

IP300

3.5-inch form factor
ETX Base Board

USER'S MANUAL

Version 1.0A

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Table of Contents

Introduction.....	1
Product Description	1
Checklist.....	2
Board Dimensions.....	3
Installations	5
Setting the Jumpers.....	6
Connectors on IP300.....	10

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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.

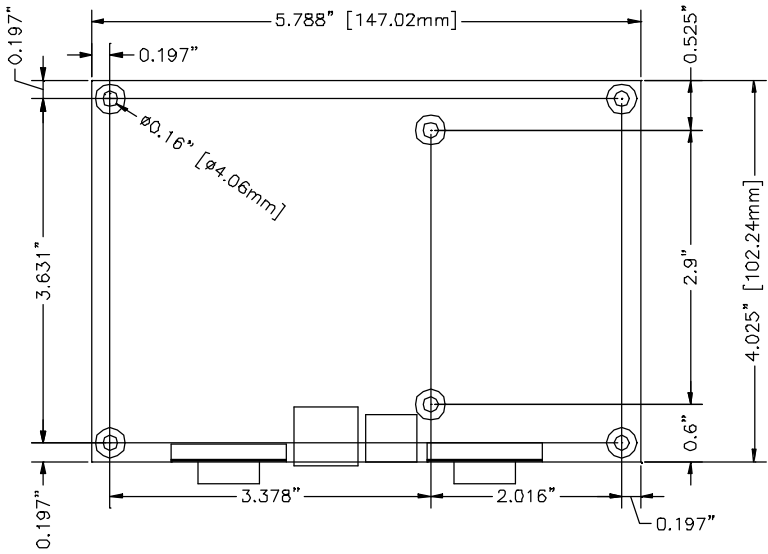
The Compact Flash connector on board is for CompactFlash Type I memory cards. A Compact Flash memory card is a solid state disk card with a 50pin connector. The pins provide a connection between the memory and the Compact Flash drive. Compact Flash cards are designed with flash technology, a non-volatile 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:

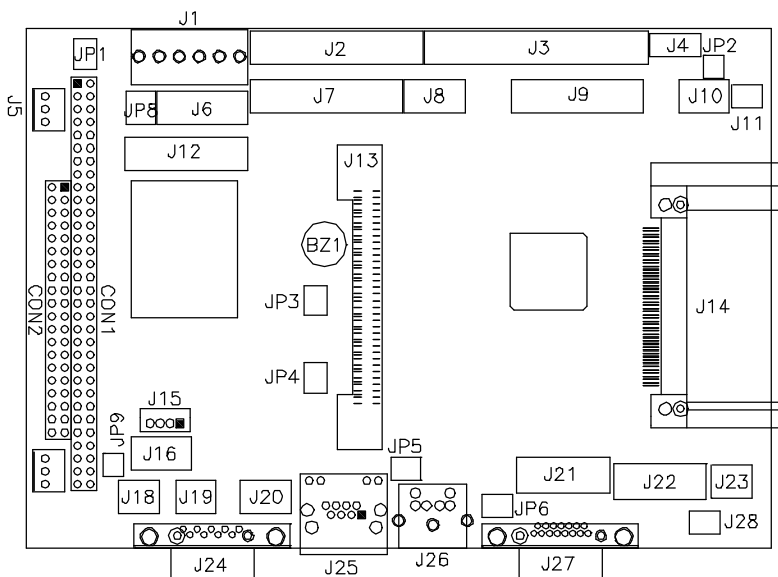
Setting the Jumpers.....	6
Connectors on IP300.....	10

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.

JP1: AT / ATX Power Select.....	8
JP2: Master/Slave Select for CF Socket.....	8
JP3: Secondary LAN Enable/Disable	8
JP6: Panel Voltage Select	8
J6, J12: RS232/RS422/RS485 (COM2) Selection.....	9
J12: COM1/COM2 +5V/+12V Power Setting.....	9
JP8: COM3/COM4 +5V/+12V Power Setting	9
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
	Pin 1-2 Short/Closed	AT Power
	Pin 2-3 Short/Closed	ATX Power



JP2: Master/Slave Select for CF Socket

JP2	Setting	Function
	Short/Closed	Master
	Open	Slave

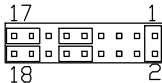
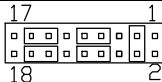
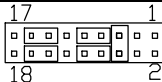
JP3: Secondary LAN Enable/Disable

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



JP6: Panel Voltage Select

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

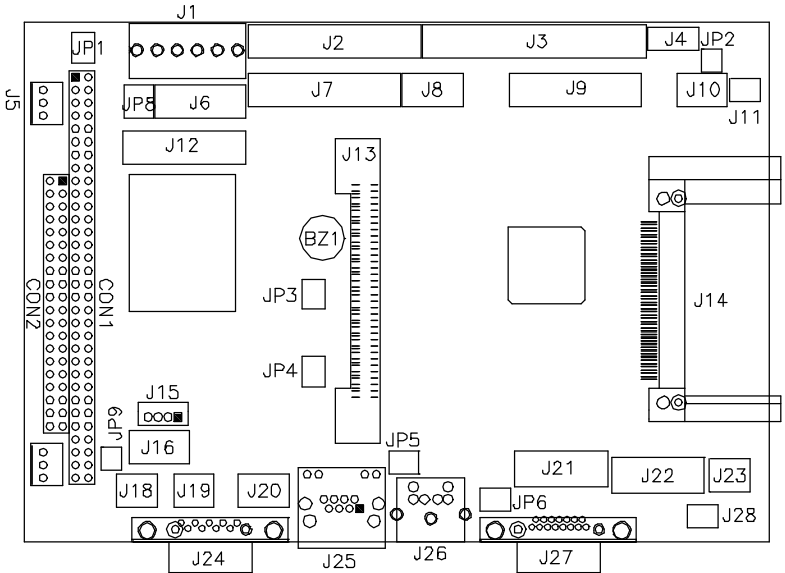
JP9	Setting	Function
	Short/Closed	ET863
	Open	ET815

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.

Connector Locations on IP300.....	11
CON1A & CON1B: PC/104 Connector	12
J1: Main Power Connector	13
J2: Floppy Drive Connector	13
J3: IDE1 Connector	14
J4: IrDA Connector	14
J5: 12V Fan Power Connector	15
J17: 5V Fan Power Connector	15
J8: Digital I/O Connector	15
J9: Parallel Port Connector	15
J10: System Function Connector	16
J13: PCI Cardbus Connector	17
J14: Compact Flash Connector	17
J15: CD-In Audio Connector	17
J16: Audio Connector	17
J18, J19: USB0 and USB1 Connectors	18
J20: LAN2 Connector	18
J21, J22: 1st and 2nd Channel LVDS Connector	19
J23: TV-Out Connector	19
J24, J7: COM1 / COM2/3/4 Serial Ports	19
J25: RJ45 Connector for LAN1	20
J26: PS/2 Keyboard and Mouse Connector	20
J27: VGA CRT Connector	20
J29: IDE2 Connector	21

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

J1: Main Power Connector

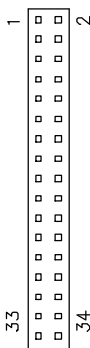
The J1 main power connector has the following pin assignments.



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

J2: Floppy Drive Connector

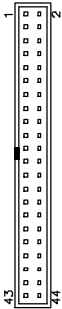
J2 a 34-pin header for the FDD connector.



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

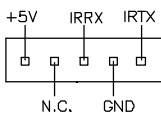
J3 is the IDE1 connector consisting of 44 pins headers. IP300 optionally comes with a cable kit containing two IDE cables connecting these connectors to your IDE devices.



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.

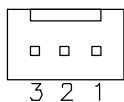
J4: IrDA Connector

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



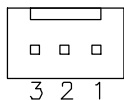
Pin #	Signal Name
1	+5V
2	No connect
3	Ir RX
4	Ground
5	Ir TX

J5: 12V Fan Power Connector



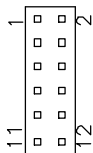
Pin #	Signal Name
1	Ground
2	+12V
3	NC

J17: 5V Fan Power Connector



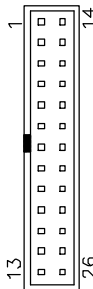
Pin #	Signal Name
1	Ground
2	+5V
3	NC

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



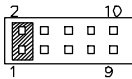
Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
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

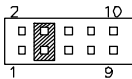
This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



Pin #	Signal Name
1	HDD Active
2	5V

Power LED: Pins 3 and 4

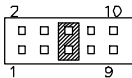
The power LED indicates the status of the main power switch.



Pin #	Signal Name
3	Ground
4	Power LED

SMI/Hardware Switch: Pins 5 and 6

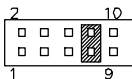
This connector supports the "Green Switch" on the control panel, which, when pressed, will force the system into the power-saving mode immediately.



Pin #	Signal Name
5	Ground
6	Sleep

Reset: Pins 7 and 8

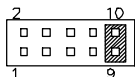
This connector connects to the reset switch button of the system.



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.



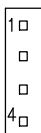
Pin #	Signal Name
9	Ground
10	PW ON

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.

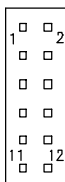
J15: CD-In Audio Connector



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

J16: Audio Connector

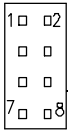
J16, a 12-pin header connector, supports an optional external connector supporting 3 sockets for Line Out, Line In and Mic functions. The following table shows the pin assignments of this connector.



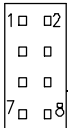
Signal Name	Pin #	Pin #	Signal Name
Line Out R	1	2	Line Out L
Ground	3	4	Ground
Line In R	5	6	Line In L
Ground	7	8	Ground
Mic	9	10	BIAS
Ground	11	12	NC

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.



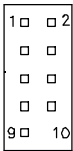
Signal Name	Pin	Pin	Signal Name
Vcc	1	2	Ground
USB0-	3	4	USB1+
USB0+	5	6	USB1-
Ground	7	8	Vcc



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

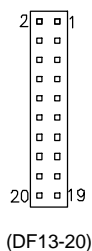
J20: LAN2 Connector

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-

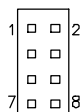
J21, J22: 1st and 2nd Channel LVDS Connector



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

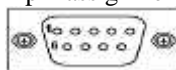
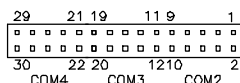
J23 is a 8-pin header for the optional TV-Out connector.



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.

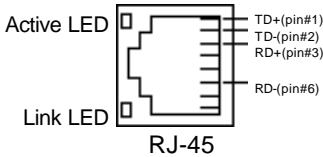


COM1

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

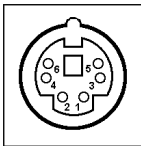
J25: RJ45 Connector for LAN1

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

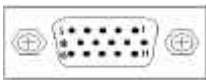
J26 uses a Y-cable with dual D-connectors for a PS/2 keyboard and a PS/2 mouse.



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

J27: VGA CRT Connector

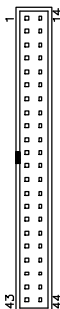
The pin assignments of the J27 VGA CRT connector are as follows:



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	VSYNC
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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