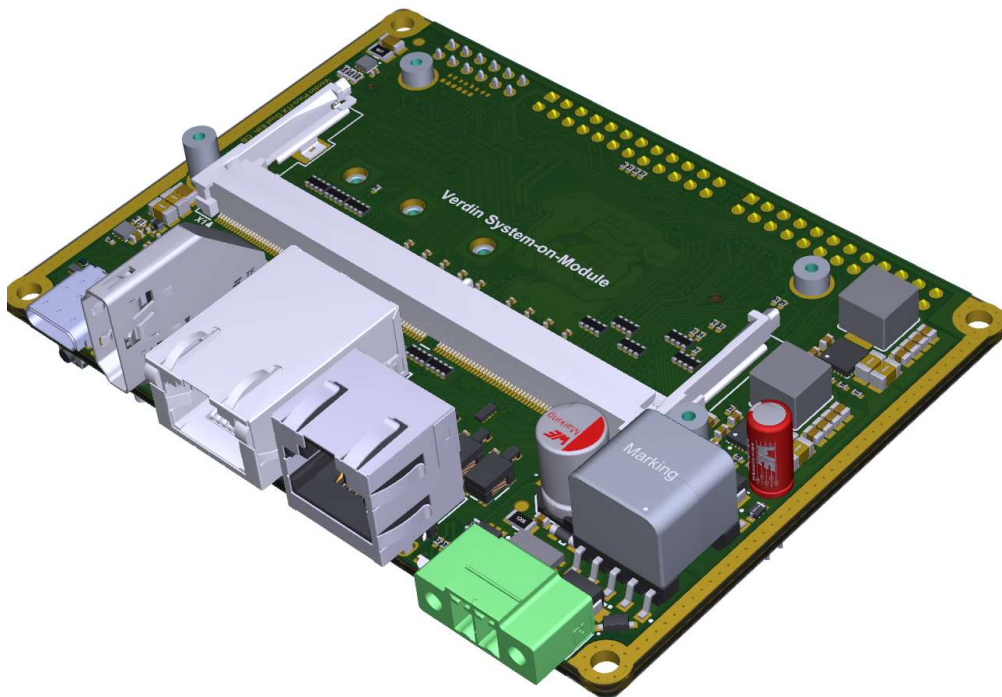


CARRIERTRONIC

Verdin Pico-ITX Dual Ethernet Carrier Board

Datasheet



Projekt Nr.: HW24/0003

Stand: April.2024, v1.0
Doc No.: P000000



Technical changes

carriertronic GmbH reserves the right to change and adapt the information, designs and technical data contained in this documentation without prior notice.

Revision Historie

The following versions of these instructions for use have already been published:

Date	HW-Version	Doc. Version	Changes
April.2024	A.2	V1.0	Initial release



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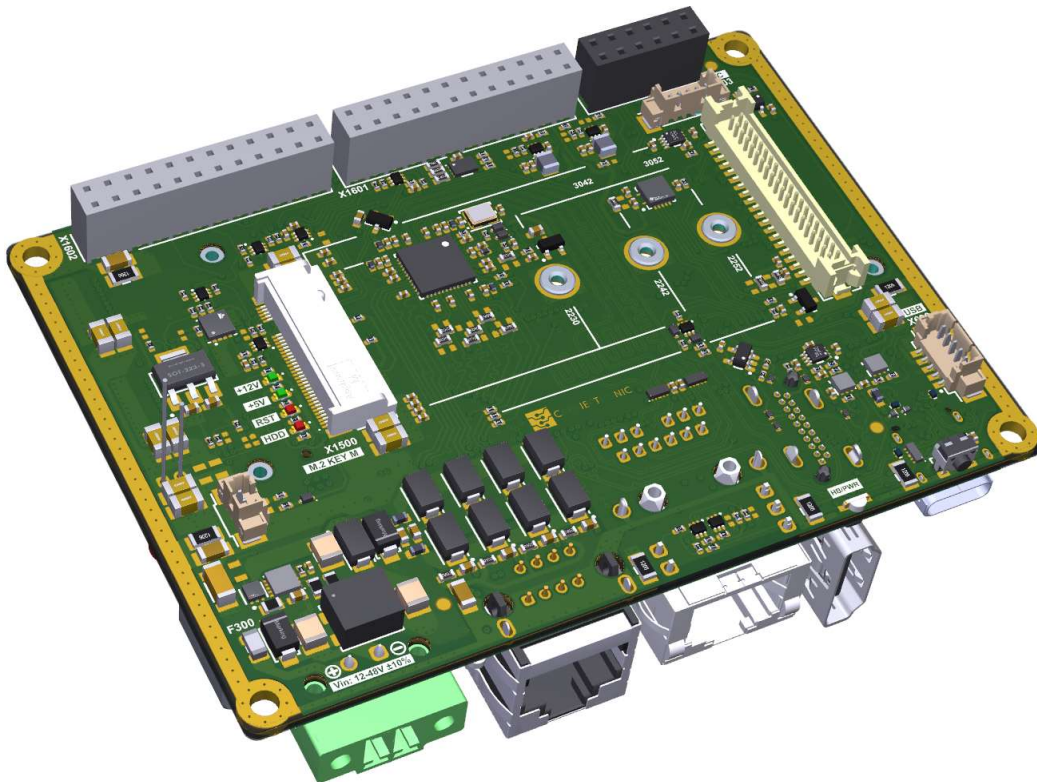
Dateiname: HW 24-0003 - CT01364 Verdin Pico-ITX Dual Ethernet Carrier Board	Ablage: R&D - General\HW24-0003 - Verdin Pico-ITX Dual Ethernet Carrier Board\Datasheet	Letzte Änderung: 04.04.2024
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2 Main Features

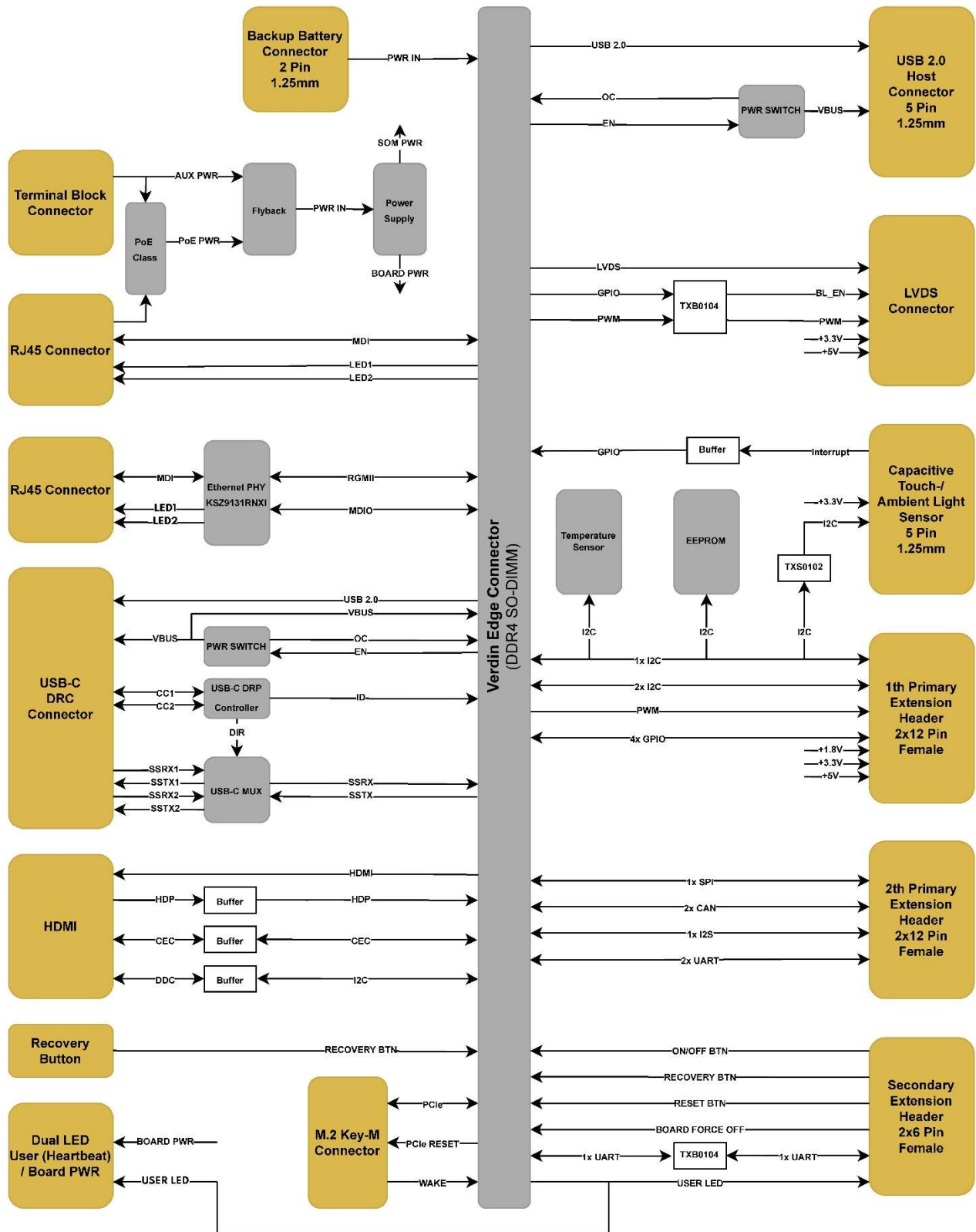
Form Factor	100 x 72mm (Pico ITX)
SOM-Details	Verdin Familie – iMX8M Mini / iMX8M Plus / AM62
Operating system	Linux (Yocto) / Torizon
Assembly option	On Request

- Isolated Aux Power Input Connector with extended Voltage Range for Usage with common 12V/24V/48V PSUs
- 1x USB 3.1 Dual-Role (DRP) (USB Type-C Connector)
- 1x USB 2.0 Host Connector (Molex Picoblade 5pol. 1.25mm pitch)
- 1x RJ45 10/100/1000 Mbps Ethernet Interface with TSN and PoE++ PoE-Standard IEEE 802.3bt-2018 (Backwards compatible up to passive PoE)
- 1x RJ45 10/100/1000 Mbps Ethernet Interface (transceiver placed on carrier Board)
- 1x M.2 Connector (Key-M)
- 1x LVDS (dual channel)
- 1x Capacitive Touch-/Ambient Light Interface Connector
- 1x HDMI 2.0 port (with Type A Connector)
- 2x Low-speed 2.54mm pitch female extension headers 1x Secondary pin header 3x I2C, 1x SPI, 1x PWM, Up to 32 GPIOs, 3x UART, 1x I2S, 1x Open Drain Output 2x CAN (without transceivers)
- 1xDual LED (Power State Indication / User Controlled via GPIO)
- 1x RTC Backup Power (Molex Picoblade 2pol. 1.25mm pitch Connector)
- 1x I2C 2Kb EEPROM IC
- 1x Digital Temperature Sensor with I2C Interface





2.1 Hardware Architecture Block Diagram



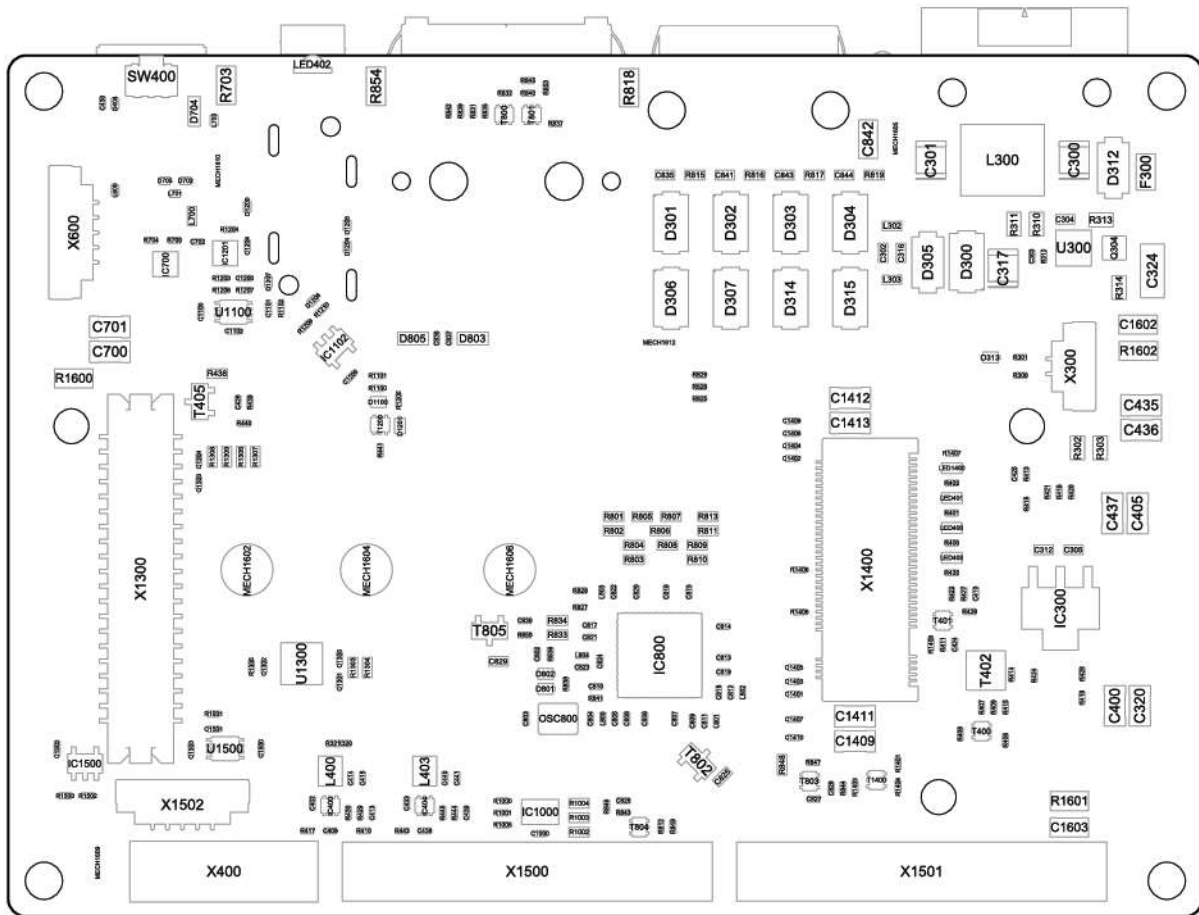
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3.2 Bottom Side Connectors

Ref.	Bottom Side Interfaces	CT01364
X400	Secondary Extension Header (Debug UART / System Control Signals)	✓
X1502	Capacitive Touch-/Ambient Light Sensor	✓
X1500	Primary Extension Header (Supplies / 2x I2C / 1x PWM / 4x GPIO)	✓
X1501	Primary Extension Header (1x SPI / 2x CAN / 1x I2S / 2x UART)	✓
X1400	1x PCIe M.2 Key-M*	✓
X1300	LVDS*	✓
X300	RTC Backup Power	✓
X600	USB 2.0 Host	✓

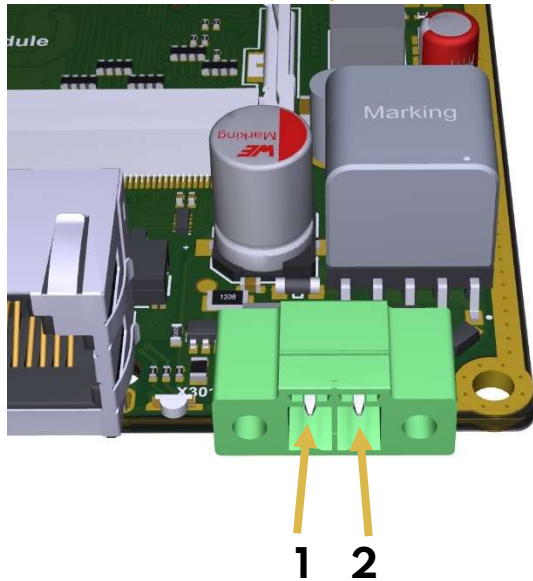
*not available on all SoMs





4 Interface Description

4.1 Aux Power Input Connector X301



Pin	Signal	Typ	Description
1	0V	PWR	Supply 0Volt DC
2	+VDC	PWR	Supply +12V - 48VDC ±10%

Connection cable: shorter 3m, unshielded

- Socket type: Phoenix Contact MC 1,5/ 2-GF-3,5 AU - 1995787
- Plug type: Phoenix Contact MC 1,5/ 3-STF-3,5 - 1847055 (Included in the scope of delivery)

Note	
	Information A slow-blow SMD fuse is installed as overcurrent protection

4.2 RTC Backup Supply

There is a backup battery connector (X300) on the Pico-ITX-carrier board to supply the RTC with backup power when the main power supply is switched off.

Pin	Description	Voltage
1	+V_BAT	+3V
2	GND	

Supported connectors: Picoblade 2 POS 1.25mm or EQ



4.3 Ethernet 1 Connector with PoE and TSN (X800)

ETH1 Connector RJ45 (X800)

Würth Elektronik (615008160221)

The pin assignments for 8 pin RJ45 Connector shown in the table below.

Pin	Connection	SODIMM Pin
1	DO_P	225
2	DO_N	227
3	DI_P	233
4	D2_P	239
5	D2_N	241
6	DI_N	231
7	D3_P	247
8	D3_N	245

4.3.1 PoE Classification

As soon as the PoE voltage is detected, the IC classifies the voltage supplied via the PoE power supply unit (PSE).

Once the classification has been successfully completed. The PoE voltage is switched through to the system.

If an external voltage (AUX) is added which is in the classified voltage window (+12V DC bis 48V DC), the LT4275A switches to the AUX voltage with priority.

Only PoE power supply units (PSU) that do not exceed the permissible voltage range according to 802.3af may be used.

The PSU used must be short-circuit proof.

4.4 Ethernet 2 Connector (X801)

The Ethernet interface is based on the KSZ9131RNXI 10/100/1000 Mbps Ethernet transceiver. For more information refer to the KSZ9131RNXI IC datasheet.

ETH2 Connector RJ45 (X801)

Würth Elektronik (7499111615) / Bel Fuse Inc. (A829-1JIT-KM)

ETH2 Connector RJ45 pin assignment

Pin	Connection
1	DO+
2	DO-
3	DI+
4	D2+
5	D2-
6	DI-
7	D3+
8	D3-



4.5 USB 1 Interface Type-C Connector (X700)

The USB-C port X700 is connected to USB_1 of the SoM.

Native USB-2.0 is available, USB-Superspeed (3.0) is type specific.

The USB port can be used in recovery mode to enable software loading onto the module by acting as a dual-role port (DRP) for both host and client.

The DRP port has a maximum output current of 1A.

Further details can be found in the datasheet of the [TUSB321 USB Type-C](#).

Pin	Signal	IO-Type	SODIMM Pin
A1	GND	PWR	
A2	USB1_SSTX1_CON_P	IO	180
A3	USB1_SSTX1_CON_N	IO	178
A4	USB_1_VBUS	PWR	
A5	USB_1_CC1	I	
A6	USB_1_D_CON_P	IO	165
A7	USB_1_D_CON_N	IO	163
A8	NC		
A9	USB_1_VBUS	PWR	
A10	USB1_SSRX2_CON_N	IO	184
A11	USB1_SSRX2_CON_P	IO	186
A12	GND	PWR	
B1	GND	PWR	
B2	USB1_SSTX2_CON_P	IO	180
B3	USB1_SSTX2_CON_N	IO	178
B4	USB_1_VBUS	PWR	
B5	USB_1_CC2	I	
B6	USB_1_D_CON_P	IO	165
B7	USB_1_D_CON_N	IO	163
B8	NC		
B9	USB_1_VBUS	PWR	
B10	USB1_SSRX1_CON_N	IO	184
B11	USB1_SSRX1_CON_P	IO	186
B12	GND	PWR	
SH1/SH2	GND_CHASSIS	PWR	
SH3/SH4	GND_CHASSIS	PWR	



4.6 HDMI Connector (X1100)

Connector Type: Right Angle

TE Connectivity: 2007435-1

The pin assignments for HDMI Connector shown in the table below.

Pin	Signal-Name	IO-Type	SODIMM	Voltage	Pull-up/Pull-down	Beschreibung
1	HDMI_1_TXD2_L_P	O	87			Positive differential HDMI data signal, lane 2
2	GND	PWR				
3	HDMI_1_TXD2_L_N	O	85			Negative differential HDMI data signal, lane 2
4	HDMI_1_TXD1_L_P	O	81			Positive differential HDMI data signal, lane 1
5	GND	PWR				
6	HDMI_1_TXD1_L_N	O	79			Negative differential HDMI data signal, lane 1
7	HDMI_1_TXD0_L_P	O	75			Positive differential HDMI data signal, lane 0
8	GND	PWR				
9	HDMI_1_TXD0_L_N	O	73			Negative differential HDMI data signal, lane 0
10	HDMI_1_TXC_L_P	O	69			Positive differential HDMI reference clock signal
11	GND	PWR				
12	HDMI_1_TXC_L_N	O	67			Negative differential HDMI reference clock signal
13	HDMI_1_CEC_CON		63		27k to +V3.3_SW	HDMI Consumer Electronic Control
14	NC					Not Connected
15	HDMI_1_DDC_SCL		59	+5V	1.8k to +V5_HDMI_1_DISP	DDC Interface Clock
16	HDMI_1_DDC_SDA		57	+5V	1.8k to +V5_HDMI_1_DISP	DDC Interface Data
17	GND	PWR				
18	+V5_HDMI_1_DISP	PWR		+5V		HDMI Power Out
19	HDMI_1_HPD_CON	I	61			HDMI Hot Plug Detect
S1,S2	GND_CHASSIS	FE				
S3,S4	GND_CHASSIS	FE				



4.7 Capacitive Touch-/Ambient Light Sensor Connector(X1502)

The carrier board provides a 5pin 1.25mm Pitch Picoblade Connector with I²C bus.

Connector Typ: CONN HEADER SMD R/A 5POS 1.25MM

Hersteller: Würth Elektronik

Hersteller Part Nr.: 653105131822

The pin assignments for 5 pin Connector shown in the table below.

Pin	Connection	Type	SODIMM	Voltage	Beschreibung
1	+V3.3_SW	PWR		3.3V	Supply Voltage
2	I2C_1_SDA_ALS	IO	12	3.3V	I2C_1 Data
3	I2C_1_SCL_ALS	IO	14	3.3V	I2C_1 Clock
4	ALS_INT_CON	I	222	Min. 1.8V Max. 5V	Interrupt Signal des Ambient Light Sensors
5	GND	PWR			Ground

4.8 UART-Interfaces

The carrier board provides 3 UART interfaces which are connected to the following connectors:

- UART1 zu Connector X1501
- UART2 zu Connector X1501
- UART3 zu Connector X400 (Primary debug log output for Cortex-A cores)

4.9 Audio

The Verdin Pico-ITX Dual Ethernet Carrier Board offers one digital audio interface. The Interface is available via the Primary Extension Connector X1500.

4.10 CAN

The Carrier Board feature 2 CAN interfaces, with no transceivers. Both CAN_1 and CAN_2 are available on the primary extension header X1501.



4.11 Primary Extension Headers X1500 and X1501

Connector Typ: 2x12 Pin Header Female, 2.54mm Pitch

The pin assignments for X1500 shown in the table below.

Pin	Connection	Type	SODIMM	Voltage	Description
1	SPI_1_CLK	O	196	+1.8V	SPI Serial Clock
2	SPI_1_MISO	I	198	+1.8V	SPI Master Input, Slave Output
3	SPI_1_MOSI	O	200	+1.8V	SPI Master Output, Slave Input
4	SPI_1_CS	O	202	+1.8V	SPI Chip Select
5	GND	PWR			
6	CAN_1_TX	O	20	+1.8V	CAN port 1 transmit pin
7	CAN_1_RX	I	22	+1.8V	CAN port 1 receive pin
8	CAN_2_TX	O	24	+1.8V	CAN port 2 transmit pin
9	CAN_2_RX	I	26	+1.8V	CAN port 2 receive pin
10	GND	PWR			
11	I2S_1_BCLK	O	30	+1.8V	Serial audio bit clock
12	I2S_1_SYNC	O	32	+1.8V	Synchronization/ field select/ left-right channel select
13	I2S_1_D_OUT	O	34	+1.8V	Serial audio output data
14	I2S_1_D_IN	I	36	+1.8V	Serial audio input data
15	I2S_1_MCLK	O	38	+1.8V	Serial audio master clock
16	GND	PWR			
17	UART_1_RXD	I	129	+1.8V	UART1 Receive Data
18	UART_1_TXD	O	131	+1.8V	UART1 Transmit Data
19	UART_1_RTS	I	133	+1.8V	UART1 Request to Send (RTS)
20	UART_1_CTS	O	135	+1.8V	UART1 Clear to Send (CTS)
21	UART_2_RXD	I	137	+1.8V	UART2 Receive Data
22	UART_2_TXD	O	139	+1.8V	UART2 Transmit Data
23	UART_2_RTS	I	141	+1.8V	UART2 Request to Send (RTS)
24	UART_2_CTS	O	143	+1.8V	UART2 Clear to Send (CTS)

Connector Typ: 2x12 Pin Header Female, 2.54mm Pitch

The pin assignments for X1501 shown in the table below.

Pin	Connection	Type	SODIMM	Voltage	Description
1	+V5_SW	PWR		+5V	Power Supply Output
2	+V3.3_SW	PWR		+3.3V	Power Supply Output
3	+V1.8_SW	PWR		+1.8V	Power Supply Output
4	GND	GND			
5	Reserve				
6	Reserve				
7	Reserve				
8	Reserve				
9	GND	PWR			
10	I2C_1_SDA	IO	12	+1.8V	Generic I ² C Data
11	I2C_1_SCL	IO	14	+1.8V	Generic I ² C Data
12	I2C_2_DSI_SDA	IO	55	+1.8V	MIPI DSI I ² C Data
13	I2C_2_DSI_SCL	IO	53	+1.8V	MIPI DSI I ² C Data
14	Reserve				
15	Reserve				
16	I2C_4_CSI_SDA	IO	95	+1.8V	MIPI CSI I ² C Data
17	I2C_4_CSI_SCL	IO	93	+1.8V	MIPI CSI I ² C Data
18	PWMI	O	15	+1.8V	General-purpose PWMI
19	Reserve				
20	GND	PWR			
21	GPIO_1	IO	206	+1.8V	General-purpose IO
22	GPIO_2	IO	208	+1.8V	General-purpose IO
23	GPIO_3	IO	210	+1.8V	General-purpose IO
24	GPIO_4	IO	212	+1.8V	General-purpose IO



4.12 Secondary Extension Header X400

Connector Typ: 2x6 Pin Header Female, 2.54mm Pitch

The pin assignments for X400 shown in the table below.

Pin	Signal	IO-Type	Signal Voltage	SODIMM Pin	Description
A1	CTRL_PWR_BTN_MICO#	IO	100k to +1.8V	248	Power button signal.
B1	GND	PWR	0V		
A2	CTRL_RECOVERY_MICO#	I(OD)	Open Drain +1.8V (on SoM)	246	SoM RECOVERY mode control
B2	GND	PWR	0V		
A3	CTRL_RESET_MICO#	I(OD)	Open Drain +1.8V (on SoM)	260	SoM's RESET signal
B3	GND	PWR	0V		
A4	CTRL_FORCE_OFF_MOCI#	I	100k to +5V (OD)	250	Force off main power-rail
B4	GND	PWR	0V		
A5	UART_3_TXD	I	+3V3	149	Cortex-A debug UART data transmit
B5	UART_3_RXD	O	+3V3	147	Cortex-A debug UART data receive
A6	Power LED+	PWR	+5V		
B6	Power LED-	O(OC)	Open-Collector (330R)	17	

A6 A5 A4 A3 A2 A1
B6 B5 B4 B3 B2 B1





4.13 Standard PCIe M.2 Connector (X1500)

The carrier board has a standard PCIe interface with M.2 Key-M slot.
The following bus is available:

- PCI Express 1 lane

Mountable sizes: 2230, 2242, 2252, 3042, 3052

Connector Type: M.2 key M, Amphenol MDT420M01001

The pin assignments for M.2 Connector shown in the table below.

Pin	Pin-Name	IO-Type	SODIMM	Voltage	Beschreibung
1	CONFIG_3	I	NC		Defines module Type
2	+V3.3_SW	PWR		+3.3V	+3.3V Input Power
3	GND	PWR			
4	+V3.3_SW	PWR		+3.3V	+3.3V Input Power
5	PERn3	IO	N/A		PCIe Lane 3 Rx
6	N/A				
7	PERp3	IO	N/A		
8	N/A				
9	GND	PWR			
10	DAS/DSS	O			Device Activity Signal (LED1400)
11	PETn3	IO	N/A		
12	+V3.3_SW	PWR		+3.3V	+3.3V Input Power
13	PETp3		N/A		
14	+V3.3_SW	PWR		+3.3V	+3.3V Input Power
15	GND	PWR			
16	+V3.3_SW	PWR		+3.3V	+3.3V Input Power
17	PERn2		N/A		
18	+V3.3_SW	PWR		+3.3V	+3.3V Input Power
19	PERp2		N/A		
20	N/A				
21	CONFIG_0		NC		Defines module Type
22	N/A				
23	PETn2		N/A		
24	N/A				
25	PETp2		N/A		
26	N/A				
27	GND	PWR			
28	N/A				
29	PERn1		N/A		
30	N/A				
31	PERp1		N/A		
32	N/A				
33	GND	PWR			
34	N/A				
35	PETn1	N/A			
36	N/A				
37	PETp1	N/A			
38	DEVSLP	NC			
39	GND	PWR			
40	N/A				
41	PCIE_1_LO_RX_N	O	232		
42	N/A				
43	PCIE_1_LO_RX_P	O	234		
44	N/A				
45	GND	PWR			
46	N/A				
47	PCIE_1_LO_TX_N	I	238		
48	N/A				
49	PCIE_1_LO_TX_P	I	240		
50	PERST#	I(OD)	244	10k to +V3.3_SW	
51	GND	PWR			
52	CLKREQ#	NC			
53	PCIE_1_CLK_N	I	226		
54	PEWAKE#		252	10k to +V1.8_SW	
55	PCIE_1_CLK_P	I	228		
56	NC				
57	GND	PWR			
58	NC				



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59-66	removed				Mechanical notch M
67	N/A				
68	SUSCLK		NC		
69	CONFIG_1			10k to +V1.8_SW	Defines module type
70	+V3.3_SW	PWR		+3.3V	+3.3V Input Power
71	GND	PWR			
72	+V3.3_SW	PWR		+3.3V	+3.3V Input Power
73	GND	PWR			
74	+V3.3_SW	PWR		+3.3V	+3.3V Input Power
75	CONFIG_2		NC		Defines module type



4.14 LVDS Connector (X1300)

Connector Type: DF13E-40DP-1.25(76)

A single channel LVDS interface can support resolutions up to 1366x768 pixels @60 frames per second (80MHz pixel clock maximum).

For higher resolutions, a second LVDS channel is required.

In dual-channel configuration, the odd bits are transmitted in the first channel, and the even bits are sent in the second channel.

The dual-channel LVDS interface can support resolutions up to 1920x1080 @60fps (160MHz pixel clock maximum).

The i.MX 8M Plus SoC features one LVDS interface that can be configured for a single or dualchannel with 18 and 24-bit.

Pin	Signal Name	IO-Type	Voltage	SODIMM Pin	Beschreibung
1	LVDSI_A_TX3+	O		114	Differential LVDS channel A data lane 3 signal positive
2	GND	PWR			
3	LVDSI_A_TX3-	O		112	Differential LVDS channel A data lane 3 signal negative
4	LVDSI_B_CLK-	O		118	Differential LVDS channel B clock signal negative
5	GND	PWR			
6	LVDSI_B_CLK+	O		120	Differential LVDS channel B clock signal positive
7	LVDSI_A_TX2+	O		108	Differential LVDS channel A data lane 2 signal positive
8	GND	PWR			
9	LVDSI_A_TX2-	O		106	Differential LVDS channel A data lane 2 signal negative
10	LVDSI_B_TX0-	O		124	Differential LVDS channel B data lane 0 signal negative
11	GND	O			
12	LVDSI_B_TX0+	O		126	Differential LVDS channel B data lane 0 signal positive
13	LVDSI_A_TX1+	O		102	Differential LVDS channel A data lane 1 signal positive
14	GND	PWR			
15	LVDSI_A_TX1-	O		100	Differential LVDS channel A data lane 1 signal negative
16	LVDSI_B_TX1-	O		130	Differential LVDS channel B data lane 1 signal negative
17	GND	PWR			
18	LVDSI_B_TX1+	O		132	Differential LVDS channel B data lane 1 signal positive
19	LVDSI_A_TX0+	O		96	Differential LVDS channel A data lane 0 signal positive
20	GND	PWR			
21	LVDSI_A_TX0-	O		94	Differential LVDS channel A data lane 0 signal negative
22	LVDSI_B_TX2-	O		136	Differential LVDS channel B data lane 2 signal negative
23	GND	PWR			
24	LVDSI_B_TX2+	O		138	Differential LVDS channel B data lane 2 signal positive
25	LVDSI_A_CLK+	O		90	Differential LVDS channel A clock signal positive
26	GND	PWR			
27	LVDSI_A_CLK-	O		88	Differential LVDS channel A clock signal negative
28	LVDSI_B_TX3-	O		142	Differential LVDS channel B data lane 3 signal negative
29	GND	PWR			
30	LVDSI_B_TX3+	O		144	Differential LVDS channel B data lane 3 signal positive
31	PWM_LVDS	O	+3.3V (5V)	16	Display brightness control output
32	GND	PWR			
33	GND	PWR			
34	+3V3_LVDS	PWR	+3.3V (5V)		LVDS display power output
35	BL_EN_LVDS	O	+3.3V (5V)	46	Display backlight ENABLE output
36	+5V_LVDS	PWR	+5V (+3.3V)		LVDS display power output
37	GND	PWR			

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38	GND	PWR			
39	+12V_LVDS	PWR	+12V		Display Backlight Power Out
40	+12V_LVDS	PWR	+12V		Display Backlight Power Out

4.15 Temperature Sensor

Das Carrier Board provides a digital temperature sensor, with an I²C interface. This is a useful feature for the remote equipment monitoring. For detailed information check the [TMP1075 datasheet](#).

Sensor	Sensor Location	Adress
1	Carrier Board	I2c_10x44

4.16 EEPROM

A 2-Kbit EEPROM (IC1000) with I²C interface is placed on the carrier board. The EEPROM can be used to store important data or for board identification. Technical details on the EEPROM can be found in data sheet M24C02-FMC6TG.

The EEPROM can be accessed via the address 0x57 on the generic serial bus I2C_1.

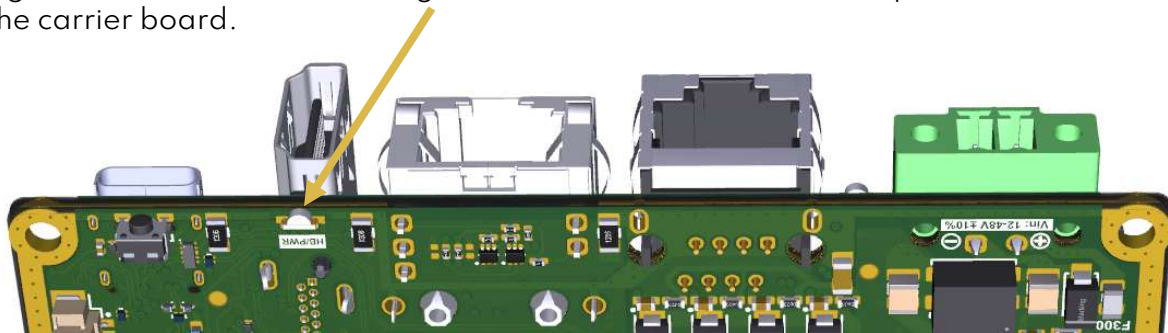
GPIO4_IO03 can be used to deactivate the EEPROM write protection.

Signal-Name	IO-Type	SODIMM	Voltage	Pull-up/Pull-down	Beschreibung
WC#	O	220	1.8V	100k to 1.8V_SW	GPIO auf Logisch "0" setzen, um den Schreibschutz zu deaktivieren

4.17 Kernel Heartbeat / PWR Rail LED

A dual LED (LED402) is installed on the interface front of the carrier board, which can be used to display the kernel status via Heartbeat (HB). The signal color of the HB LED is red.

The green LED lights up when Reset is not active and the CTRL_PWR_EN_MOCI signal has been switched. The green LED therefore indicates the power rail status of the carrier board.



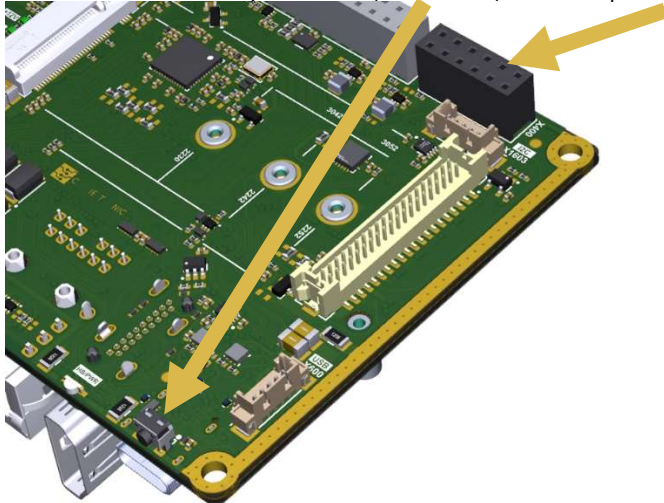
Signal-Name	IO-Type	SODIMM	Pull-up/Pull-down	Description
HEARTBEAT_LED	O	216	-	LED "double" flashes at a load average-based rate

<https://android.googlesource.com/kernel/msm/+android-msm-flo-3.4-kitkat-mr1/Documentation/devicetree/bindings/gpio/led.txt>

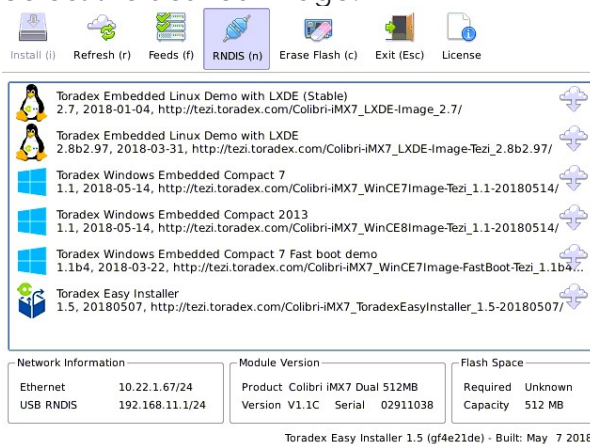


4.18 Backup-/ Resore the System

1. Switch off the device
2. Press the recovery button (SW400) or Jumper A2/B2 (X400)



3. Switch on the device, now you can release the button or remove the Jumper
4. connect your laptop to the USB-OTG (USB-C) port using a suitable USB-C cable
5. Download Toradex Easy Installer (TEZI) with standard LVDS output (native): https://carriertronic.com/wp-content/uploads/2024/02/Verdin-iMX8MP_ToradexEasyInstaller_6.5.0build.4_CT.zip
6. Unzip the Toradex Easy Installer package, change to this directory, and use one of the scripts on the host machine to load and execute the tool through USB OTG interface.
Detailed information can be found under the following link: <https://developer.toradex.com/easy-installer/toradex-easy-installer/loading-toradex-easy-installer/#312-run-the-recovery-mode-script>
7. Select the desired image.



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5 Technical specifications

5.1 Environmental specifications

5.1.1 Temperatures

Operating temperature: -20°C bis +55°C

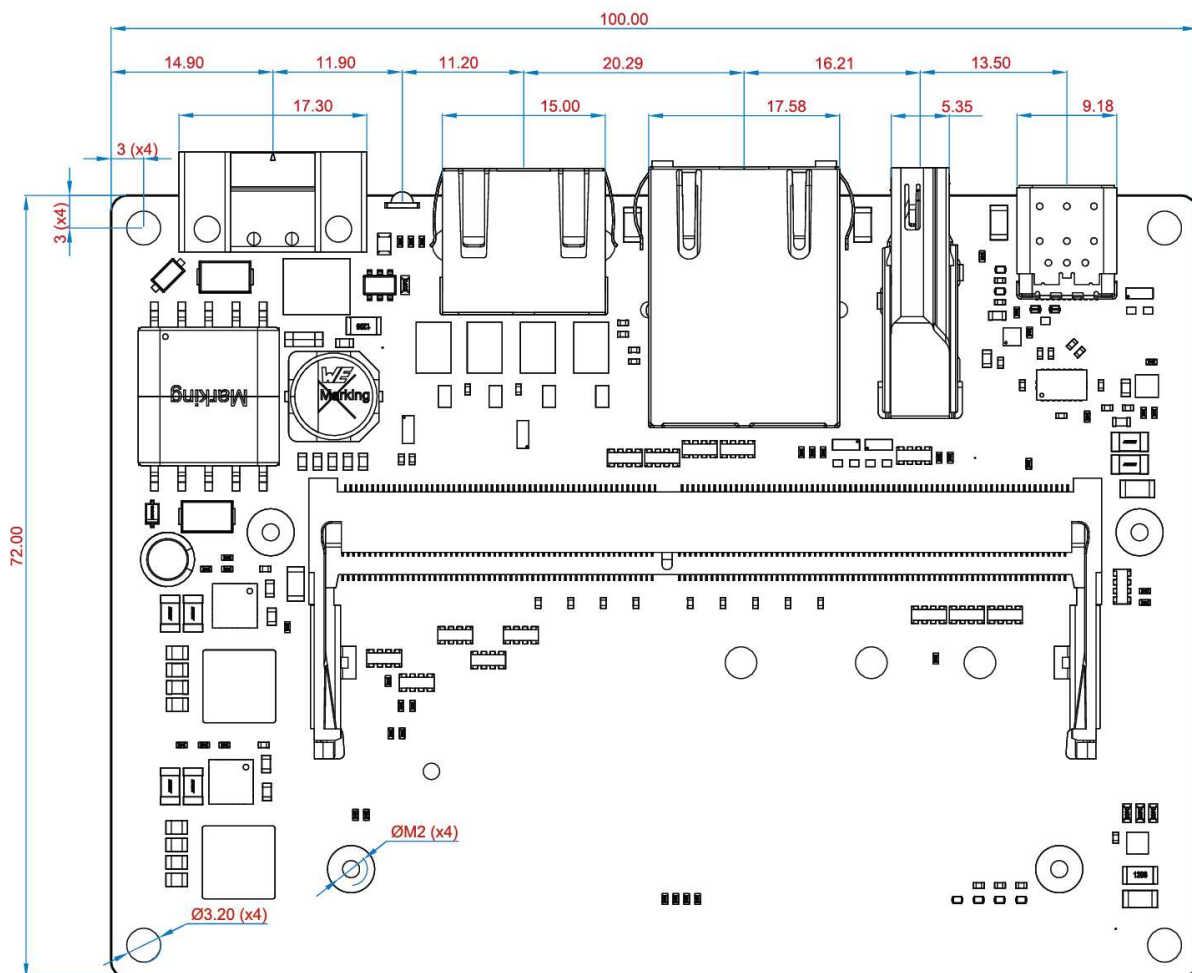
Storage temperature: -25 to +85°C

5.2 Mechanical dimensions

100x72mm (Pico-ITX)

5.3 Top Side Connectors

Carrier Board dimensions (in millimeters) – top view

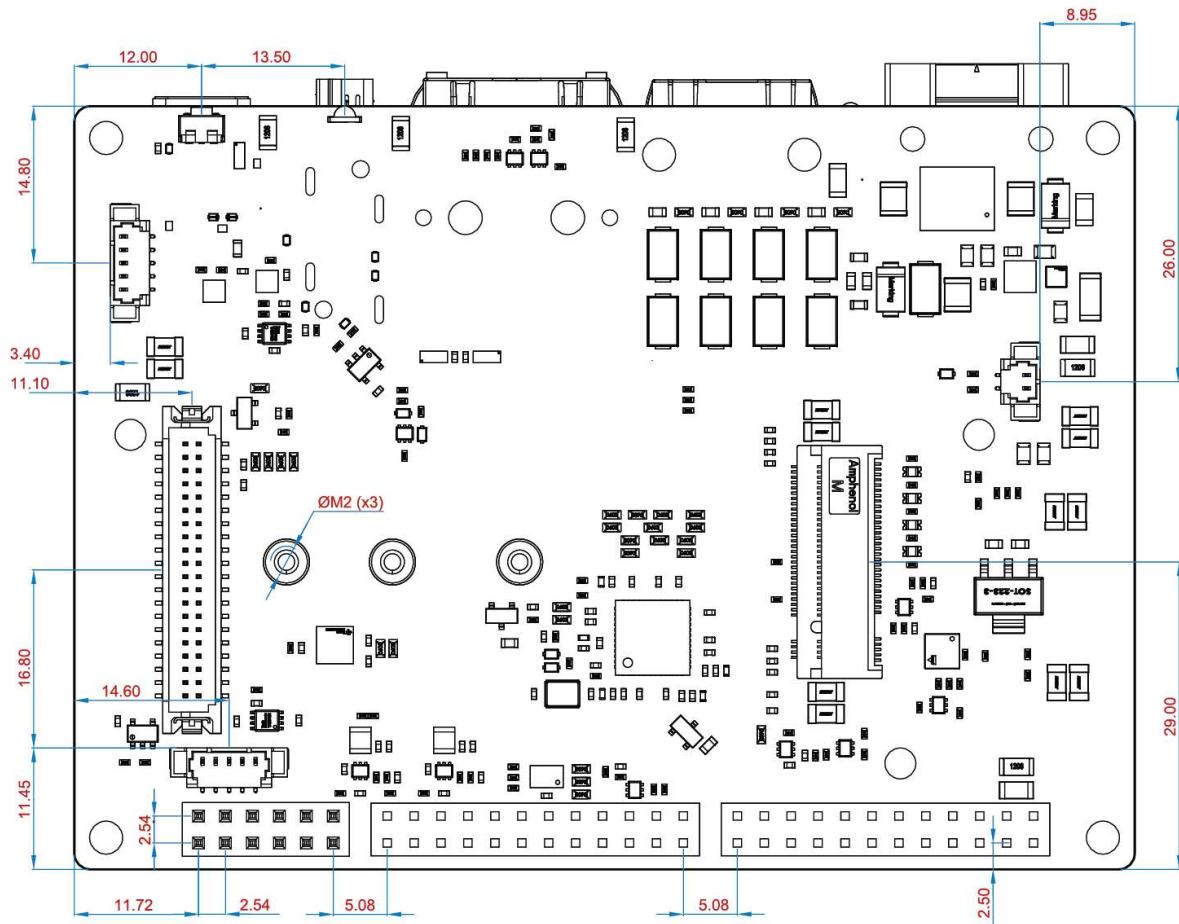


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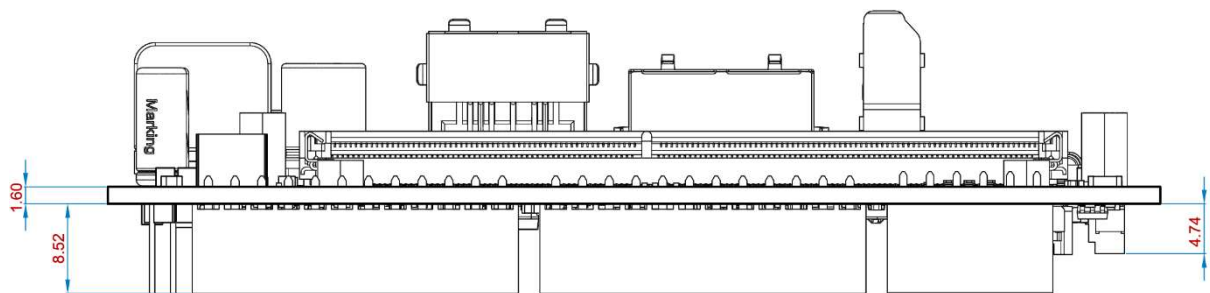


5.4 Bottom Side Connectos

Carrier Board dimesions (in millimeters) - bottom view



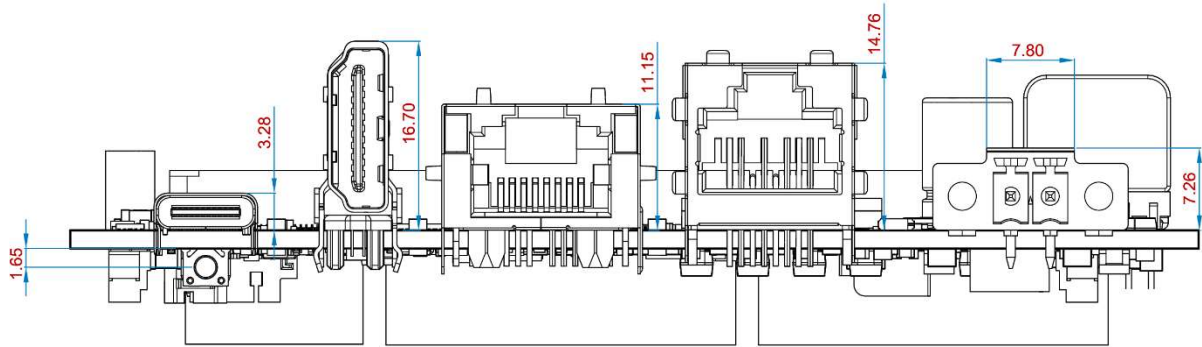
Verdin Pico-ITX Dual Ethernet Carrier Board dimensions (millimeters) - rear side



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Verdin Pico-ITX Dual Ethernet Carrier Board dimensions (millimeters) – front side



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6 Reference documents

Description	Link
Verdin Family Specification	https://docs.toradex.com/109262-verdin-family-specification.pdf
Verdin Computer on Module Family Overview	https://www.toradex.com/de/computer-on-modules/Verdin-arm-family
Temperature Sensor TI TMP1075DSGR	https://www.ti.com/lit/ds/symlink/tmp1075.pdf
Ethernet RJ45 Jack	www.well-known-components.com/components/products/datasheet/615008160221.pdf
PoE PD IEEE 802.3 Controller IC	https://www.analog.com/media/en/technical-documentation/data-sheets/4275f.pdf
USB C Connector	https://cdn.amphenol-cs.com/media/wysiwyg/files/documentation/datasheet/inputoutput/io_usb_type_c.pdf
USB Type C Config IC	www.ti.com/lit/ds/symlink/tusb321ai.pdf
USB Type C Mux/Demux	www.ti.com/lit/ds/symlink/tmuxhs4212.pdf
HDMI Connector	https://www.te.com/de/product-2007435-1.html
Power Input Connector MC1,5/ 2-GF-3,5 AU	https://www.phoenixcontact.com/de-de/produkte/leiterplattengrundleiste-mc-15-2-gf-35-au-1995787
System Ctrl Connector (Secondary Extension)	https://www.well-known-components.com/components/products/datasheet/61301221821.pdf
Low Speed Signal Con. (Primary Extension)	https://www.well-known-components.com/components/products/datasheet/61302421821.pdf
Isolated Flyback Controller	https://www.analog.com/media/en/technical-documentation/data-sheets/lt8306.pdf
Bidirectional Voltage-Level Translator	https://www.ti.com/lit/ds/symlink/txb0104.pdf
Gigabit Ethernet Transceiver	https://www1.microchip.com/downloads/aemDocuments/documents/UNG/ProductDocuments/DataSheets/00002840C.pdf
EEPROM	https://www.st.com/resource/en/datasheet/m24c01-w.pdf

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