ProSys-5101

Box PC with Intel® BayTrail Celeron Quad Core J1900

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Introduction

Symbols used in this Manual


This symbol point out to especially information.

Important Instructions

This chapter contains instructions which must be observed when using your Flatman Monitor.
The manufacturer's instructions provide useful information on your device.

Note on the Warranty

Due to their limited service life, parts which by their nature are subject to a particularly high degree of wear (wearing parts) are excluded from the warranty beyond that provided by law. This applies to the CMOS battery, for example.

Technical Short Information

Housing
RAL 7021 powder coated
(WxDxH) 180 X 134 X 50mm
Weight: ~ 1kg
Integrated SBC
CPU Intel® BayTrail Celeron Quad Core J1900
4GB RAM *(Option up to 8GB)*
Storage: 64GB mSATA SSD *(Option up to 256GB)*
Power Supply included
16-30V_{DC} Input via Phoenix Connector PSC 1,5/ 3-F
EMC
EN55022 class B

Interfaces
4x USB2.0
1x USB3.0
2x GbE
1x HDMI
1x VGA
2x COM (RS232, RS422, RS485, BIOS configurable)
OS Support
Windows7, Windows8, Linux
Environment
Fanless passive cooling
Operating temp.: 0 °-50°C ambient
Humidity: 10%-90% @ 39°C, non condensing

Power Consumption	U_{IN}	I_{IN}	P_{IN}
Standby	24 V	0,019 A	0,5 W
Windows IDLE	24 V	0,183 A	4,4 W
Windows typical workload (BurnIn with max. load)	24 V	0,515 A	12,4 W
Windows with CPU at TDP (Thermal Design Power selected in Thermal-analysis-tool)	24 V	0,633 A	15,2 W
Windows with max. workload & max. Graphics, adjusted in Thermal-analysis-tool (max. current consumption)	24 V	0,826 A	19,8 W

Test Setup: Windows 7 pro. 64bit; 4GB RAM ; 60GB mSATA

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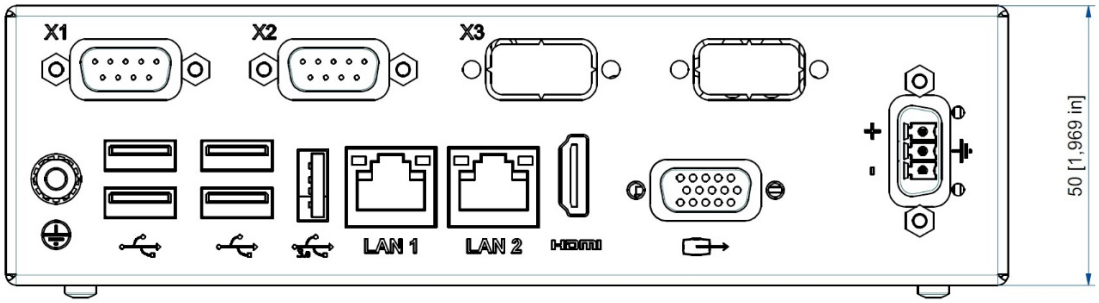
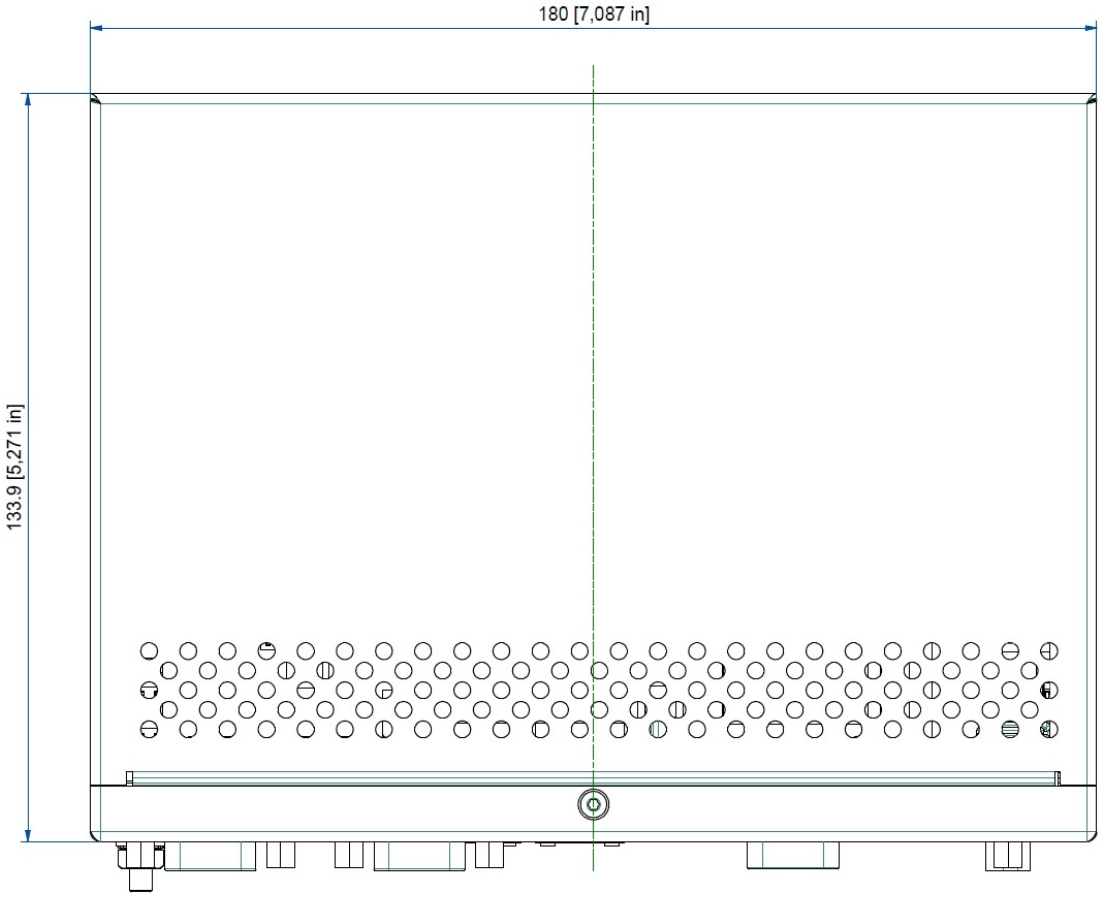
EN00-005004-01 RAIL-PC-1750; Intel BayTrail CeleronJ1900, 4GB, 256GB mSATA

Dimension





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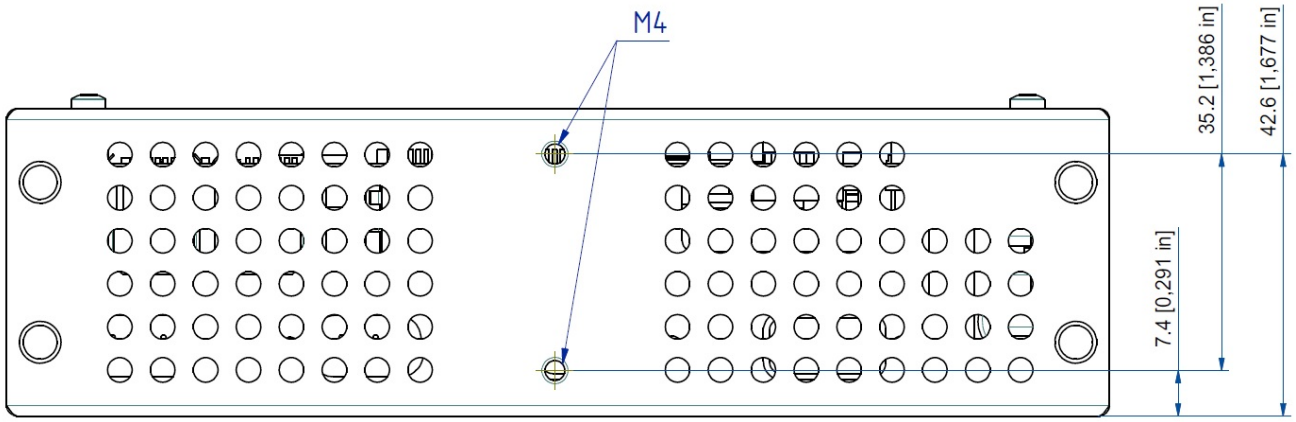

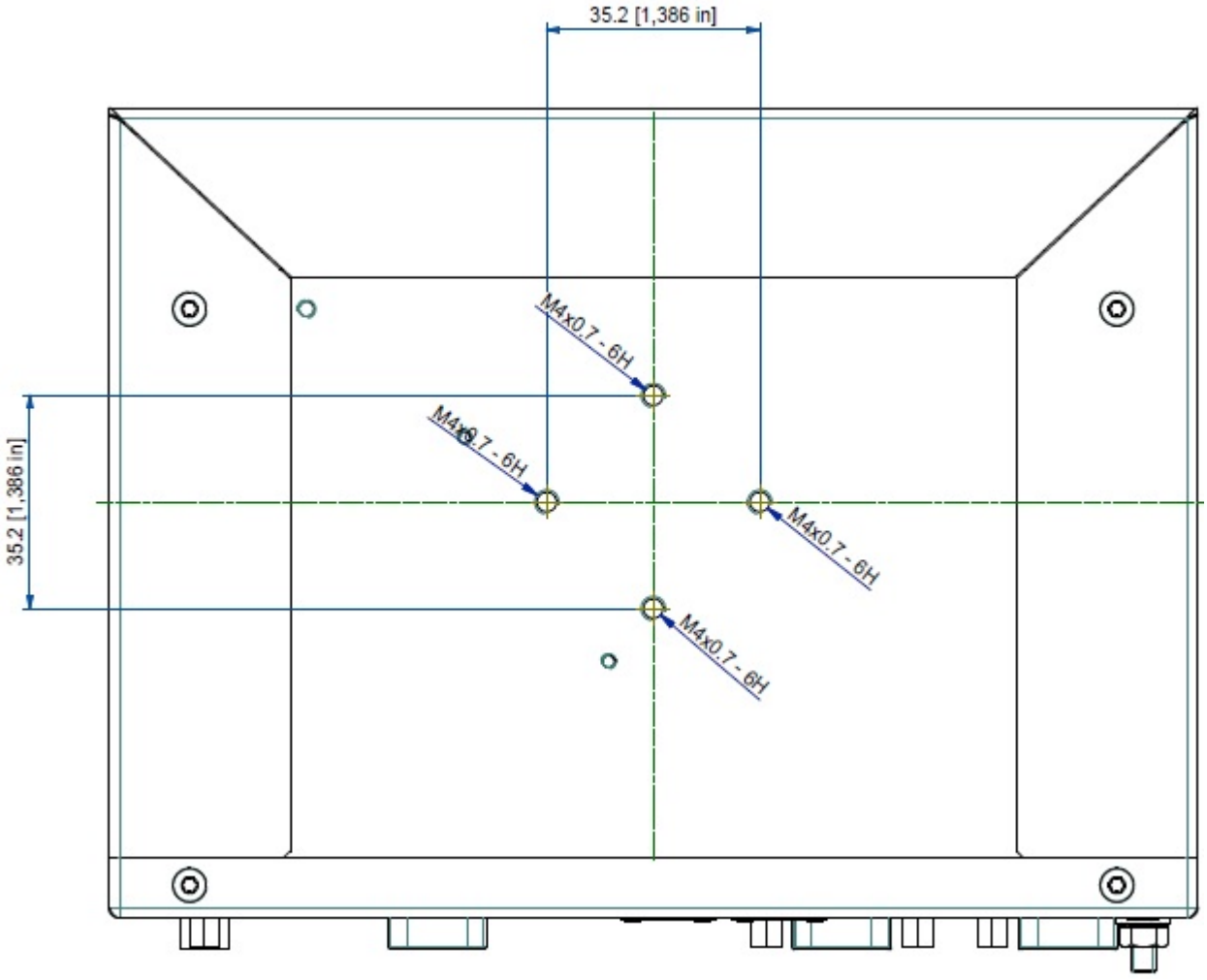

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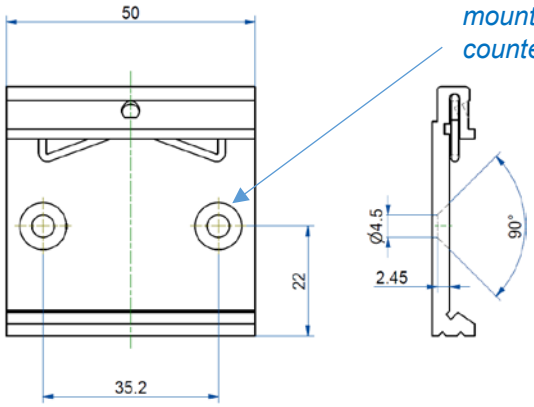
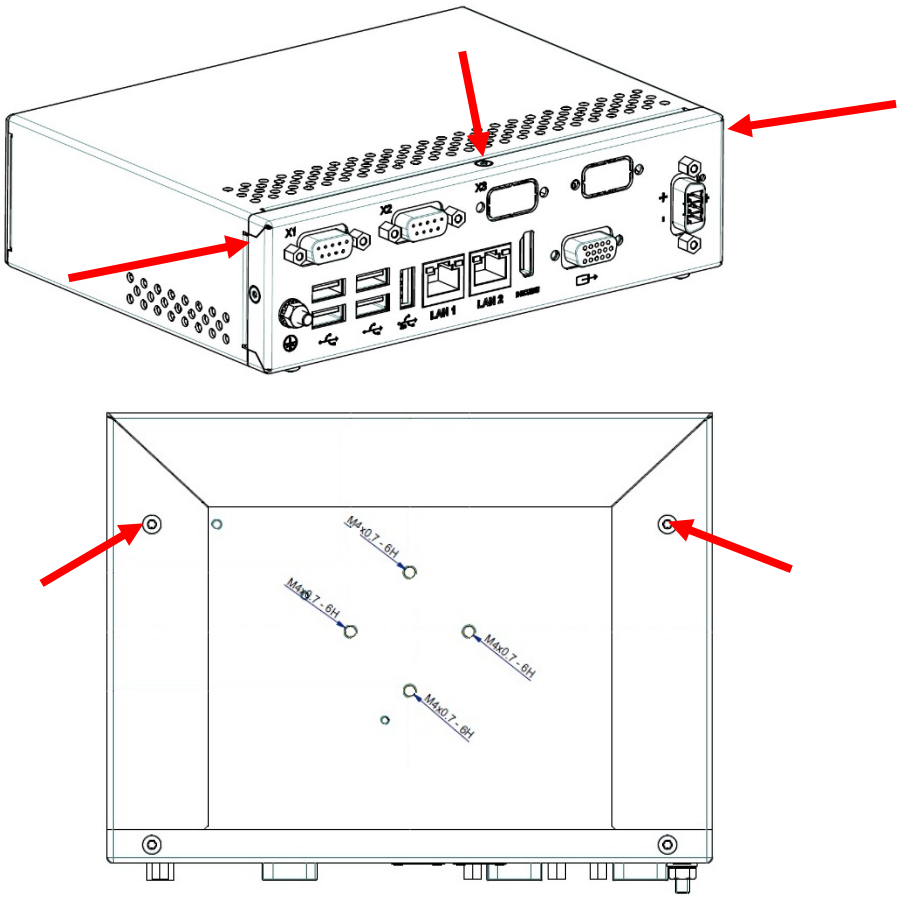
Mounting options

Always make sure to mount the DIN rail retaining clamp in upper position



Open the housing

To open the housing just remove five screws:



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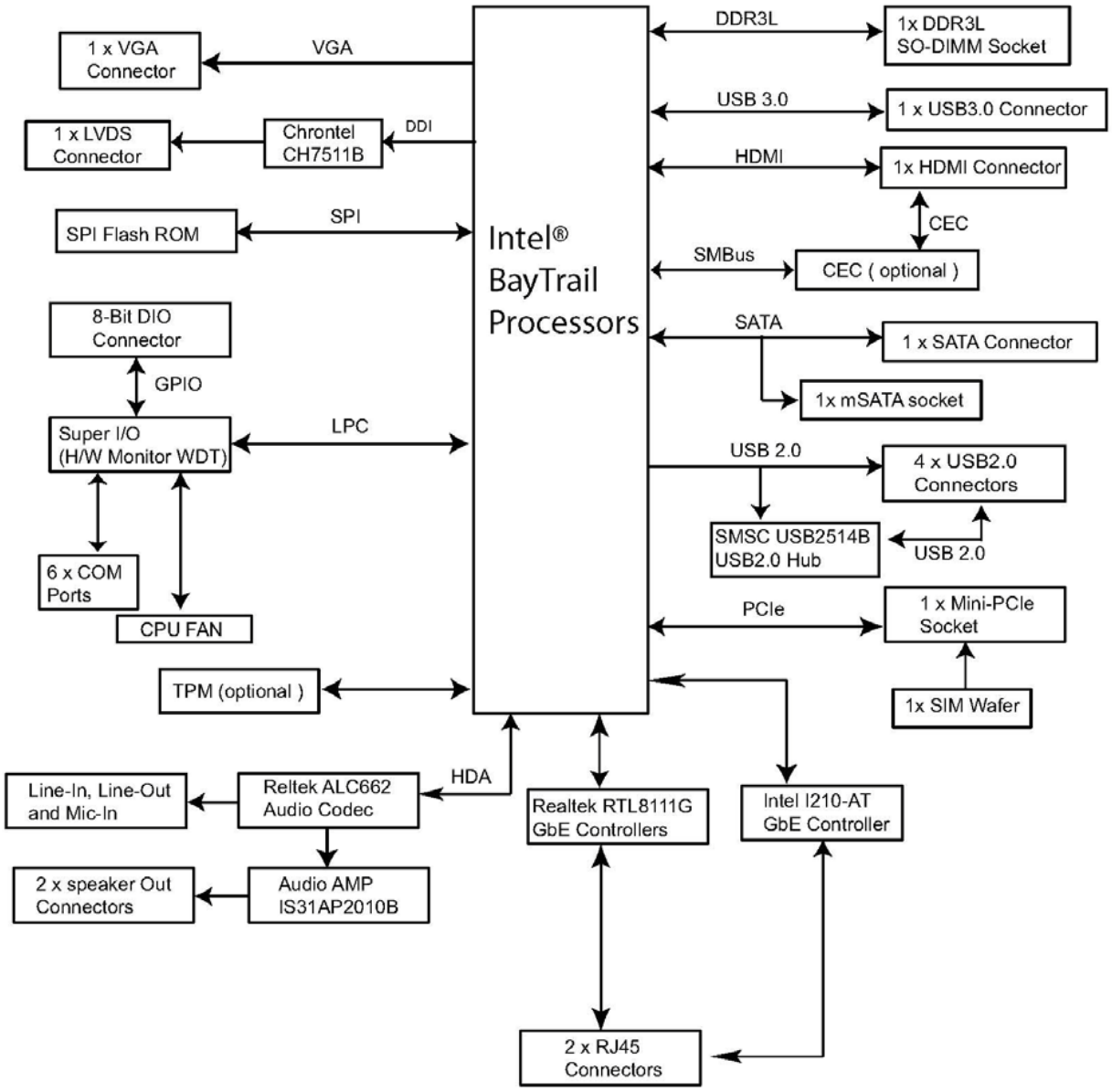
CPU inside

Block diagram:



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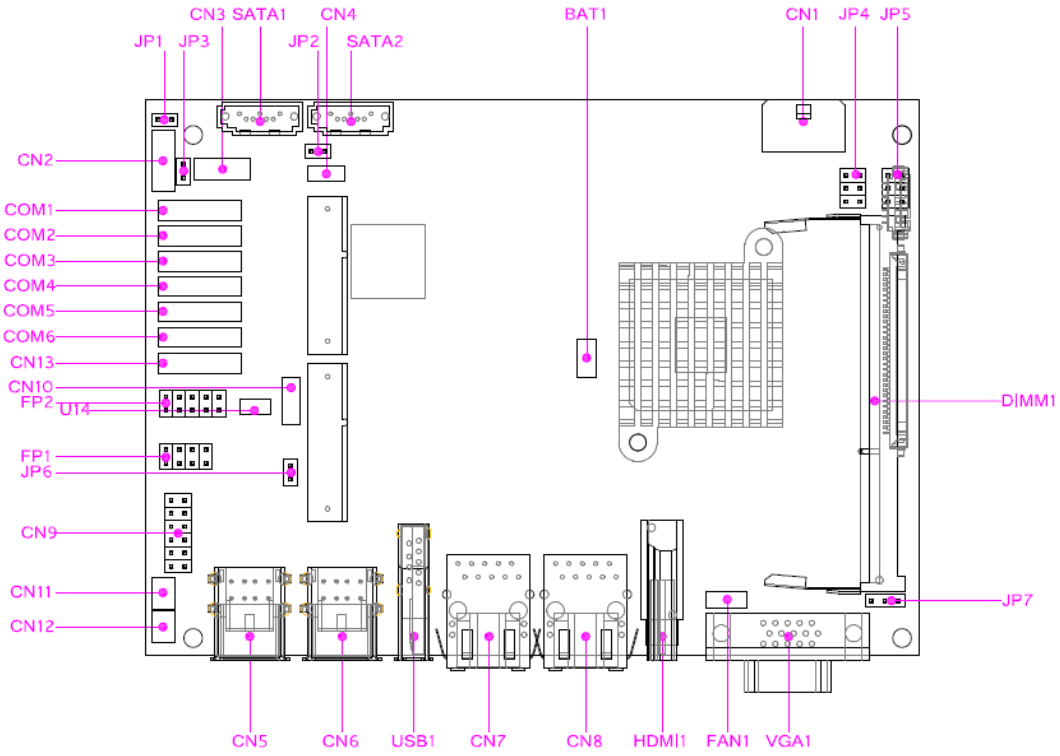
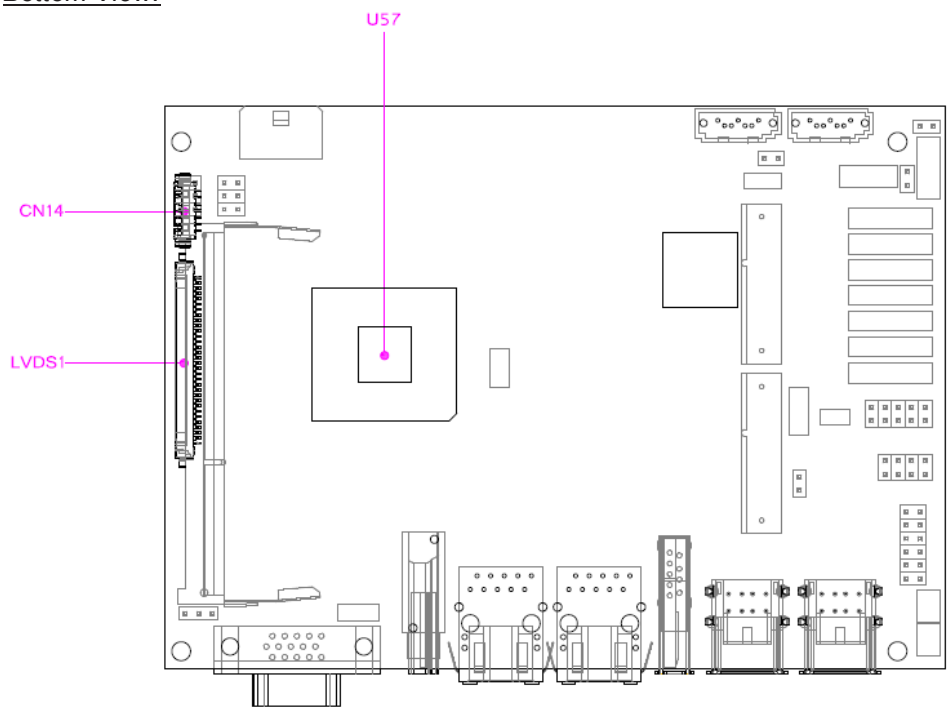
Top View:



Bottom View:



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Internal Connector List

Label	Function
BAT1	Battery Power Input Wafer
BZ1	Onboard Buzzer
COM1 - 2	RS-232/422/485 Port 1~2Wafer
COM3 - 6	RS-232 Port 3~6 Wafer
CN1	Power Input Wafer
CN2	PS/2 Keyboard / Mouse Wafer
CN3	HDD Power Output Wafer
CN4	P80_Header LPC
CN9	Audio Input / Output Pin Header
CN10	SIM Interface Wafer for MPCIE2
CN11	Right Channel 3W Audio AMP Output Wafer
CN12	Left Channel 3W Audio AMP Output Wafer
CN13	Digital Input / Output Pin Header
CN14	Backlight Power Output Wafer
DIMM1	DDR3 Memory SO-DIMM Socket
FAN1	CPU FAN Wafer
FP1	Front Panel 1 Pin Header
FP2	Front Panel 2 Pin Header
LVDS1	18/24-bit, Single Channel LVDS Panel Connector
mPCIE1	Mini-PCIE Express v1.2 Socket / mSATA
mPCIE2	Mini-PCIE Express v1.2 Socket
SATA1	Serial ATA Port 0 Connector
SATA2	Serial ATA Port 1 Connector

Panel Connector List

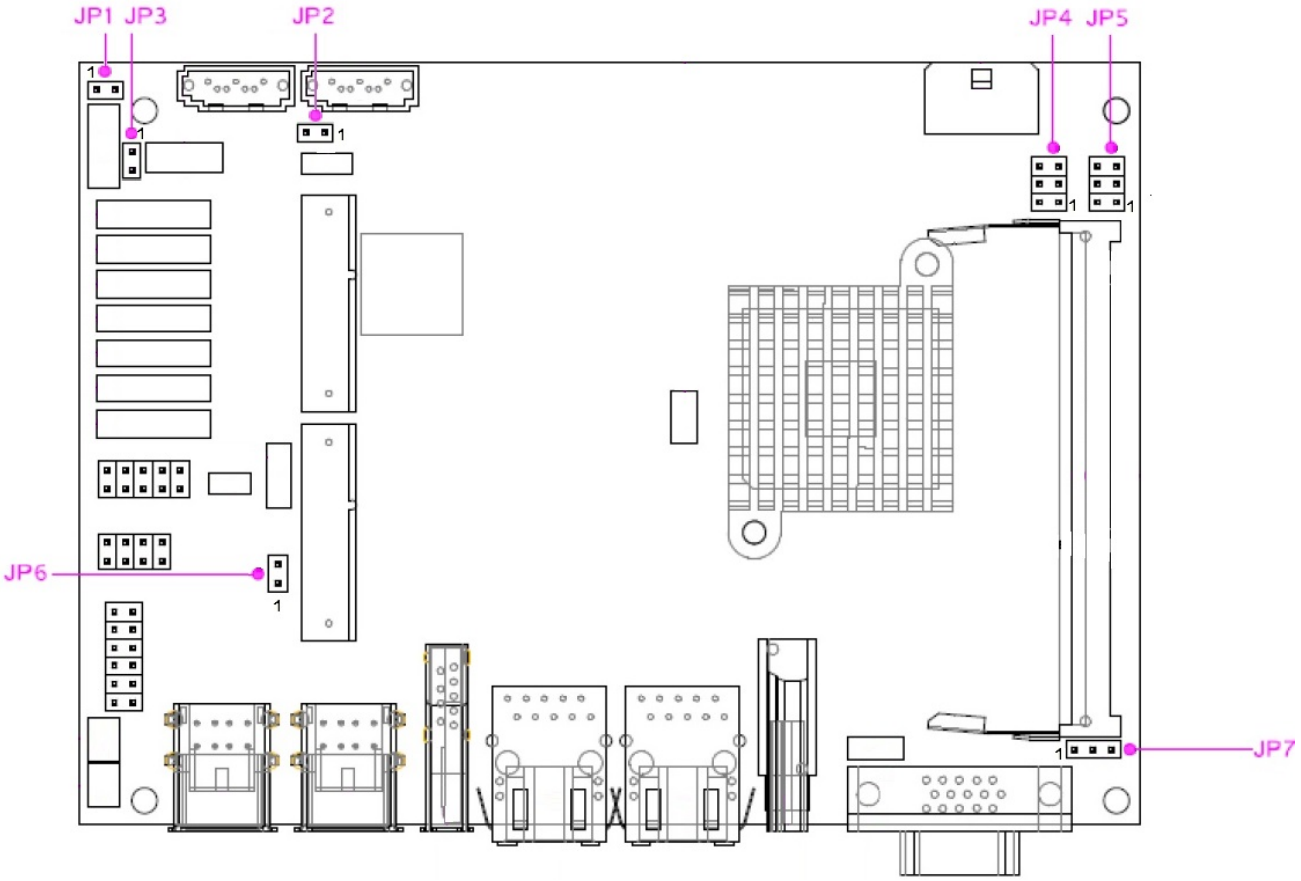
Label	Function
CN7	GbE LAN1 RJ-45 Connector
CN8	GbE LAN2 RJ-45 Connector
CN5	USB2.0 Port 0,1 Connector
CN6	USB2.0 Port 2,3 Connector
USB1	USB3.0 Port 0 Connector
VGA1	VGA Connector
HDMI1	HDMI Connector
X1	COM1
X2	COM2
PWR	Input Power Connector (3pin Phoenix)

Jumper List

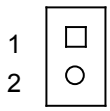
Label	Function
JP1	RTC Reset Selection
JP2	MPCIE Activity LED Indication
JP3	RTC Battery Test
JP4	Backlight Enable Selection
JP5	Panel & Backlight Power Selection
JP6	USB Power Selection

JP7	AT / ATX Power Mode Selection

Jumper Settings



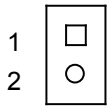
JP1: RTC Reset Selection (Pitch 2.54mm)



Jumper	Status
1-2 Open	Normal Operation
1-2 Short	Clear ME Registers

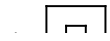
JP2: mPCIE Activity LED Indication (Pitch 2.54mm)

(not used for Rail-PC-System !!)



Pin	Description
1	LED+
2	LED-

JP3: RTC Battery test (Pitch 2.54mm)

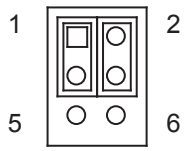


Jumper	Status

1-2 Open	Normal
1-2 Short	Reserved

JP4: Backlight Enable Selection for LVDS1 (Pitch 2.00mm)

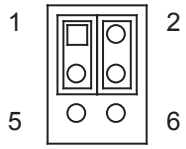
(not used for Rail-PC-System !!)



Jumper	Setting	Status
1	1-3	Backlight *Enable* Voltage = +3.3V
	3-5	Backlight *Enable* Voltage = +5V
2	2-4	Active High
	4-6	Active Low

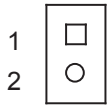
JP5: Panel & Backlight Power Selection for LVDS1 (Pitch 2.00mm)

(not used for Rail-PC-System !!)



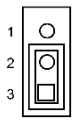
Jumper	Setting	Status
1	1-3	Backlight Power = +12V
	3-5	Backlight Power = +5V
2	2-4	Panel Power = +3.3V
	4-6	Panel Power = +5V

JP6: USB Power Selection (Pitch 2.00mm)



Jumper	Status
1-2 Short	USB power will be cut off in S4 & S5 state.
1-2 Open	USB power is always supply.

JP7: AT / ATX Power Mode Selection (Pitch 2.54mm)



Jumper	Status
1-2 Short	ATX Mode
2-3 Short	AT Mode (default)

Importent note:
There is no „power-on-button“ on the device available:
Therefore the jumper **JP7** (AT/ATX Mode) has always set to „**AT-Mode**“!
According to this the **BIOS setting** for Power Mode is „**Power Off**“!
(Default settings ex factory)

BIOS Power Setting

Control Group Structure Name	BIOS Defaults	Possible Setting
ACPI Sleep State	S3 (Suspend to Ram)	Suspend Disabled - S3 (Suspend to Ram)
Restore AC Power LOSS	Power OFF	**Power Off** - Power On - Last State
Power Saving Mode	Disabled	Disabled - Enabled
Resume Event Control		
Resume from S3 By PS/2	Disabled	Disabled - Enabled

Keyboard		
Resume from S3 By PS/2 Mouse	Disabled	Disabled - Enabled
Resume By PCIE Device	Disabled	Disabled - Enabled
Resume By RingRTC Alarm	Disabled	Disabled - Enabled
Resume By RTC Alarm	Disabled	Disabled - Enabled
► WatchDog Timer Configuration		

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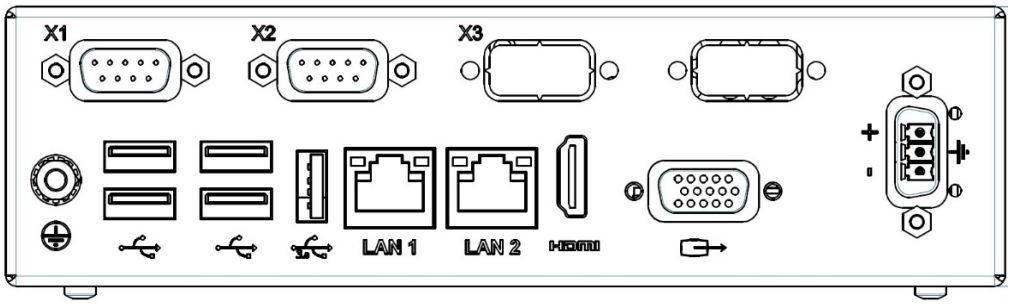
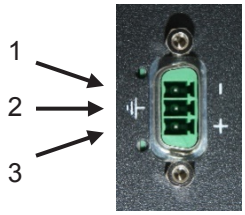
Panel Connector Pin Assignments



PWR: Input Power Connector

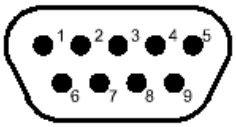


Pin	Signal
1	GND
2	Shield
3	VCC

Mating connector	
Phoenix Contact PSC 1,5/ 3-F Order# 1841909	

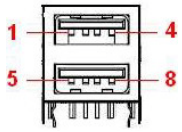
X1: COM1 RS-232/422/485 (via internal cable connection to CN15)

X2: COM2 RS-232/422/485 (via internal cable connection to CN16)



Pin	RS-232	RS-422	Half Duplex RS-485	Full Duplex RS-485
1	DCD	Tx-	DATA-	Tx-
2	RxD	Tx+	DATA+	Tx-
3	TxD	Rx+	-	Rx+
4	DTR	Rx-	-	Rx-
5	GND	GND	GND	GND
6	DSR	-	-	-
7	RTS	-	-	-
8	CTS	-	-	-
9	RI	-	-	-

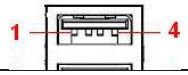
CN5: USB2.0 Port-0,1 Type-A Connector



Pin	Signal Name	Pin	Signal Name
1	+USB_VCC	5	+USB_VCC
2	USBA_A-	6	USBB_B-
3	USBA_A+	7	USBB_B+
4	GND	8	GND

** : The power source of +USBVCC can be selected by JP6.*

CN6: USB2.0 Port-2,3 Type-A Connector

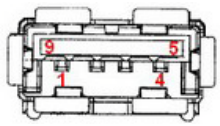


Pin	Signal Name	Pin	Signal Name
1	+USB_VCC	5	+USB_VCC

	2	USBA_A-	6	USBB_B-
	3	USBA_A+	7	USBB_B+
	4	GND	8	GND

** : The power source of +USBVCC can be selected by JP6.*

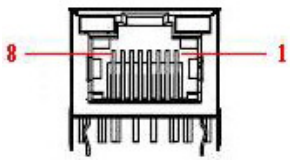
USB1: USB3.0 Port 0, Type-A Connector



Pin	Signal Name	Pin	Signal Name
1	+USB_VCC	5	USB_RX-
2	USB_D-	6	USB_RX+
3	USB_D+	7	GND
4	GND	8	USB_TX-
		9	USB_TX+

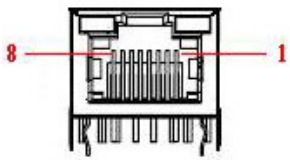
** : The power source of +USBVCC can be selected by JP6.*

CN7: GbE LAN1 RJ-45 Connector



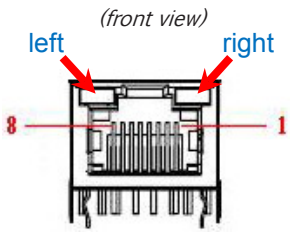
Pin	Signal Name	Pin	Signal Name
1	TX1+	5	TX3-
2	TX1-	6	TX2-
3	TX2+	7	TX4+
4	TX3+	8	TX4-

CN8: GbE LAN2 RJ-45 Connector



Pin	Signal Name	Pin	Signal Name
1	TX1+	5	TX3-
2	TX1-	6	TX2-
3	TX2+	7	TX4+
4	TX3+	8	TX4-

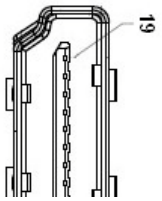
LED Diagram of LAN Connectors:



left LED: activity / link	
off	No LAN connectivity
yellow	link
blinking	activity

right LED: 10/100/1000	
off	10 Mbit
green	100 Mbit
orange	1 GbE

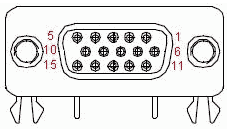
HDMI1: HDMI Connector



Pin	Signal Name
1	TMDS Data2+
2	GND
3	TMDS Data2–
4	TMDS Data1+
5	GND

Pin	Signal Name
6	TMDS Data1–
7	TMDS Data0+
8	GND
9	TMDS Data0–
10	TMDS Clock+
11	GND
12	TMDS Clock–
13	Reserved
14	Reserved
15	DDC_CLK
16	DDC_DATA
17	GND
18	+5 V Power
19	Hot Plug Detect

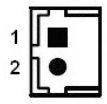
VGA1: DB15 VGA Connector



Pin	Signal Name	Pin	Signal Name
1	Red	2	Green
3	Blue	4	n.c.
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	n.c.	12	DDC Data
13	Hsync	14	Vsync
15	DDC Clock		

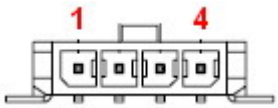
Internal Connector Pin Assignment

BAT1: Battery Power Input Wafer



Pin	Signal Name
1	+VBAT
2	GND

CN1: Power Input Wafer (internal cable connection to DC-DC-Converter)



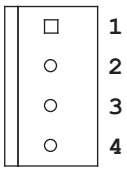
Pin	Signal
1	+Vin
2	GND
3	GND
4	+Vin

CN2: PS/2 Keyboard/Mouse wafer

(not used for Rail-PC-System !!)

Pin	Signal Name
1	MSCLK
2	VCC
3	MSDAT
4	KBDAT
5	GND
6	KBCLK

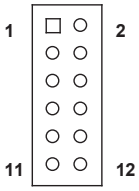
CN3: SATA HDD Power Output Wafer



Pin	Signal Name
1	+12V
2	GND
3	GND
4	+5V

CN9: Audio Pin Header

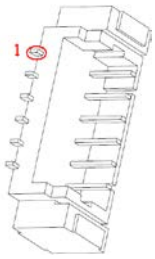
(not used for Rail-PC-System !!)



Pin	Signal Name	Pin	Signal Name
1	MIC_IN_L	2	MIC_IN_R
3	MIC_IN_JD	4	GND
5	LINE_IN_L	6	LINE_IN_R
7	LINE_IN_JD	8	GND
9	LINE_OUT_L	10	LINE_OUT_R
11	LINE_OUT_JD	12	GND

CN10: SIM Interface Wafer for MPCIE2

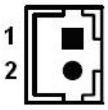
(not used for Rail-PC-System !!)



Pin	Signal Name
1	UIM_PWR
2	UIM_DATA
3	UIM_RESET
4	UIM_VPP
5	UIM_CLK
6	GND

CN11: Right Channel 3W Audio AMP Output Wafer

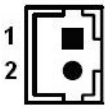
(not used for Rail-PC-System !!)



Pin	Signal Name
1	Speaker+
2	Speaker-

CN12: Left Channel 3W Audio AMP Output Wafer

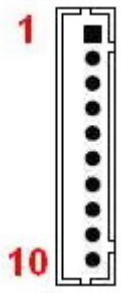
(not used for Rail-PC-System !!)



Pin	Signal Name
1	Speaker+
2	Speaker-

CN13: Digital Input / Output Wafer

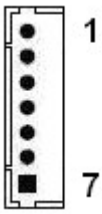
(not used for Rail-PC-System !!)



Pin	Signal Name
1	+5V
2	DIO_0
3	DIO_1
4	DIO_2
5	DIO_3
6	DIO_4
7	DIO_5
8	DIO_6
9	DIO_7
10	GND

CN18: Backlight Power Output Wafer

(not used for Rail-PC-System !!)

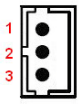


Pin	Signal Name
1	BL_ADJ_PWM *
2	BL_ADJ_VOL *
3	GND
4	+5V / +12V **
5	+5V / +12V **
6	GND
7	BL_EN***

** : BL_ADJ can be setting in BIOS setup.*
*** : Backlight Power can be selected by JP5.*
**** : BL_EN can be selected by JP4.*

FAN1: DC5V FAN Wafer

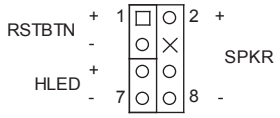
(not used for Rail-PC-System !!)



Pin	Signal
1	SENSE
2	+5V*
3	GND

** : PWM Fan control supported.*

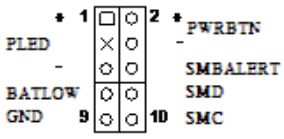
FP1: Front Panel 1 Pin Header



Pin	Signal	Pin	Signal
1	Reset Button +	2	Speaker +
3	Reset Button -	4	NC
5	HDD LED +	6	Internal Speaker-
7	HDD LED -	8	Speaker -

Note : Internal Buzzer is enabled when Pin6-8 is shorted.

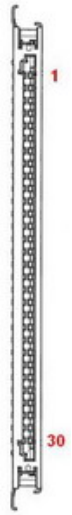
FP2: Front Panel 2 Pin Header



Pin	Signal	Pin	Signal
1	Power LED +	2	Power Button +
3	NC	4	Power Button -
5	Power LED -	6	SMBALERT#
7	BATLOW#	8	SMBus Data
9	GND	10	SMBus Clock

LVDS1: Secondary 18/24-bit, 2-channel LVDS Panel Connector

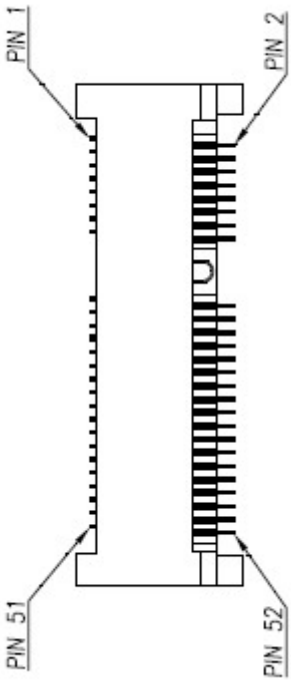
(not used for Rail-PC-System !!)



Pin	Signal Name	Pin	Signal Name
1	LVDS_A0-	16	LVDS_B1+
2	LVDS_A0+	17	GND
3	LVDS_A1-	18	LVDS_B2-
4	LVDS_A1+	19	LVDS_B2+
5	LVDS_A2-	20	LVDSBCLK-
6	LVDS_A2+	21	LVDS_BCLK+
7	GND	22	LVDS_B3-/NC
8	LVDS_ACLK-	23	LVDS_B3+/NC
9	LVDS_ACLK+	24	GND
10	LVDS_A3-/NC	25	DDC_DATA
11	LVDS_A3+/NC	26	VDDEN
12	LVDS_B0-	27	DDC_CLK
13	LVDS_B0+	28	+3.3V / +5V *
14	GND	29	+3.3V / +5V *
15	LVDS_B1-	30	+3.3V / +5V *

** : Panel Power can be selected by JP5.*

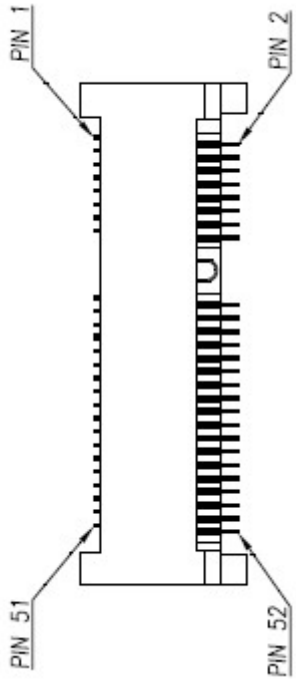
mPCIE1: Mini-PCIE Express v1.2 Socket / mSATA



Signal	Pin	Pin	Signal
WAKE#	1	2	+3.3VSB
Reserved	3	4	Ground
Reserved	5	6	+1.5V
CLKREQ#	7	8	NC
Ground	9	10	NC
REFCLK-	11	12	NC
REFCLK+	13	14	NC
Ground	15	16	NC
Reserved	17	18	Ground
Reserved	19	20	W_Disable#
Ground	21	22	PERST#
PERn0	23	24	+3.3VSB
PERp0	25	26	Ground
Ground	27	28	+1.5V
Ground	29	30	SMB_CLK
PETn0	31	32	SMB_DATA
PETp0	33	34	Ground
Ground	35	36	USB_D-
Ground	37	38	USB_D+
+3.3VSB	39	40	Ground
+3.3VSB	41	42	LED_WWAN#
Ground	43	44	LED_WLAN#
Reserved	45	46	LED_WPAN#

Reserved	47	48	+1.5V
Reserved	49	50	Ground
Reserved	51	52	+3.3VSB

mPCIE2: Mini-PCIE Express v1.2 Socket

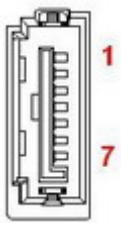


Signal	Pin	Pin	Signal
WAKE#	1	2	+3.3VSB
Reserved	3	4	Ground
Reserved	5	6	+1.5V
CLKREQ#	7	8	UIM_PWR*
Ground	9	10	UIM_DATA*
REFCLK-	11	12	UIM_CLK*
REFCLK+	13	14	UIM_RESET*
Ground	15	16	UIM_VPP*
Reserved	17	18	Ground
Reserved	19	20	W_Disable#
Ground	21	22	PERST#
PERn0	23	24	+3.3VSB
PERp0	25	26	Ground
Ground	27	28	+1.5V
Ground	29	30	SMB_CLK
PETn0	31	32	SMB_DATA
PETp0	33	34	Ground
Ground	35	36	USB_D-
Ground	37	38	USB_D+
+3.3VSB	39	40	Ground
+3.3VSB	41	42	LED_WWAN#
Ground	43	44	LED_WLAN#
Reserved	45	46	LED_WPAN#
Reserved	47	48	+1.5V
Reserved	49	50	Ground
Reserved	51	52	+3.3VSB

** : These pins are connected to CN10 directly.*

SATA1: Serial ATA Port 0 Connector

SATA2: Serial ATA Port 1 Connector



Pin	Signal Name
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+

Pin	Signal Name
7	GND

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Box PC with Intel® BayTrail Celeron Quad Core J1900

ELMA
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24V-to-12VDC – Converter

(Internal usage only)

$24V_{DC}$ Input

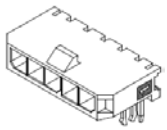
$12V_{DC}$ Output

$24V_{DC}$ in

Phoenix Contact PSC 1,5/ 3-M

Pin	Signal
1	GND
2	SHLD
3	VCC

$12V_{DC}$ out



Molex 43650-0403

Pin	Signal
1	+12V
2	GND
3	GND
4	+12V

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