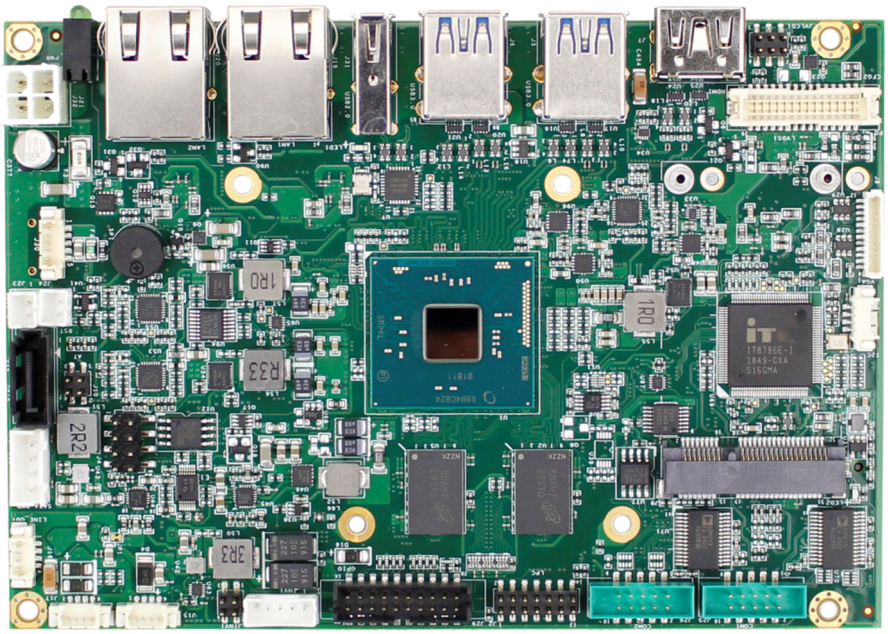
User Manual



IBW-35

A 3.5” embedded solution on

Intel® Quad-core Processor

(Braswell Family)

Version 1.0

ICOP Technology Inc.

Copyright

Revision History

Revision	Date	Remark
1.0	February 25, 2020	First version release

Table of Contents

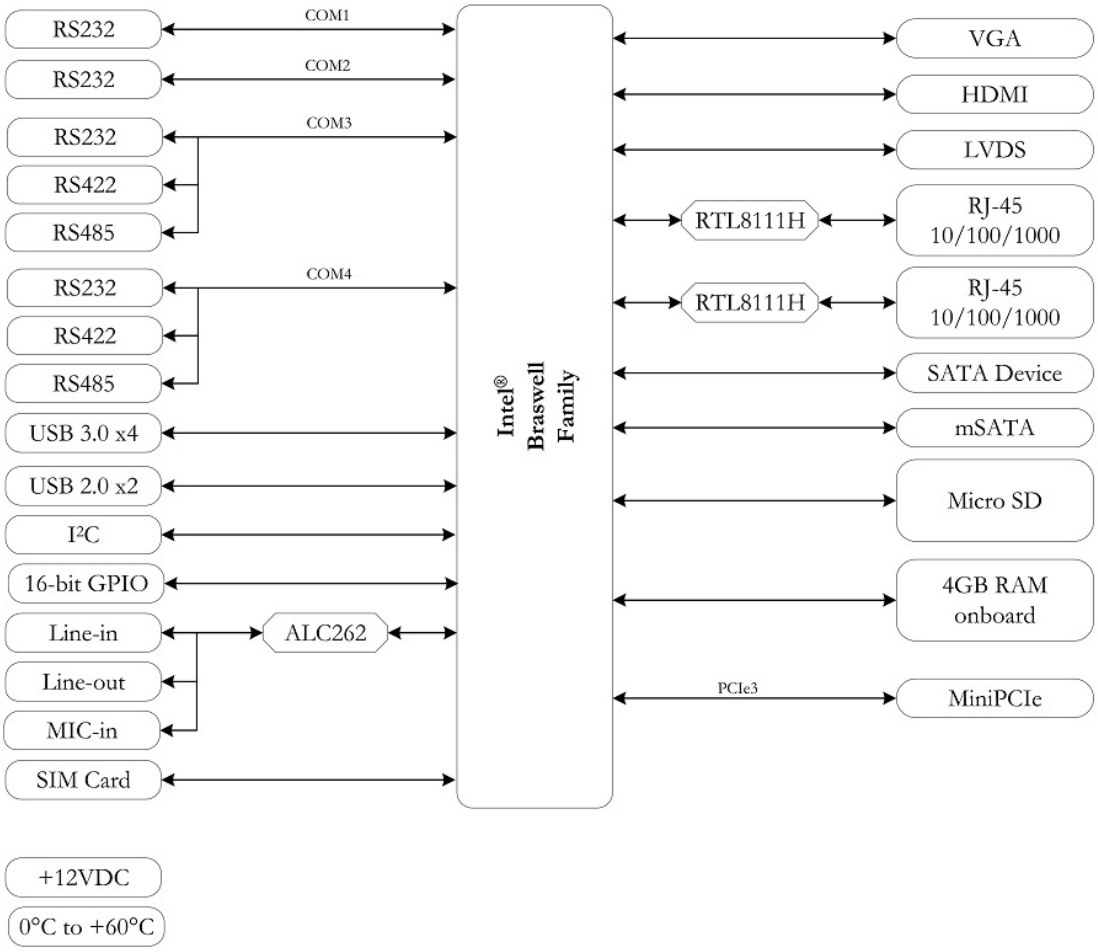
1 General Information

1.1 Overview

IBW35, a standard 3.5" embedded solution for industrial application based on Intel® Braswell Quad-Core CPU with 4GB DDR3L RAM onboard, provides stable and powerful computing performance.

IBW35 supports 2x Gigabit LAN, 4x COM, 6x USB, I²C, 16-bit GPIO, MiniPCIe, HDMI, LVDS, VGA, and 3 storage options, storage as SATA interface, mSATA interface, and Micro SD for development use. SIM card holder is also supported on IBW-35 for wireless long-distance communication.

1.2 Block diagram



1.3 Specifications

Processor	Intel® Atom™ x5-E8000, 2.00Ghz (Burst), 1.04GHz Quad Core Intel® Pentium® N3710, 2.56Ghz (Burst), 1.6GHz Quad Core (Option) Intel® Celeron® N3160, 2.24Ghz (Burst), 1.6GHz Quad Core (Option)
System Memory	4GB DDR3L 1600MHz onboard
BIOS	UEFI BIOS
Bus	MiniPCIe (full-size) x1 SIM Card x1
Display	Hardware decoding: H.265, MPEG2, MVC, VC-1, VP8, WMV9, and JPEG/MJPEG formats Hardware encoding: H.264, MVC, and JPEG/MJPEG formats VGA: resolutions up to 1920 x 1200 @ 60Hz HDMI: resolutions up to 2560 x 1600 @ 60Hz, 24bpp LVDS: resolutions up to 1920 x 1200 @ 60Jz, in dual LVDS bus mode
LAN	Realtek 8111H GbE x2
HD Audio	Realtek ALC262 VD
Disk Support	Micro SD x1 SATA device x1 mSATA device x1*
I/O Interface	COM x4 I²C x1 USB3.0 x4 USB2.0 x2 16-bit GPIO x1

*mSATA interface could be configured as a standard MiniPCIe interface through H/W modification

Connectors	7-pin SATA connector for SATA DOM x1 4.2mm 4-pin wafer for Power x1 2.5mm 4-pin wafer for SATA HDD Power x1 2.0mm 20-pin box header for GPIO x1 2.0mm 14-pin header for LPC x1 2.0mm 10-pin box header for COM x2 2.0mm 2-pin wafer for Power button x1 2.0mm 2-pin wafer for Rest buttom x1 1.25mm 4-pin wader for Line-in/Line-out/MIC-in x3 1.25mm 4-pin wafer for I²C x1 1.25mm 30-pin wafer for LVDS x1 1.0mm 12-pin wafer for VGA x1 HDMI connector x1 Mini PCIe socket x2 RJ45 connector x2 USB3.0 connector x4 USB2.0 connector x2 SIM card holder x1
Power Requirement	12V standard input from internal 4-pin power connector support for ATX mode
Operating Temp.	0°C to +60°C
Dimensions	102mm x 146mm
Weight	120g
O/S Support	Windows 10 Windows 7 (64bits) Linux

1.4 Ordering Information

1.4.1 IBW-35

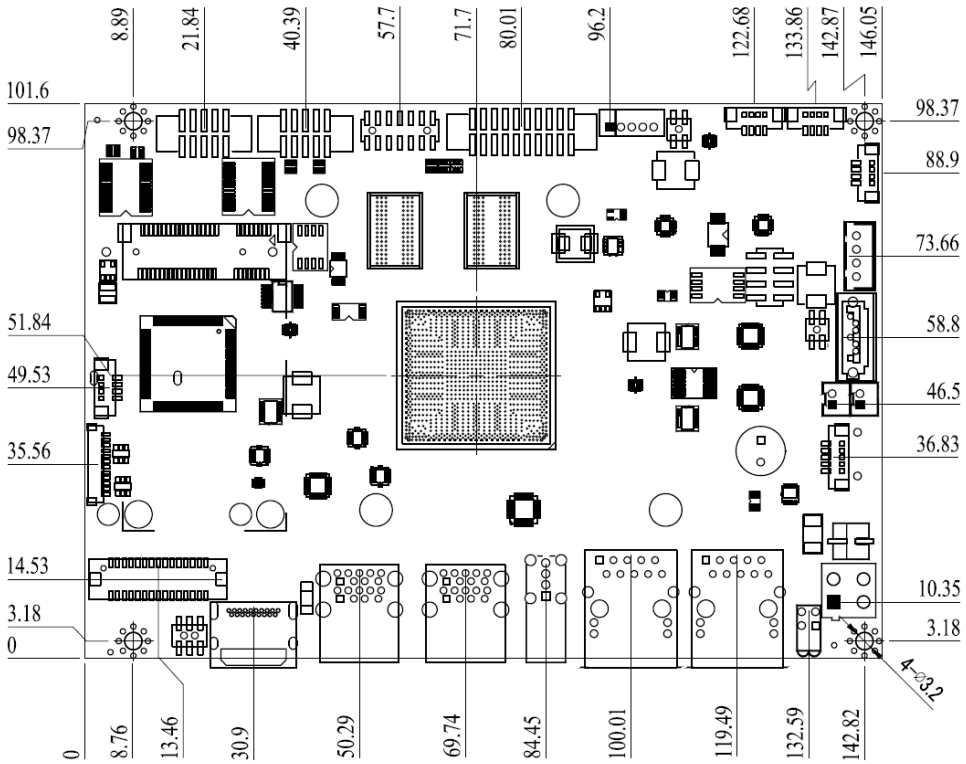
Product Name	IBW-35-E4	IBW-35-A4	IBW-35-B4
Processor	1.04GHz (Intel® Atom™ x5-E8000)	1.60GHz (Intel® Pentium® N3710)	1.60GHz (Intel® Celeron® N3160)
System Memory	4GB DDR3L 1600MHz		
Accessary	CABLE-SATA-IBW-15CM x1		

1.4.2 Optional Accessary

CABLE-SET-IBW35	Cable set for IBW-35 (RS232 x4, GPIO x1, Audio x3)
CABLE-ATX12V-10CM	ATX12V 2x2 Pin to DC power jack cable
CABLE-VGA-IBW35-15CM	VGA cable for IBW-35

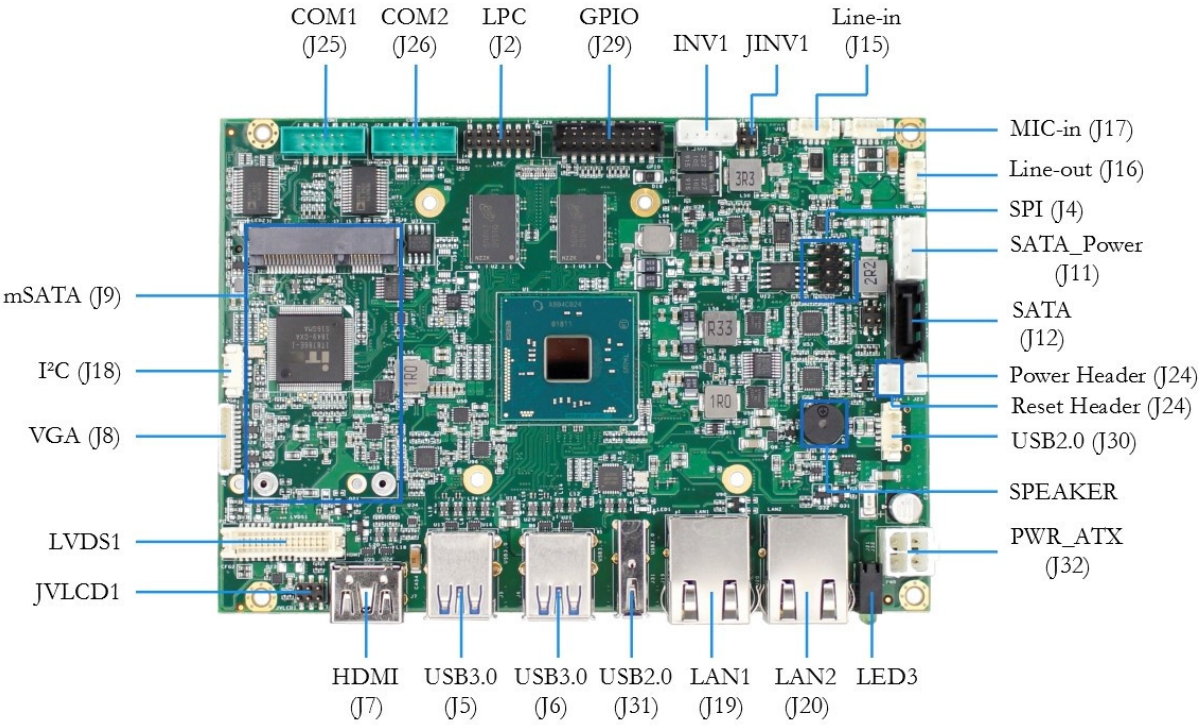
2 Hardware Information

2.1 Dimension

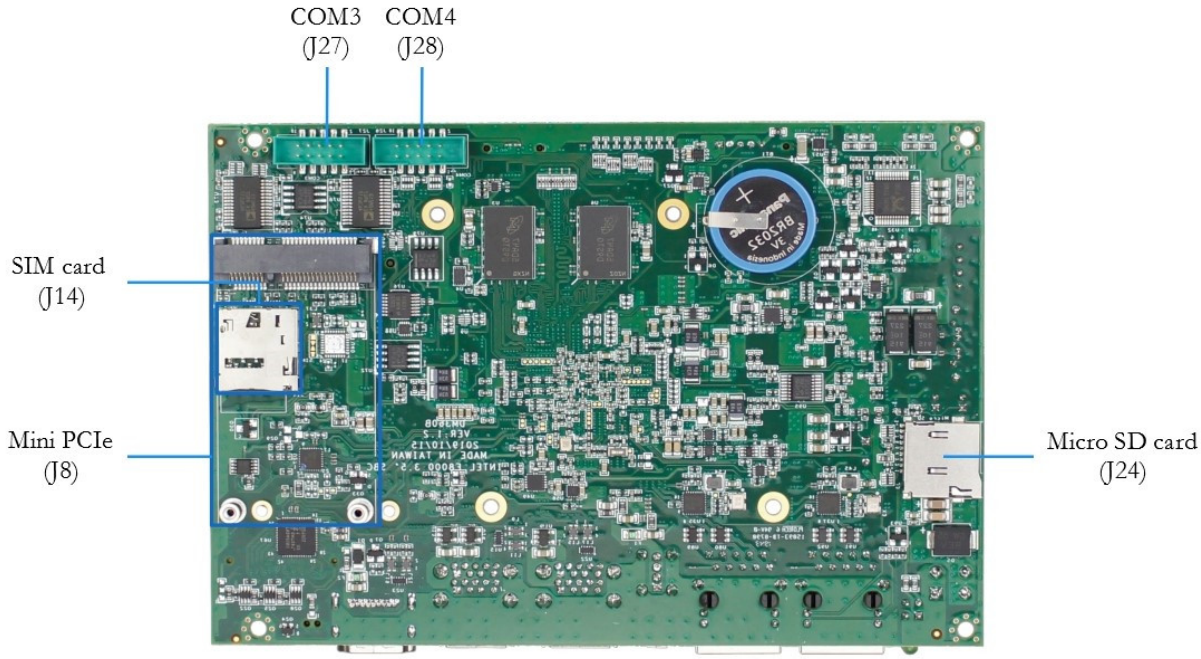


2.2 Board Outline

TOP:



BOTTOM:



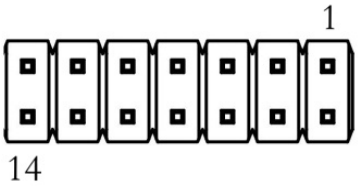
2.3 Connector and Jumper Summary

Nbr.	Name	Type of Connections	Nbr of Pin
J2	LPC Header	Pin Header, 2.0m, 7x2	14
J3	Micro SD Slot	Standard Micro SD Slot	
J5	USB(3.0) 0 & 1	Type A USB3.0 Connector	
J6	USB(3.0) 2 & 3	Type A USB3.0 Connector	
J7	HDMI	Standard HDMI Connector	
J8	VGA	Wafer, 1.0mm, 12x1	12
J9	mSATA	Standard MiniPCIe connector	
J10	Jumper Selection for AT/ATX	Pin Header, 2.0mm, 2x2	4
J11	Power for SATA HDD	Wafer, 2.5mm, 4x1	4
J12	SATA Connector	SATA 7p Connector, 7x1	7
J14	SIM Card Holder	Standard SIM Card Holder	
J15	Line-in	Wafer, 1.25mm, 4x1	4
J16	Line-out	Wafer, 1.25mm, 4x1	4
J17	MIC-in	Wafer, 1.25mm, 4x1	4
J18	I²C	Wafer, 1.25mm, 4x1	4
J19	LAN1	RJ45 Connector	8
J19A		LED-SMD	
J19B		LED-SMD	
J20	LAN2	RJ45 Connector	8
J20A		LED-SMD	
J20B		LED-SMD	
J23	Power Button	Wafer, 2.0mm, 2x1	2
J24	Reset Button	Wafer, 2.0mm, 2x1	2
J25	COM1 (RS232)	Box Header, 2.0mm, 5x2	10
J26	COM2 (RS232)	Box Header, 2.0mm, 5x2	10
J27	COM3 (RS232/422/485)	Box Header, 2.0mm, 5x2	10
J28	COM4 (RS232/422/485)	Box Header, 2.0mm, 5x2	10
J29	GPIO	Box Header, 2.0mm, 10x2	20
J30	USB(2.0) 1	Wafer, 1.25mm, 5x1	5
J31	USB(2.0) 2	Type A USB2.0 Connector	
J32	Power Input	Wafer, 4.2mm, 2x2	4
JINV1	Power Selection for INV1	Pin Header, 2.0m, 2x2	4
JVLCD1	Power Selection for LCD Panel	Pin Header, 2.0mm, 2x3	6

LVDS1	LVDS	Wafer, 1.25mm, 15x2	30
INV1	LCD Backlight Control	Wafer, 2.0mm, 5x1	5
LED2	Wireless LED	LED-SMD	
LED3	SATA DOM LED	LED-SMD	

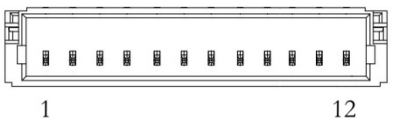
2.4 Pin Assignments & Jumper Settings

J2: LPC Header



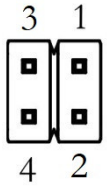
Pin#	Signal Name	Pin#	Signal Name
1.	LPC_CLKOUT	2	GND
2	L_FRAME_N	4	NC
3	PLTRST_3P3_N	6	VCC5
7	LPC_AD3	8	LPC_AD2
9	VCC3	10	LPC_AD1
11	LCD_ADD	12	GND
13	LCD_SMB_CLK	14	LPC_SMB_DAT

J8: VGA



Pin#	Signal Name
1.	ROUT
2	GND
3	GOUT
4	GND
5	BOUT
6	GND
7	VGADDCSDA
8	GND
9	HSYNC_A
10	GND
11	VSYNC_A
12	VGADDCCLK

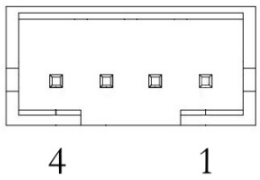
J10: Jumper Selection for AT/ATX



Pin 1&2 closed ➔ AT mode

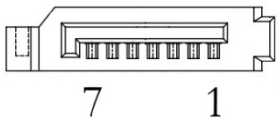
Pin 1&2 open ➔ ATX mode

J11: Power for SATA HDD



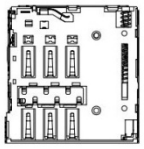
Pin#	Signal Name
1.	VCC12
2	GND
3	GND
4	VCC5

J12: SATA DOM



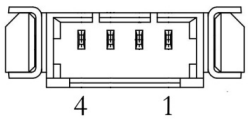
Pin#	Signal Name
1.	GND
2	SATA_TXP
3	SATA_TXN
4	GND
5	SATA_RXN
6	SATA_RXP
7	GND

J14: SIM Card Holder



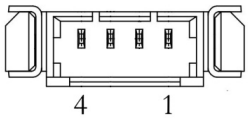
Pin#	Signal Name
1.	SIM-VCC
2	SIM-RST
3	SIM-CLK
4	GND
5	SIM-VPP
6	SIM-IO

J15: Line-in



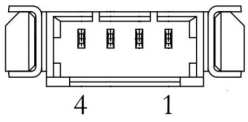
Pin#	Signal Name
1.	LINE_IN_R
2	GND
3	LINE_IN_L
4	GND

J15: Line-out



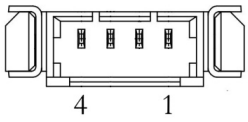
Pin#	Signal Name
1.	LOUT_R
2	GND
3	LOUT_L
4	GND

J17: MIC-in



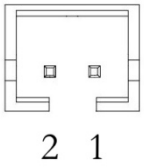
Pin#	Signal Name
1.	MIC_IN_R
2	GND
3	MIC_IN _L
4	GND

J18: I^{2}C



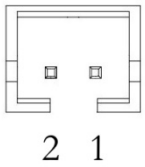
Pin#	Signal Name
1.	GND
2	I2C5_SDA_3P3
3	I2C5_SCL_3P3
4	VCC3

J23: Power Button



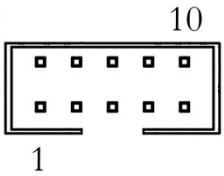
Pin#	Signal Name
1.	PWRBTN
2	GND

J24: Reset Button



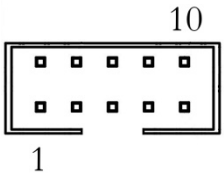
Pin#	Signal Name
1.	RSTBTN
2	GND

J25: COM1 (RS232)



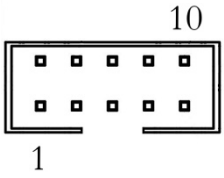
Pin#	Signal Name	Pin#	Signal Name
1.	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI1	10	VCC5

J26: COM2 (RS232)



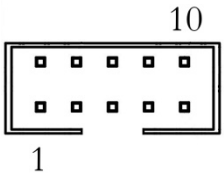
Pin#	Signal Name	Pin#	Signal Name
1.	DCD2	2	RXD2
3	TXD2	4	DTR2
5	GND	6	DSR2
7	RTS2	8	CTS2
9	RI2	10	VCC5

J27: COM3 (RS232/422/485)



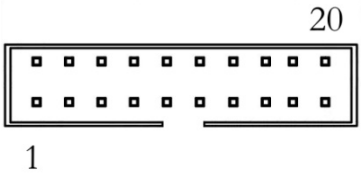
Pin#	Signal Name	Pin#	Signal Name
1.	DCD3/422TX-3 /1RS485-3	2	RXD3/422TX+3 /1RS485+3
3	TXD3/422RX+3	4	DTR3/422RX-3
5	GND	6	DSR3
7	RTS3	8	CTS3
9	RI3	10	VCC5

J28: COM4 (RS232/422/485)



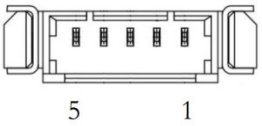
Pin#	Signal Name	Pin#	Signal Name
1.	DCD4/422TX-4 /2RS485-4	2	RXD4/422TX+4 /2RS485+4
3	TXD4/422RX+4	4	DTR4/422RX-4
5	GND	6	DSR4
7	RTS4	8	CTS4
9	RI4	10	VCC5

J29: GPIO



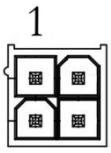
Pin#	Signal Name	Pin#	Signal Name
1.	GND	2	VCC5
2	GP80	4	GP70
3	GP81	6	GP71
7	GP82	8	GP72
9	GP83	10	GP73
11	GP84	12	GP74
13	GP85	14	GP75
15	GP86	16	GP76
17	GP87	18	GP77
19	VCC5	20	P_PERROR-

J32: USB(2.0) 1



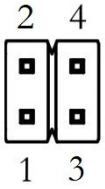
Pin#	Signal Name
1.	VCC5
2	USB-
3	USB+
4	GND
5	GND

J32: Power Input



Pin#	Signal Name	Pin#	Signal Name
1.	GND	3	+12V
2	GND	4	+12V

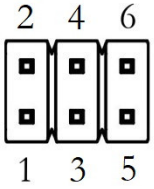
JINV1: Power Selection for INV1



Pin 1&2 closed ➔ +5VDC input support

Pin 3&4 closed ➔ +12VDC input support

JVLCD1: Power Selection for LCD Panel

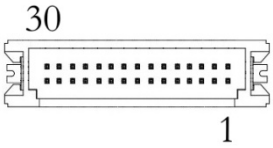


Pin 1&2 closed ➔ +3.3VDC input support (default)

Pin 3&4 closed ➔ +5VDC input support

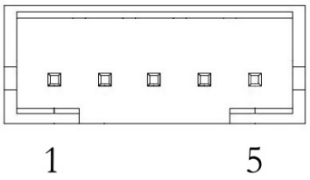
Pin 5&6 closed ➔ +12VDC input support

LVDS1: LVDS



Pin#	Signal Name	Pin#	Signal Name
1.	VDD	2	VDD
3	GND	4	GND
5	LVDS_A0+	6	LVDS_A0-
7	LVDS_A1-	8	LVDS_A2+
9	LVDS_A2+	10	LVDS_A2-
11	GND	12	GND
13	LVDS_ACLK-	14	LVDS_ACLK+
15	LVDS_A3-	16	LVDS_A3+
17	LVDS_B0+	18	LVDS_B0-
19	GND	20	GND
21	LVDS_B1-	22	LVDS_B1+
23	LVDS_B2+	24	LVDS_B2-
25	LVDS_B3+	26	LVDS_B3-
27	DDC_SDA	28	DDC_CLK
29	LVDS_BCLK+	30	LVDS_BCLK-

INV1: LCD Backlight Control



Pin#	Signal Name
1.	INV_LVDS
2	GND
3	L_BKLT_EN
4	LCD_BKLT_CTRL
5	GND

Technical Support Directly from ICOP

To offer you more accurate and specific solutions for the technical situations you have, please prepare the information below before contacting ICOP:

—Product name and serial number

—Description of the H/W environment (i.e.: working temperature, I/O board information, information of connection between main board and IO boards, and/or other devices, etc)

—Description of the S/W environment (i.e: operating system, version, application software, and/or other related information, etc.)

—A detailed description and photos of the technical situation

—Any complement or technical situations you want ICOP more focusing on

User Manual Feedback

To make this user manual more complete, if you have any comments or feedbacks to this manual, please feel free to write to info@icop.com.tw or contact your ICOP sales representative.

Warranty

This product is warranted to be in good working order for a period of one year (12 months) from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it without additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster. Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, originality to use this product. Vendor will not be liable for any claim made by any other related party. Return authorization must be obtained from the vendor before returned merchandise is accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description. Should you have questions about warranty and RMA service, please contact us directly.

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