

IP402

**COM Express TYPE6
Baseboard**

USER'S MANUAL

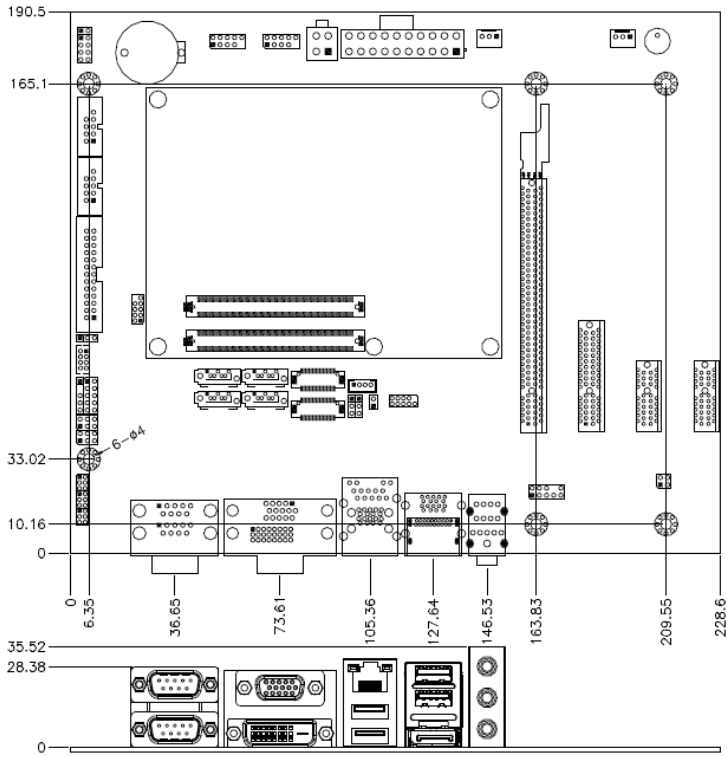
Version 1.0A

Acknowledgments

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Table of Contents

Introduction	1
IP402 Specifications	1
Board Dimensions	3
Installations	4
Installing the CPU Module.....	5
Setting the Jumpers	6
Connectors on IP402	11
Connector Locations on IP402	12
J2: PS/2 Keyboard and PS/2 Mouse Connectors	13
CN11: Audio Connector	13
J13: Audio Pin Header for Chassis Front Panel.....	13
J12: ATX Power Supply Connector	14
J8 : ATX 12V Power Connector.....	14
JP10 : Panel Inverter Power Connector.....	14
CN7 (CH1), CN8 (CH2): LVDS Connector.....	15
RECS1, RECS2: COM Express Connector	15
JP8, JP7: USB4/5, USB6/7 Port Pin Header	15
JP13: SPDIF In/Out Connector	16
J7: Digital I/O	16
J3: System Function Connector	16
LPT: Parallel Port Connector	17
CPU_FAN: CPU Fan Power Connector	17
SYS_FAN: System Fan Power Connector.....	17



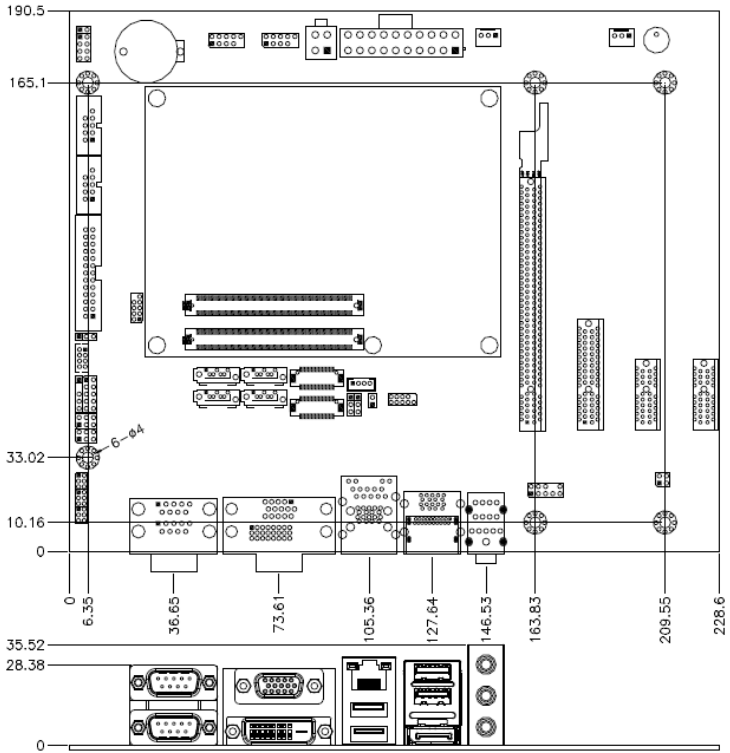
The IP402 Baseboard

Introduction

IP402 Specifications

Product Name	IP402(COM Express Rev. 2.0)
Form Factor	Flex ATX for COM Express CPU module(Pin-out Type 6)
BIOS	AMI BIOS
VGA	Derived from COM Express module
LVDS	Derived from COM Express module, supporting 24-bit dual channel
LAN	Derived from COM Express module 82579V
USB	Derived from COM Express module w/ 8 x USB2.0 ports, w/ 4 x USB3.0
IDE Interface	N/A
SATA	Derived from COM Express module x 2 port SATA II + 2 x SATA III
Audio	Onboard ALC892 w/ 5.1 CH audio
Super I/O	Fintek F81865F-I : COMx4(RS232) , Parallel x 1, PS/2 KB/Mouse & Hardware monitor(2 x thermal inputs, 3 voltage monitor inputs, 2x fan headers)
Battery for RTC/CMOS	Lithium battery for RTC of COM Express module
Edge Connectors	Dual DB9 stack connector x 1 for COM1/2 DB15 + DVI stack connector x1 for VGA/DVI-D RJ45 + dual USB3.0 stack connector x 1 DP + dual USB3.0 stack connector x 1 Audio connector x 1 (Line-in, Line-out & Mic.)
On Board Connectors / Headers	DF13-20pin x2 for LVDS 2x5 pins box-header x2 for COM3/4 DF11-10 pin connector x 1 for PS/2 KB/MS SATA connector x 4 10 pins header x2 for USB5-8 26 pins header x 1 for Parallel 220-pin COM Express Type 6 connector x 2
Expansion	PCIe(16x) slot x 1 PCIe(4x) slot x 1 PCIe(1x) slot x 2
Power Connector	20+4 pins connector for ATX
Operation Temperature	0°C~60°C
Storage Temperature	-20°C~80°C
Relative Humidity	10% ~ 90% (non-condensing)
RoHS Compliant	Yes
Board Size	190mm x 228mm

Board Dimensions



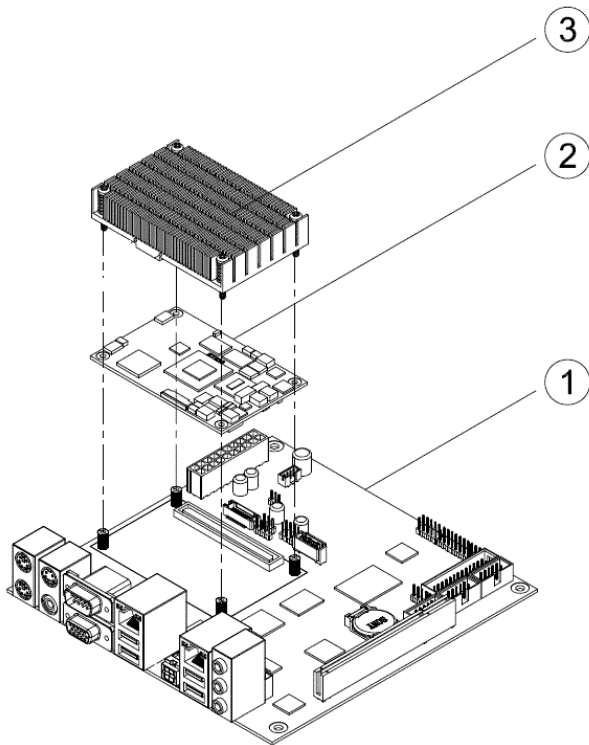
Installations

This section provides information on how to use the jumpers and connectors on the IP402 in order to set up a workable system. The topics covered are:

Installing the CPU Module.....	5
Setting the Jumpers	6
Connectors on IP402.....	11

Installing the CPU Module

The IP402 board supports COM Express Type6 CPU module such as the ET930. Below is a picture showing how the CPU module and the heatsink should be installed on the IP402 baseboard. There are five holes on the IP402 that can be used to screw the three parts together – the heatsink, the CPU module and the baseboard.

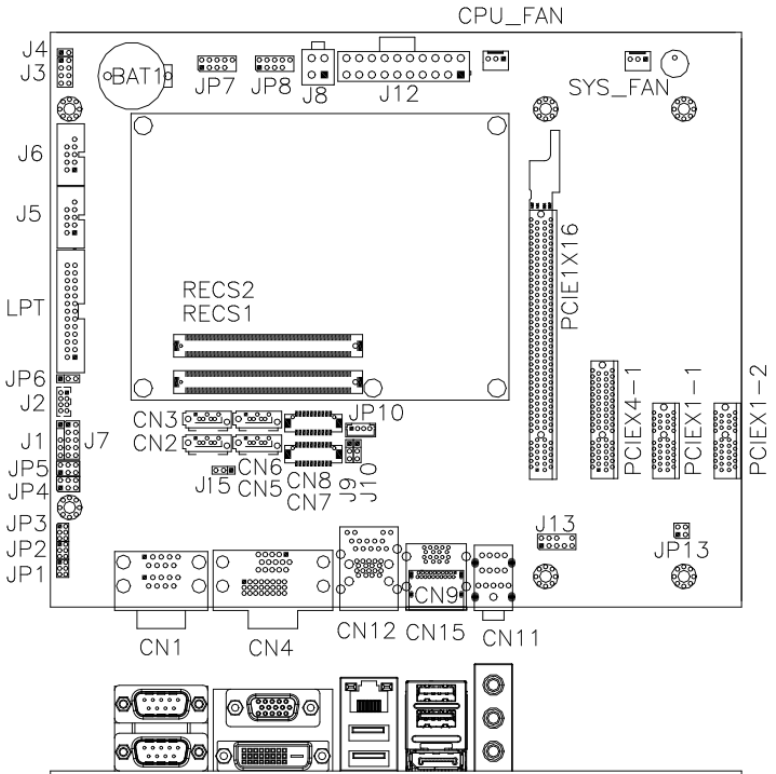


Setting the Jumpers

Jumpers are used on IP402 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 IP402 and their respective functions.

Jumper Locations on IP402.....	7
J4: AT/ATX Power Setting.....	8
J9: LVDS Panel Power	8
J10: LVDS Backlight Power Setting.....	8
J15: SPI Setting.....	8
JP1, JP2, JP3: RS232/422/485 (COM1) Selection	9
JP4 : COM1 RS232 +5V/+12V Power Setting	10
JP5 : COM2 RS232 +5V/+12V Power Setting	10
JP6 : PS2 mouse/keyboard Power Setting	10

Jumper Locations on IP402





INSTALLATIONS



J4: AT/ATX Power Setting

J4	Power Type
Open	ATX (Default)
Close	AT



J9: LVDS Panel Power

J9	LVDS Panel Power
 1 2 3	+3.3V (default)
 1 2 3	+5V

J10: LVDS Backlight Power Setting

J10	Power
 1 2 3	+3.3V (default)
 1 2 3	+5V

J15: SPI Setting

J15	BOOT
 1 2 3	Main Board (default)
 1 2 3	Baseboard

JP1, JP2, JP3: RS232/422/485 (COM1) Selection

COM2~COM4 are fixed for RS-232 use only.

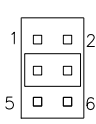
COM1 is selectable for RS232, RS-422 and RS-485.

The following table describes the jumper settings for COM1 selection.

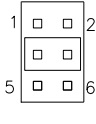
COM1 Function	RS-232	RS-422	RS-485
Jumper Setting (pin closed)	JP1: 3-5 & 4-6	JP1: 1-3 & 2-4	JP1: 1-3 & 2-4
	JP3: 3-5 & 4-6	JP3: 1-3 & 2-4	JP3: 1-3 & 2-4
	JP2: 1-2	JP2: 3-4	JP2: 5-6

INSTALLATIONS



JP4: COM1 RS232 +5V/+12V Power Setting

JP4	Setting	Function
	Pin 1-3 Short/Closed	+12V
	Pin 3-4 Short/Closed	Normal
	Pin 3-5 Short/Closed	+5V

JP5: COM2 RS232 +5V/+12V Power Setting

JP5	Setting	Function
	Pin 1-3 Short/Closed	+12V
	Pin 3-4 Short/Closed	Normal
	Pin 3-5 Short/Closed	+5V

JP6: PS2 mouse/keyboard Power Setting

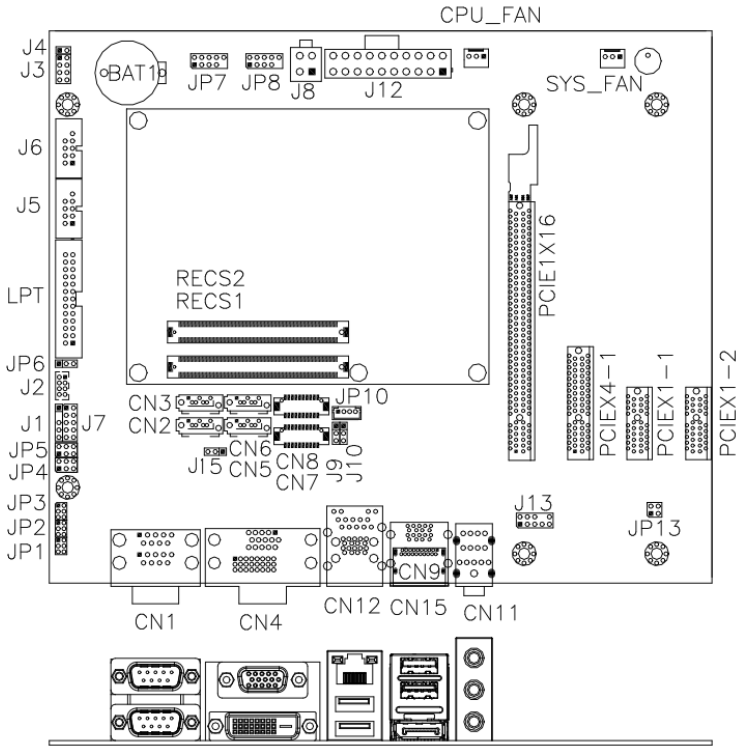
JP6	Setting	Function
	Pin 1-2 Short/Closed	+5VSB
	Pin 2-3 Short/Closed	+5V

Connectors on IP402

The connectors on IP402 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on IP402 and their respective functions.

Connector Locations on IP402	11
J2: PS/2 Keyboard and PS/2 Mouse Connectors	13
CN11: Audio Connector	13
J13: Audio Pin Header for Chassis Front Panel.....	13
J6(COM3),J5(COM4): Serial Ports	14
J12: ATX Power Supply Connector	14
J8 : ATX 12V Power Connector.....	14
JP10 : Panel Inverter Power Connector.....	14
CN7 (CH1), CN8 (CH2): LVDS Connector	15
RECS1, RECS2: COM Express Connector	15
JP8, JP7: USB4/5, USB6/7 Port Pin Header	15
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SYS_FAN: System Fan Power Connector	17

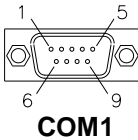
Connector Locations on IP402



J2: PS/2 Keyboard and PS/2 Mouse Connectors

Signal Name	Pin #	Pin #	Signal Name
5V	1	2	5V
Mouse data	3	4	Keyboard data
Mouse clock	5	6	Keyboard clock
GND	7	8	GND

CN1A, CN1B: COM1(UP) and COM2(DOWN) Connector



Signal Name	Pin #	Pin #	Signal Name
DCD	1	6	DSR
RXD	2	7	RTS
TXD	3	8	CTS
DTR	4	9	RI
GND	5	10	Not Used

CN4A, CN4B: VGA(UP) and DVI(DOWN) Connector

CN12: GbE_1 RJ-45 and USB2/3 Ports

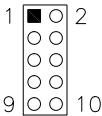
CN15: DP and USB0/1 Ports

CN11: Audio Connector

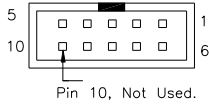
The audio connector, from top to bottom, is composed of Line in, Line out and Microphone jacks.

J13: Audio Pin Header for Chassis Front Panel

Signal Name	Pin	Pin	Signal Name
MIC IN_L	1	2	Ground
MIC IN_R	3	4	DET
LINE_R	5	6	Ground
Sense	7	8	KEY
LINE_L	9	10	Ground

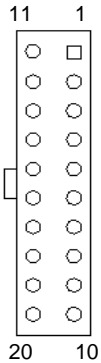


J6(COM3),J5(COM4): Serial Ports



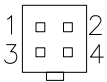
Signal Name	Pin #	Pin #	Signal Name
DCD, Data carrier detect	1	6	DSR, Data set ready
RXD, Receive data	2	7	RTS, Request to send
TXD, Transmit data	3	8	CTS, Clear to send
DTR, Data terminal ready	4	9	RI, Ring indicator
GND, ground	5	10	Not Used

J12: ATX Power Supply Connector



Signal Name	Pin #	Pin #	Signal Name
3.3V	11	1	3.3V
-12V	12	2	3.3V
Ground	13	3	Ground
PS-ON	14	4	+5V
Ground	15	5	Ground
Ground	16	6	+5V
Ground	17	7	Ground
-5V	18	8	Power good
+5V	19	9	5VSB
+5V	20	10	+12V

J8 : ATX 12V Power Connector



Signal Name	Pin #	Pin #	Signal Name
+12V	3	1	Ground
+12V	4	2	Ground

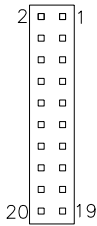
JP10 : Panel Inverter Power Connector



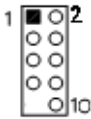
Pin #	Signal Name
1	+12V
2	Backlight Enable
3	ADJ
4	Ground

CN7 (CH1), CN8 (CH2): LVDS Connector

The LVDS connector supports single-channel 18-bit or 24-bit displays.

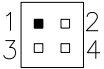


Signal Name	Pin #	Pin #	Signal Name
TX0-	2	1	TX0+
Ground	4	3	Ground
TX1-	6	5	TX1+
5V/3.3V	8	7	Ground
TX3-	10	9	TX3+
TX2-	12	11	TX2+
Ground	14	13	Ground
TXC-	16	15	TXC+
5V/3.3V	18	17	ENABKL
VCC12	20	19	VCC12

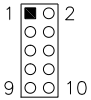
RECS1, RECS2: COM Express Connector**JP8, JP7: USB4/5, USB6/7 Port Pin Header**

Signal Name	Pin	Pin	Signal Name
Vcc	1	2	Vcc
D0-	3	4	D1-
D0+	5	6	D1+
Ground	7	8	Ground
Key Pin	9	10	NC

CN3,CN6: SATA2-IDE Connector**CN2,CN5: SATA3-IDE Connector****PCIEX1-1,PCIEX1-2: PCI- E(x1) Connector****PCIEX4-1,: PCI- E(x4) Connector****PCIEX16-1,: PCI- E(x16) Connector**

JP13: SPDIF In/Out Connector

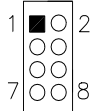
Pin #	Signal Name
1	SPDIF IN
2	Ground
3	SPDIF OUT
4	Ground

J7: Digital I/O

Signal Name	Pin	Pin	Signal Name
GND	1	2	VCC
OUT3	3	4	OUT1
OUT2	5	6	OUT0
IN3	7	8	IN1
IN2	9	10	IN0

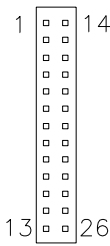
J3: System Function Connector

J3 provides connectors for system indicators that provide light indication of the computer activities and switches to change the computer status. J3 is a 8-pin header that provides interfaces for the following functions.



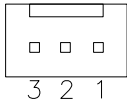
Signal Name	Pin #	Pin #	Signal Name
Power BTN	1	2	Power BTN
HDD LED+	3	4	HDD LED-
Reset BTN	5	6	Reset BTN
Power LED+	7	8	Power LED-

LPT: Parallel Port Connector



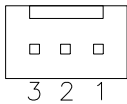
Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	26	N/A

CPU_FAN: CPU Fan Power Connector



Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection

SYS_FAN: System Fan Power Connector



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