

IP300

3.5-inch form factor
ETX Base Board

USER'S MANUAL

Version 1.0A

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Introduction

Product Description

The IP300 3.5-inch base board is designed for ETX CPU modules with dimensions as an interface platform. It packs all the PC connectors for the ETX CPU module to be a high-performance functional embedded board.

The IP300 includes the following features:

- Intel 82559 Ethernet controller
- Pin header for four USB ports
- PS2 keyboard/mouse connector
- VGA CRT connector
- 36-bit LVDS connector (Hirose DF13)
- COM 1 D-Sub connector and pin header for COM2/3/4 ports
- Pin header for IDE and FDD connectors
- Pin header for parallel port connector
- PCI CardBus Socket
- CompactFlash Socket
- One PC/104 expansion connector
- 6 PCB layers
- 102mm x 146mm

PC/104 is an ISA interface that supports compact-form-factor PC/104 modules (3.6" x 3.8"). It supports self-stacking and pin-and-socket connector. PC/104 features a standard form factor for Embedded applications. It is reliable, small in size and has low power consumption. Flexible mechanical configurations can be attained with PC/104.

Modules support various functions such as display, audio, GPS, PCMCIA, fax/modem, Ethernet, SCSI, RS-232/422/485, digital I/O and SSD.

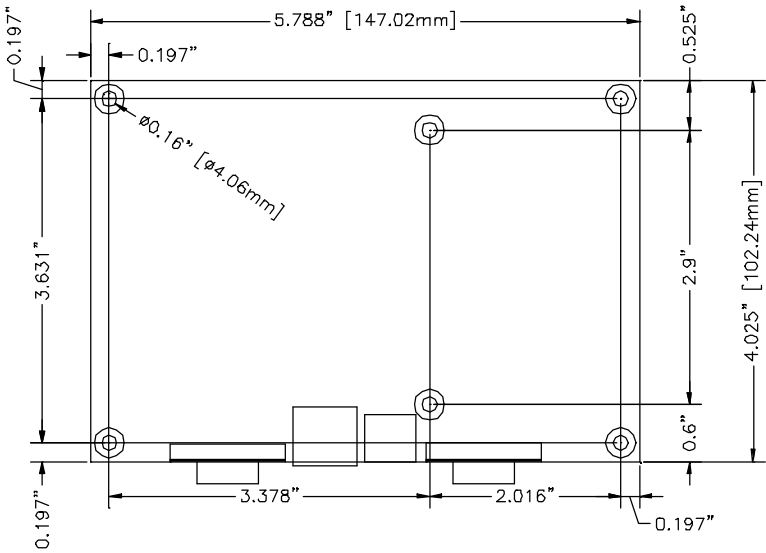
The Compact Flash connector on board is for CompactFlash Type I memory cards. A Compact Flash memory card is a solid state disk card with a 50pin connector. The pins provide a connection between the memory and the Compact Flash drive. Compact Flash cards are designed with flash technology, a non-volatile storage solution that does not lose its information once power is removed from the card. The cards contain no moving parts and are extremely rugged, providing much greater protection of data than conventional magnetic disk drives.

Checklist

Your IP300 package should include the items listed below. Damaged or missing items should be reported to your supplier.

- The IP300 Embedded Little Board
- This User' s Manual
- Optional cables such as:
 - 1 Audio Cable
 - 1 44-pin IDE Ribbon Cable
 - 1 44-pin to 40-pin IDE Ribbon Cable
 - 1 COM Port Cable
 - 1 Printer Port Cable
 - 1 PS/2 Keyboard/Mouse Cable
 - 2 USB Cables
 - 1 RJ45 LAN Cable or IBLD dual RJ45 Cable
 - 1 Power Cable for AT power
 - 1 Power Cable for ATX power
 - 1 34-pin FDD Cable

Board Dimensions



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Installations

This section provides information on how to use the jumpers and connectors on the IP300 in order to set up a workable system. The topics covered are:

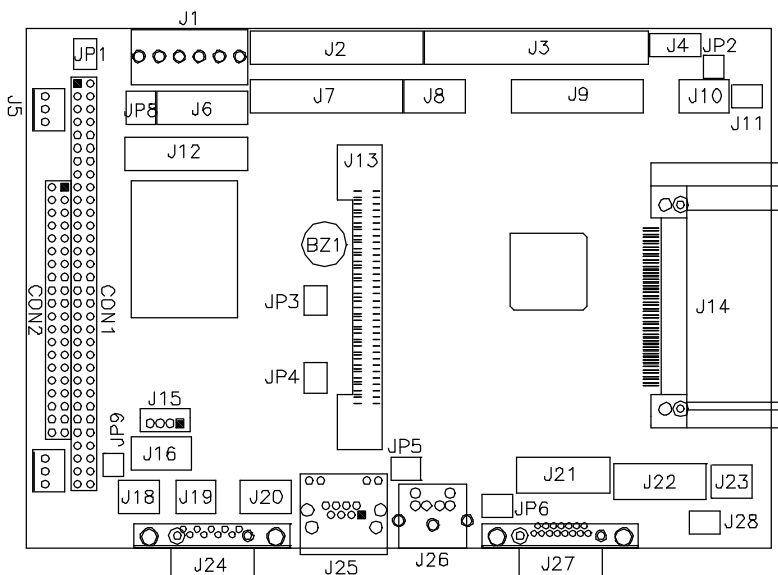
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Setting the Jumpers

Jumpers are used on the IP300 to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on IP300 and their respective functions.

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JP9: Microphone Bias Setting for ET863/ET815	9

Jumper Locations on IP300



Jumpers on IP300

JP1: AT / ATX Power Select

JP2: Master/Slave Select for CF Socket

JP3: Secondary LAN Enable/Disable

JP6: Panel Voltage Select

J6, J12: RS232/RS422/RS485 (COM2) Selection

JP8, J12: COM3/COM4 +5V/+12V Power Setting

JP9: Microphone Bias Setting for ET863/ET815

NOTE:

Before installing the ETX CPU module, make sure of the pin orientation of both the ETX interface connectors and the ETX module connector before plugging the module. Once the module is slightly plugged in, use an even force to fully plug in the module.

JP1: AT / ATX Power Select

JP1	Setting	Function
 1 2 3	Pin 1-2 Short/Closed	AT Power
 1 2 3	Pin 2-3 Short/Closed	ATX Power

JP2: Master/Slave Select for CF Socket

JP2	Setting	Function
 1 2	Short/Closed	Master
 1 2	Open	Slave

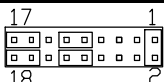
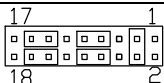
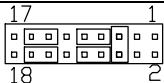
JP3: Secondary LAN Enable/Disable

JP3	Setting	LAN2 Function
 1 2 3	Pin 1-2 Short/Closed	Enabled
 1 2 3	Pin 2-3 Short/Closed	Disabled

JP6: Panel Voltage Select

JP6	Setting	LAN1 Function
 1 2 3	Pin 1-2 Short/Closed	3.3V
 1 2 3	Pin 2-3 Short/Closed	5V

J6, J12: RS232/RS422/RS485 (COM1/2) Selection

J6	Function
	RS232
	RS422
	RS485

J12: COM1/COM2 +5V/+12V Power Setting

J12	Function
	+5V
	+12V

JP8: COM3/COM4 +5V/+12V Power Setting

JP8	Function
	+5V
	+12V

JP9: Microphone Bias Setting for ET863/ET815

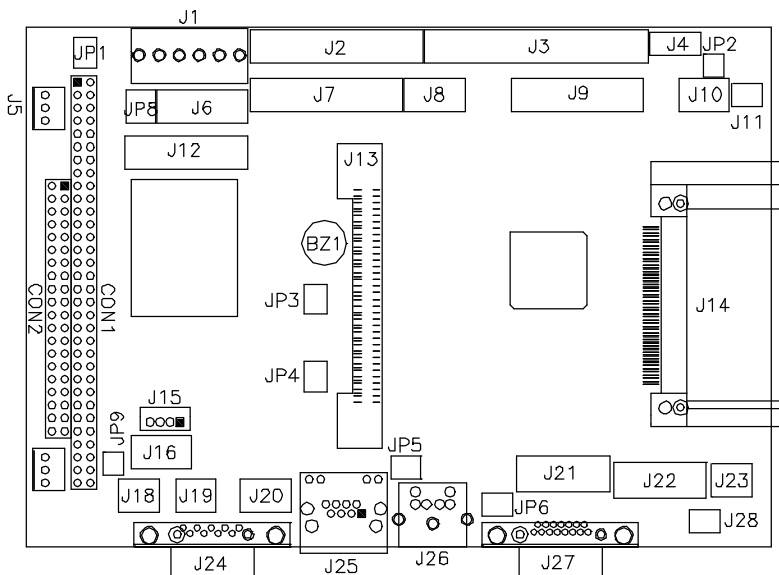
JP9	Setting	Function
	Short/Closed	ET863
	Open	ET815

Connectors on IP300

The connectors on IP300 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on IP300 and their respective functions.

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Connector Locations on IP300



Connectors on IP300

CON1A & CON1B: PC/104 Connector

J1: Main Power Connector

J2: Floppy Drive Connector

J3: IDE1 Connector

J4: IrDA Connector

J5: 12V Fan Power Connector

J17: 5V Fan Power Connector

J8: Digital I/O Connector

J9: Parallel Port Connector

J10: System Function Connector

J13: PCI Cardbus Connector

J14: Compact Flash Connector

J15: CD-In Audio Connector

J16: Audio Connector

J18, J19: USB0 and USB1 Connectors

J20: LAN2 Connector

J21, J22: 1st and 2nd Channel LVDS Connector

J23: TV-Out Connector

J24, J7: COM1 / COM2/3/4 Serial Ports

J25: RJ45 Connector for LAN1

J26: PS/2 Keyboard and Mouse Connector

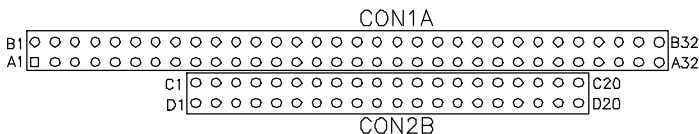
J27: VGA CRT Connector

J29: IDE2 Connector

CON1A & CON1B: PC/104 Connector

CON1A and CON1B are dual-in-line pin headers that support PC-104 modules. CON1A consists of 64 pins and CON2B has 40 pins.

CON1				CON2			
Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	IOCHK	B1	GND	C1	GND	D1	GND
A2	D7	B2	REST	C2	SBHE	D2	MEMCS16
A3	D6	B3	VCC	C3	LA23	D3	IOCS16
A4	D5	B4	IRQ9	C4	LA22	D4	IRQ10
A5	D4	B5	-5V	C5	LA21	D5	IRQ11
A6	D3	B6	DRQ2	C6	LA20	D6	IRQ12
A7	D2	B7	-12V	C7	LA19	D7	IRQ15
A8	D1	B8	OWS	C8	LA18	D8	IRQ14
A9	D0	B9	+12V	C9	LA17	D9	DACK0
A10	IOCHRDY	B10	GND	C10	MEMR	D10	DRQ0
A11	AEN	B11	SMEMW	C11	MEMW	D11	DACK5
A12	A19	B12	SMEMR	C12	D8	D12	DRQ5
A13	A18	B13	IOW	C13	D9	D13	DACK6
A14	A17	B14	IOR	C14	D10	D14	DRQ6
ZA15	A16	B15	DACK3	C15	D11	D15	DACK7
A16	A15	B16	DRQ3	C16	D12	D16	DRQ7
A17	A14	B17	DACK1	C17	D13	D17	VCC
A18	A13	B18	DRQ1	C18	D14	D18	MASTER
A19	A12	B19	REFRESH	C19	D15	D19	GND
A20	A11	B20	CLK	C20	KEY PIN	D20	GND
A21	A10	B21	IRQ7				
A22	A9	B22	IRQ6				
A23	A8	B23	IRQ5				
A24	A7	B24	IRQ4				
A25	A6	B25	IRQ3				
A26	A5	B26	DACK2				
A27	A4	B27	TC				
A28	A3	B28	BALE				
A29	A2	B29	VCC				
A30	A1	B30	OSC				
A31	A0	B31	GND				
A32	GND	B32	GND				



J1: Main Power Connector

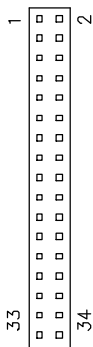
The J1 main power connector has the following pin assignments.



Pin #	Signal Name
1	+12V
2	Ground
3	Ground
4	+5V
5	5VSB
6	PS_ON

J2: Floppy Drive Connector

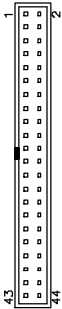
J2 a 34-pin header for the FDD connector.



Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	RM/LC
Ground	3	4	No connect
Ground	5	6	No connect
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	Write gate
Ground	25	26	Track 00
Ground	27	28	Write protect
Ground	29	30	Read data
Ground	31	32	Side 1 select
Ground	33	34	Diskette change

J3: IDE1 Connector

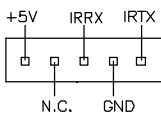
J3 is the IDE1 connector consisting of 44 pins headers. IP300 optionally comes with a cable kit containing two IDE cables connecting these connectors to your IDE devices.



Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground
Vcc	41	42	Vcc
Ground	43	44	N.C.

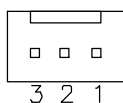
J4: IrDA Connector

J4 is used for an optional IrDA connector for wireless communication.



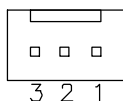
Pin #	Signal Name
1	+5V
2	No connect
3	Ir RX
4	Ground
5	Ir TX

J5: 12V Fan Power Connector



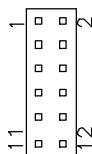
Pin #	Signal Name
1	Ground
2	+12V
3	NC

J17: 5V Fan Power Connector



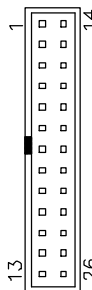
Pin #	Signal Name
1	Ground
2	+5V
3	NC

J8: Digital I/O Connector



Signal Name	Pin #	Pin #	Signal Name
IN0	1	2	+5V
IN1	3	4	OUT0
IN2	5	6	GND
IN3	7	8	OUT1
GND	9	10	+12V
OUT2	11	12	OUT3

J9: Parallel Port Connector



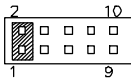
Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

J10: System Function Connector

J10 provides connectors for system indicators that provide light indication of the computer activities and switches to change the computer status. It provides interfaces for the following functions.

Hard Disk Drive LED Connector: Pins 1 and 2

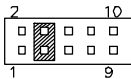
This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



Pin #	Signal Name
1	HDD Active
2	5V

Power LED: Pins 3 and 4

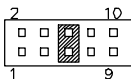
The power LED indicates the status of the main power switch.



Pin #	Signal Name
3	Ground
4	Power LED

SMI/Hardware Switch: Pins 5 and 6

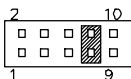
This connector supports the "Green Switch" on the control panel, which, when pressed, will force the system into the power-saving mode immediately.



Pin #	Signal Name
5	Ground
6	Sleep

Reset: Pins 7 and 8

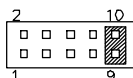
This connector connects to the reset switch button of the system.



Pin #	Signal Name
7	Ground
8	Reset

Power Switch: Pins 9 and 10

When the power is set as ATX mode, this connector becomes the power button. In AT mode, this connector has no function.



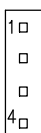
Pin #	Signal Name
9	Ground
10	PW ON

J13: PCI Cardbus Connector

J14: Compact Flash Connector

J14 is the Compact Flash connector that is used in conjunction with the IDE2 (J29) connector. If the CompactFlash connector and IDE2 are to be used simultaneously, you have to set JP2 to configure J14 as either Master or Slave.

J15: CD-In Audio Connector



Pin #	Signal Name
1	CD Audio L
2	Ground
3	Ground
4	CD Audio R

J16: Audio Connector

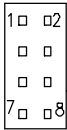
J16, a 12-pin header connector, supports an optional external connector supporting 3 sockets for Line Out, Line In and Mic functions. The following table shows the pin assignments of this connector.



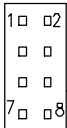
Signal Name	Pin #	Pin #	Signal Name
Line Out R	1	2	Line Out L
Ground	3	4	Ground
Line In R	5	6	Line In L
Ground	7	8	Ground
Mic	9	10	BIAS
Ground	11	12	NC

J18, J19: USB0 and USB1 Connectors

The following table shows the pin outs of the USB pin headers connectors. Overall, the two pin headers support four USB ports.



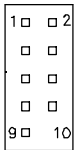
Signal Name	Pin	Pin	Signal Name
Vcc	1	2	Ground
USB0-	3	4	USB1+
USB0+	5	6	USB1-
Ground	7	8	Vcc



Signal Name	Pin	Pin	Signal Name
Vcc	1	2	Ground
USB2-	3	4	USB3+
USB2+	5	6	USB3-
Ground	7	8	Vcc

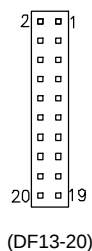
J20: LAN2 Connector

J20 is a 10-pin header connecting an RJ45 cable for LAN2.



Signal Name	Pin #	Pin #	Signal Name
LED1+	1	2	LED1-
RX+	3	4	RX-
LED2-	5	6	Ground
LED2+	7	8	Ground
TX+	9	10	TX-

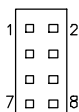
J21, J22: 1st and 2nd Channel LVDS Connector



Signal Name	Pin #	Pin #	Signal Name
TX0-	2	1	TX0+
Ground	4	3	Ground
TX1-	6	5	TX1+
5V/3.3V	8	7	Ground
NC	10	9	NC
TX2-	12	11	TX2+
Ground	14	13	Ground
TXC-	16	15	TXC+
5V/3.3V	18	17	ENABKL
+12V	20	19	+12V

J23: TV-Out Connector

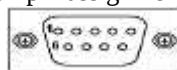
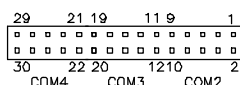
J23 is a 8-pin header for the optional TV-Out connector.



Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	Ground
S-Y	3	4	S-C
NC	5	6	NC
Comp	7	8	NC

J24, J7: COM1 / COM2/3/4 Serial Ports

J24 (COM1) is a DB-9 connector, while J7 (COM2/3/4) is a 30-pin header. Refer to the table below for their pin assignments.

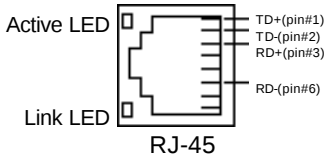


COM1

Signal Name	Pin #	Pin #	Signal Name
DCD, Data carrier detect	1 st	2 nd	DSR, Data set ready
RXD, Receive data	3 rd	4 th	RTS, Request to send
TXD, Transmit data	5 th	6 th	CTS, Clear to send
DTR, Data terminal ready	7 th	8 th	RI, Ring indicator
Ground	9 th	10 th	Not Used

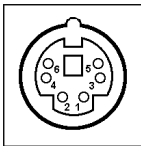
J25: RJ45 Connector for LAN1

J25 is the RJ-45 connector on board for LAN1. The figure below shows the pin out assignments of the connector and its corresponding input jack.



J26: PS/2 Keyboard and Mouse Connector

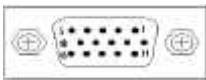
J26 uses a Y-cable with dual D-connectors for a PS/2 keyboard and a PS/2 mouse.



Pin #	Signal Name
1	Mouse data
2	Keyboard data
3	Ground
4	Vcc
5	Mouse Clock
6	Keyboard Clock

J27: VGA CRT Connector

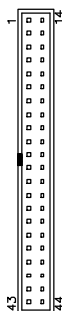
The pin assignments of the J27 VGA CRT connector are as follows:



Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	DDCK
GND	5	6	GND
GND	7	8	GND
Vcc	9	10	GND
N.C.	11	12	DDDA
HSYNC	13	14	VSYSN
NC	15		

J29: IDE2 Connector

J29 is the IDE2 connector consisting of 44 pins headers. IP300 optionally comes with a cable kit containing two IDE cables connecting these connectors to your IDE devices.



Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground
Vcc	41	42	Vcc
Ground	43	44	N.C.

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