

SLOT-CPU-Card AAIO586S

Project Planning Manual

SYSTEM200

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What is the purpose of this document?	<p>The following documentation describes</p> <ul style="list-style-type: none"> the Hardware the Interfaces the Default-Settings

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1 Brief Description

1.1 Performance Characteristics

- ISA bus module, 180 mm long
- corresponds to socket 7 specification
- Award Flash BIOS
- Graphics interface for XGA / SVGA / LCD
- PS/2 mouse and keyboard
- Connection for EIDE hard disk and floppy
- Ethernet interface (10 Base-T)
- 2 USB, 2 serial interfaces and 1 parallel interface
- Expandable up to P233MMX or AMD K6-233
- Up to 128 MB main memory

1.2 Specifications

Electrical specifications

Supply voltage	+5V (+/-5%)
Current consumption	typ. 3.5 A (depends on processor)
Backup batteries	Varta CR1/3N
Average battery service life	5 years

Figure 1-1: Electrical specifications

Ambient conditions

	Operating conditions	Storage conditions	Transport conditions (packaged)
Temperature	+5..+50 °C	0..+55 °C	-40..+70 °C
max. gradient	0,5 °C/min, max. 7,5 °C in 30 min	0,5 °C/min	1 °C/min
Rel. humidity (no condensation permitted)	5..85 %	5..95 %	5..100%
Altitude	-150..+3000 m	-500..+3000 m	-500..+13000 m
Vibration	10 ... 58 Hz: 0.075 mm amp. 58 ... 500 Hz: 10 m/s	5 ... 9 Hz: 2.5 mm amp. 9 ... 500 Hz: 10 m/s	5 ... 9 Hz: 3.5 mm amp. 9 ... 500 Hz: 10 m/s
Shock	150 m/s for 6 ms	400 m/s for 6 ms	400 m/s for 6 ms

Figure 1-2: Ambient conditions

2 Configuration

2.1 Hardware Configuration

Note: The hardware should be configured prior to commissioning the module. Incorrect settings can lead to destroyed components.

Location of the configuration elements

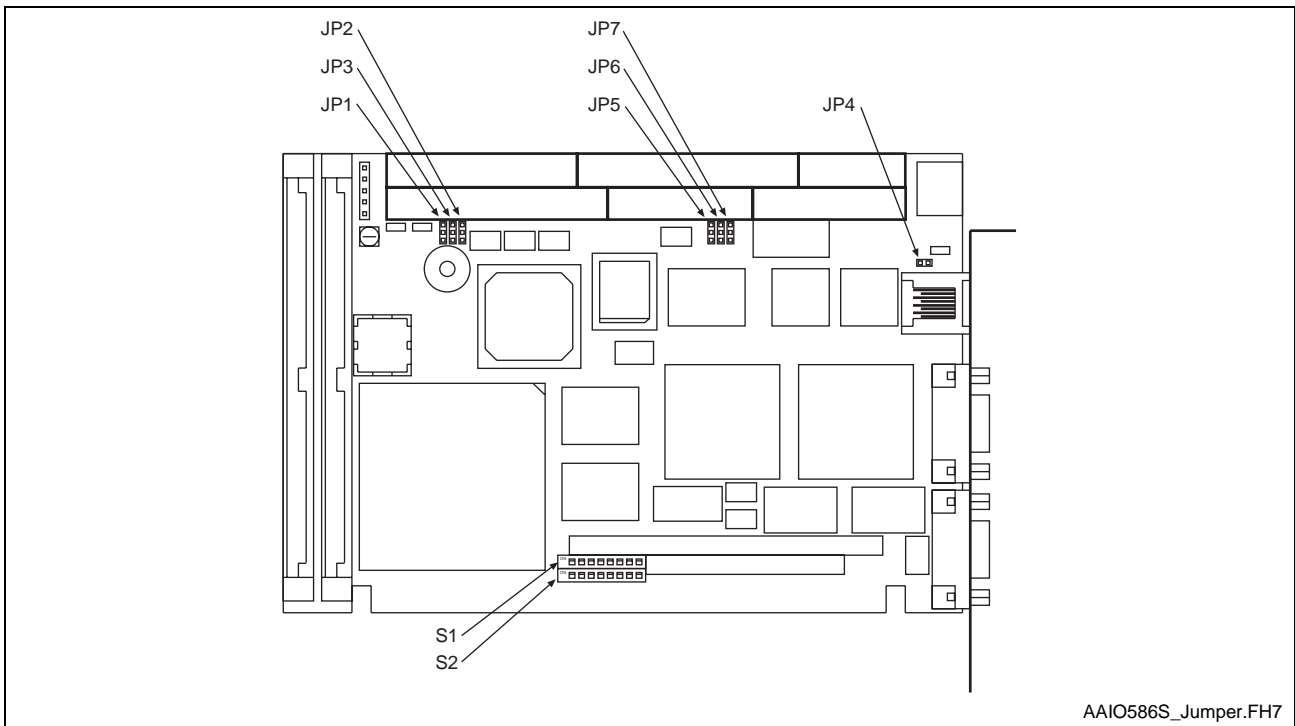


Figure 2-1: Configuration elements

Switch settings

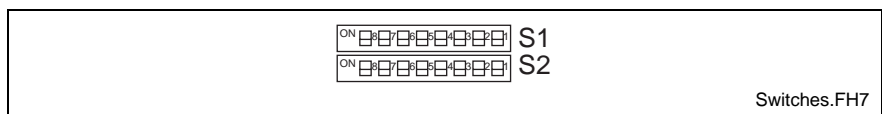


Figure 2-2: Switch groups S1, S2

The switch SW8 of the switch group S1 is not used.

Display setting

The display type is selected via the switches SW1, SW2 and SW3 of switch group S1. The polarity of the signals Backlight Enable, Contrast Enable and LCD Enable is selected via the switches SW3 and SW4.

The default settings for the display used by Indramat are: SW1: OFF, SW2: OFF, SW3: ON, SW4: ON, SW5: OFF.

An incorrect setting of SW4 (Backlight Enable) can be the cause of the display remaining dark after the power has been switched on.

SW1	SW2	SW3	LCD type		Resolution
ON	ON	ON	0	reserved	
OFF	ON	ON	1	Single Scan TFT Color 18, 24, 36 bits	1024 x 768
ON	OFF	ON	2	Dual Scan STN Color 16 Bit	640 x 480
OFF	OFF	ON	3	Single Scan TFT Color 9, 12, 18 bits	640 x 480
ON	ON	OFF	4	Dual Scan STN Color 16 Bit	640 x 480
OFF	ON	OFF	5	reserved	
ON	OFF	OFF	6	Dual Scan STN Color 16 Bit	800 x 600
OFF	OFF	OFF	7	Single Scan TFT Color 9, 12, 18 Bit	800 x 600

Figure 2-3: S1: Selection of LCD type

Switch		Meaning
SW 4	ON	Backlight-Enable and Contrast-Enable signal 1-active
	OFF	Backlight-Enable and Contrast-Enable signal 0-active
SW 5	ON	LCD-Enable signal 1-active
	OFF	LCD-Enable signal 0-active

Figure 2-4: S1: Selection of signal polarity for flat display

CPU selection

The module must be configured for the variety of available CPU types. . This is done through the switches SW6 and SW7 of the switch group S1 and the complete switch group S2.

SW6	SW7	CPU frequency
OFF	OFF	reserved
ON	OFF	60 MHz
OFF	ON	66 MHz
ON	ON	50 MHz

Figure 2-5: S1: Selection of the external bus clock signal of the CPU

SW1	SW2	SW3	Intel Pentium Classic	Intel Pentium MMX	AMD K6 K6-2	AMD K5 Mod. 0	AMD K5 Mod. 1, 2	IDT WinChip C6
OFF	OFF	OFF	1.5	3.5	3.5	1.5	1.5	4
ON	OFF	OFF	2	reserved	2	2	1.5	2
ON	ON	OFF	2.5	2.5	2.5		1.75	reserved
OFF	ON	OFF	3	3	3		reserved	3
ON	OFF	ON			4			4
ON	ON	ON			4.5			reserved
OFF	ON	ON			5			5
OFF	OFF	ON			5.5			reserved

Figure 2-6: S2: Factor for internal bus clock signal

SW4	SW5	SW6	SW7	SW8	Core voltage
OFF	ON	OFF	ON	ON	1.80 V
ON	ON	OFF	ON	ON	1.85 V
OFF	OFF	ON	ON	ON	1.90 V
ON	OFF	ON	ON	ON	1.95 V
OFF	ON	ON	ON	ON	2.00 V
ON	ON	ON	ON	ON	2.05 V
OFF	OFF	OFF	OFF	OFF	Shutdown
ON	OFF	OFF	OFF	OFF	2.1 V
OFF	ON	OFF	OFF	OFF	2.2 V
ON	ON	OFF	OFF	OFF	2.3 V
OFF	OFF	ON	OFF	OFF	2.4 V
ON	OFF	ON	OFF	OFF	2.5 V
OFF	ON	ON	OFF	OFF	2.6 V
ON	ON	ON	OFF	OFF	2.7 V
OFF	OFF	OFF	ON	OFF	2.8 V
ON	OFF	OFF	ON	OFF	2.9 V
OFF	ON	OFF	ON	OFF	3.0 V
ON	ON	OFF	ON	OFF	3.1 V
OFF	OFF	ON	ON	OFF	3.2 V
ON	OFF	ON	ON	OFF	3.3 V
OFF	ON	ON	ON	OFF	3.4 V
ON	ON	ON	ON	OFF	3.5 V

Figure 2-7: Core voltage

Note: Some processors require different voltage settings for the individual revision levels.

The settings for a Pentium 200 MHz with MMX are: SW1: OFF, SW2: ON, SW3: OFF, SW4: OFF, SW5: OFF, SW6: OFF, SW7: ON, SW8: OFF.

Jumper settings

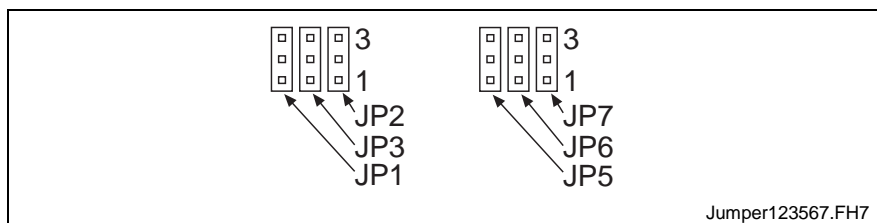


Figure 2-8: Jumpers JP1, JP2, JP3, JP5, JP6, JP7

The default settings of the jumpers are: JP1: 1-2, JP2: 1-2, JP3: 2-3, JP5: 1-2, JP6: 1-2, JP7: 1-2. These settings should only be changed if this is absolutely necessary.

Only active TFT displays are used in the Indramat configuration. Thus, the contrast voltage generating circuitry and, consequently, JP1 was not installed in all cards.

JP5, JP6 and JP7 are used for setting the 2nd serial interface to RS485 mode. Since RS485 operation features a restricted functionality and no isolation of the interface, Indramat always configure the interface as RS232. If necessary, conversion to RS485 is made on a separate module.

Jumper	1-2 inserted	2-3 inserted	Comment
JP 1	Negative contrast voltage	Positive contrast voltage	JP 1 not installed on some modules
JP 2	<i>Internal battery ON</i>	Internal battery OFF	
JP 3	External speaker	<i>Internal speaker</i>	
JP 4	<i>IRQ12 for PS/2 mouse assigned</i>		not inserted: IRQ12 unassigned
JP 5 JP 6 JP 7	<i>UART2 in RS232 mode</i>	UART2 in RS485 mode	

Figure 2-9: Jumper settings

2.2 Memory Configuration

The AAI0586/S is equipped with 2 SIMM72 modules. EDO, BEDO and FP modules of a maximum storage capacity of 64 MB each can be used. Both slots must be equipped with modules of the same type.

To replace a module loosen the lateral lock and tilt the module by approximately 60° before you remove it. To insert the module, tilt it by approximately 60° and lock the lever home.

Always ensure proper seating and correct orientation of the modules.

2.3 BIOS Configuration

The module is equipped with an Award-Bios Version 4.51PG. The BIOS forms the interface between the hardware and the operating system, and must be adjusted to the installed hardware. This configuration takes place in the BIOS setup, and is stored in a battery-backed CMOS-RAM.

To invoke the BIOS setup, press the 'Del' key while the computer is booting. The setup main menu is then displayed on the screen.

Hinweis: Since a keyboard driver has not yet been loaded, the system assumes the keyboard assignments of a US keyboard. This means that, for example, the 'Y' is at the location of the 'Z' key of a German keyboard, etc.

Only the currently valid settings are shown here for the configuration.

Setup main menu

The parameters that are to be set are selected from the setup main menu. Besides the selection of the submenus that are listed below, you may also invoke certain functions:

Load BIOS Defaults

Loads the settings that have been defined by the BIOS manufacturer for a minimum operation of the module.

Load Setup Defaults

Loads the basic settings that have been defined by the OEM.

Password Setting

Here, you can enter a password that protects the system or the BIOS against unauthorized access.

IDE HDD Auto Detection

This function reads the hard disk parameters of the IDE hard disks and enters them in the setup.

Save & Exit Setup

Saves the modifications in the CMOS RAM and exits the setup. Same function as the 'F10' function key.

Exit Without Save

Discards the modifications and exits the setup. Same function as the 'Esc' key.

Standard CMOS Setup

Date (mm:dd:yy): Datum eintragen (Monat, Tag, Jahr, Wochentag wird automatisch eingestellt)									
Time (hh:mm:ss): Uhrzeit eintragen (Stunde, Minute, Sekunde)									
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE	

Primary Master	: Auto	0	0	0	0	0	0	Auto	
Primary Slave	: None	0	0	0	0	0	0	-----	
Secondary Master	: None	0	0	0	0	0	0	-----	
Secondary Slave	: None	0	0	0	0	0	0	-----	
Drive A	: 1.44M, 3.5 in.								
Drive B	: None								
Video	: EGA/VGA								
Halt On	: All Errors								

Figure 2-10: Default-Settings Standard CMOS Setup

BIOS Features Setup

CPU Internal Cache	: Enabled	Video BIOS Shadow	: Enabled
External Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
Quick Power On Self Test	: Disabled	CC000-CFFFF Shadow	: Disabled
Boot Sequence	: A,C,SCSI	D0000-D3FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D4000-D7FFF Shadow	: Disabled
Boot Up Floppy Seek	: Enabled	D8000-DBFFF Shadow	: Disabled
Boot Up Numlock Status	: Off	DC000-DFFFF Shadow	: Disabled
Boot Up System Speed	: High		
Gate A20 Option	: Fast		
Typematic Rate Setting	: Enabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PS/2 mouse function control	: Enabled		
PCI/VGA Palette Snoop	: Disabled		
OS Select For DRAM > 64MB	: Non-OS2		

Figure 2-11: Default-Settings BIOS Features Setup

Chipset Features Setup

DRAM Auto Configuration	: 70ns
DRAM Timing Control	: Auto
Sustained 3T Write	: Disabled
2 Bank PBSRAM	: 3-1-1-1
Read Pipeline	: Disabled
Write Pipeline	: Enabled
Video BIOS Cacheable	: Enabled
System BIOS Cacheable	: Disabled
Memory Hole At 15Mb Addr.	: Disabled
ISA Bus Clock	: 7.159MHz

Figure 2-12: Default-Settings Chipset Features Setup

Power Management Setup

Power Management	: Disable	IRQ5 (LPT 2)	: Primary
PM Control by APM	: Yes	IRQ6 (Floppy Disk)	: Primary
Video Off Option	: Suspend -> Off	IRQ7 (LPT 1)	: Primary
Video Off Method	: V/H SYNC+Blank	IRQ8 (RTC Alarm)	: Disabled
MODEM Use IRQ	: 3	IRQ9 (IRQ2 Redir)	: Secondary
		IRQ10 (Reserved)	: Secondary
** PM Timers **		IRQ11 (Reserved)	: Secondary
HDD Power Down	: Disable	IRQ12 (PS/2 Mouse)	: Primary
Doze Mode	: Disable	IRQ13 (Coprocessor)	: Primary
Suspend Mode	: Disable	IRQ14 (Hard Disk)	: Primary
		IRQ15 (Reserved)	: Disabled
** PM Events **			
VGA	: OFF		
LPT & COM	: LPT/COM		
HDD & FDD	: ON		
DMA/master	: OFF		
RTC Alarm Resume	: Enabled		
Primary INTR	: ON		
IRQ3 (COM2)	: Primary		
IRQ4 (COM1)	: Primary		

Figure 2-13: Default-Settings Power Management Setup

PNP / PCI Configuration

Resources Controlled By	: Manual	CPU to PCI Write Buffer	: Enabled
Reset Configuration Data	: Disabled	PCI Dynamic Bursting	: Enabled
		PCI Master 0 WS Write	: Enabled
IRQ-3 assigned to	: PCI/ISA PnP	PCI Peer Concurrency	: Enabled
IRQ-4 assigned to	: PCI/ISA PnP	PCI Delay Transaction	: Disabled
IRQ-5 assigned to	: Legacy ISA		
IRQ-7 assigned to	: PCI/ISA PnP	PCI IRQ Activated By	: Edge
IRQ-9 assigned to	: Legacy ISA		
IRQ-10 assigned to	: Legacy ISA	Primary IDE INT#	: A
IRQ-11 assigned to	: Legacy ISA		
IRQ-12 assigned to	: PCI/ISA PnP		
IRQ-14 assigned to	: PCI/ISA PnP	Reserve Memory at	: N/A
IRQ-15 assigned to	: Legacy ISA		
DMA-0 assigned to	: PCI/ISA PnP		
DMA-1 assigned to	: PCI/ISA PnP		
DMA-3 assigned to	: PCI/ISA PnP		
DMA-5 assigned to	: PCI/ISA PnP		
DMA-6 assigned to	: PCI/ISA PnP		
DMA-7 assigned to	: PCI/ISA PnP		

Figure 2-14: Default-Settings PnP / PCI Configuration

Integrated Peripherals

IDE HDD Block Mode	: Enabled	Onboard FDC Controller	: Enabled
IDE Prefetch Mode	: Enabled	Onboard UART 1	: Auto
		Onboard UART 2	: Auto
OnChip IDE First Channel	: Enabled	Onboard UART 2 Mod	: Standard
IDE Primary Master PIO	: Mode 1		
IDE Primary Slave PIO	: Auto		
IDE Primary Master UDMA	: Auto	Onboard Parallel Port	: 378/IRQ7
IDE Primary Slave UDMA	: Auto	Parallel Port Mode	: Normal
OnChip USB	: Disabled		

Figure 2-15: Default-Settings Integrated Peripherals

Micro Design Features Setup

MD-Feature-Port	: 110h	Temperature	: <50°C !
		Supply (5V)	: 5000 mV
Contrast	: 7Fh	Battery	: 3000 mV
Brightness	: 7Fh		
Onboard-Ethernet	: Enabled		
Ethernet-Connector	: 10Base-T		
Ethernet-IO-Base	: 280h		
Ethernet-IRQ	: 11		

Figure 2-16: Default-Settings Micro Design Features Setup

Note: Some cards have no analog value acquisition module installed. The indication of temperature and voltages is incorrect in these cases.

3 Interface

3.1 Location of the Interface Connectors

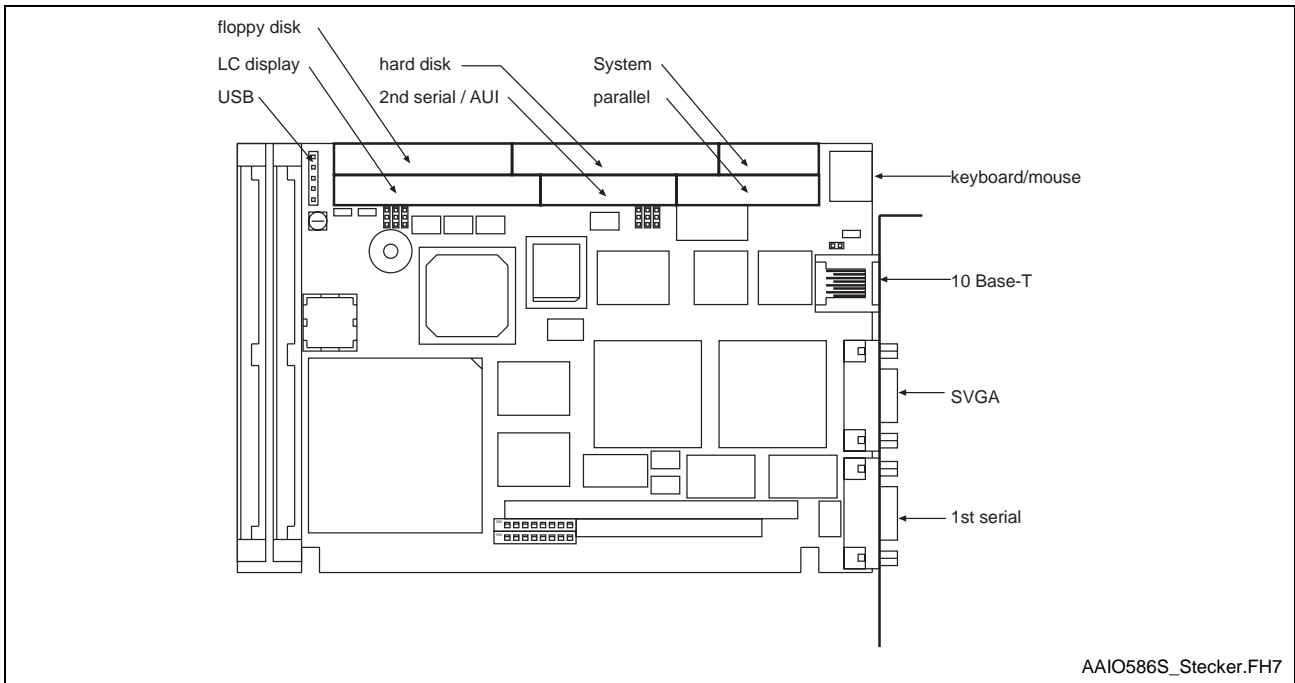


Figure 3-1: Connectors

3.2 Description of the Interfaces

Keyboard / PS/2 mouse interface

Here, the keyboard interface and the PS/2 mouse interface are combined in a single connector (as it is common practice in the laptop field). Connecting both units usually requires an adapter.

Since this interface is parallel to the system interface, only one of the interfaces can be used at any one time.

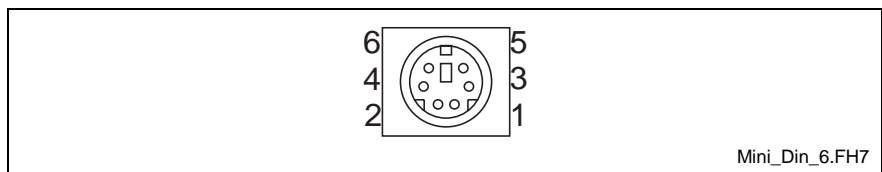


Figure 3-2: Keyboard / PS/2 mouse

Pin	Signal name
1	Keyboard data
3	GND
5	Keyboard clock signal

Pin	Signal name
2	Mouse data
4	VCC fused
6	Mouse clock signal

Figure 3-3: Keyboard / PS/2 mouse interface assignments

System interface

This interface combines several signals that are usually led to the front panel of a computer. These are the connections of keyboard, PS/2 mouse, hard disk and power LED, external speaker, and the buttons for reset and suspend.

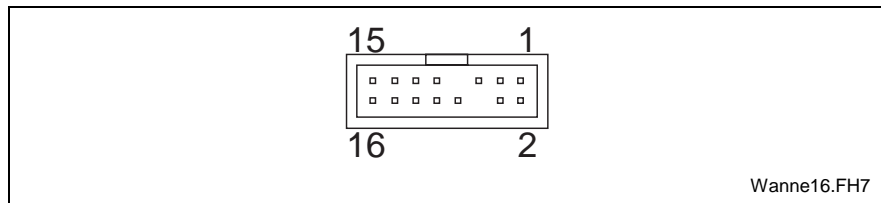


Figure 3-4: System interface

Pin	Signal name
1	Keyboard clock signal
3	Keyboard data
5	VCC fused
7	encoded
9	Hard disk LED
11	Power LED
13	Keyboard OFF
15	GND

Pin	Signal name
2	Mouse clock signal
4	Mouse data
6	encoded
8	GND
10	VCC
12	External speaker
14	Suspend
16	Reset

Figure 3-5: System interface pin assignments

Serial interface 1

While this interface always works in RS232 mode, the 2nd serial interface can be configured differently.

The allocation of the interfaces to COM ports can be selected in the BIOS.

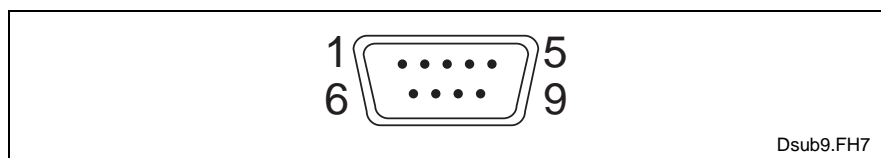


Figure 3-6: Serial interface 1

Pin	Signal name
1	DCD#
3	TxD
5	GND
7	RTS#
9	RI#

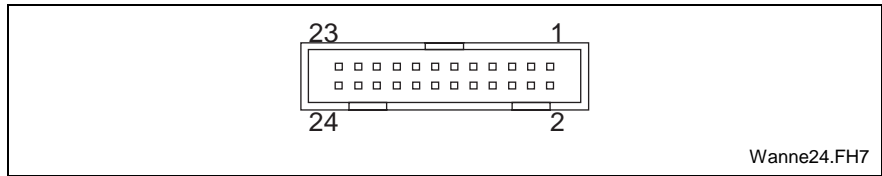
Pin	Signal name
2	RxD
4	DTR#
6	DSR#
8	CTS#

Figure 3-7: Connector pin assignments of the serial interface 1

Serial interface 2 / AUI / IrDa interface

This connector combines several interfaces: The 2nd serial interface (that can be configured via the jumpers JP5, 6, 7 and the BIOS), an infrared interface, and an AUI interface.

The serial interface is not isolated against the rest of the circuitry. A configuration as an RS485 interface is therefore not advisable.



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Figure 3-8: Serial interface2 /AUI/IrDa interface

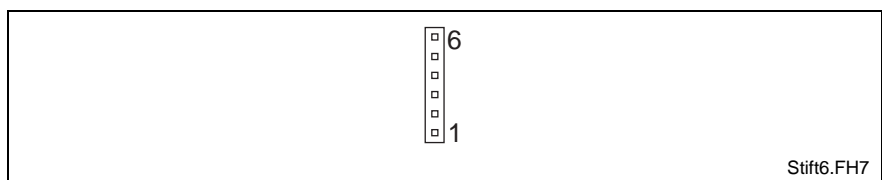
Pin	Signal name
1	DCD#
3	RxD
5	TxD
7	DTR#
9	GND
11	IRRx
13	VCC
15	COLP
17	GND
19	TXP
21	GND
23	RECP

Pin	Signal name
2	DSR#
4	RTS#
6	CTS#
8	RI#
10	GND
12	IRTx
14	VCC
16	COLN
18	GND
20	TXN
22	GND
24	RECN

Figure 3-9: Connector pin assignments of serial interface2 /AUI/IrDa interface

Universal Serial Bus (USB)

The USB shall be the future standard interface for keyboard, mouse, printer, modem, etc. As far as we know, this interface is only supported by Windows98 so far.



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Figure 3-10: Universal Serial Bus (USB)

Pin	Signal name
1	VCC
3	USB P1+
5	USB P0+

Pin	Signal name
2	USB P1-
4	USB P0-
6	GND

Figure 3-11: USB connector pin assignments

Parallel interface

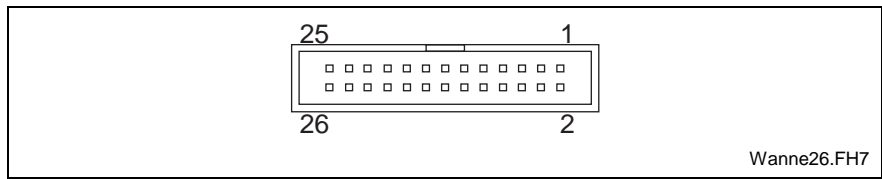


Figure 3-12: Parallel interface

Pin	Signal name
1	Strobe
3	Data bit 0
5	Data bit 1
7	Data bit 2
9	Data bit 3
11	Data bit 4
13	Data bit 5
15	Data bit 6
17	Data bit 7
19	Acknowledge
21	Busy
23	Paper off
25	SELECT

PIN	Signal name
2	Auto Line Feed
4	Fault
6	Initialization
8	Select In
10	GND
12	GND
14	GND
16	GND
18	GND
20	GND
22	GND
24	GND
26	VCC

Figure 3-13: Pin assignments of the parallel interface

XGA / SVGA screen connection

Standard connection for CRT monitors, frequently referred to as 'VGA connector'.

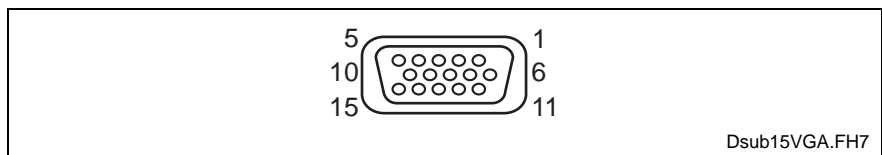


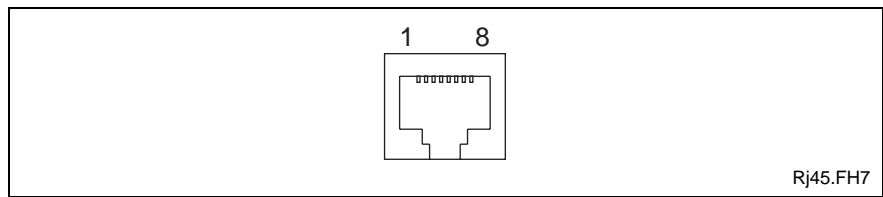
Figure 3-14: Screen connection

Pin	Signal name
1	Video signal red
3	Video signal blue
5	GND
7	GND green
9	n. c.
11	n. c.
13	H sync
15	DDCC

Pin	Signal name
2	Video signal green
4	n. c.
6	GND red
8	GND blue
10	GND
12	DDCC
14	V sync

Figure 3-15: Screen connector pin assignments

Ethernet interface (10 Base-T)



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Figure 3-16: 10 Base-T interface

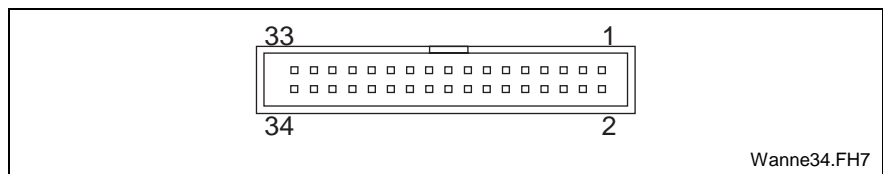
Pin	Signal name
1	T+
3	R+
5	n. c.
7	n. c.

Pin	Signal name
2	T-
4	n. c.
6	R-
8	n. c.

Figure 3-17: Connector pin assignments of the 10 Base-T interface

Floppy disk interface

A standard 1.44 MB floppy disk drive can be connected here.



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Figure 3-18: Floppy disk interface

Pin	Signal name
1	GND
3	GND
5	GND
7	GND
9	GND
11	GND
13	GND
15	GND
17	GND
19	GND
21	GND
23	GND
25	GND
27	GND
29	GND
31	GND
33	GND

Pin	Signal name
2	High Density Select 0
4	not used
6	High Density Select 1
8	Index Hole
10	Motor 1 On
12	Drive 2 Select
14	Drive 1 Select
16	Motor 2 On
18	Direction
20	Step Impulse
22	Write Data
24	Write Enable
26	Track 0
28	Write Protection
30	Read Data
32	Head Select
34	Disk Change

Figure 3-19: Connector pin assignments of floppy disk interface

Hard disk interface (EIDE)

Interface for the connection of up to 2 EIDE hard disks (Primary Master / Primary Slave).

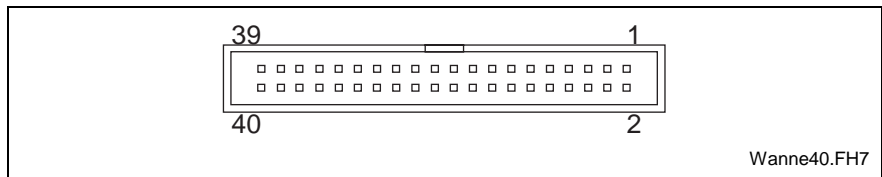


Figure 3-20: Hard disk interface

Pin	Signal name
1	Reset#
3	D7
5	D6
7	D5
9	D4
11	D3
13	D2
15	D1
17	D0
19	GND
21	DRQ
23	IOW#
25	IOR#
27	RDY#
29	DACK#
31	IRQ
33	A1
35	A0
37	CS0#
39	HDLED

Pin	Signal name
2	GND
4	D8
6	D9
8	D10
10	D11
12	D12
14	D13
16	D14
18	D15
20	encoded
22	GND
24	GND
26	GND
28	n. c.
30	GND
32	n. c.
34	n. c.
36	A2
38	CS1#
40	n. c.

Figure 3-21: Connector pin assignments of hard disk interface

Universal LCD connection

Most of the standard LC displays can be connected here. However, an adaptation of the VGA-BIOS is frequently necessary.

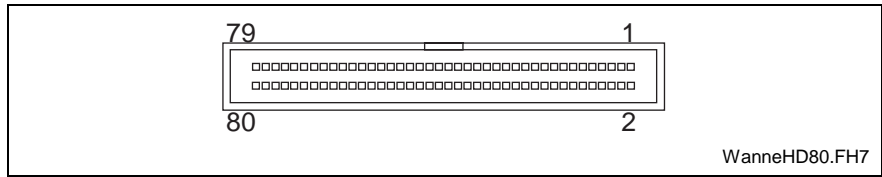


Figure 3-22: LCD connection

Pin	Signal name
1	FP16
3	FP17
5	FP8
7	FP9
9	FP0/GND
11	FP1
13	SFP16
15	SFP17
17	SFP18
19	SFP19
21	SFP20
23	SFP21
25	SFP22
27	SFP23
29	GND
31	SFP8
33	SFP9
35	SFP10
37	SFP11
39	SFP12

Pin	Signal name
2	FPVDCLK
4	GND
6	LFS
8	LLCLK
10	FPDE
12	FP18
14	FP19
16	FP20
18	FP21
20	FP22
22	FP23
24	FP10
26	FP11
28	FP12
30	FP13
32	FP14
34	FP15
36	SVCC
38	GND
40	S12V

Pin	Signal name
41	SFP13
43	SFP14
45	SFP15
47	GND
49	SFP0
51	SFP1
53	SFP2
55	SFP3
57	SFP4
59	SFP5
61	SFP6
63	SFP7
65	SW3
67	GND
69	SW4
71	S12V
73	SW0
75	SW1
77	SW2
79	SVCC

Pin	Signal name
42	DACVCC
44	DAOUT
46	GND
48	FP2
50	FP3/MOD
52	FP4
54	FP5
56	FP6
58	FP7
60	GND
62	BLEN
64	GND
66	LCD-
68	GND
70	LCD+
72	S12V
74	FPVCC
76	FPVEE
78	GND
80	SVCC

Figure 3-23: Pin assignments of LCD connection

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