Introduction

This technical manual applies for the mainboard D990. This system board is available in different configuration levels. Depending on the hardware configuration of your device, it may be that you cannot find several options in your version of the system board, even though they are described.

Further information f. e. the complete technical manual for the D990 and the reference manual for the BIOS-Setup are provided on the "Drivers & Utility" CD.

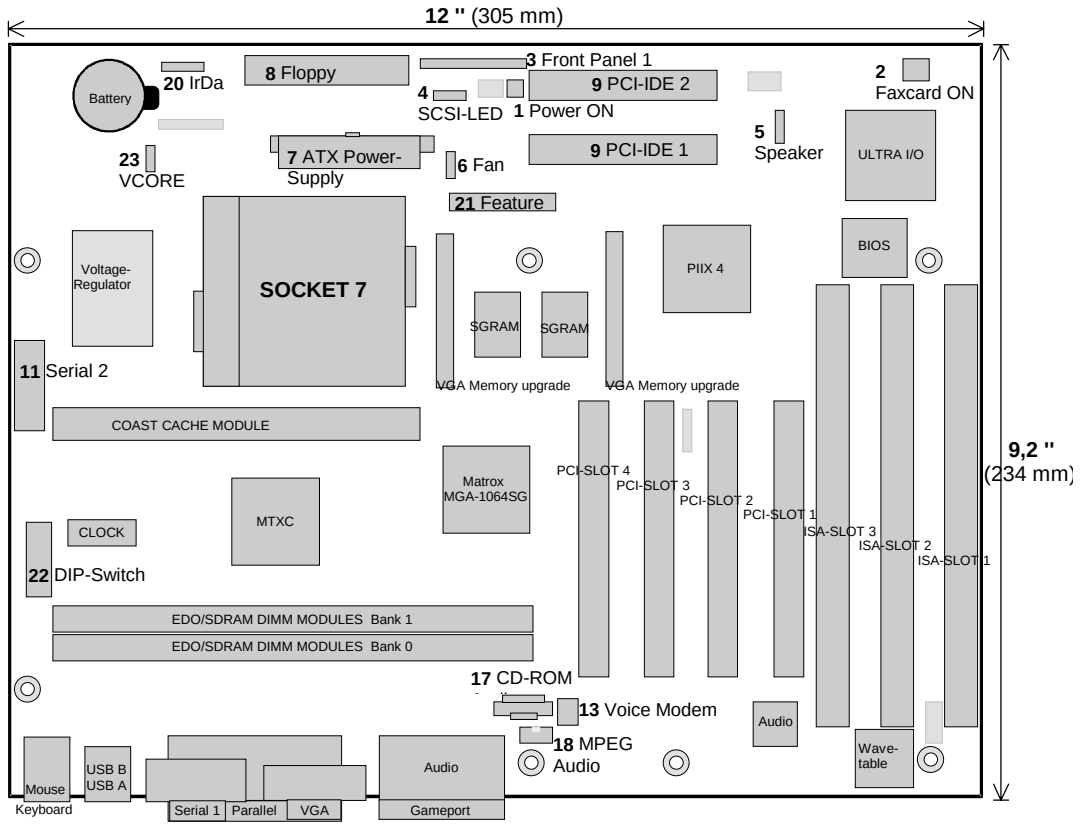
1 Features

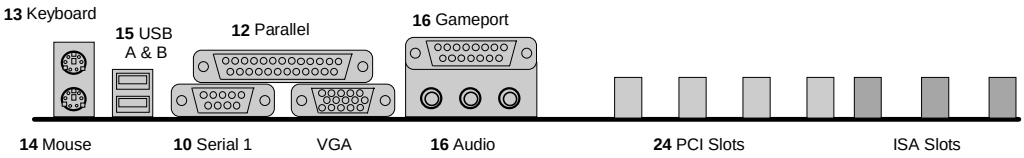
Version	A
Processor	Intel P54 / 90 MHz - 200 MHz Intel P55 / 166 MHz - 233 MHz AMD K6 / 166 MHz - 233 MHz with active cooled heatsink
IrDA	√
Video	√
Audio	√
USB	√
2nd serial Interface	√
KBD-on	√
BIOS Fax	√

2 Mechanics

2.1 Layout

ATX 12'' x 9,2'' (305mm x 234mm)





CAUTION:

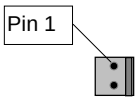
Computer mainboards and components contain very delicate IC chips. To protect them against damage caused from electric static, you have to follow some precautions:

- Unplug your computer when you work inside
- Hold components by the edge, don't touch their leads
- Use a grounded wrist strap

Place the mainboard and the components on a grounded antistatic pad whenever you work outside the computer

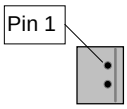
2.1.1 Power ON Switch-Connector

Pin	**Signal**
1	GND
2	Power-On Pulse (low asserted)



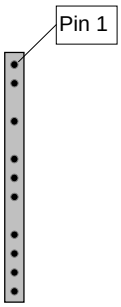
2.1.2 Faxcard-On-Connector

Pin	**Signal**
1	GND
2	Remote On



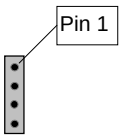
2.1.3 Front Panel Connector 1

Pin	**Signal**
1	Boot Lock
2	+ Standby LED
3	Key
4	+ Power LED
5	Key
6	- Standby / Power LED
7	n.c.
8	GND
9	Key
10	+ HD LED
11	HD LED
12	HD LED
13	+ HD LED



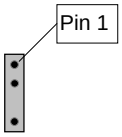
2.1.4 SCSI-LED Connector

Pin	**Signal**
1	n.c.
2	HD-LED
3	HD-LED
4	n.c.



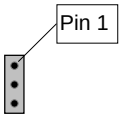
2.1.5 Speaker Connector

Pin	**Signal**
1	VCC
2	GND
3	Key
4	SPEAKER OUT



2.1.6 FAN Connector (symmetrical)

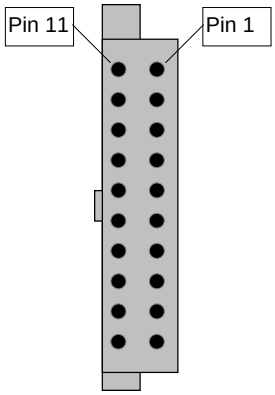
Pin	**Signal**
1	GND
2	+ 12 V
3	GND



2.1.7 ATX-Power-Supply-Connector

Pin	**Signal**
11	3.3 V
12	- 12 V
13	GND
14	PS-ON
15	GND
16	GND
17	GND
18	- 5 V
19	5 V
20	5 V

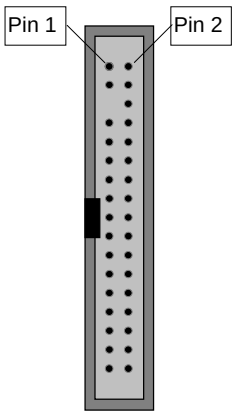
Pin	**Signal**
1	3.3 V
2	3.3 V
3	GND
4	5 V
5	GND
6	5 V
7	GND
8	Power OK
9	5 V SB
10	12 V



2.1.8 Floppy Connector

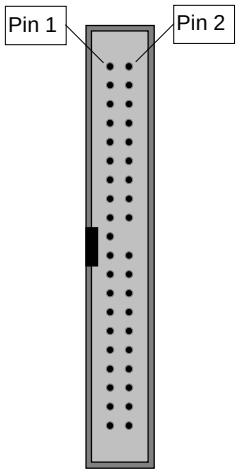
Pin	**Signal**
1	GND
3	GND
5	Key
7	GND
9	GND
11	GND
13	GND
15	GND
17	GND
19	GND
21	GND
23	GND
25	GND
27	GND
29	GND
31	GND
33	GND

Pin	**Signal**
2	FDHDIN
4	n.c.
6	n.c.
8	Index
10	Motor Enable A
12	Drive Select B
14	Drive Select A
16	Motor Enable B
18	Step DIR
20	Step Pulse
22	Write Data
24	Write Enable
26	Track 0
28	Write Protect
30	Read Data
32	Side 1 Select
34	Disk Change



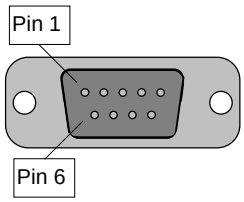
2.1.9 PCI-IDE Connector

Pin	Signal	*Pin*	Signal
1	Reset Drive	*2*	GND
3	Data 7	*4*	Data 8
5	Data 6	*6*	Data 9
7	Data 5	*8*	Data 10
9	Data 4	*10*	Data 11
11	Data 3	*12*	Data 12
13	Data 2	*14*	Data 13
15	Data 1	*16*	Data 14
17	Data 0	*18*	Data 15
19	GND	20	Key
21	DRQ	*22*	GND
23	I/O Write	*24*	GND
25	I/O Read	*26*	GND
27	IORDY	*28*	Cable Select
29	DACK	30	GND
31	IRQ	32	n.c.
33	ADR 1	34	n.c.
35	ADR 0	*36*	ADR 2
37	Chip Select 1	*38*	Chip Select 3
39	IDE-LED	*40*	GND



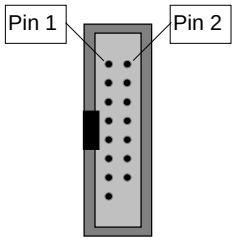
2.1.10 Serial Port 1 (V24)

Pin	Signal	*Pin*	Signal
1	DCD 1	6	DSR 1
2	SIN 1	7	RTS 1
3	SOUT 1	8	CTS 1
4	DTR 1	9	RI 1 (Remote On)
5	GND		



2.1.11 Internal Serial Port 2 for Cardreader

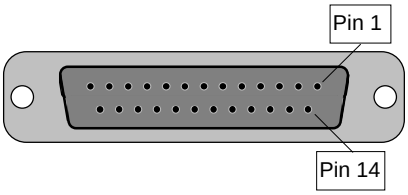
Pin	Signal	*Pin*	Signal
1	DCD 2	2	DSR 2
3	SIN 2	4	RTS 2
5	SOUT 2	6	CTS 2
7	DTR 2	8	PC_ON_Strobe
9	GND	10	VCCHELP
11	EXTSMI	12	VCC
13	RESETDRV	14	GND
15	GND	16	Key



2.1.12 Parallel Port

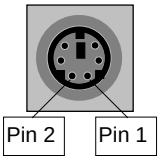
Pin	Signal
1	STROBE
2	LPT DAT 0
3	LPT DAT 1
4	LPT DAT 2
5	LPT DAT 3
6	LPT DAT 4
7	LPT DAT 5
8	LPT DAT 6
9	LPT DAT 7
10	ACK
11	BUSY
12	PEMTY
13	SELECT

Pin	Signal
14	AUTOFD
15	ERROR
16	INIT
17	LPT SEL
18	GND
19	GND
20	GND
21	GND
22	GND
23	GND
24	GND
25	GND



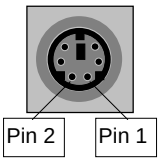
2.1.13 Keyboard Port Connector

Pin	Signal
1	KBD DAT
2	n.c. (optional MOUSE DAT)
3	GND
4	VCC
5	KBD CLK
6	Key ON/OFF (optional MOUS E CLK)



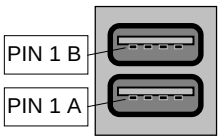
2.1.14 Mouse Port Connector

Pin	Signal
1	MOUSE DAT
2	n.c.
3	GND
4	VCC
5	MOUSE CLK
6	n.c.



2.1.15 USB Connector A / B

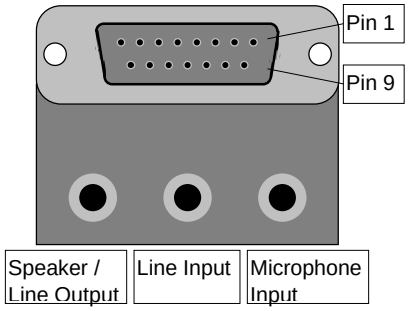
Pin	Signal
1	VCC
2	DATA_NEGATIVE
3	DATA_POSITIVE
4	GND



2.1.16 Audio/Gameport-Connector

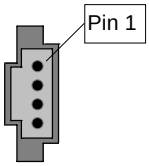
Pin	Signal
1	GAME_VCC
2	JOY_PORT_L<0>
3	XJOY_TIMER_A<0>
4	GND
5	GND
6	XJOY_TIMER_A<1>
7	JOY_PORT_L<1>
8	GAME_VCC

Pin	Signal
9	GAME_VCC
10	JOY_PORT_L<2>
11	XJOY_TIMER_A<2>
12	XMIDI_OUT_H
13	XJOY_TIMER_A<3>
14	JOY_PORT_L<2>
15	XMIDI_EXT_IN_H



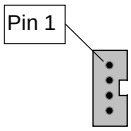
2.1.17 Internal CD-ROM Audio Connector

Pin	Signal
1	Left CD Audio Input
2	GND
3	GND
4	Right CD Audio Input



2.1.18 Internal MPEG Audio Connector

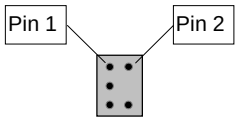
Pin	Signal
1	GND
2	Left MPEG Audio Input
3	GND
4	Right MPEG Audio Input



2.1.19 Internal Voice Modem Connector

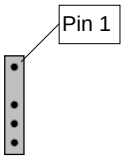
Pin	Signal
1	Speaker Input from MODEM
3	GND
5	Microphone Output to MODEM

Pin	Signal
2	n.c.
4	Key
6	n.c.



2.1.20 Infrared Connector

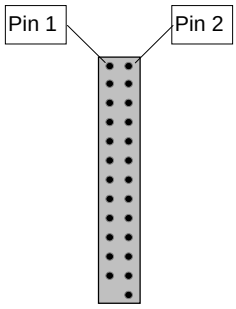
Pin	**Signal**
1	VCC
2	Key
3	IRDA_RX
4	GND
5	IRDA_TX



2.1.21 Feature Connector

Pin	**Signal**
1	GND
3	GND
5	GND
7	Video Enable
9	SYNC Enable
11	DCLK Enable
13	n.c.
15	GND
17	GND
19	GND
21	GND
23	VIDRST
25	Key

Pin	**Signal**
2	Video Data 0
4	Video Data 1
6	Video Data 2
8	Video Data 3
10	Video Data 4
12	Video Data 5
14	Video Data 6
16	Video Data 7
18	DCLK
20	BLANK
22	HSYNC
24	VSYNC
26	GND



2.1.22 Configuration SWITCH-Block (DIP-Switch)

for Frequency selection, Recovery and Password clear

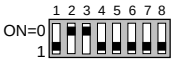
Function:	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**	**SW6**	**SW7**	**SW8**
Recover BIOS								
On	x	x	x	x	On	x	x	x
Off	x	x	x	x	Off	x	x	x
Password Skip								
On	x	x	x	x	x	On	x	x
Off	x	x	x	x	x	Off	x	x
Floppy Write Protect								
On	x	x	x	x	x	x	x	On
Off	x	x	x	x	x	x	x	Off

On = 0 = Close *Off = 1 = Open* *x = don't care*

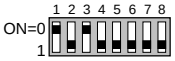
Frequency-setting for Intel P54 Processor:

90 BUS = 60 MHz Core = x 1,5

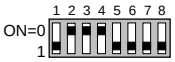
100 BUS = 66 MHz Core = x 1,5



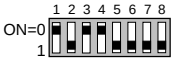
120 BUS = 60 MHz Core = x 2,0



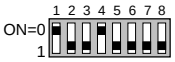
133 BUS = 66 MHz Core = x 2,0



150 BUS = 60 MHz Core = x 2,5

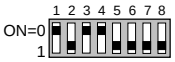


166 BUS = 66 MHz Core = x 2,5

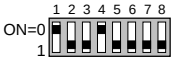


200 BUS = 66 MHz Core = x 3,0

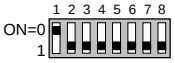
Frequency-setting for Intel P55 (MMX) Processor:



166 BUS = 66 MHz Core = x 2,5

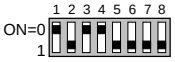


200 BUS = 66 MHz Core = x 3,0



233 BUS = 66 MHz Core = x 3,5

Frequency-setting for AMD (K6) Processor:

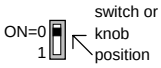


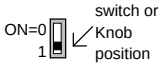
166 BUS = 66 MHz Core = x 2,5

200 BUS = 66 MHz Core = x 3,0

233 BUS = 66 MHz Core = x 3,5

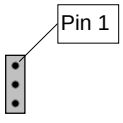
Switchposition: **ON (0)** **OFF (1)**





2.1.23 Processor supply-voltage setting

Processor-type	Jumper	1-2-3
Intel	-	
AMD K6 - 166 AMD K6 - 200	1 - 2	
AMD K6 - 233	2 - 3	



2.1.24 PCI-SLOT Configuration And Placement

PCI-SLOT	IDSEL	Device Number
PCI-SLOT 1	ADR 28	11h
PCI-SLOT 2	ADR 29	12h
PCI-SLOT 3	ADR 30	13h
PCI-SLOT 4	ADR 31	14h

2.2 Power Requirements (Power Supply)

Voltage	Max. Variation	Max. Current
+ 5.1 V	+/- 5 %	Tbd
- 5 V	+/- 5 %	Tbd
+ 12 V	+/- 10 %	Tbd
- 12 V	+/- 10 %	Tbd
+ 3.4 V	+/- 5 %	Tbd
+ 5.0 V (aux)		Tbd

- power: at least 145 W
- ATX-compliant
- Remote on/off support
- continous voltage supply with at least 5V/20mA

3 Installing drivers and utilities

- Insert the "Drivers & Utilities" CD.
- When the *DeskStart* window appears, select *Explore the CD via HTML*.
- Select the language in which you want to operate the user interface.
- Select *Xpert* and then *Windows 95.*

  Here you will find the required drivers and utilities.
- For the following components, install the software offered to you in the HTML interface:
  - Audio board (sound card) "Crystal"
  - Hard disk controller "PIIX4"
  - Software update "DirectX 3.0a"
  - Monitor controller (graphics card) "Matrox Mystique"

4 Upgrades

4.1 Main Memory

Further information is given in the main technical manual.

Correct functionality of the mainboard D990 is only warranted with the usage of the following DIMM-Modules.

Recommended memory modules:

16MB DIMM SDRAM 2Mx64

Producer	Part.-No
SAMSUNG	KMM366S203BTN-G2

32MB DIMM SDRAM 4Mx64

Producer	Part.-No
NEC	MC-454AD644F-A67
SAMSUNG	KMM366S403BTN-G2
SIEMENS	HYS64V4020GU-10
HYUNDAI	HYM7V64400TFG-10

64MB DIMM SDRAM 8Mx64

Producer	Part.-No
NEC	MC-458CB644F-A10
SAMSUNG	KMM366S823AT-G2

128MB DIMM SDRAM 16Mx64

Producer	Part.-No
NEC	MC-4516CD644F-A10
SAMSUNG	KMM366S1623AT-G2

4.2 VGA Memory Upgrade

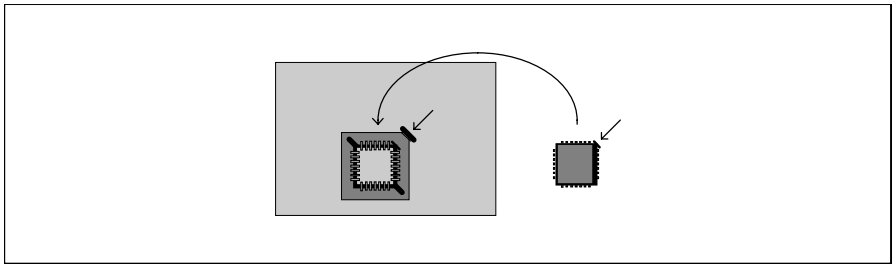
Further information are shown in the main technical manual.

Use only the standard 2 MB VGA memory extension (up to 4 MB VGA memory) for the Matrox Mystique grapic cards.

4.3 Wavetable-Upgrade

The mainboard D990 is prepared for a single chip wavetable-upgrade with the Crystal CS9236.

To order please ask your local dealer.



5 BIOS-Fax

The mainboard D990-A1x supports the BIOS-fax functionality, developed by SIEMENS NIXDORF. This is a special feature for receiving faxes although the PC is in standby-mode.

Caution:

To use this feature you need a special fax-modem-kit from SIEMENS NIXDORF . To order please ask your local dealer. The following country versions are already available:

Country	**Symbol**
Germany	D
german Swiss	CH (D)
Austria	A
France	F
Great Britain	GB

SIEMENS
NIXDORF

A26361-D990-Z180-2-7619

D990

Additional Technical Manual D990

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