

**IP402**

**COM Express TYPE6  
Baseboard**

# **USER'S MANUAL**

**Version 1.0**

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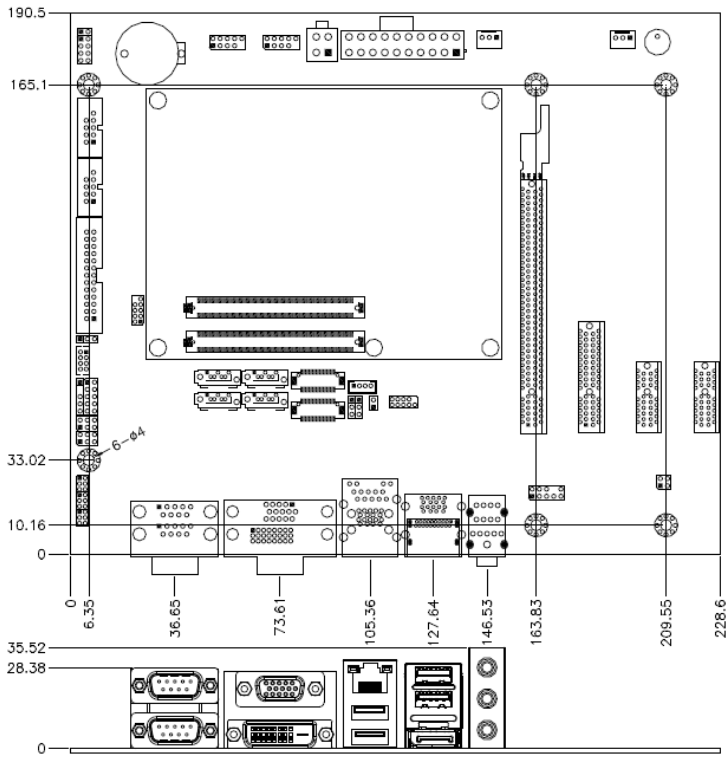
## Acknowledgments

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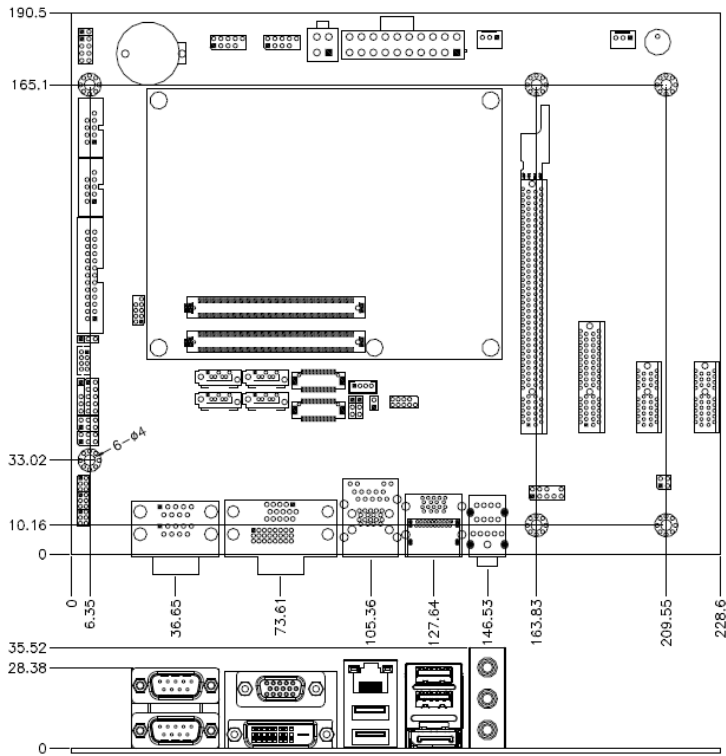
The IP402 Baseboard

# Introduction

## IP402 Specifications

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

# Board Dimensions



## **Installations**

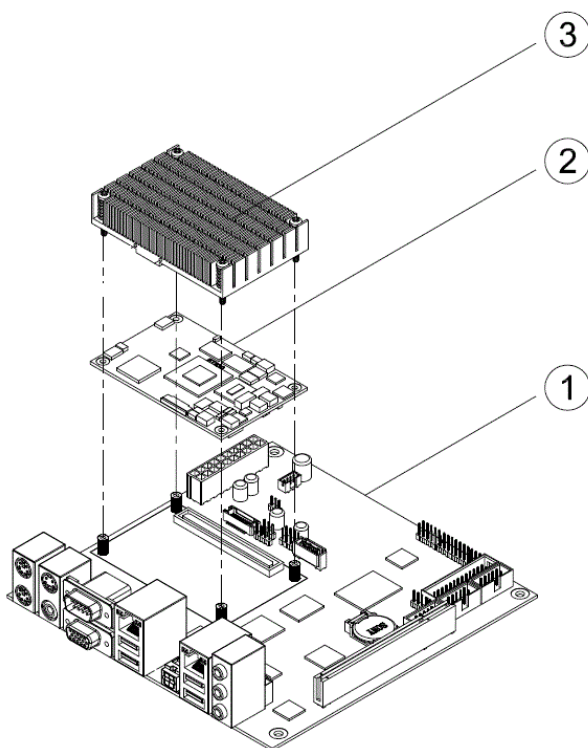
This section provides information on how to use the jumpers and connectors on the IP402 in order to set up a workable system. The topics covered are:

Installing the CPU Module .....	4
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### Installing the CPU Module

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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.



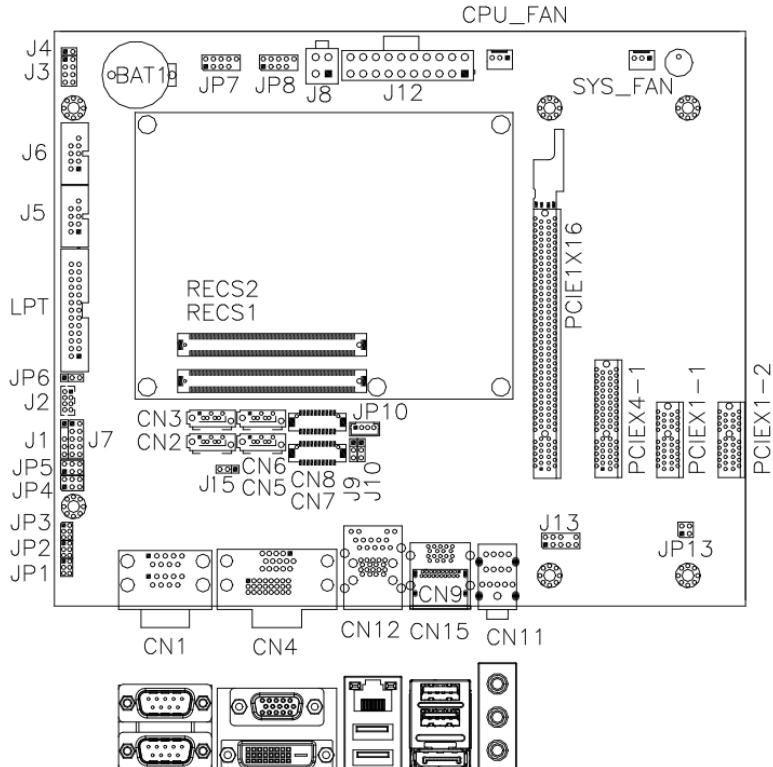


## **Setting the Jumpers**

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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.



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

**J4: AT/ATX Power Setting**

<b>J4</b>	<b>Power Type</b>
Open	ATX (Default)
Close	AT



**J9: LVDS Panel Power**

<b>J9</b>	<b>LVDS Panel Power</b>
 1 2 3	+3.3V (default)
 1 2 3	+5V

**J10: LVDS Backlight Power Setting**

<b>J10</b>	<b>Power</b>
 1 2 3	+3.3V (default)
 1 2 3	+5V

**J15: SPI Setting**

<b>J15</b>	<b>BOOT</b>
 1 2 3	Main Board (default)
 1 2 3	Baseboard

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

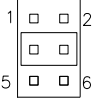
COM2~COM4 are fixed for RS-232 use only.

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


The following table describes the jumper settings for COM1 selection.

<b>COM1 Function</b>	<b>RS-232</b>	<b>RS-422</b>	<b>RS-485</b>
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



**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

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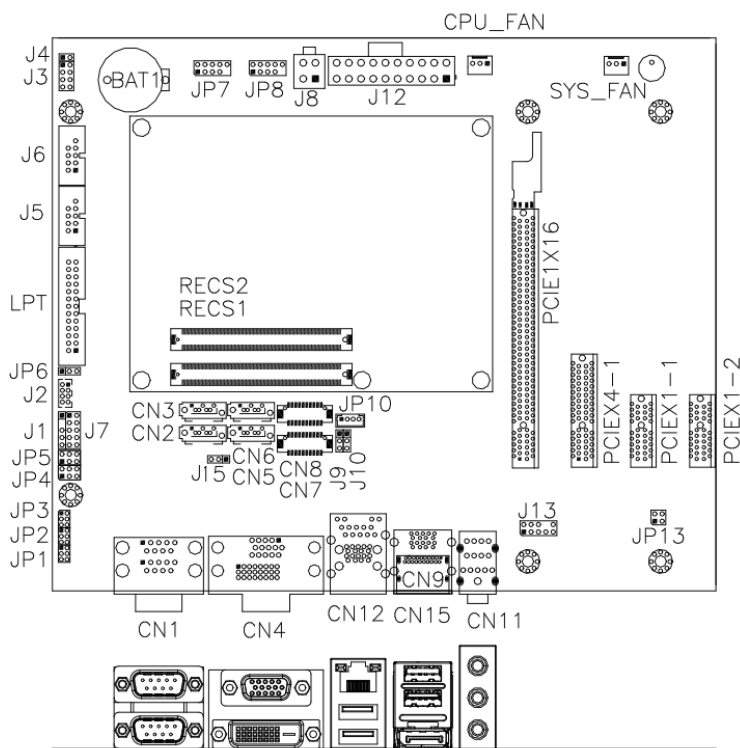
## Connectors on IP402

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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.

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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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J7: Digital I/O.....	16
J3: System Function Connector.....	16
J1: IrDA Connector .....	16
LPT: Parallel Port Connector.....	17
CPU_FAN: CPU Fan Power Connector.....	17
SYS_FAN: System Fan Power Connector .....	17

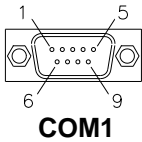
## Connector Locations on IP402



**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**

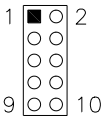
**CN12: GbE\_1 RJ-45 and USB2/3 Ports**

**CN15: DP and USB0/1 Ports**

**CN11: Audio Connector**

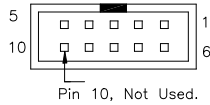
The audio connector, from top to bottom, is composed of Line in, Line out and Microphone jacks.

**J13: Audio Pin Header for Chassis Front Panel**

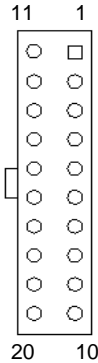


Signal Name	Pin	Pin	Signal Name
MIC IN_L	1	2	Ground
MIC IN_R	3	4	DET
LINE_R	5	6	Ground
Sense	7	8	KEY
LINE_L	9	10	Ground

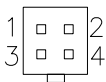


**J6(COM3),J5(COM4): Serial Ports**

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**

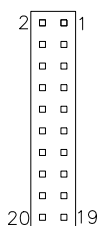
Signal Name	Pin #	Pin #	Signal Name
+12V	3	1	Ground
+12V	4	2	Ground

**JP10 : Panel Inverter Power Connector**

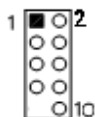
Pin #	Signal Name
1	+12V
2	Backlight Enable
3	ADJ
4	Ground

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

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

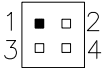


Signal Name	Pin #	Pin #	Signal Name
TX0-	2	1	TX0+
Ground	4	3	Ground
TX1-	6	5	TX1+
5V/3.3V	8	7	Ground
TX3-	10	9	TX3+
TX2-	12	11	TX2+
Ground	14	13	Ground
TXC-	16	15	TXC+
5V/3.3V	18	17	ENABKL
VCC12	20	19	VCC12

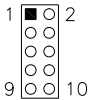
**RECS1, RECS2: COM Express Connector****JP8, JP7: USB4/5, USB6/7 Port Pin Header**

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**


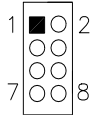
Pin #	Signal Name
1	SPDIF IN
2	Ground
3	SPDIF OUT
4	Ground

**J7: Digital I/O**


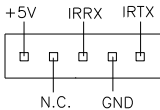
Signal Name	Pin	Pin	Signal Name
GND	1	2	VCC
OUT3	3	4	OUT1
OUT2	5	6	OUT0
IN3	7	8	IN1
IN2	9	10	IN0

**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.

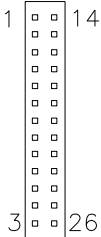


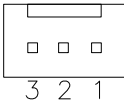
Signal Name	Pin #	Pin #	Signal Name
Power BTN	1	2	Power BTN
HDD LED+	3	4	HDD LED-
Reset BTN	5	6	Reset BTN
Power LED+	7	8	Power LED-

**J1: IrDA Connector**


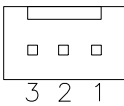
Pin #	Signal Name
1	+5V
2	No connect
3	Ir RX
4	Ground
5	Ir TX

**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