

**PC/104-Plus SBC with Intel® Atom™/Celeron® on-board SoC with
DDR3L, VGA, LVDS, GbE, USB 2.0, SATA 3Gb/s,
RS-232/422/485 and 5V DC input, RoHS**

PM-BT

Quick Installation Guide

Version 1.0

Jun 15, 2018.

Package List

PM-BT package includes the following items:

- 1 x PM-BT single board computer
- 1 x COM port cable
- 1 x LAN cable
- 1 x SATA cable kit
- 1 x Single-port USB cable
- 1 x VGA cable



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Specifications

- SoC:
 - Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W)
 - Intel® Atom™ E3827 on-board SoC (1.75GHz, dual-core, 1MB cache, TDP=8W)
 - Intel® Atom™ E3826 on-board SoC (1.46GHz, dual-core, 1MB cache, TDP=7W)
 - Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)
 - Intel® Atom™ E3815 on-board SoC (1.46GHz, single-core, 512KB cache, TDP=5W)
 - Intel® Celeron® J1900 on-board SoC (2GHz, quad-core, 2MB cache, TDP=10W)
 - Intel® Celeron® N2930 on-board SoC (1.83GHz, quad-core, 2MB cache, TDP=7.5W)
 - Intel® Celeron® N2807 on-board SoC (1.58GHz, dual-core, 2MB cache, TDP=4.3W)
- Memory:
 - One 204-pin 1333/1066 MHz single-channel DDR3L SO-DIMM supports up to 8 GB (J1900, N2930, E3845, E3827, E3826, E3825, E3815) or 4 GB (N2807)
- BIOS: AMI UEFI BIOS
- Graphics:
 - Intel® HD Graphics Gen 7 Engine with four execution units, supporting DX11.1, OpenGL 4.2 and OpenCL1.2
- Display Output:
 - Dual independent display
 - 1 x VGA (up to 2560x1600@60 Hz)
 - 1 x 18/24-bit single-channel LVDS (2x10 pin)
- Ethernet:
 - 1 x Intel® I210
- Super I/O:
 - Fintek F81866

- Internal I/O Interface:
 - 1 x SATA 3Gb/s with 5V SATA power connector
 - 3 x USB 2.0 (1x4 pin, P=1.25)
 - 2 x RS-232/422/485 (2x5, P=2.0)
- Storage:
 - On-board SSD (optional, support by request)
- Front Panel:
 - 1 x 10-pin header, P=2.0 (power LED, HDD LED, power button and reset button)
- Expansion:
 - 1 x Full-size PCIe Mini slot (supports mSATA)
 - 1 x PC/104-Plus (ISA+PCI)
 - * The ISA function is limited. Please refer to page 5 for details.**
- Digital I/O: 1 x 8-bit digital I/O (2x5 pin, P=2.0)
- Power supply:
 - 5V DC input
 - 12V for fan, LVDS and PCI-104 plus
 - » 5V for PCI-104 plus (1x3 pin, P=2.0)
 - » 12V for PCI-104 plus (1x3 pin, P=2.0)
 - 3/5V jumper for PCI-104 plus
 - Support AT/ATX mode
 - ErP/EuP Compliant
- Watchdog Timer:
 - Software programmable, supports 1~255 sec. system reset
- Operating Temperature:
 - 20°C ~ 60°C (for J1900/N2930/N2807)
 - 40°C ~ 85°C (for E38xx)
- Storage Temperature: -40°C ~ 85°C
- Thermal: Heatsink
- Operation Humidity: 5% ~ 95%, non-condensing
- Dimensions: 96 mm x 90 mm

- Weight: GW: 500g / NW 120g
- CE/FCC compliant

All the drivers and One Key Recovery utility for the PM-BT are available on IEI Resource Download Center. Type PM-BT and press Enter to find all the relevant software, utilities, and documentation. To install software from the downloaded ISO file, mount the file as a virtual drive to view its content.

IEI Resource Download Center

<https://download.ieiworld.com>



Ordering Information

- **PM-BT-J19001-R10:**

PC/104-Plus Single Board Computer with Intel® Atom™ J1900 SoC with DDR3L, VGA, LVDS, USB 2.0, SATA 3Gb/s, GbE, RS-232/422/485 and 5V DC input, RoHS

- **PM-BT-N28071-R10:**

PC/104-Plus Single Board Computer with Intel® Atom™ N2807 SoC with DDR3L, VGA, LVDS, USB 2.0, SATA 3Gb/s, GbE, RS-232/422/485 and 5V DC input, RoHS

- **PM-BT-E38xx1W2-R10**:**

PC/104-Plus Single Board Computer with Intel® Atom™ E38xx SoC with DDR3L, VGA, LVDS, USB 2.0, SATA 3Gb/s, GbE, RS-232/422/485 and 5V DC input, RoHS, -40°C ~ 85°C

***Note: Models with other CPUs not listed in the table are requested by MOQ - 100 pcs/lot.*

- **33403-000015-RS:**
PC104 plus spacer (For PCI) 120 Pin socket connector
- **33403-000016-RS:**
PC104 plus spacer (For ISA) 64+40 Pin socket connector

NOTE:

ISA Limitation of PM-BT

Due to the limitation of Intel® Bay Trail processors, the PM-BT does not support the following features:

Bus Master Cycles

DMA

LPC Memory Mapped Transactions

IRQ0, IRQ1, IRQ2, IRQ8, IRQ9, IRQ13, IRQ14

ISA Enable (IE) Bit

PnP

Jumpers setting and connectors

LABEL	FUNCTION
BAT1	Clear COMS Setup
J_ATX_AT1	Select ATX or AT Mode
J_VLVDS1	LVDS VDD Power Selection
SW1	LVDS Panel Resolution Selection
PCI_P_CN1	PCI Power Voltage Selection
ISA_P_CN1	ISA Power Voltage Selection (External Input)
LAN1	LAN Port
PWR1	DC +5V Power IN
F_PANEL1	F_PANEL Pin Connector
PC104_PLUS1	PCI-104 Plus slot (PCI)
CN1	PCI-104 slot (ISA)
JSPI1	SPI Flash Connector
INV_CN1	Panel Power Supply
M_PCIE1	PCI-E Mini Card for M-SATA
LVDS1	LVDS Connector
DIMM1	DDR3L SO-DIMM Slot
SATA1	SATA Connector
SATA_PWR1	SATA Power Connector
COM1, COM2	Internal RS-232/RS-422/RS-485 Serial Port Connectors
USB1, USB2, USB3	Internal USB 2.0 Connectors
DIO1	Digital Input / Output Connector

BAT1: Clear COMS Setup

PIN NO.	DESCRIPTION
Short	Clear CMOS

J_ATX_AT1: Select ATX or AT Mode

PIN NO.	DESCRIPTION
Short A - B	ATX mode (default)
Short B - C	AT mode

J_VLVDS1: LVDS VDD Power Selection	
PIN NO.	DESCRIPTION
Short 1 - 3	Back-light Enable +3.3V (default)
Short 2 - 4	Set The Voltage Level Of Panel To +3.3V (default)
Short 3 - 5	Back-light Enable +5V
Short 4 - 6	Set The Voltage Level Of Panel To +5V

SW1: LVDS Panel Resolution Selection (ON=0, OFF=1) (S=Single)	
SW1	DESCRIPTION
4-3-2-1	
0000	800 x 600 18bit S (default)
0001	1024 x 768 18bit S
0010	1024 x 768 24bit S
0011	1280 x 768 18bit S
0100	1280 x 800 18bit S
0101	1280 x 960 18bit S
0111	1366 x 768 18bit S
1000	1366 x 768 24bit S

PCI_P_CN1: PCI Power Voltage Selection	
PIN NO.	DESCRIPTION
Short 1 - 2	+3.3V (default)
Short 2 - 3	+5V

ISA_P_CN1: ISA Power Voltage Selection (External Input)	
PIN NO.	DESCRIPTION
1	-12V (default)
2	GND
3	-5V

LAN1: LAN Port			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LAN1_MDX0+	2	LAN1_MDX0-
3	LAN1_MDX1+	4	LAN1_MDX1-
5	LAN1_MDX2+	6	LAN1_MDX2-
7	LAN1_MDX3+	8	LAN1_MDX3-
9	LAN_GND	10	LAN_GND
11	LAN_LINKLED+	12	LAN_LINKLED-
13	LAN_SPEEDLED	14	LAN_SPEEDLED2

PWR1: DC +5V Power IN			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	12V	2	GND
3	5V		

F_PANEL1: F_PANEL Pin Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	PWR_LED+	4	PWR_LED-
5	HDD_LED+	6	HDD_LED-
7	PWR_BTN+	8	PWR_BTN-
9	RESET+	10	RESET-

PC104_PLUS1: PC-104 Plus Connector							
PIN	Description	PIN	Description	PIN	Description	PIN	Description
A1	GND	B1	SERIRQ_PCI	C1	+V5S	D1	A_D0
A2	+PIO_VCC	B2	A_D2	C2	A_D1	D2	+V5S
A3	A_D5	B3	GND	C3	A_D4	D3	A_D3
A4	C_BE0	B4	A_D7	C4	GND	D4	A_D6
A5	GND	B5	A_D9	C5	A_D8	D5	GND
A6	A_D11	B6	+PIO_VCC	C6	A_D10	D6	GND
A7	A_D14	B7	A_D13	C7	GND	D7	A_D12
A8	+V3.3S	B8	C_BE1	C8	A_D15	D8	+V3.3S
A9	-SERR	B9	GND	C9	+V3.3S	D9	PAR
A10	GND	B10	-PERR	C10	+V3.3S	D10	+V3.3S
A11	-STOP	B11	+V3.3S	C11	-PLOCK	D11	GND
A12	+V3.3S	B12	-TRDY	C12	GND	D12	-DEVSEL
A13	-FRAME	B13	GND	C13	-IRDY	D13	+V3.3S
A14	GND	B14	A_D16	C14	+V3.3S	D14	C_BE2
A15	A_D18	B15	+V3.3S	C15	A_D17	D15	GND
A16	A_D21	B16	A_D20	C16	GND	D16	A_D19
A17	+V3.3S	B17	A_D23	C17	A_D22	D17	+V3.3S
A18	A_D16	B18	GND	C18	A_D17	D18	A_D18
A19	A_D24	B19	C_BE3	C19	+PIO_VCC	D19	A_D19
A20	GND	B20	A_D26	C20	A_D25	D20	GND
A21	A_D29	B21	+V5S	C21	A_D28	D21	A_D27
A22	+V5S	B22	A_D30	C22	GND	D22	A_D31
A23	PREQ-0	B23	GND	C23	PREQ-1	D23	+PIO_VCC
A24	GND	B24	PREQ-2	C24	+V5S	D24	PGNT-0
A25	PGNT-1	B25	+PIO_VCC	C25	PGNT-2	D25	GND
A26	+V5S	B26	PCLK_BUF0	C26	GND	D26	PCLK_BUF1
A27	PCLK_BUF2	B27	+V5S	C27	PCLK_BUF3	D27	GND
A28	GND	B28	-PIRQD	C28	+V5S	D28	PCIRST-
A29	+V12S	B29	-PIRQA	C29	-PIRQB	D29	-PIRQC
A30	-12V	B30	PREQ-3	C30	PREQ-3	D30	GND

CN1: PC-104 ISA Connector

PIN	Description	PIN	Description	PIN	Description	PIN	Description
A1	IOCHK#	B1	GND	C1	GND	D1	GND
A2	SD7	B2	RSTDRV	C2	SBHE#	D2	MEMCS16#
A3	SD6	B3	+V5S	C3	LA23	D3	IOCS16#
A4	SD5	B4	IRQ9	C4	LA22	D4	IRQ10
A5	SD4	B5	-5V	C5	LA21	D5	IRQ11
A6	SD3	B6	DRQ2	C6	LA20	D6	IRQ12
A7	SD2	B7	-12V	C7	LA19	D7	IRQ15
A8	SD1	B8	NOWS#	C8	LA18	D8	IRQ14
A9	SD0	B9	+V12S	C9	LA17	D9	DACK0#
A10	IOCHRDY	B10	GND	C10	MEMR#	D10	DRQ0
A11	AEN	B11	SMEMW#	C11	MEMW#	D11	DACK5#
A12	SA19	B12	SMEMR#	C12	SD8	D12	DRQ5
A13	SA18	B13	IOW#	C13	SD9	D13	DACK#6
A14	SA17	B14	IOR#	C14	SD10	D14	DRQ6
A15	SA16	B15	DACK3#	C15	SD11	D15	DACK#7
A16	SA15	B16	DRQ3	C16	SD12	D16	DRQ7
A17	SA14	B17	DACK1#	C17	SD13	D17	+V5S
A18	SA13	B18	DRQ1	C18	SD14	D18	RMASTER#
A19	SA12	B19	REFRESH#	C19	SD15	D19	GND
A20	SA11	B20	SYSCLK	C20	N/C	D20	GND
A21	SA10	B21	IRQ7				
A22	SA9	B22	IRQ6				
A23	SA8	B23	IRQ5				
A24	SA7	B24	IRQ4				
A25	SA6	B25	IRQ3				
A26	SA5	B26	DACK2#				
A27	SA4	B27	TC				
A28	SA3	B28	BALE				
A29	SA2	B29	+V5S				
A30	SA1	B30	ISA_14.318M_OUT1				
A31	SA0	B31	GND				
A32	GND	B32	GND				

JSPI1: SPI Flash Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+V1.8M_SPI_CON	2	SPI_CS
3	SPI_SO	4	SPI_CLK
5	SPI_SI	6	GND

M_PCIE1: PCI-E Mini Card for M-SATA			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PCIE_WAKE#	2	+V3.3A_MINI-1
3	N/C	4	GND
5	N/C	6	+V1.5_MINI-1
7	GND	8	N/C
9	GND	10	N/C
11	CLK_PCIE_MINI_N	12	N/C
13	CLK_PCIE_MINI_P	14	N/C
15	GND	16	N/C
17	N/C	18	GND
19	N/C	20	+V3.3S
21	GND	22	BUF_PLT_RST#
23	MPCIE_RXDN	24	+V3.3A_MINI-1
25	MPCIE_RXDP	26	GND
27	GND	28	+V1.5_MINI-1
29	GND	30	SMB_CLK
31	MPCIE_TXDN	32	SMB_DATA
33	MPCIE_TXDP	34	GND
35	GND	36	USB_PN3-
37	GND	38	USB_PP3+
39	+V3.3_MINI-1	40	GND
41	+V3.3_MINI-1	42	N/C
43	N/C	44	N/C
45	N/C	46	N/C
47	N/C	48	+V1.5_MINI-1
49	N/C	50	GND
51	mSATA_DET#	52	+V3.3_MINI-1

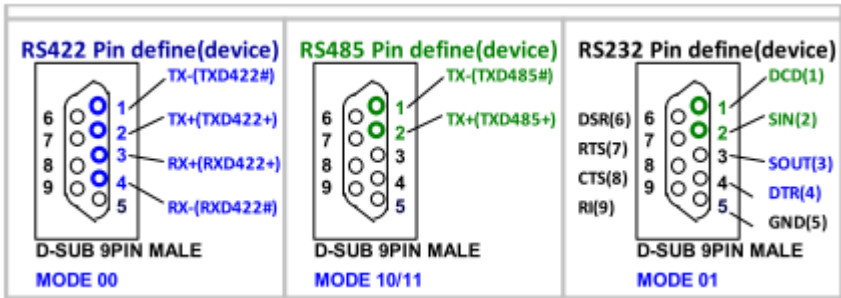
INV_CN1: Panel Power Supply			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+12V	2	+12V
3	ENABKL	4	BRIGHTNESS
5	GND	6	GND

LVDS1: LVDS Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	A1M_L	4	A0M_L
5	A1P_L	6	A0P_L
7	GND	8	GND
9	CLK1M_L	10	A2M_L
11	CLK1P_L	12	A2P_L
13	GND	14	GND
15	A3M_L	16	NC
17	A3P_L	18	+VCC_LCD
19	GND	20	+VCC_LCD

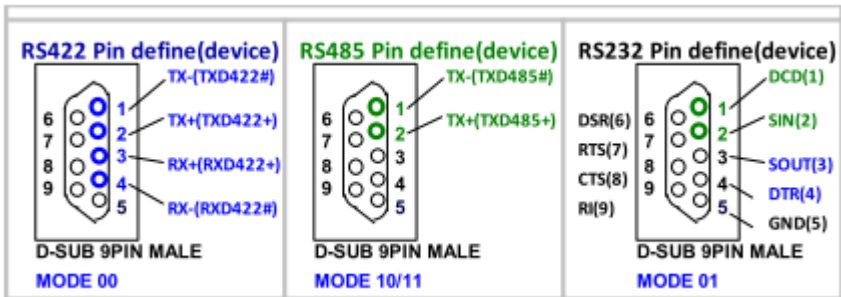
SATA1: SATA Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	TX1+
3	TX1-	4	GND
5	RX1-	6	RX1+
7	GND		

SATA_PWR1: SATA Power Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5V	2	GND

COM1: Internal RS-232/RS-422/RS-485 Serial Port Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	-NDCD1	2	-NDSR1
3	NSIN1	4	-NRTS1
5	NSOUT1	6	-NCTS1
7	-NDTR1	8	-XRI1
9	GND	10	N/C



COM2: Internal RS-232/RS-422/RS-485 Serial Port Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	-NDCD2	2	-NDSR2
3	NSIN2	4	-NRTS2
5	NSOUT2	6	-NCTS2
7	-NDTR2	8	-XRI2
9	GND	10	N/C



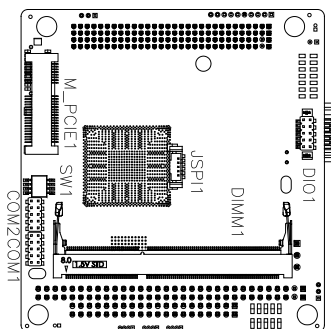
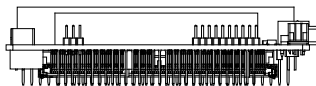
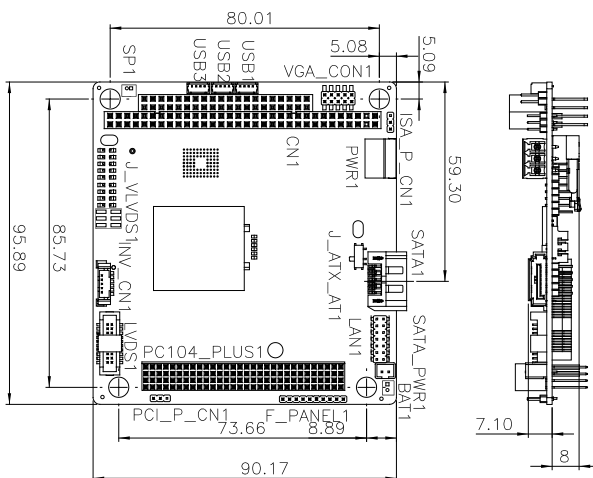
USB1: Internal USB 2.0 Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5A	2	D0F-
3	D0F+	4	GND

USB2: Internal USB 2.0 Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5A	2	D1F-
3	D1F+	4	GND

USB3: Internal USB 2.0 Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5A	2	D2F-
3	D2F+	4	GND

DIO1: Digital Input / Output Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+5V
3	DOUT3	4	DOUT2
5	DOUT1	6	DOUT0
7	DIN3	8	DIN2
9	DIN1	10	DIN0

Board Layout: Jumper and Connector Locations



(Unit: mm)