

786BASE

Reference Guide

18-Mar-2003

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1. Revision Notes

Table 1 - Revision Notes

Date	Description
21-Jan-2002	Preliminary revision
03-Apr-2002	First released version
02-Sep-2002	VCH - VideoController Hub is marked is not yet supported
07-Feb-2003	All references to LCD Panel were removed, since LCD panels are not supported with 786BASE.
18-Mar-2003	Updated Industrial Temperature availability - now available for all on-board functions.

2. Introduction

786BASE Highlights

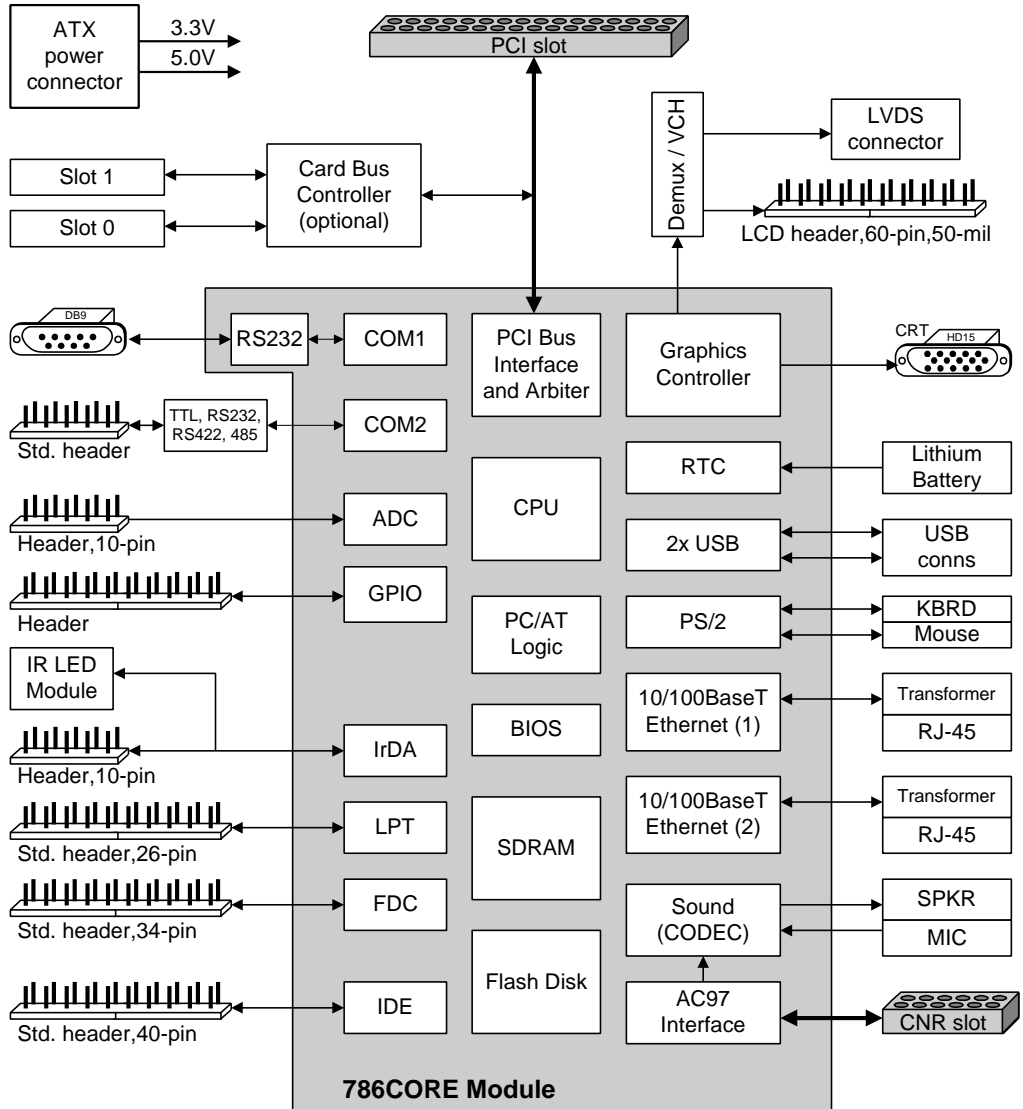
- **Single Board Computer using the 786CORE module**
- **Celeron or Pentium III CPU, 400 - 700MHz**
- **PCI expansion slot and/or header**
- **CNR expansion slot (AC'97)**
- **32 - 256 MB SDRAM**
- **16 - 512 MB Flash Disk**
- **COM1 and COM2 with RS232 / RS485 / RS422 / TTL driver options**
- **IrDA, LPT, GPIO, PS/2 keyboard and mouse**
- **Hard and floppy disk interfaces**
- **VGA / SXGA graphics controller and connector for CRT monitor (optional)**
- **Single or dual 10/100BaseT Ethernet ports (optional)**
- **Single or Dual PC Card (CardBus or PCMCIA) slots (optional)**
- **Two USB ports (optional)**
- **Sound I/O (optional)**
- **Lithium battery for RTC**
- **Power management**

The 786BASE is a single board computer, which uses a 786CORE module to implement most of the provided functions and also implements several additional important functions on-board. Rich set of features provided by the 786BASE is customizable according to the price / performance targets of the user's application.

The 786BASE contains PCI and CNR expansion connectors opening it up to the wide range of standard peripheral cards. Furthermore, the 786BASE contains a PC Card controller and slots. The PC Card controller is compatible with both existing standards: the popular PCMCIA (16-bit) and the new CardBus (32-bit). PC Card peripherals may be inserted and secured in the on-board slots, with no additional mechanical means. Off-the-shelf PCMCIA/CardBus modules can extend the system with capabilities such as a larger solid state disk, modem, and wireless LAN.

2.1. Block Diagram

Figure 1 - 786Base block diagram



1.5

2.2. Features

Electrical and Mechanical Specifications	
Power Supply	Standard ATX power supply, if desktop power management (PM) required, or {5.0V and 3.3V} if no PM.
Dimensions	150 mm x 125 mm x 14 mm. Height starts from 14 mm but can be significantly larger, depending on connectors assembled and the heat sink type used. Specified height includes the 786CORE module.

Connectors	
COM1	RS232 levels, DB-9 connector
COM2	RS232 / RS485 / RS422 / TTL level options, standard 10-pin header
LPT (Parallel Port)	Standard 26-pin header
IDE	Ultra ATA header
FDC	Standard 34-pin header
Ethernet	One or two RJ-45 connectors for 10/100BaseT Ethernet sockets
CRT Monitor	Standard HD-15connector to CRT color monitor.
PS/2	Two standard PS/2 connectors for keyboard and mouse
GPIO	34-pin 100-mil header and additional FWH general purpose inputs 10-pin header
A/D	Voltage sense A/D inputs 10-pin header
PCMCIA / CardBus Slot	Single or dual slots with card guides, for cards type I, II and III.
USB	Dual Host interface stacked Type-A connector.
Sound I/O	Standard Audio Jack for speakers/headphones, microphone and line-in. Headers for internal connection of PC speaker, speakers, microphone, CD audio.
PCI	Standard 5V/3.3V VIO PCI slot and/or PCI extension header.
CNR	CNR connector with AC'97 and SMBus signals
IrDA	SIR / FIR LED module and 10-pin header
DVI	DVI connector for panel link interface flat panels

786BASE Single Board Computer

System	Reset, panel switch, two fan headers, ATX power supply connector.
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CardBus / PCMCIA controller (optional)	
Controller	Texas Instruments PCI1420, dual slot, CardBus / PCMCIA
Bus Interface	PCI

3. Connector Pinout

The 786BASE uses the attached 786CORE module to implement most of the provided functions. For these functions, the 786BASE routes the signals from the 786CORE miniature connectors to the standard connectors. Function descriptions are therefore provided in the 786CORE Reference Guide. The section below provides only the description of the external interface connectors. The next section provides the specifications of the functions implemented on the 786BASE itself.

3.1. COM1 Connector (P3)

Standard DB9 connector, RS-232 levels.

Table 2- COM1 Connector

Pin	Name	Pin	Name
1	COM1-DCD	6	COM1-DSR
2	COM1-RXD	7	COM1-RTS
3	COM1-TXD	8	COM1-CTS
4	COM1-DTR	9	COM1-RI
5	GND		

3.2. COM2 Header (P25)

Dual row, 2x5, 100-mil header, compatible with a standard "flat-cable to DB-9" adapter. Options for RS-232, RS-422, RS-485 or TTL levels.

Table 3 - COM2 Header

Pin	Name	Pin	Name
1	COM2-DCD	2	COM2-RXD
3	COM2-TXD	4	COM2-DTR
5	GND	6	COM2-DSR
7	COM2-RTS	8	COM2-CTS
9	COM2-RI	10	-

3.3. IrDA Header (P22)

Dual row, 2x5, 100-mil header.

Table 4 - IrDA Header

Pin	Name	Pin	Name
1	VCC5	2	GND
3	IRTX	4	IRRX
5	CIRRX	6	VCC3_3
7	SIO_GPOD24	8	GND
9	-	10	-

Note: The on-board IrDA LED module U7 must be disassembled if the user intends to connect another LED module through the IrDA header.

3.4. Voltage Sense A/D Inputs Header (P21)

Dual row, 2x5, 100-mil header.

Table 5 - Voltage Sense A/D Inputs Header

Pin	Name	Pin	Name
1	A2D0	2	A2D5
3	A2D1	4	GND
5	A2D2	6	GND
7	A2D3	8	GND
9	A2D4	10	GND

3.5. PS/2 Keyboard and Mouse Connectors

Standard 6-pin Mini-Din.

Table 6 - PS/2 Keyboard and Mouse connectors

	Mouse (J5)	Keyboard (J4)
Pin	Name	Name
1	MDAT	KDAT
2	-	-
3	GND	GND
4	VCC	VCC
5	MCLK	KCLK
6	-	-

3.6. GPIO Header (P18)

Dual row, 2 x 17, 100mil header

Table 7 - GPIO Header (P18)

Pin	Name	Pin	Name
01	VCC5SBY	02	ICH_GPO16
03	SIO_GPIO10	04	ICH_GPO21
05	SIO_GPIO11	06	SIO_GPIOD35/SUSLED
07	SIO_GPIO12	08	SIO_GPIOD34/CIRRX
09	SIO_GPIO13	10	SIO_GPIOD31/PWRCTL#
11	SIO_GPIO14	12	SIO_GPIOD26/IRTX
13	SIO_GPIO15	14	SIO_GPIOD25/IRRX
15	SIO_GPIO16	16	SIO_GPIOD24/WDTO
17	SIO_GPIO17	18	SIO_GPIOD23/POWLED
19	GND	20	SIO_GPIOD20/MSI
21	GND	22	IDE_IRQ15
23	ICH_GPIØ	24	GND
25	ICH_GPI11	26	GND
27	ICH_GPI13	28	GND
29	ICH_GPOD23	30	GND
31	ICH_GPIOD27	32	GND
33	ICH_GPIOD28	34	GND

3.7. LPT / FDD (P23)

Standard LPT dual row, 2x13 pin shrouded header, compatible with a regular "flat-cable to DB-26" adapter. This connector is used for two different functions:

1. LPT - Parallel Port
2. FDD - Floppy Disk Drive interface

Selection between these two functions is performed in the BIOS setup. Pin functions change according to the mode selected.

When used as LPT, the connector's pin-out is:

Table 8 - LPT header (P23)

Pin	Name	Pin	Name
1	PP-STROBE#	2	PP-ALF#
3	PP-PD0	4	PP-ERROR#
5	PP-PD1	6	PP-INIT#
7	PP-PD2	8	PP-SLCTIN#
9	PP-PD3	10	GND
11	PP-PD4	12	GND
13	PP-PD5	14	GND
15	PP-PD6	16	GND
17	PP-PD7	18	GND
19	PP-ACK#	20	GND
21	PP-BUSY	22	GND
23	PP-PE	24	GND
25	PP-SLCT	26	-

When used as FDD connector, connector's pin-out is:

Table 9 - LPT as alternate FDD header (P23)

Pin	Name	Pin	Name
1	(DS0)	2	DENSEL
3	INDEX	4	HDSEL
5	TRK0	6	DIR
7	WP	8	STEP
9	RDATA	10	GND
11	DSKCHG	12	GND
13	MEDIA-ID0	14	GND
15	(MTR0)	16	GND
17	MEDIA-ID1	18	GND
19	DS1	20	GND
21	MTR1	22	GND
23	WDATA	24	GND
25	WGATE	26	-

A ready to use adapter from LPT (26-pin) to FDD (34-pin) connector format is available from CompuLab. Adapter design is published in CompuLab's web-site in [Developer]>>[H/W Packages].

Note that routing of FDD through LPT is rarely used in 786BASE, since dedicated FDD interface connector is also provided, as specified below.

3.8. FDD – Floppy Disk Interface (P17)

Standard dual row, 2x17 pin header, directly compatible with an FDD flat cable.

Table 10 - FDD – Floppy Disk Interface Header (P17)

Pin	Name	Pin	Name
1	GND	2	FD-DRVDEN#0
3	GND	4	-
5	GND	6	FD-DRVDEN#1
7	GND	8	FD-INDEX#
9	GND	10	FD-MTR#0
11	GND	12	-
13	GND	14	FD-DS#0
15	GND	16	-
17	GND	18	FD-DIR#
19	GND	20	FD-STEP#
21	GND	22	FD-WDATA#
23	GND	24	FD-WGATE#
25	GND	26	FD-TRK#0
27	GND	28	FD-WRTPRT#
29	GND	30	FD-RDATA#
31	GND	32	FD-HDSEL#
33	GND	34	FD-DSKCHG#

Note: 786BASE supports only one floppy disk drive.

3.9. IDE – Hard Disk Interface (P16)

Standard dual row, 2x20 pin header, directly compatible with an IDE flat cable

Table 11 - IDE – Hard Disk Interface header (P16)

Pin	Name	Pin	Name
1	IDE_RST#	2	GND
3	PDD7	4	PDD8
5	PDD6	6	PDD9
7	PDD5	8	PDD10
9	PDD4	10	PDD11
11	PDD3	12	PDD12
13	PDD2	14	PDD13
15	PDD1	16	PDD14
17	PDD0	18	PDD15
19	GND	20	-
21	PDREQ	22	GND
23	PDIO#	24	GND
25	PDIOR#	26	GND
27	PIORDY	28	GND
29	PDDACK#	30	GND
31	IDE_IRQ14	32	-
33	PDA1	34	P66DET
35	PDA0	36	PDA2
37	PDCS1#	38	PDCS3#
39	IDE_LED#	40	GND

3.10. PC Card - CardBus / PCMCIA slots (P30, P31)

68-pin PC Card slots which conform to CardBus and PCMCIA standards and include card guides. The 786BASE can be assembled with either none, one or two PC Card slots. Signal names are specified for both P30 and P31 slots; however, they are physically connected to separate signal sets of the controller.

The selection of PCMCIA versus CardBus mode is performed automatically.

Table 12 - PC CARD slots (P30, P31)

Pin	PCMCIA Name	CardBus Name	Pin	PCMCIA Name	CardBus Name
1	GND	GND	35	GND	GND
2	D3	CAD0	36	CD1#	CC/D#1
3	D4	CAD1	37	D11	CAD2
4	D5	CAD3	38	D12	CAD4
5	D6	CAD5	39	D13	CAD6
6	D7	CAD7	40	D14	RESERVED
7	CE1#	CC/BE#0	41	D15	CAD8
8	A10	CAD9	42	CE2#	CAD10
9	OE#	CAD11	43	VS1#	CVS1
10	A11	CAD12	44	IOR#	CAD13
11	A9	CAD14	45	IOW#	CAD15
12	A8	CC/BE#1	46	A17	CAD16
13	A13	CPAR	47	A18	RESERVED
14	A14	CPERR#	48	A19	CBLOCK#
15	WE#	CGNT#	49	A20	CSTOP#
16	RDY#/IREQ#	CINT#	50	A21	CDEVSEL#
17	VCC	VCC	51	VCC	VCC
18	VPP1	VPP1	52	VPP2	VPP2
19	A16	CCLK	53	A22	CTRDY#
20	A15	CIRDY#	54	A23	CFRAME#
21	A12	CC/BE#2	55	A24	CAD17
22	A7	CAD18	56	A25	CAD19
23	A6	CAD20	57	VS2#	CVS2
24	A5	CAD21	58	RESET	CRST#
25	A4	CAD22	59	WAIT	CSERR#
26	A3	CAD23	60	INPACK#	CREQ#
27	A2	CAD24	61	REG#	CC/BE#3
28	A1	CAD25	62	BVD2/SPK	CAUDIO
29	A0	CAD26	63	BVD1/STS	CSTSCHG
30	D0	CAD27	64	D8	CAD28
31	D1	CAD29	65	D9	CAD30
32	D2	RESERVED	66	D10	CAD31
33	WP/IOIS#	CCLKRUN#	67	CD2#	CCD2#
34	GND	GND	68	GND	GND

3.11. VGA (P12)

PC standard HD-15 connector.

Table 13 - VGA Connector (P12)

Pin	Name	Pin	Name
1	RED	9	VCC5
2	GREEN	10	GND
3	BLUE	11	-
4	-	12	3VFTSDA(3.3V)
5	GND	13	HSYNC(3.3V)
6	GND	14	VSYNC(3.3V)
7	GND	15	3VFTSCL(3.3V)
8	GND		

3.12. DVI Interface Connector (P4)

24 signal contacts and 4 coaxial contacts standard DVI connector.

Table 14 - DVI Interface Connector digital signals (P4)

Pin	Name	Pin	Name	Pin	Name
01	A_TX2_NEG	09	A_TX1_NEG	17	A_TX0_NEG
02	A_TX2_POS	10	A_TX1_POS	18	A_TX0_POS
03	GND	11	GND	19	GND
04	B_TX1_NEG	12	B_TX0_NEG	20	B_TX2_NEG
05	B_TX1_POS	13	B_TX0_POS	21	B_TX2_POS
06	3VFTSCL	14	VCC5	22	GND
07	3VFTSDA	15	GND	23	CLK_POS
08	CRT_VSYNC	16	-	24	CLK_NEG

Table 15 - DVI Interface Connector coaxial contacts (P4)

Pin	Name
C1	RED
C2	GREEN
C3	BLUE
C4	CRT_HSYNC

3.13. CNR: Communication and Network Riser (P15)

Standard slot for CNR card edge connector.

Table 16 - CNR: Communication and Network Riser slot (P15)

B1	RESERVED	A1	RESERVED
B2	RESERVED	A2	RESERVED
B3	RESERVED	A3	GND
B4	GND	A4	RESERVED
B5	RESERVED	A5	RESERVED
B6	RESERVED	A6	GND
B7	GND	A7	-
B8	-	A8	-
B9	-	A9	GND
B10	GND	A10	-
B11	-	A11	-
B12	-	A12	RESERVED
B13	GND	A13	-
B14	RESERVED	A14	GND
B15	VCC5SBY	A15	-
B16	-	A16	VCC12
B17	GND	A17	GND
B18	VCC12N	A18	VCC3_3SBY
B19	VCC3_3	A19	VCC5
B20	GND	A20	GND
B21	-	A21	-
B22	-	A22	-
B23	GND	A23	SMB_A1
B24	SMB_A0	A24	SMB_A2
B25	SMB_SCL	A25	SMB_SDA
B26	CDC_DN_ENAB#	A26	AC97_RESET#
B27	GND	A27	RESERVED
B28	AC97_SYNC	A28	AC97_SDATA_IN1
B29	AC97_SDATA_OUT	A29	AC97_SDATA_IN0
B30	AC97_BITCLK	A30	GND

3.14. PCI Slot (P20)

Standard slot for 3.3V/5V PCI card edge connector.

Table 17 - PCI Slot (P20)

B1	VCC12N	A1	-
B2	-	A2	VCC12
B3	GND	A3	-
B4	-	A4	-
B5	VCC5	A5	VCC5
B6	VCC5	A6	PCI_IRQ#C
B7	PCI_IRQ#D	A7	PCI_IRQ#A
B8	PCI_IRQ#B	A8	VCC5
B9	-	A9	-
B10	-	A10	PCI_VIO
B11	-	A11	-
B12	GND (3V KEY)	A12	GND (3V KEY)
B13	GND (3V KEY)	A13	GND (3V KEY)
B14	-	A14	VCC3_3SBY
B15	GND	A15	PCIRST#
B16	PCI_CLK3	A16	PCI_VIO
B17	GND	A17	PGNT#0
B18	PREQ#0	A18	GND
B19	PCI_VIO	A19	PCI_PME#
B20	AD31	A20	AD30
B21	AD29	A21	VCC3_3
B22	GND	A22	AD28
B23	AD27	A23	AD26
B24	AD25	A24	GND
B25	VCC3_3	A25	AD24
B26	C_BE#3	A26	IDSEL(AD18)
B27	AD23	A27	VCC3_3
B28	GND	A28	AD22
B29	AD21	A29	AD20
B30	AD19	A30	GND
B31	VCC3_3	A31	AD18
B32	AD17	A32	AD16
B33	C_BE#2	A33	VCC3_3
B34	GND	A34	FRAME#
B35	IRDY#	A35	GND
B36	VCC3_3	A36	TRDY#
B37	DEVSEL#	A37	GND
B38	GND	A38	STOP#
B39	PLOCK#	A39	+3.3V
B40	PERR#	A40	-
B41	VCC3_3	A41	-
B42	SERR#	A42	GND
B43	VCC3_3	A43	PAR
B44	C_BE#1	A44	AD15
B45	AD14	A45	VCC3_3

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B46	GND	A46	AD13
B47	AD12	A47	AD11
B48	AD10	A48	GND
B49	M66EN (GND)	A49	AD9
B50	GND (5V KEY)	A50	GND (5V KEY)
B51	GND (5V KEY)	A51	GND (5V KEY)
B52	AD8	A52	C_BE#0
B53	AD7	A53	VCC3_3
B54	VCC3_3	A54	AD6
B55	AD5	A55	AD4
B56	AD3	A56	GND
B57	GND	A57	AD2
B58	AD1	A58	AD0
B59	PCI_VIO	A59	PCI_VIO
B60	-	A60	-
B61	VCC5	A61	VCC5
B62	VCC5	A62	VCC5

3.15. PCI Extension Header (P29)

Standard slot or header for 3.3V/5V PCI card edge connector.

Table 18 - PCI Extension Header (P29)

B1	VCC12N	A1	-
B2	-	A2	VCC12
B3	GND	A3	-
B4	-	A4	-
B5	VCC5	A5	VCC5
B6	VCC5	A6	PCI_IRQ#C
B7	PCI_IRQ#D	A7	PCI_IRQ#A
B8	PCI_IRQ#B	A8	VCC5
B9	*PREQ4#	A9	*PGNT5#
B10	*PGNT4#	A10	PCI_VIO
B11	*PREQ5#	A11	*PCI_CLK2
B12	GND (3V KEY)	A12	GND (3V KEY)
B13	GND (3V KEY)	A13	GND (3V KEY)
B14	-	A14	VCC3_3SBY
B15	GND	A15	PCIRST#
B16	PCI_CLK3	A16	PCI_VIO
B17	GND	A17	PGNT#0
B18	PREQ#0	A18	GND
B19	PCI_VIO	A19	PCI_PME#
B20	AD31	A20	AD30
B21	AD29	A21	VCC3_3
B22	GND	A22	AD28
B23	AD27	A23	AD26
B24	AD25	A24	GND
B25	VCC3_3	A25	AD24
B26	C_BE#3	A26	IDSEL(AD18)
B27	AD23	A27	VCC3_3
B28	GND	A28	AD22
B29	AD21	A29	AD20
B30	AD19	A30	GND
B31	VCC3_3	A31	AD18
B32	AD17	A32	AD16
B33	C_BE#2	A33	VCC3_3
B34	GND	A34	FRAME#
B35	IRDY#	A35	GND
B36	VCC3_3	A36	TRDY#
B37	DEVSEL#	A37	GND
B38	GND	A38	STOP#
B39	PLOCK#	A39	+3.3V
B40	PERR#	A40	-
B41	VCC3_3	A41	-
B42	SERR#	A42	GND
B43	VCC3_3	A43	PAR

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B44	C_BE#1	A44	AD15
B45	AD14	A45	VCC3_3
B46	GND	A46	AD13
B47	AD12	A47	AD11
B48	AD10	A48	GND
B49	M66EN (GND)	A49	AD9
B50	GND (5V KEY)	A50	GND (5V KEY)
B51	GND (5V KEY)	A51	GND (5V KEY)
B52	AD8	A52	C_BE#0
B53	AD7	A53	VCC3_3
B54	VCC3_3	A54	AD6
B55	AD5	A55	AD4
B56	AD3	A56	GND
B57	GND	A57	AD2
B58	AD1	A58	AD0
B59	PCI_VIO	A59	PCI_VIO
B60	-	A60	-
B61	VCC5	A61	VCC5
B62	VCC5	A62	VCC5

* Optional signals

3.16. USB Connector (U4)

Standard dual USB Type-A stacked connector.

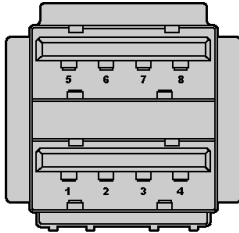


Table 19 - USB Connector (U4)

USB interface 0		USB interface 1	
Pin	Name	Pin	Name
1	VBUS	5	VBUS
2	DN	6	DN
3	DP	7	DP
4	GND	8	GND

3.17. LAN1 and LAN2 ETHERNET Connectors (P5, P6)

Standard RJ-45 shielded modular connector

Table 20 - LAN1 and LAN2 ETHERNET Connectors (P5, P6)

	LAN1 P5	LAN2 P6
Pin	Name	Name
1	TX+	TX+
2	TX-	TX-
3	RX+	RX+
4	-	-
5	-	-
6	RX-	RX-
7	-	-
8	-	-

3.18. Speaker Jack (J6)

Standard 3.5mm stereo jack

Table 21 - Speaker Jack (J6)

Pin	Description	Name
1	Body	GND
2	Tip	L-OUT
3	Ring	R-OUT

3.19. Speaker Header (P19)

4-pin single row, 100-mil shrouded header with locking and polarity key

Table 22 - Speaker Header (P19)

Pin	Name
1	L-OUT
2	GND
3	GND
4	R-OUT

3.20. Microphone and Line-In Jacks (J1, J2)

Standard 3.5mm stereo jack

Table 23 - Microphone and Line-In Jacks (J1,J2)

		Microphone J1	Line-In J2
Pin	Description	Name	Name
1	Body	GND	GND
2	Tip	Signal*	L-IN
3	Ring	Power*	R-IN

* In certain configurations Signal and Power may come shorted together for electret microphone support (R40 assembled).

3.21. Microphone Header (P11)

2-pin 100-mil header

Table 24 - Microphone Header (P11)

Pin	Name
1	Signal/Power*
2	GND

* May be Signal-only or Signal/Power depending on R40 assembling (combined Signal/Power when R40 assembled).

3.22. PC Speaker Header (P8)

2-pin 100-mil header

Table 25 - PC Speaker Header (P8)

Pin	Name
1	VCC5
2	SPK

3.23. CD-ROM Audio Input Header (P7)

4-pin single row, 100-mil shrouded header with locking and polarity key

Table 26 - CD-ROM Audio Input Header (P7)

Pin	Name
1	L-IN
2	GND
3	GND
4	R-IN

3.24. Panel Switch Header (P9)

2-pin 100-mil header, for optional on/off toggle switch. When the card is in "off" state, momentary shorting of the pins will change it's state to "on". When the card is in "on" state, shorting the pins for 4 seconds or more will change its state to "off".

Default state of the card upon power-up is "on".

Table 27 - Panel Switch Header (P9)

Pin	Name
1	PANSWIN
2	VCC5SBY

3.25. Reset Switch Header (P10)

2-pin 100-mil header

Table 28 - Reset Switch Header (P10)

Pin	Name
1	GND
2	RST_BTN

3.26. CPU Fan Header (E2)

3-pin 100-mil header

Table 29 - CPU Fan Header (E2)

Pin	Name
1	GND
2	CPU_FAN
3	FANIO1

3.27. PSUP Fan Header (E3)

3-pin 100-mil header

Table 30 - PSUP Fan Header (E3)

Pin	Name
1	GND
2	VCC5
3	FANIO1

3.28. ATX Power Supply Connector (U6)

Standard ATX power connector.

Table 31 - ATX Power Supply Connector (U6)

Pin	Name	Pin	Name
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	PS_ON
4	+5.0V	14	+3.3V
5	GND	15	GND
6	+5.0V	16	GND
7	GND	17	GND
8	PWROK	18	-5.0V
9	VCC5ATX	19	+5.0V
10	+12V	20	+5.0V

When connecting power supply, which is not standard ATX power module, read the instructions in section “Power Supply Scheme”.

4. Jumpers

4.1. PCI_VIO Select (E1)

Table 32 - PCI_VIO Select Jumper (E1)

Pins	Selected
1-2	5.0V
2-3	3.3V

4.2. Power Supply ON (E5)

Overrides software control over power supply's main rail.

Table 33 - Power Supply ON Jumper (E5)

Pins	Selected
1-2	PSUP ON

4.3. Write Protect Core FWH (E7)

Write protects the FWH on 786CORE.

Note: BIOS update cannot take place while this jumper is assembled.

Table 34 - Write Protect Core FWH Jumper (E7)

Pins	Selected
1-2	PROTECTED

4.4. RTC Reset (E8)

RTC reset jumper clears the CMOS memory, forcing default values on next boot. It may be used when CMOS memory was altered in a way that prohibits boot process. It also should be used after replacing the CMOS battery.

Table 35 - RTC Reset Jumper (E8)

Pins	Selected
1-2	NORM
2-3	RESET

5. Functions Implemented on the 786BASE

Following the concepts of the CORE/BASE approach, most of the 786BASE board functions are implemented by the attached 786CORE module, while the 786BASE board provides the standard connectors. However, several additional functions are implemented on the 786BASE itself. This section describes those functions.

5.1. RS-232 and RS-422/485 Serial Port Drivers

The 786CORE module has RS-232 (only) drivers for the COM1 serial port. The COM2 serial port of the 786CORE has TTL interface. The 786BASE adds RS-232 and RS-422/485 driver options for COM2 serial port of the 786CORE. Driver support includes modem control lines.

Selection between the RS-422 (full duplex) and RS-485 (half duplex) options is performed under software control (SIO_GPIOD20/MSI).

5.2. Dual PC Card Controller

The 786BASE implements a dual PC Card interface using a TI PCI1420 controller. The PC Card controller and slots are optional, according to the 786BASE's configuration. The PCI1420 is a high-performance PCI-to-CardBus controller that supports two independent card sockets compliant with the 1997 PC Card Standard. The 1997 PC Card Standard retains the 16-bit PC Card specification (PCMCIA) and defines the new 32-bit PC Card, CardBus, capable of full 32-bit data transfers at 33 MHz. The 786BASE supports any combination of PCMCIA and CardBus PC Cards in the two sockets, powered at 5V or 3.3V, as required.

The controller is compliant with the PCI Local Bus Specification, and its PCI interface can act as either a PCI master device or a PCI slave device. The PCI bus mastering is initiated during 16-bit PC Card DMA transfers or CardBus PC Card bridging transactions. The controller is also compliant with the latest PCI Bus Power Management Interface Specification.

All PC Card signals are internally buffered to allow hot insertion and removal without external buffering. The PCI1420 is register-compatible with the Intel 82365SL controller in 16-bit PCMCIA mode. The controller's internal data path logic allows the host to access 8-, 16-, and 32-bit cards using full 32-bit PCI cycles for maximum performance.

Features

- Mix-and-match 5-V/3.3-V 16-bit PC Cards and 3.3-V CardBus Cards
- Two PC Card or CardBus slots with hot insertion and removal
- Dual-slot PC Card power switch
- Burst transfers, 130 MB/s throughput
- Five PCI memory windows and two I/O windows available for each socket
- Two I/O windows and two memory windows available by each CardBus socket
- Intel 82365SL register compatible
- Distributed DMA (DDMA) and PC/PCI DMA
- 16-Bit DMA on both PC Card sockets

The controller is initialized by 786CORE BIOS and supported by all operating system packages provided for the 786CORE / BASE.

5.3. IrDA Transceiver Module

The 786BASE contains one IrDA transceiver LED module - Vishay TFDU6102E-TR3. The module is capable of transmitting data at rates of up to 4 Mb/s.

Note

The P22 header contains signals for the external IrDA module. These signals are connected in parallel to the on-board IrDA module. If the user prefers an external module, the on-board module should be removed, in order to avoid signal contention.

5.4. USB Support

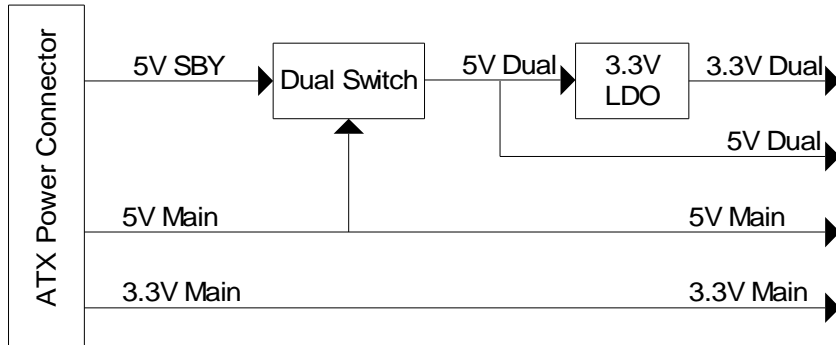
The USB controller is located on the 786CORE module. The 786BASE provides USB VBUS protection circuit, as required by the USB standard. Each USB socket is capable to supply 0.5A current to USB device.

5.5. Power Supply Scheme

The following figure shows the power delivery architecture for 786BASE. This power delivery architecture supports the “Instantly Available PC Design Guidelines” via the *suspend-to-RAM* (STR) state.

During STR, only the necessary devices are powered. These devices include: main memory, the ICH resume well, PCI wake devices (via 3.3 Vaux), AC'97, and USB (USB can be powered only if sufficient standby power is available). Due to the requirements of main memory, PCI 3.3 Vaux and other devices in the system, a *dual* power rail was implemented in 786BASE.

Figure 2 – 786Base Power supply scheme



5.6. Connecting Regular Power Supply

When STR state is not used, there's no need in power supply with standby rail, such as ATX power supply. In this case regular power supply can be used. Connecting regular power supply to the 786CORE ATX supply connector U6 is done as described in the following table:

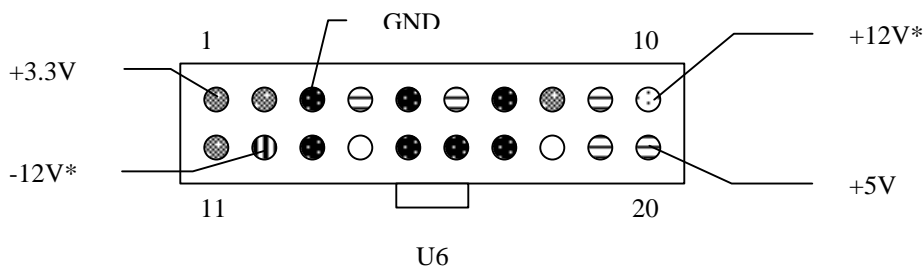
Table 36 - Connection of regular power supply

Connect to...	Signal	Pin	Pin	Signal	Connect to...
3.3V	VCC3_3	1	11	VCC3_3	3.3V
3.3V	VCC3_3	2	12	VCC12N	-12V ²
Common	GND	3	13	GND	Common
5.0V	VCC5	4	14	PS_ON	-
Common	GND	5	15	GND	Common
5.0V	VCC5	6	16	GND	Common
Common	GND	7	17	GND	Common
3.3V ³	PWROK	8	18	N.C.	-
5.0V	VCC5ATX	9	19	VCC5	5.0V
12V ¹	VCC12	10	20	VCC5	5.0V

¹ VCC12 net is routed to the CNR and PCI connectors and PC-card supply switch. If either these features are not in use, or they're not using 12V supply, this signal may be left unconnected.

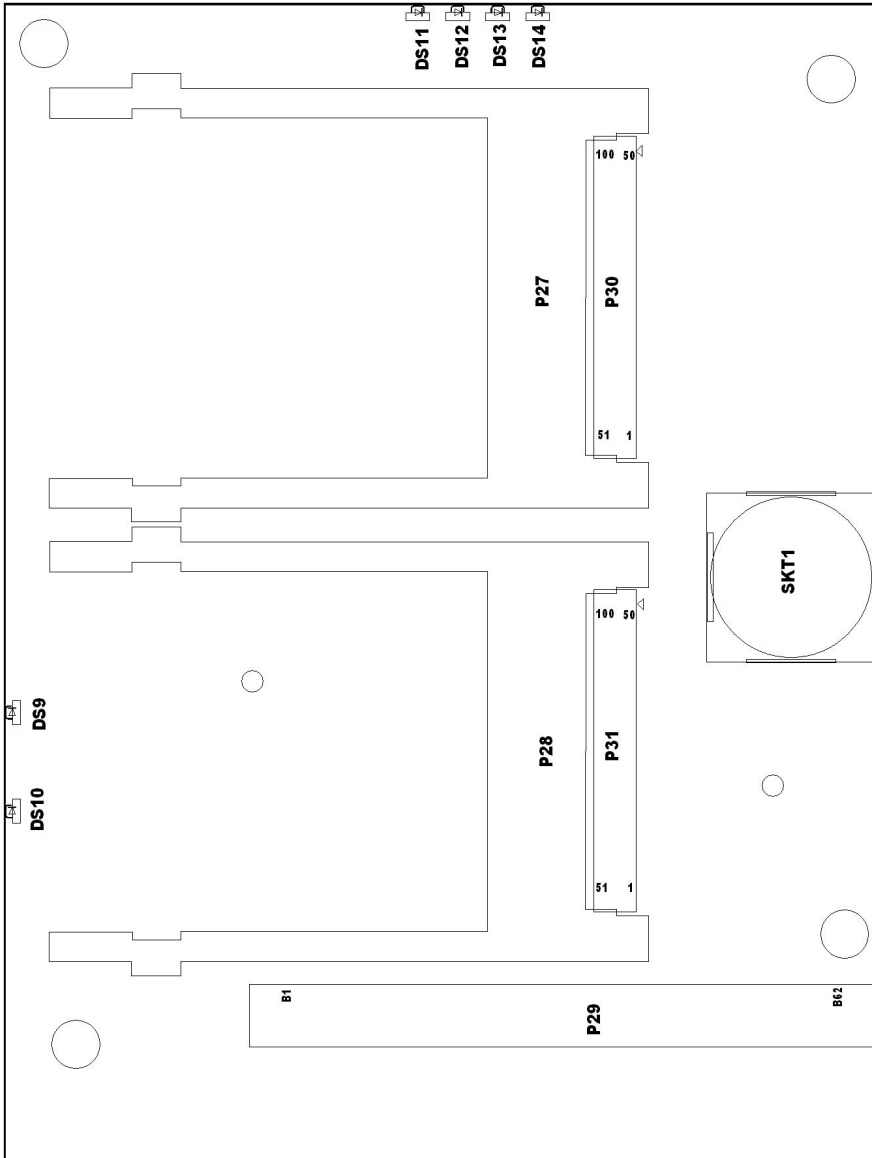
² VCC12N net is routed to the CNR and PCI connectors only. If your add-on cards do not use -12V supply, leave this signal unconnected.

³ This signal should be connected to 3.3V supply in order to provide POWER_OK signal for the 786BASE.

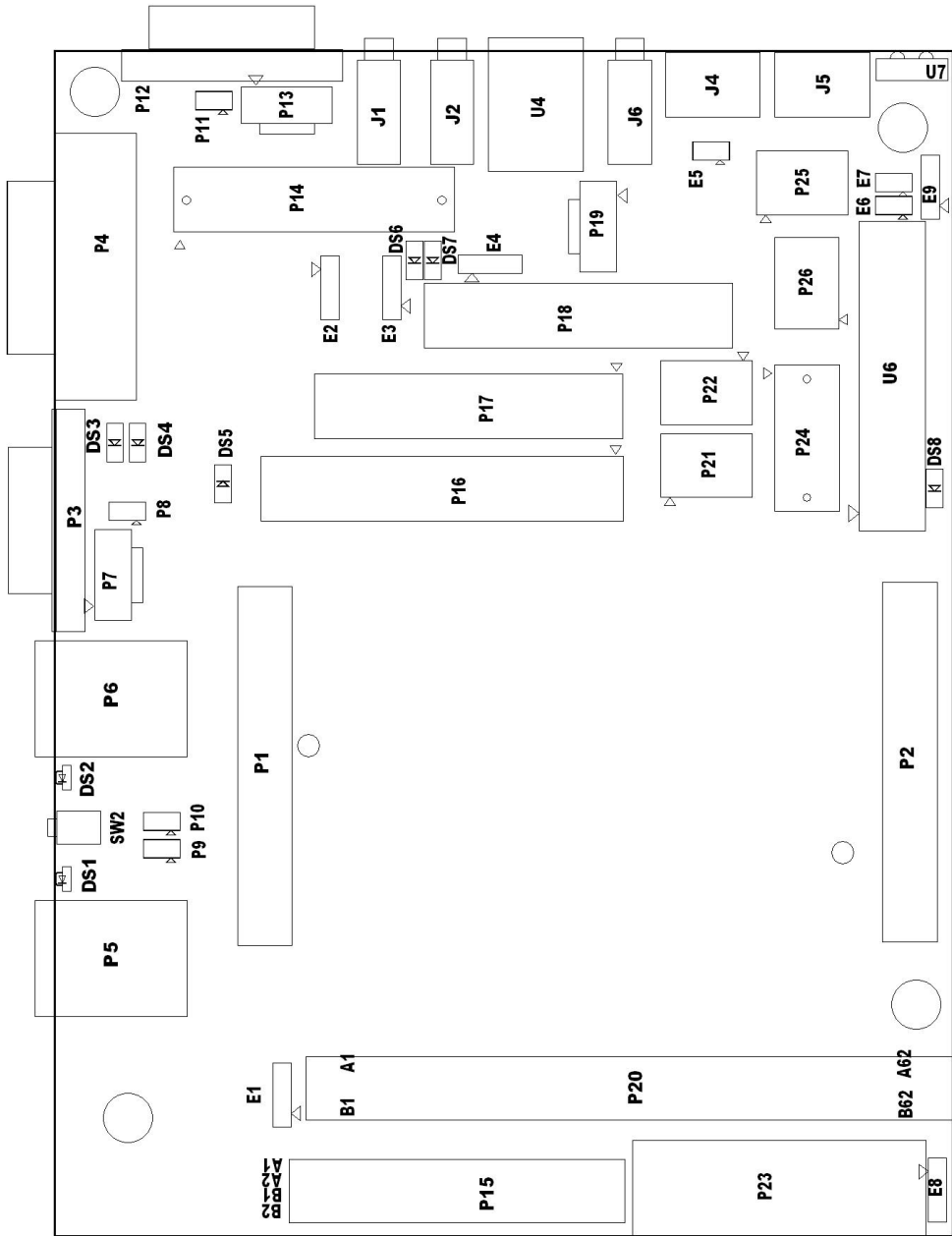


Connecting power supply connector to regular power supply

6. Connector Location



786BASE Bottom side (Top side view)



786BASE Top side

Reference

Top side:

P1, P2	786CORE mating connectors
P3	COM1 port connector (DB-9)
P4	DVI connector
P5	1 st Ethernet port socket (RJ-45)
P6	2 nd Ethernet port socket (RJ-45)
P7	ATAPI CD-ROM audio input header
P8	System buzzer header
P9	Panel switch header
P10	External reset button header
P11	Internal microphone header
P12	CRT connector (DB-15)
P15	CNR slot
P16	HDD header
P17	FDD header
P18	GPIO header
P19	Internal speakers header
P20	PCI slot
P21	Voltage sense A/D inputs header
P22	External IrDA header
P23	LPT connector (right-angle)
P25	COM2 serial port header
P26	FWH general-purpose inputs header
E1	PCI VIO select jumper
E2	CPU fan header
E3	Generic fan header
E5	Power management override jumper
E7	Write protect 786CORE FWH jumper
E8	RTC reset jumper
J1	Microphone jack
J2	Line-in jack
J6	Speakers jack
J4	PS/2 keyboard connector
J5	PS/2 mouse connector
U4	Dual stacked USB type-A connector
U6	ATX power supply connector
U7	IrDA transceiver module
SW2	Reset button
DS1	1 st Ethernet port link/activity LED

DS2	2 nd Ethernet port link/activity LED
DS3	CARDBUS slot 1 activity LED
DS4	CARDBUS slot 2 activity LED
DS5	HDD activity LED
DS6	STS2 led (ICH_GPOD28)
DS7	STS1 led (ICH_GPOD27)
DS8	ATX 5.0V standby power present LED

Bottom side:

P27	PC Card Slot B
P28	PC Card Slot A
P29	PCI slot / extension header
P30	PC Card Slot B mating connector
P31	PC Card Slot A mating connector
SKT1	RTC battery socket
DS9	2 nd Ethernet port speed LED
DS10	1 st Ethernet port speed LED
DS11	Main power presence LED
DS12	General-purpose LED (SIO_GPIOD20)
DS13	General-purpose LED (SIO_GPIOD23/POWLED)
DS14	General-purpose LED (SIO_GPIOD35/SUSLED)

7. Operating Temperature Ranges

The 786BASE is available with three options of operating temperature range:

Commercial	0° to 70° C
Extended	-20° to 70° C
Industrial	-40° to 85° C

The cards' manufacturing and certification method for each option is explained in the "Operating Temperature Ranges" section of the 786CORE Reference Guide.

Availability of Industrial temperature range is not limited to certain functions, however not all components are certified by manufacturers for industrial temperature grade.