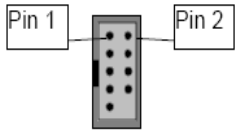
Internal Connectors

6.9 Internal Serial Connector



Pin	Signal
1	DCD 2
2	DSR 2
3	SIN 2
4	RTS 2
5	SOUT 2

Pin	Signal
6	CTS 2
7	DTR 2
8	RI 2
9	GND



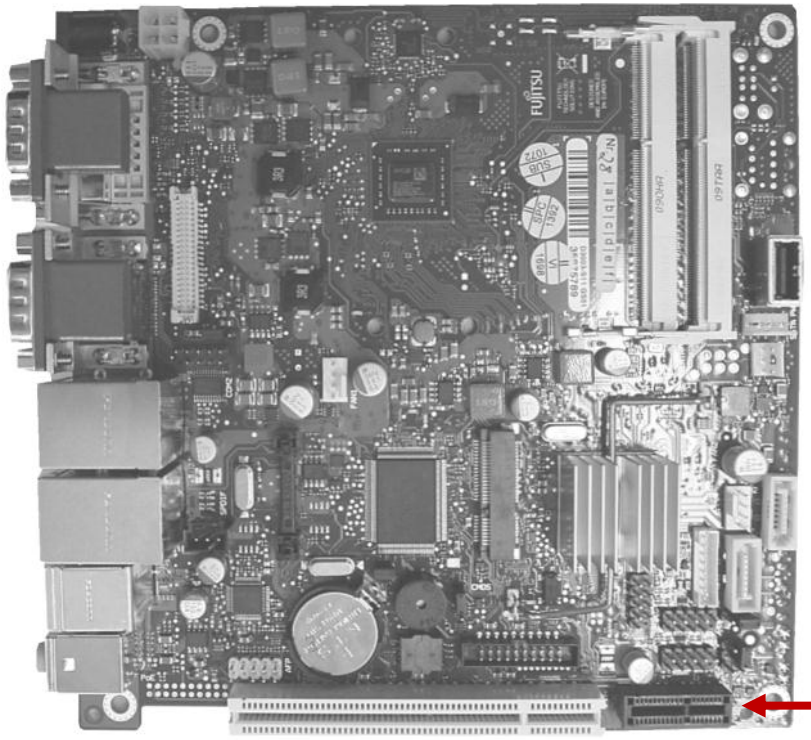
Note: Pinning according FTS standard!

External I/O Bracket

Note:
Internal COM2 and external COM2 must NOT be used simultaneously!

Internal Connectors

6.10 PCI Express Extension Slot



PCIe x2 (Gen2)

- supports one or two lanes
- Provides the option to install customer-specific extension cards
- Proprietary pinout – not PCIe x1 compatible!
- Can only be used with riser card D3044 or customized riser

Internal Connectors

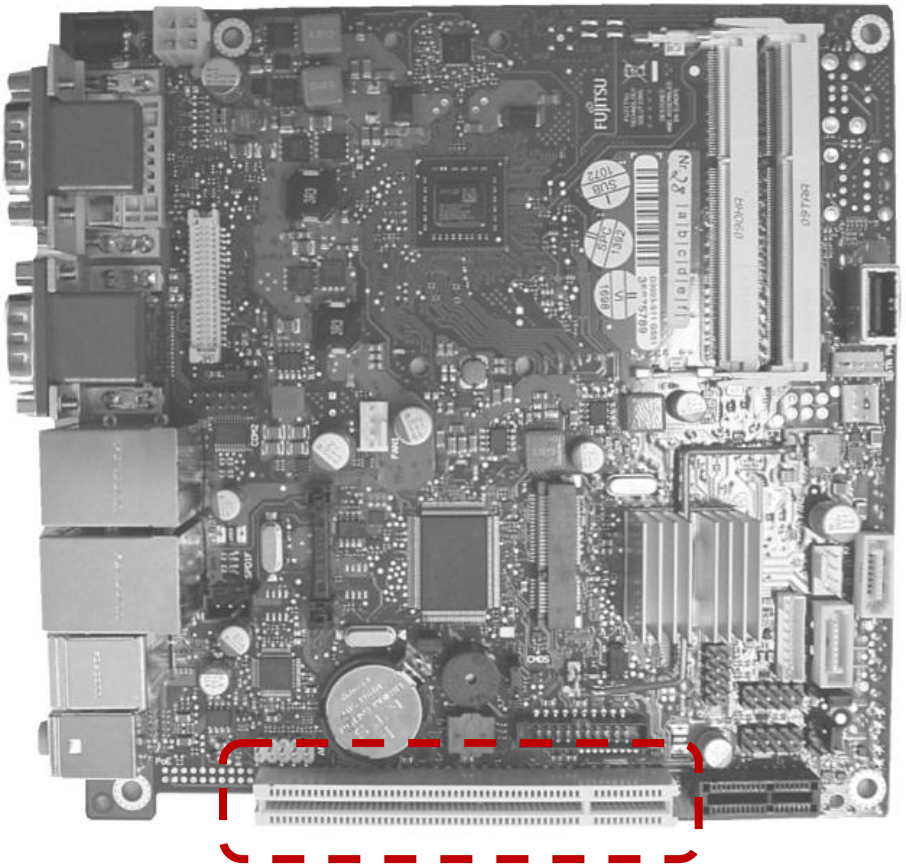
6.11 PCI Express x2 Extension Slot Proprietary Pinout

Pin	Signal Assignment	Type	ioh/ iol	Pull U/D	Comment
A1	+12V	Power			
A2	+12V	Power			
A3	GND	Power			
A4	GND	Power			
A5	Receive data1 negative	AI			
A6	Receive data1 positive	AI			
A7	GND	Power			
A8	GND	Power			
A9	Transmit data1 negative	AO			
A10	Transmit data1 positive	AO			
A11	GND	Power			
A12	GND	Power			
A13	Clock positive	AO			
A14	Clock negative	AO			
A15	GND	Power			
A16	Receive data0 positive	AI			
A17	Receive data0 negative	AI			
A18	GND	Power			

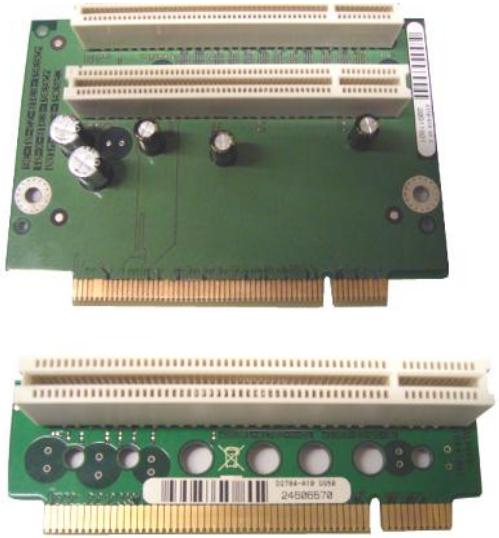
Pin	Signal Assignment	Type	ioh/ iol	Pull U/D	Comment
B1	+12V	Power			
B2	+12V	Power			
B3	+12V	Power			
B4	GND	Power			
B5	NC				
B6	NC				
B7	GND	Power			
B8	NC				
B9	NC				
B10	NC				
B11	WAKE low	I			
B12	Reset low	O			
B13	GND	Power			
B14	Transmit data0 positive	AO			
B15	Transmit data0 negative	AO			
B16	GND	Power			
B17	NC				
B18	GND	Power			

Internal Connectors

6.12 PCI Extension Slot



- 32Bit, 33MHz, PCI Rev. 2.3
- Compliant to 3.3V / 5V devices
- Supports up to two PCI master slots via risercards



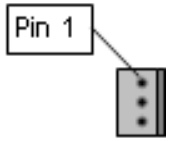
PCI Risercards offered by FTS

Note:
„Reserved Pins" according to PCI specification must NOT be used by 3rd party riser cards. Some of these pins are used on D3003-S for accessing the second PCI master slot.

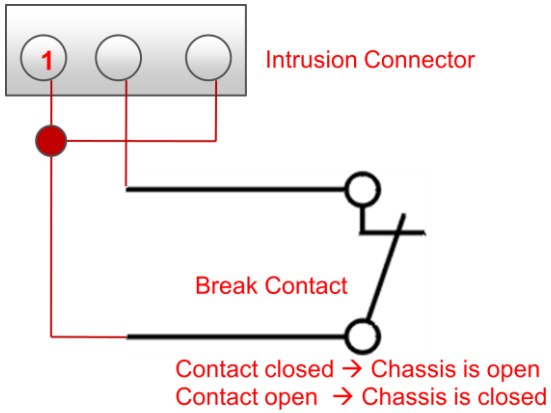
Internal Connectors

6.13 Intrusion Connector

Pin	Signal
1	GND
2	Case open (low asserted)
3	Intrusion switch present (low asserted)



Note: The intrusion supervision feature needs to be enabled in BIOS Setup first (Menu „Security" → „Cabinet Monitoring"). This BIOS option is only available if pin 3 („Intrusion Switch Present") is connected to GND!



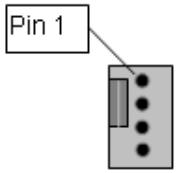
Chassis intrusion is active even if the system is switched off (S5 state) or disconnected from mains power.
The intrusion event is monitored by the chipset and stored in the BIOS Eventlog during the next Boot.
A timestamp (Boot date/time) will be added then.
Note: This timestamp does not represent date/time of the intrusion event!
If a Supervisor Password is enabled in BIOS Setup, the system will stop during BIOS POST if an intrusion event has been detected. In order to continue, the Supervisor Password must be entered to confirm the intrusion event.

The intrusion status can be easily monitored by using the BMCAPI (Windows):
ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/IndustrialTools_D3003-S/BMC_Management-Controller-API/

Internal Connectors

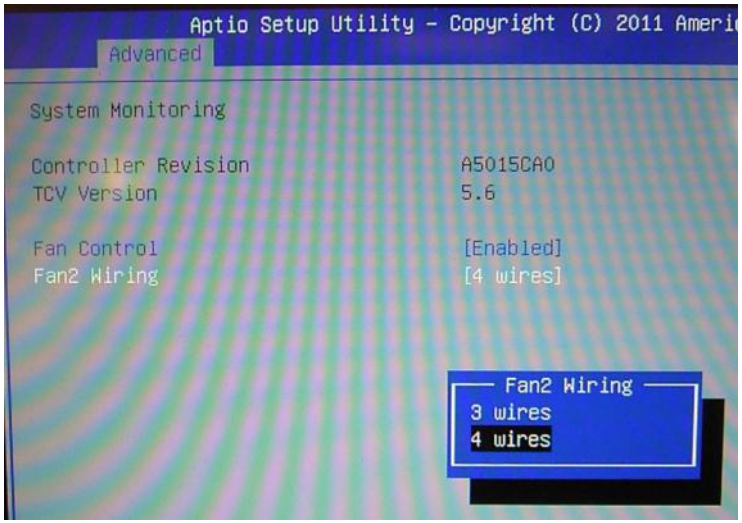
6.14 Fan Connector

Pin	Signal
1	GND
2	12V (PWM-4pin mode) / 6V-12V (3pin mode)
3	FAN Sense
4	FAN PWM (PWM-4pin mode) / reserved (3pin mode)



Note:
Fan 1 (Processor) supports 4-wire "PWM" only.
Fan 2 (Chassis) can be used in 4-wire or 3-wire mode (BIOS Setup)

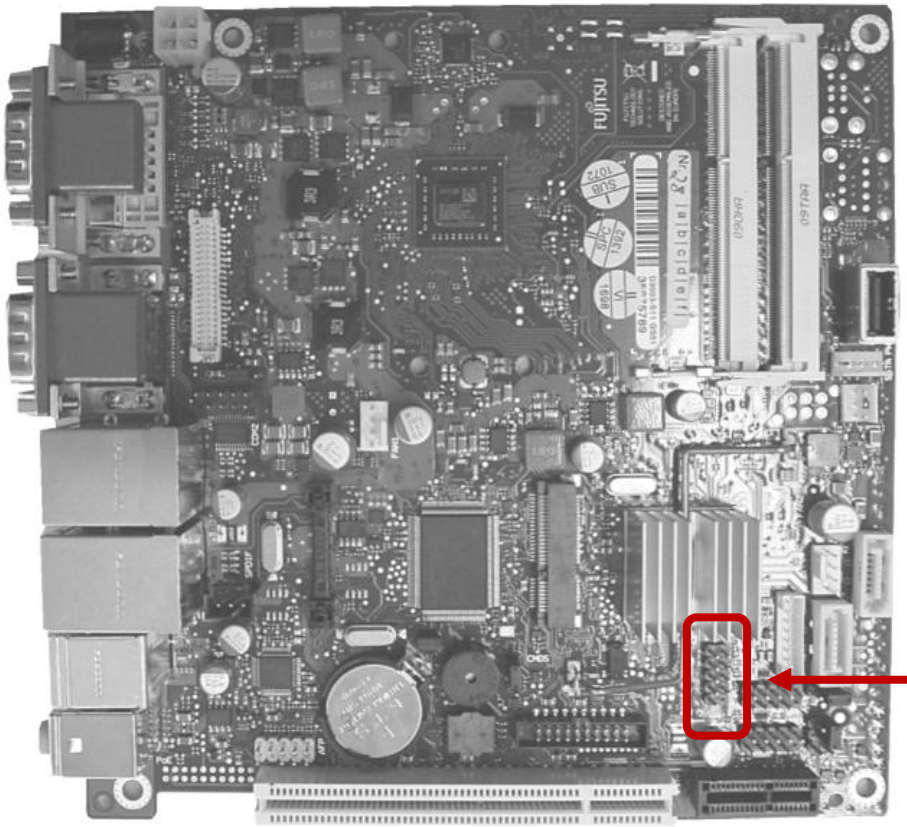
If a 3-wire fan is connected, but BIOS Setup is set to "4 wires" (= Default) the fan will operate at full speed (12V).
In 3-wire mode, the default minimum operating voltage is set to ~ 4V.
Fan current must not exceed 1A per connector.



→ Minimum fan speed can be customized via SilentFanConfig-Manager tool
ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S//IndustrialTools_D3003-S/

Internal Connectors

6.15 Frontpanel Connector

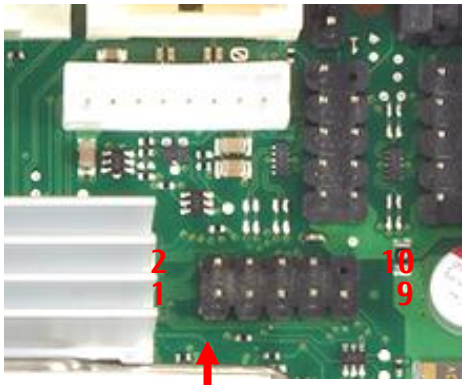


Frontpanel providing
- Powerswitch
- Power/HDD-LED
- Reset-Switch

Frontpanel Connector

Internal Connectors

Frontpanel Connector



Frontpanel Connector

Power LED: 3.3V supply, max. 10mA
onboard 150R serial resistor

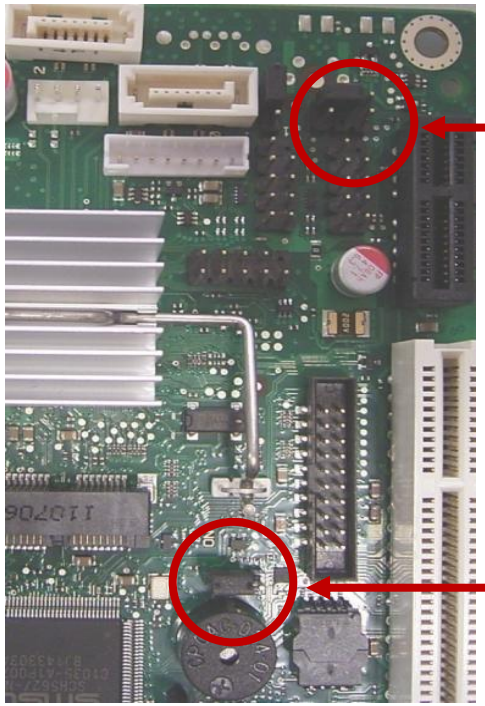
HDD LED: 5.0V supply, max. 10mA
onboard 330R serial resistor

10	(KEY)	Reserved (NC)	9
8	PowerSwitch_GND	ResetSwitch_P	7
6	PowerSwitch_P	ResetSwitch_GND	5
4	Power_LED_GND	HDD_LED-	3
2	Power_LED+	HDD_LED+	1

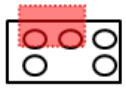
Note: Pinning is compatible to
Intel 10 pin header

Internal Connectors

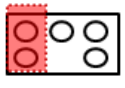
6.16 Additional Jumper Settings



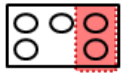
BIOS Recovery Jumper:



Default Setting

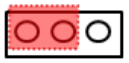


BIOS Recovery



BIOS Reserved Mode

System Power-On Jumper:



Default Setting

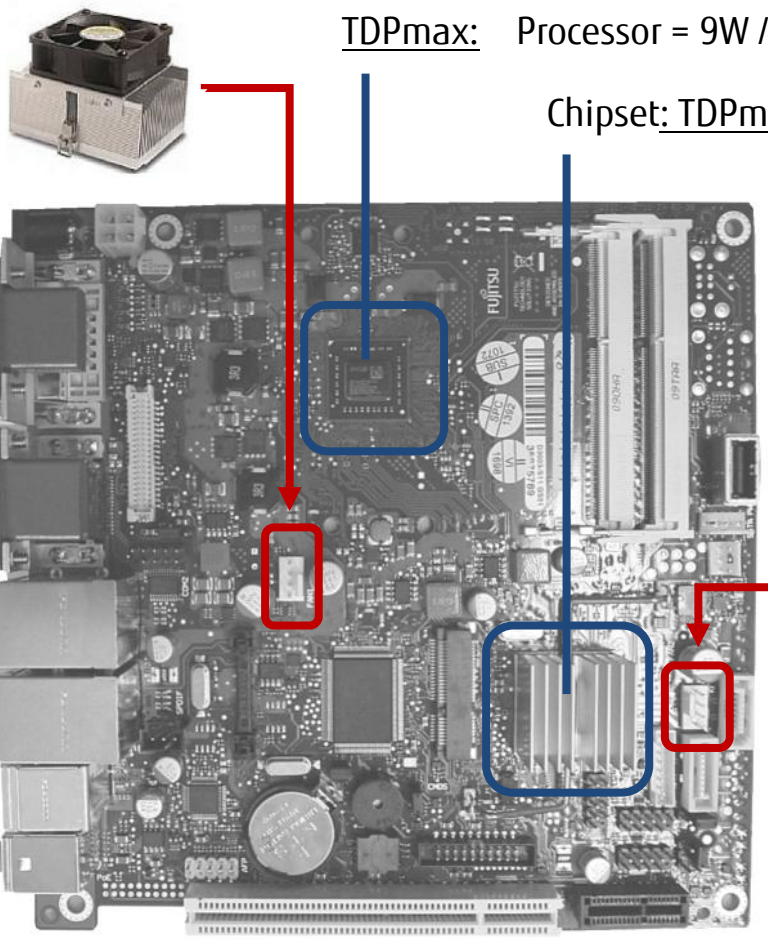
Forced "Power-On" Setting
--> System will switch on automatically even if the battery is empty or damaged (no explicit need for system power button).
Furthermore, this setting improves automatic power on in case of "AC fail".
Note: Power-on may be delayed for several seconds!

Note: "System Power-on Jumper" replaces the previous "Clear CMOS" Jumper.
This "forced power-on" feature is available for D3003- S12 / -S22 / -S32 only!

7 System Monitoring

7.1 D3003-S: Fans

FAN 1
(CPU Fan)



TDPmax: Processor = 9W / 18W (single / dual core)

Chipset: TDPmax = 6W

FAN 2
(Chassis)

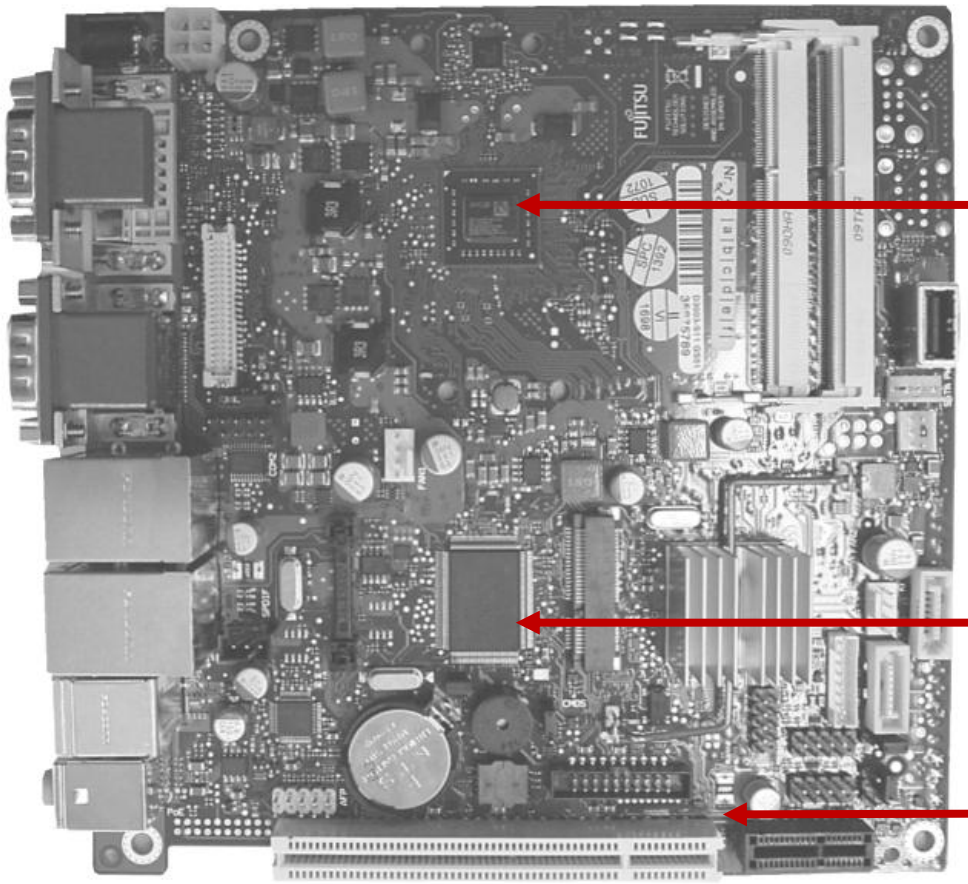
Fans must NOT be attached or removed while the system is powered! Mainboard may be damaged!

Note:
Fan1 PWM (4-wire) only!
Fan2: PWM (4-wire) or voltage controlled (3-wire) possible.
Selectable via BIOS Setup

Note: Do not attach more than one fan per connector (max. 1A per connector)!

System Monitoring

7.2 D3003-S: Sensors



CPU Sensor
(inside Processor)

Sensor 1 "SIO"
(inside Super I/O)

Sensor 2 "PCIe-G"
(close to PCIe connector)

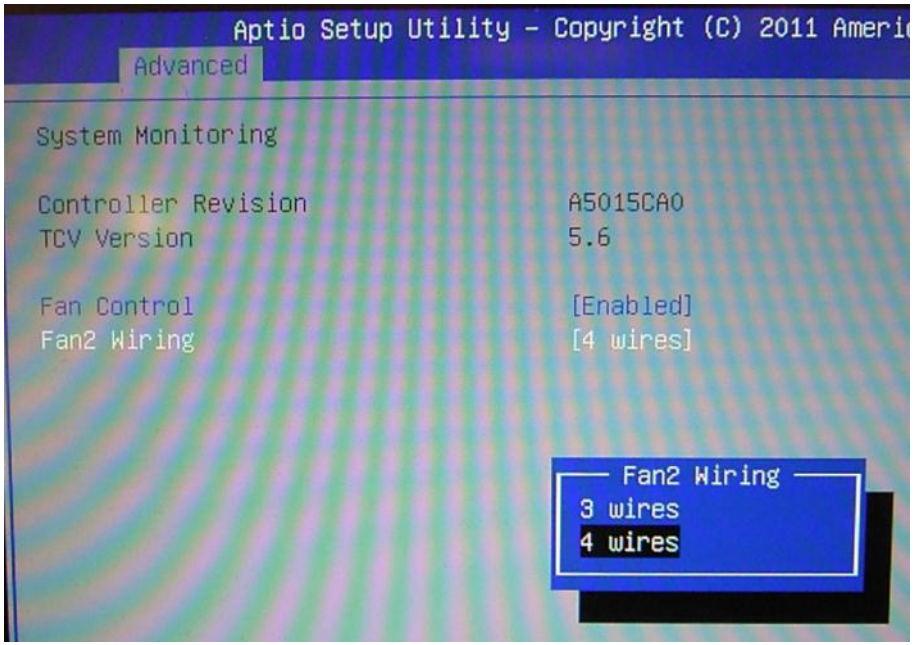
System Monitoring

7.3 D3003-S: BIOS Fan Setting

BIOS Setup option for Fan2
Note: Default setting is PWM (4 wires)

Setting "3 wires":
The default minimum operating voltage is set to ~ 4V; the maximum operating voltage (full speed) is 12V.

Note:
If a 3-wire fan is used while BIOS Setup is set to "4 Wires", the fan will operate at full speed (=12V operating voltage)!



System Monitoring

7.4 SystemGuard: Fan/Temperature Monitor

Windows-based Monitoring Tool

Download link to latest version:
ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Services/Software&Tools/Common-Mainboard-Tools/SystemGuard/

Note: Version 3.63 or higher recommended for D3003-S

System Guard offers several options like "LogFile- feature" and "No Adjustments- mode"
Details are available here:
ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Services/Software&Tools/Common-Mainboard-Tools/SystemGuard/Documentation/

Note: Windows-based and Linux-based APIs resp. drivers for easy implementation of the System Monitoring features like fan speed, sensor temperatures, Watchdog access etc. are available here:
ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/IndustrialTools_D3003-S/

System Monitoring

7.5 D3003-S: SystemGuard Details

Temperature Sensors

Processor Sensor

Super I/O Sensor

PCI Express Sensor

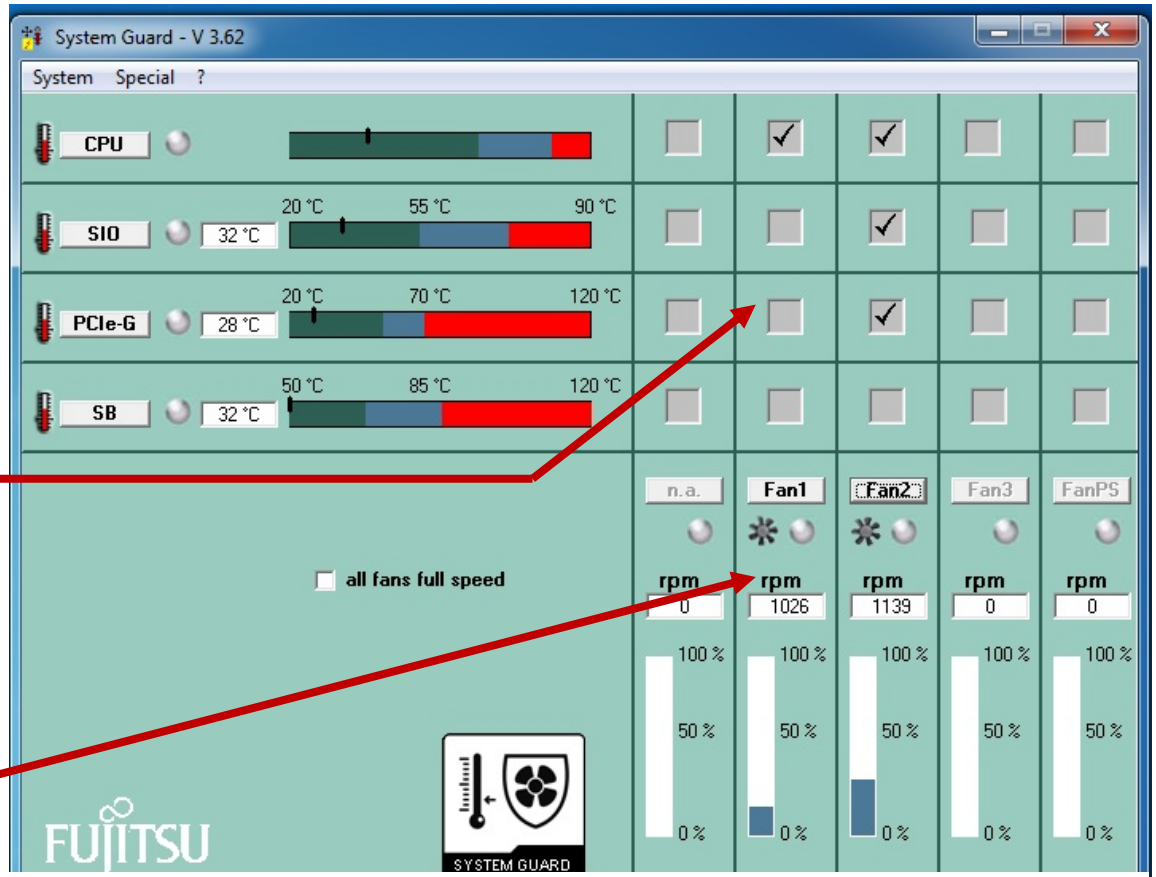
Not used!

Sensor / Fan Matrix

Factory default setting:

- FAN1 (CPU) controlled by Processor temperature 1)
- FAN2 controlled by all sensors

Current Fan Speed



All relevant System Monitoring parameters can be customized via SilentFanConfig-Tool!

1) Note: Characteristics for FAN1 is always dependent on CPU temperature – fully controlled by the system BIOS. Due to safety reasons this influence cannot be disabled!

System Monitoring

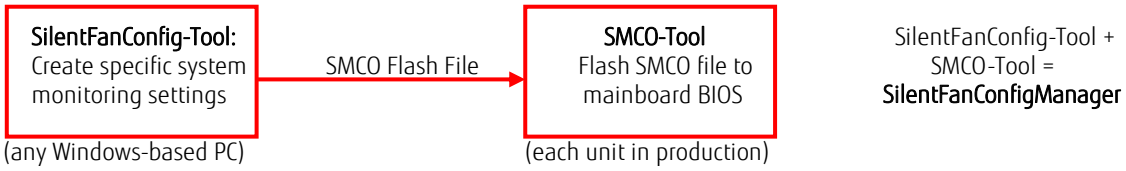
7.6 SilentFanConfigManager – Customize System Monitoring Settings

Windows-based System Management Configuration Tool

ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/IndustrialTools_D3003-S/SilentFanConfig-Manager/

1. Windows-based configuration tool (SilentFanConfig) to create customized system monitoring settings like minimum fan speed and temperature sensor influence. These customized settings are stored in a specific "SMCO" flash file.

2. DOS-based tool "SMCO" to flash the customized system monitoring settings (SMCO file) to the system BIOS of the target unit.

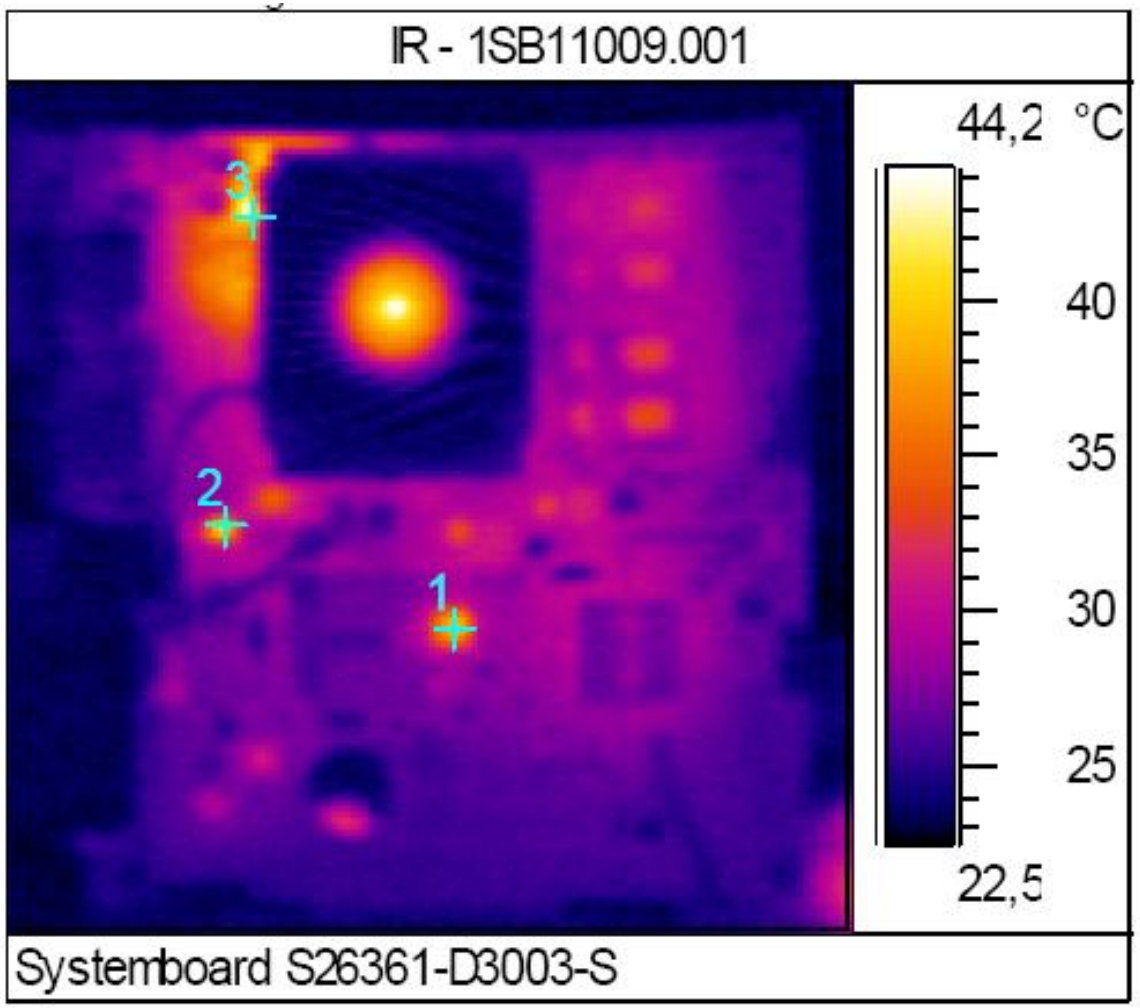


Note: New settings are written permanently to system BIOS.
Any BIOS update or BIOS Recovery will not reset the new settings

SilentFanConfig ≥ **V1.67** required for D3003-S (BIOS ≥ R1.15.0)
4

System Monitoring

7.7 Thermography D3003-S



SCANNER-DATEN

	Scanner Type	THV470
SWB		
	Serial Number	75128
	Level	248
	Sens	4
	Blende	0
	Filter	NOF
	Optik	20

BILD OBJ. PAR.

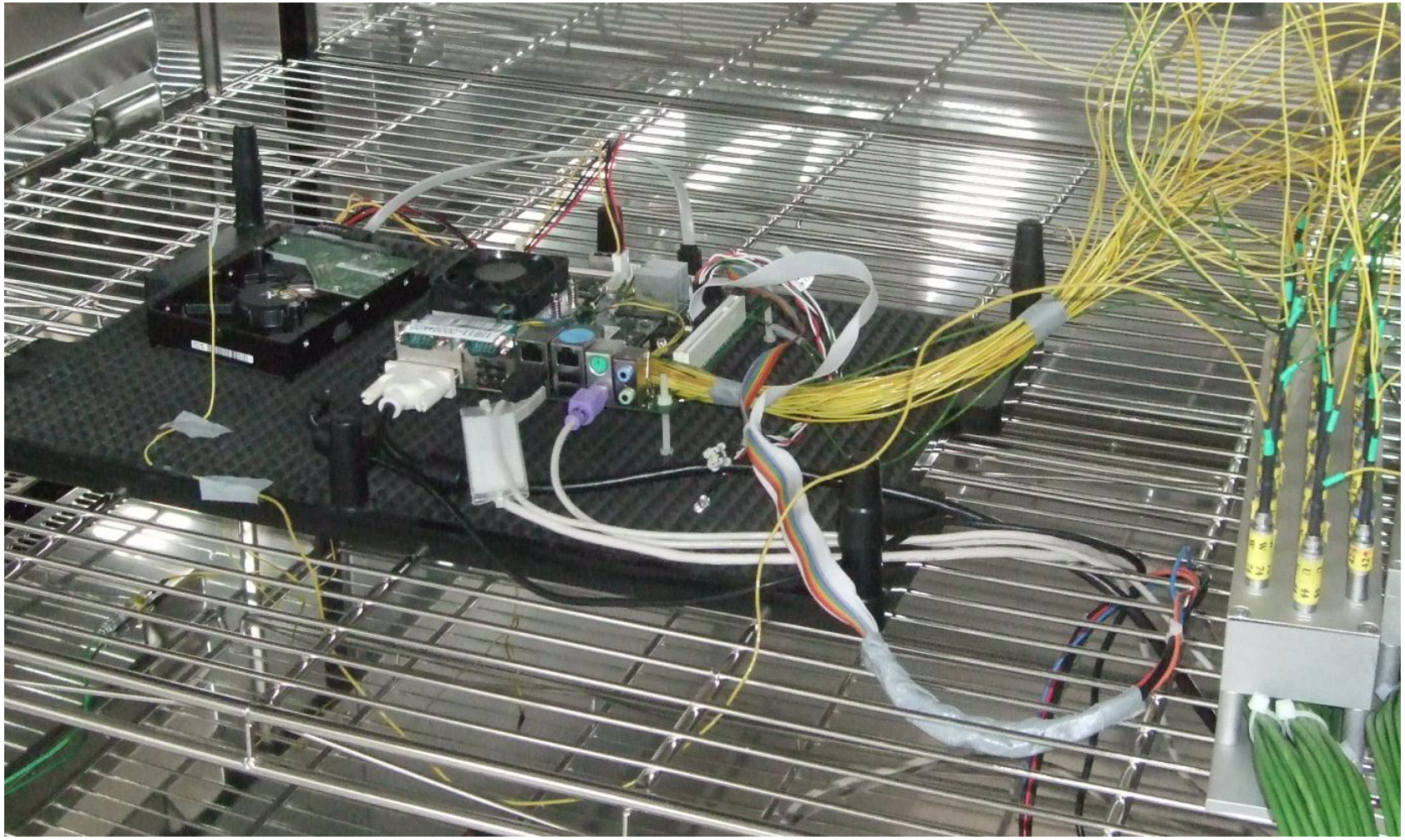
Emissionsfaktor	0,95
Umg.-Temp.	25,0 °C
Atm.-Temp.	25,0 °C
Objekt Dist.	1,0 m
Transmission	0,99

Temp.

SP01	38,9 °C	U1
SP02	39,6 °C	525D51
SP03	36,4 °C	127V12

System Monitoring

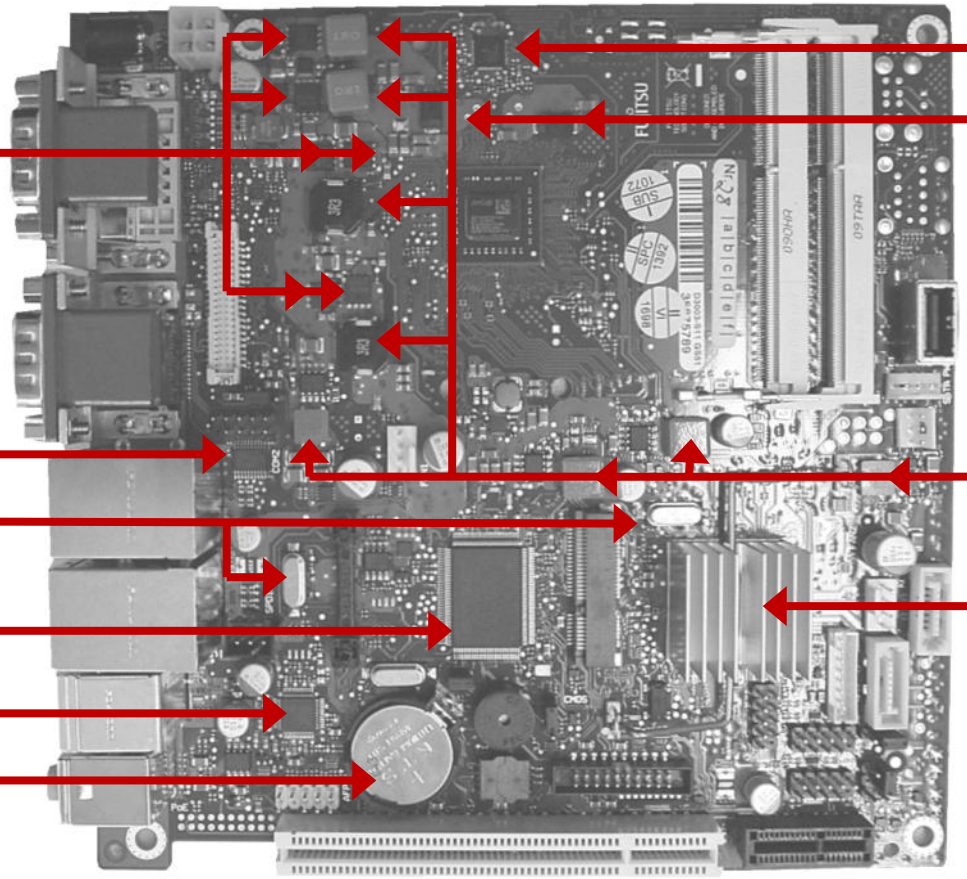
7.8 Climatic Test D3003-S



System Monitoring

7.9 Temperature Reference Points D3003-S

Operating Conditions:
Circulating air max. 60°C
Usage 24h / 7 days



All capacitors max. 70°C

Core Regulator max. 80°C

SP-Caps max. 85°C

Voltage Regulators max. 90°C

COM Driver max. 80°C

Quartz max. 70°C

Super I/O max. 70°C

Audio Codec max. 70°C

Battery max. 60/70°C 1)

Inductors max. 90°C

FCH max. 75°C
(chip surface)

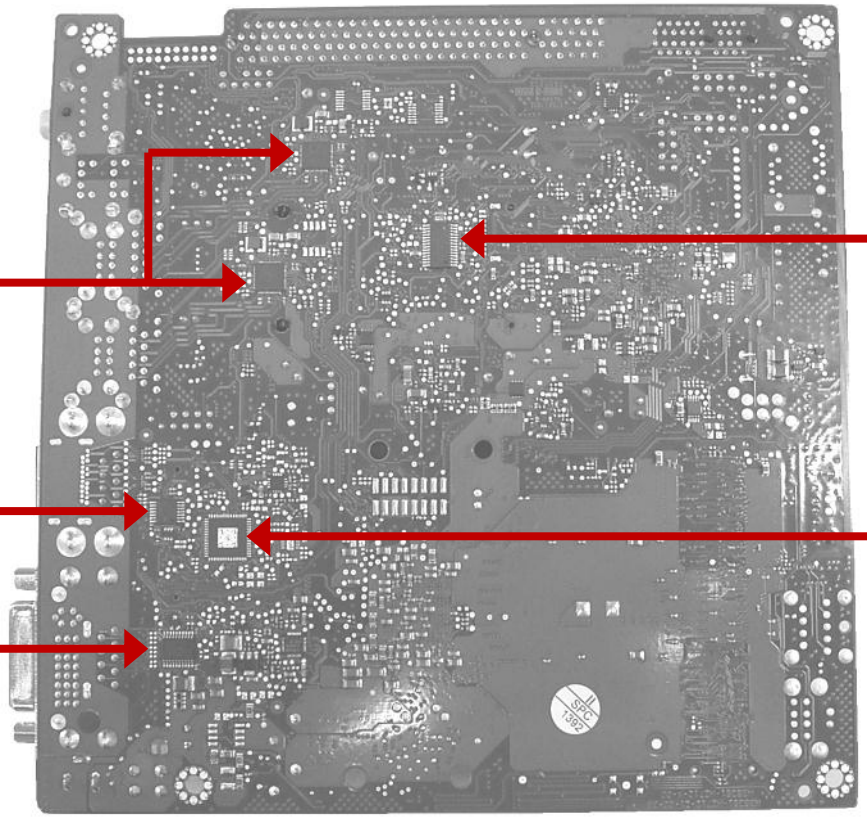
1) Note: Battery operation is specified in temperature range up to 60°C.
Operation between 60°C and 70°C may result in:
- Higher self discharge rate
- Decline of specified characteristics
- Danger of leakage increases

Reference Point Limit Temperatures (Component Surface) must not be exceeded!

System Monitoring

7.10 Temperature Reference Points D3003-S (Rear View)

Operating Conditions:
Circulating air max. 60°C
Usage 24h / 7 days



LAN Controller max. 75°C

MUX max. 75°C

COM Driver max. 80°C

All capacitors max. 70°C

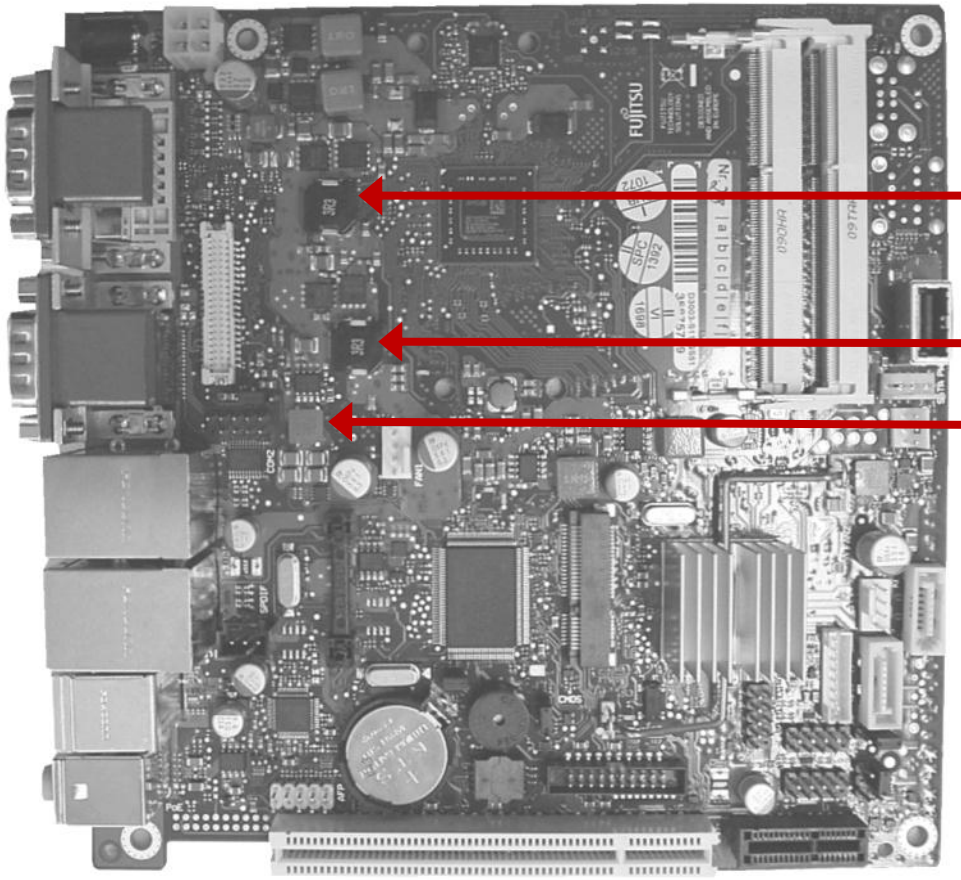
TPM max. 70°C

LVDS Converter max. 70°C

Reference Point Limit Temperatures (Component Surface) must not be exceeded!

System Monitoring

7.11 Inductors for onboard Voltage Regulators



All inductors max. 90°C

Inductor +5V

Inductor +3.3V

Inductor +12V

Mainboard output current:
The max. mainboard output power available via PCI/PCIe- connector, USB-connectors, GPI/O, backlight-connector, and drive power connector is limited due to the inductors shown above!

Max. overall output current:
+3.3V / 5A
+5V / 4.5A
+12V / 2.5A

8 Power Consumption

Sample Configuration

D3003-S2 BIOS R1.4.0
2 x 2GB DDR3 SDRAM
HDD 2.5“
AC Adaptor E557-V55 (20V)
Windows 7-64
WoL = On (BIOS Setup)

Desktop / Full CPU Load	Desktop / Idle	S3 mode (Standby)	S5 mode (Off)
20W	12W	0.7W	0.6W

9 Operating System Support

9.1 MS Windows / MS Windows Embedded (updated)

MS Windows

.

- Windows 732bit / 64bit
- Windows XP 32bit / 64bit
- Mainboard D3003-S is designed according to the Microsoft Guidelines for Windows XP and Windows 7
- MS certified drivers (32/64 Bit) are available via OEM DU-DVD and OEM FTP Server:

  ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/Drivers_D3003-S/

Note: MS Windows 8 is basically supported on D3003-S, but Microsoft Win8 Certification is not possible (e.g. no support for Secure Boot)!

MS Windows embedded

.

- Windows XP embedded - Link to BSP:
  ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/Drivers_D3003-S/D3003-S_Windows-XP-Embedded_BSP/

- Windows 7 embedded (Please use standard Windows 7 drivers)

Operating System Support

9.2 Linux Status (updated)

OS Item	Debian 6 64Bit	Fedora 14 64Bit	RHEL 5.6 64Bit	RHEL 6.0 64Bit	OpenSUSE 11.3 / 64Bit	OpenSUSE 11.4 / 64Bit	SLED 11.1 / 64Bit	Ubuntu 10.10/64Bit	Ubuntu 11.04/64Bit
PXE Install	ok	ok	ok	ok	ok	ok	ok	not tested	not tested
Network	ok	ok	ok	ok	ok	ok	ok	ok	ok
SATA HDD	ok	ok	ok	ok	ok	ok	ok	ok	ok
Basic X Server	ok	ok	ok	ok	ok	ok	ok	ok	ok
Shutdown/ Power off	ok	ok	ok	ok	ok	ok	ok	ok	ok
Save to Disk	ok	ok	ok	failed	ok	ok	ok	ok	ok
Save to RAM	failed	failed	ok	failed	failed	ok	failed	failed	ok
PS/2 Devices	ok	ok	ok	ok	ok	ok	ok	ok	ok
Audio Playback	ok	ok	failed	ok	ok	ok	ok	ok	ok
Audio Recording (external source)	failed	failed	failed	failed	failed	failed	failed	failed	failed

Note for OpenSUSE: see http://wiki.cchtml.com/index.php/SUSE/openSUSE [→OpenSUSE 11.4: "kernel-devel kernel-desktop-devel gcc gcc-c++ make patch" required]

Operating System Support

9.3 Embedded Linux

A Board Support Package (BSP) for Embedded Linux is available in cooperation with emlix.

- Link to BSP datasheet:
  ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/Drivers_D3003-S/EmbeddedLinux_Demo-BSP/BSP_Fujitsu_D3003-S.pdf

- The „Evaluation Edition" of the BSP can be downloaded from the FTP:
  ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/Drivers_D3003-S/EmbeddedLinux_Demo-BSP/

emlix
embedded linux systems

Operating System Support

9.4 Others

RTOS
http://www.amd.com/us/press-releases/Pages/green-hills-software-2012mar27.aspx

MS Windows 8
FTS plans to provide drivers for MS Windows 8, but D3003-S will NOT be enabled to pass to MS Windows 8 logo certification (specific core BIOS support missing!)

10 Mainboard Tools

Common Mainboard Tools

10.1 BIOS Boot Logo Tool

- Tool to integrate a customized boot logo

ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Services/Software&Tools/Common-Mainboard-Tools/BootLogo_4_UEFI/

Note: The available BIOS space (D3003-S) for the logo is 180kB

10.2 EditCMOS

- DOS-based production tool to change BIOS settings
  and freeze customized BIOS settings (= customized default settings)
  ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Services/Software&Tools/Common-Mainboard-Tools/EditCMOS_UEFI/

10.3 OEMIDENT

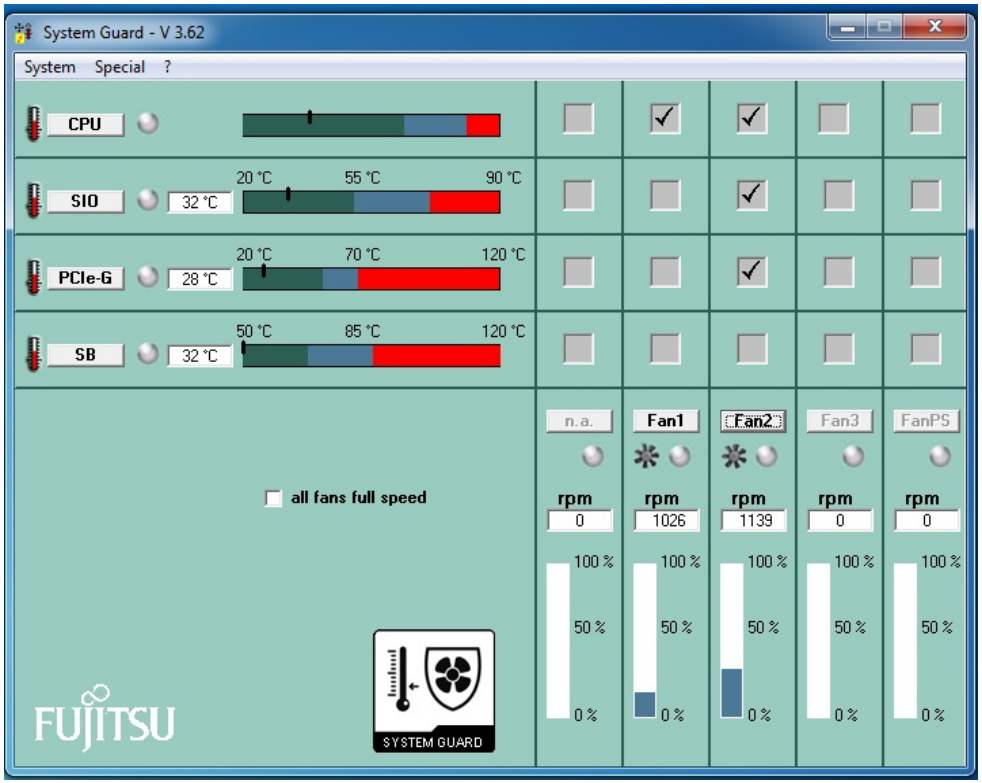
- Production tool to add MS OEM licence data (SLP1 for Windows XP and SLP2.x for Windows Vista & Windows 7)
- Add an individual customer serial no / add a chassis asset tag
- Disable and hide TPM feature in BIOS Setup
  ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Services/Software&Tools/Common-Mainboard-Tools/OEM-Ident/

Mainboard Tools

10.4 SystemGuard

- Windows-based tool to monitor temperatures and fan speed of FTS mainboards
- Option to configure automatic fan ageing supervision
- Provides access to the System Watchdog (SystemGuard ≥ V3.63 requried)

ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Services/Software&Tools/Common-Mainboard-Tools/SystemGuard/



Mainboard Tools

Industrial Tools

10.5 SilentFanConfig-Manager

- Windows-based configuration tool to implement customized fan characteristics and temperature parameters. Includes DOS-based tool "SMCO" to flash the configuration file permanently into the system BIOS.

ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/IndustrialTools_D3003-S/SilentFanConfig-Manager/

10.6 Windows System-Monitoring API (BMCAPI)

- BMC-Management-Controller to access and adjust System Monitoring parameters like fan speed and temperatures. This API also provides access to the mainboard watchdog, the 8Bit GPIO interface and the intrusion feature of the mainboard.

ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/IndustrialTools_D3003-S/BMC_Management-Controller-API/

10.7 Linux System-Monitoring Driver ("LM-Sensors")

- BMC-Management-Controller to access and adjust System Monitoring parameters like fan speed and temperatures. This driver also provides access to the mainboard watchdog.

ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3071-S_D3076-S/IndustrialTools_D307x-S/Linux_SystemMonitoring&Watchdog-Driver/

Mainboard Tools

10.8 LVDS Tool

- Tool to adjust LVDS-timings for mainboard D3003-S1 & -S3. Adjusted data are flashed into the system BIOS permanently.

Download-Link for LVDS Tool (D3003-S only):
ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/IndustrialTools_D3003-S/LVDS-Tool/

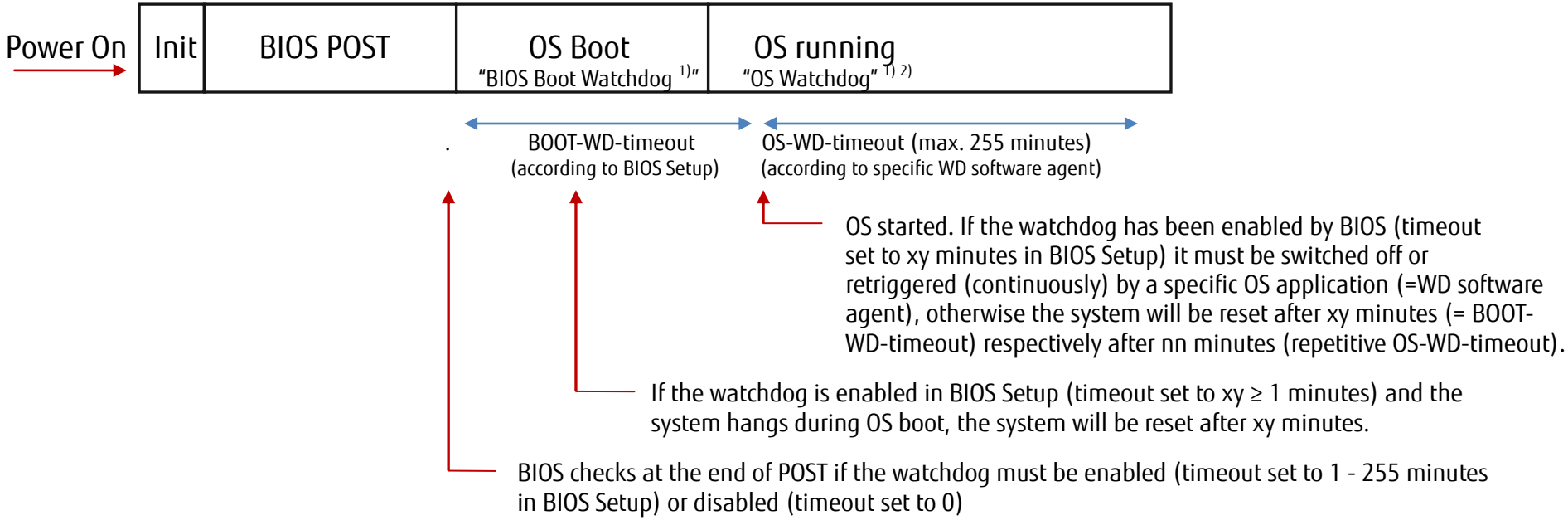
See chapter 4.5 for more details.

Note: Further details regarding mainboard tools can be found in the related "Mainboard Tools Datasheet"
ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Services/Software&Tools/Common-Mainboard-Tools/$$_DS_UEFI-Tools.pdf

11 Miscellaneous

11.1 System Watchdog (WD)

D3003-S provides full Operating System Boot- and Operating System-Runtime HW Watchdog supervision.



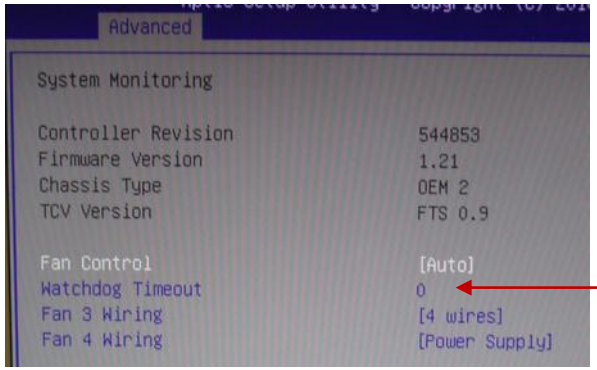
1) Note: Both watchdogs are physical identical, but they are handled from different application levels
2) As the SystemGuard tool offers access to the watchdog it can be used as "WD software agent" to retrigger the watchdog during OS runtime

Miscellaneous

System Watchdog (WD)

How to handle the two watchdog levels

- **BIOS Boot Watchdog**
  - Set Watchdog in BIOS Setup



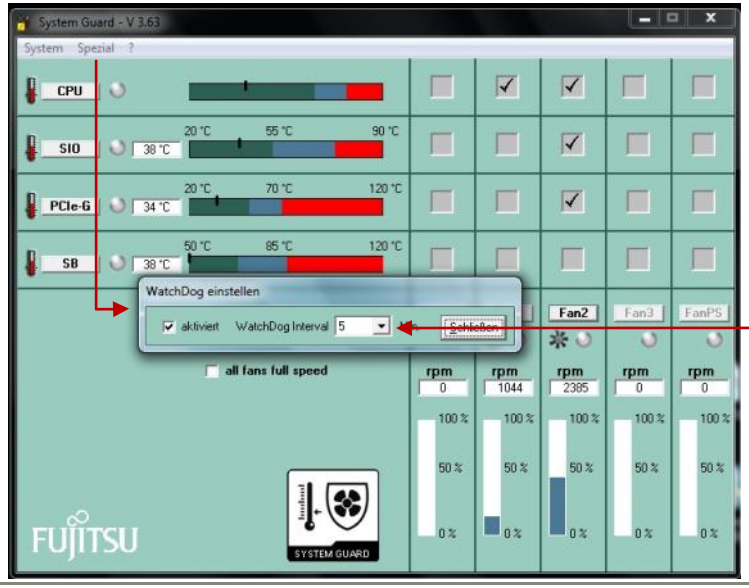
0 = WD disabled
1 – 255 = WD enabled (timeout = 1 – 255 minutes)

Miscellaneous

System Watchdog (WD)

- **OS Watchdog**
  - Use "WD software agent" to stop or retrigger the watchdog during OS runtime
    Note: This "agent" needs to be provided by the customer, dependent on his needs.
    For easy access to the watchdog functions, the Windows API (BMCAPI) or the related Linux driver (lm-sensors) can be used:
    ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/IndustrialTools_D3003-S/

  - For easy testing, the SystemGuard tool provides access to the OS Watchdog. After enabling the Watchdog, SystemGuard retriggers the WD continuously. In case the system freezes, SystemGuard does no longer provide the retrigger signal and the watchdog resets the system after the timeout.
    Note: When SystemGuard is closed, the WD is stopped in order to avoid a unwanted system reset!

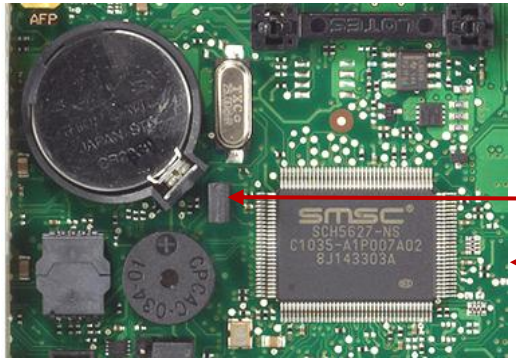


Menu "Special":
--> Enable WD
--> Set timeout to 1 – 8 minutes

Miscellaneous

11.2 Trusted Platform Module (TPM)

TPM V1.2 controller: Infineon SLB 9635 TT1.2



TPM Jumper

TPM Infineon (rear side below SMSC Super I/O)

Note:

- TPM Jumper must be installed in order to enable the TPM hardware (installed = default)
- TPM must be enabled in BIOS Setup before its features can be used

- For applications / customers that do not what to use TPM, the full functionality can be disabled and hidden in BIOS Setup by the OEMIDENT tool. See OEMIDENT readme for details.
  Once TPM has been disabled by OEMIDENT, it cannot be re-enabled again (only possible by factory RMA)!

Miscellaneous

11.3 BIOS Update / BIOS Recovery (updated)

BIOS update options

Link to related BIOS files (OEM FTP Server):
ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/BIOS_D3003/

- **DOS-based BIOS update (DOS-bootable USB stick)**

  Required BIOS files:

  - EfiFlash.exe (DOS flash tool)
  - DosFlash.bat (batch file)
  - D3003-Sx.upd (flash file)

  Copy unzipped files to a DOS-bootable USB stick, boot system from stick and run *DosFlash.bat*
  Note: The parameter /NORESET (EfiFlash.exe) allows to flash the BIOS w/o automatic Reboot!

  (Update) Link to a Fujitsu Windows tool to create a bootable Free-DOS USB stick:

  ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/BIOS_D3003/BIOS_D3003-S3/FTS_Basic-BootStick.$XE

Miscellaneous

BIOS Update / BIOS Recovery

Windows-based BIOS update (Deskflash tool)

Required BIOS file:

- D3003-Sx.R1.x.y.**DFI.exe** (Windows executable flash tool)

Copy file from FTP (link see above), rename *filename.**$xe*** to *filename.**exe*** and copy to target system (e.g. Windows desktop).
Doubleclick to start BIOS update and follow instructions on the screen.

DOS-based BIOS Recovery (DOS-bootable USB stick)

Required BIOS files:

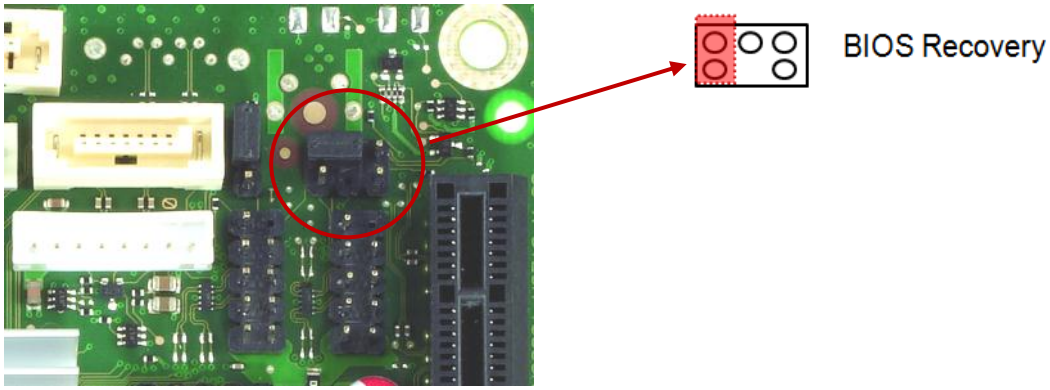
- EfiFlash.exe (DOS flash tool)
- DosFlash.bat (batch file)
- D3003-Sx.upd (flash file)
- D3003-Sx.rom --> Important: This file must be located in the root directory of the USB stick!

Set onboard jumper to Recovery Mode (see picture)

Copy unzipped files to a DOS-bootable USB stick,
boot system from stick and run *DosFlash.bat*

Follow instructions on the screen and set jumper to default position

Note:
BIOS Recovery should only be used to repair a corrupted BIOS.
All customized data except for OEM SLP data will be reset.



12 FAQs to BIOS & BIOS Features

12.1 Important items in BIOS Setup

- PXE Boot Option (enable/disable)
  - ADVANCED → Legacy OpROM Support
- TPM (enable/disable/activate/deactivate)
  - ADVANCED → Trusted Computing
- CPU Features (P-States, NX-Mode, Virtualization)
  - ADVANCED → CPU Configuration
- GPU Features (int. GPU enable/disable, e.g.)
  - ADVANCED → Graphics Configuration
- SATA Features (AHCI-, RAID-, NATIVE- Mode, SATA Power)
  - ADVANCED → SATA Configuration

FAQs to BIOS & BIOS Features

Important items in BIOS Setup

- USB Features (Legacy Support)
  - ADVANCED → USB Configuration
- System Monitoring Features (FAN control, FAN 3-wire)
  - ADVANCED → System Monitoring
- ONBOARD DEVICES (LAN, HD Audio, Legacy Audio, Front panel)
  - ADVANCED → Onboard Devices
- SERIAL PORT Configuration
  - ADVANCED → Super I/O Configuration

FAQs to BIOS & BIOS Features

Important items in BIOS Setup

- PASSWORD Configuration incl. Silent HDD Password
  - SECURITY → Admin / User Password
  - SECURITY → HDD Security → HDD Passwords (choose the relevant HDD)
- CABINET MONITORING / INTRUSION CONTROL
  - SECURITY → Cabinet monitoring
    Note: Option is only available if Intrusion Switch is detected!
- POWER SETTINGS (Power failure recovery, e.g.)
  - POWER → ...
- WAKE UP RESOURCES
  - POWER → Wake up resources (USB Keyboard, LAN, Timer, WOL)
- Force „USB Boot“
  - Boot → Prefer USB Boot

13 Known Issues & Important Notes

13.1 Graphics Performance

- Please make sure to have the latest drivers, codecs and players installed in order to achieve full support of the AMD graphics engine.
  Recommended updates and a performance monitoring tool are available here:
  ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/Evaluation_Tools/

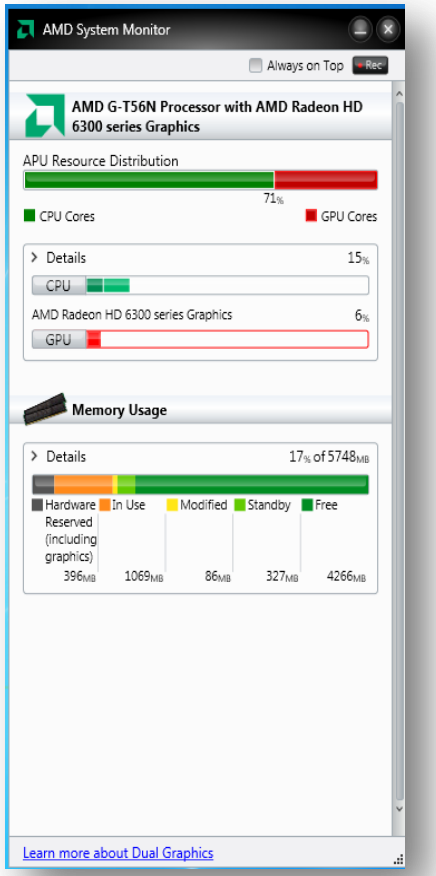
- Minimum requirements are
  AMD Catalyst 11.7 / Driver version 8.87
  AMD Catalyst 11.7 Codec Package
  Adobe Flash Player 10.3

- GPU Accelaration
  In some cases you have to enable the GPU accelaration in your application software seperately. (VLC Player e.g.)

Known Issues & Important notes

13.2 AMD System Monitor Tool

- To check the share between CPU and GPU performance within your application you can use the AMD System Monitor Tool
- Similar features like „perfmon“ or „task manager“ but with an indication about the used GPU performance
- Graphics benchmark in parallel to customer applications



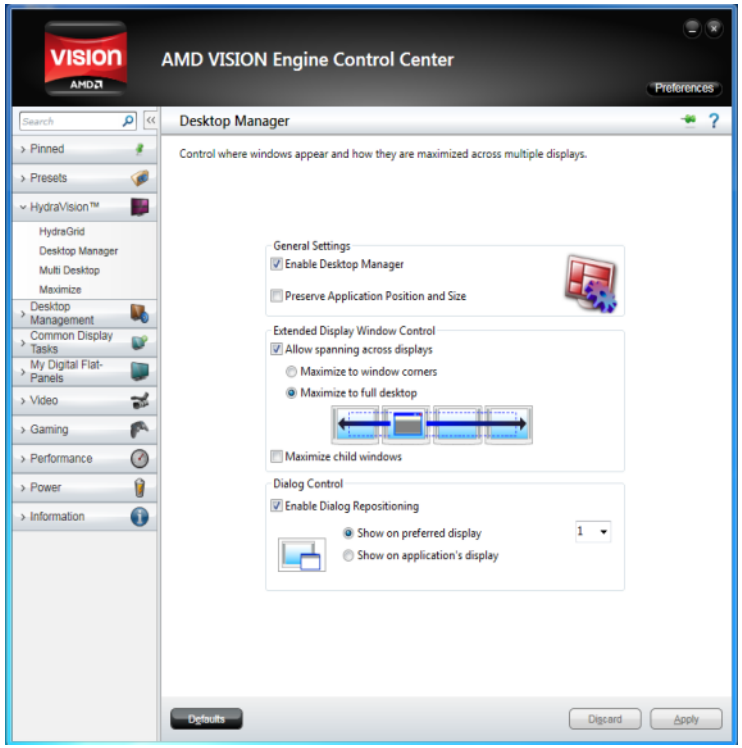
ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/Evaluation_Tools/

Known Issues & Important notes

13.3 Multi-Monitor Use

- If you want to use more than one monitor please install the AMD HydraVision™ PlugIn for the monitor configuration

- Display spanning
- Preserve application positioning
- Multi-Desktop use
- Multi-Monitor use with external graphics controller
- Simultaneous use of internal and external graphics card is possible – automatic recognition of such cards is integrated



ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/Evaluation_Tools/

Known Issues & Important notes

13.4 Graphics Performance @ Linux

Linux: In order to take advantage of UVD acceleration you need to install an XvBA SDK package that AMD recently released along with XvBA Tool kit that brings sample 'xvbaplay' player.

There is a third party mplayer-vaapi that uses another API layer to communicate with XvBA and can take advantage of UVD acceleration at a cost of the extra interface layer, but you can get an idea of the better performance with it.

The XvBA files, have been posted online in AMD Open Source Zone:
http://developer.amd.com/zones/opensource/Pages/default.aspx

Direct links:
Current XvBA SDK release (contains the header file need to build players that use Xvba)
http://developer.amd.com/Downloads/xvba-sdk-0.74-404001.tar.gz

XvBA Tools (contains the limited sample player)
http://xvbat.sourceforge.net/

XvBA Reference System Installer
http://xvbat.sourceforge.net/d-i

Known Issues & Important notes

13.5 Graphic Performance @ Linux / Google Chrome

- In some special cases the GPU accelaration will not work. Here you find one scenario and a possible solution.

Operating System Linux Suse 11.3 / Ubuntu 11.04:
GPU Accelaration on Google Chrome will not work due to the fact that the GPU is listed on a blacklist.

Solution:
Start Chrome with the parameter *--ignore-gpu-blacklist*

Google Chrome

Known Issues & Important notes

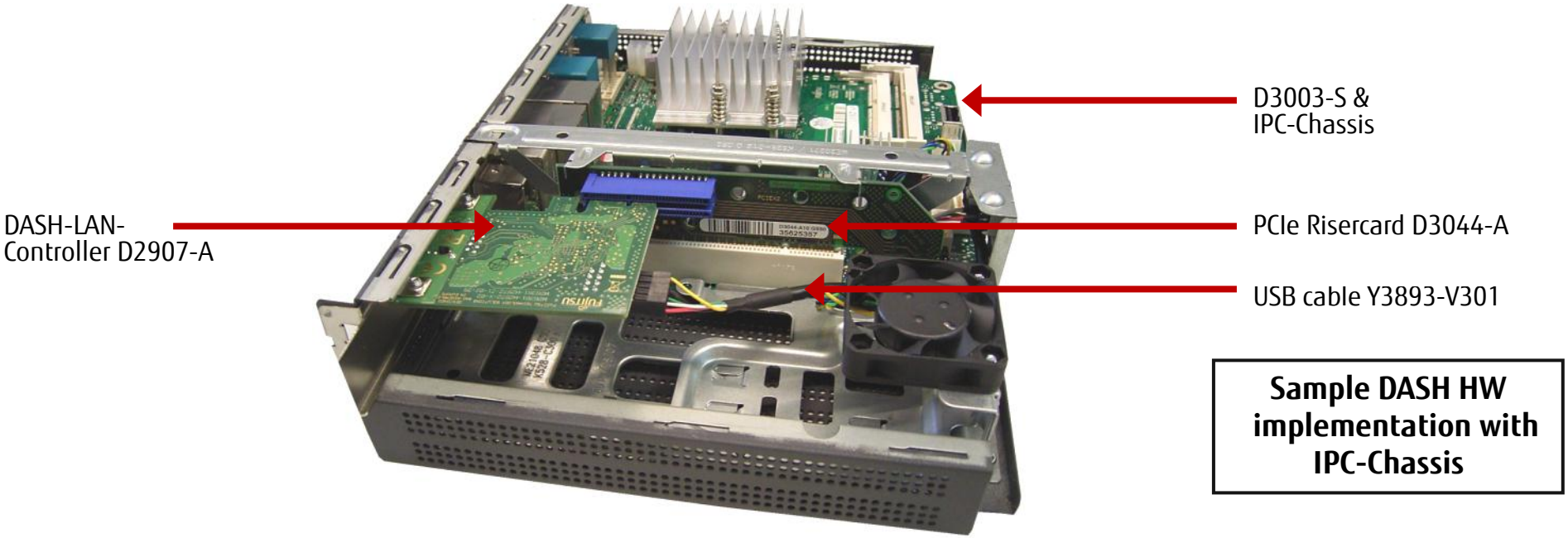
13.6 RAID / AHCI driver disk installation (Windows XP) from floppy disk

- D3003 doesn´t offer a legacy floppy interface
- Windows XP has some limitations regarding USB floppy support, for details see link below
  http://support.microsoft.com/kb/916196
- Alternative option: Use nLite-tool to create customized XP installation CD incl. RAID/AHCI driver
  www.nliteos.com/nlite.html

14 Accessories for D3003-S

14.1 DASH Mangeability Extension

- DASH-LAN-controller D2907-A (S26361-F5000-L001)
- Internal USB cable Y3893-V301
- Mainboard D3003-S with related DASH BIOS implementation



Accessories

DASH Mangeability Extension

- Provides cost-effective solution for Out-of-Band Management
- Supports DASH V1.1
- Features like Remote Power-On / Power-Off / System Reset,
  Remote Access to BIOS Setup, Remote OS Boot (e.g. for Service SW Image)
- DASH configuration tools are available for MS Windows OS
  and Linux (Easy FTP download)
  ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/Industrial&ExtendedLifetime/D3003-S/IndustrialTools_D3003-S/DASH_Manageability/

Accessories

14.2 IPC Chassis

- Cost-effective industrial box solution für D3003-S
- Approved according CE (EMI) requirements
- Tested and approved for enhanced operating temperature range
- FTP link (datasheet, approvals, 3D-file etc.)

  ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Accessories/Industrial-Mini-ITX-Chassis/

Accessories

14.3 USB WLAN Module

- Cost-effective WLAN solution (802.11 b/g/n) for D3003-S / IPC chassis incl. integrated antenna

- Ordercode: S26361-F5000-W001

  contains:

  - AZR:AW-NU224 (WLAN module)
  - T26139-Y3943-V201 (USB cable)
  - COVER7023424001011 (Antenna cover for IPC chassis)

- FTP link (datasheet, drivers etc.)_
  ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Accessories/LAN_&_WLAN/Azurewave_NU224/

Accessories

14.4 DisplayPort to DVI Converter Cable

- Ordercode CFO:E003-R150-RS (S26361-F5000-A003)
- Suitable for D3003-S2
- Converts the DisplayPort output to a (second) DVI output
- Cable length: 40 cm

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