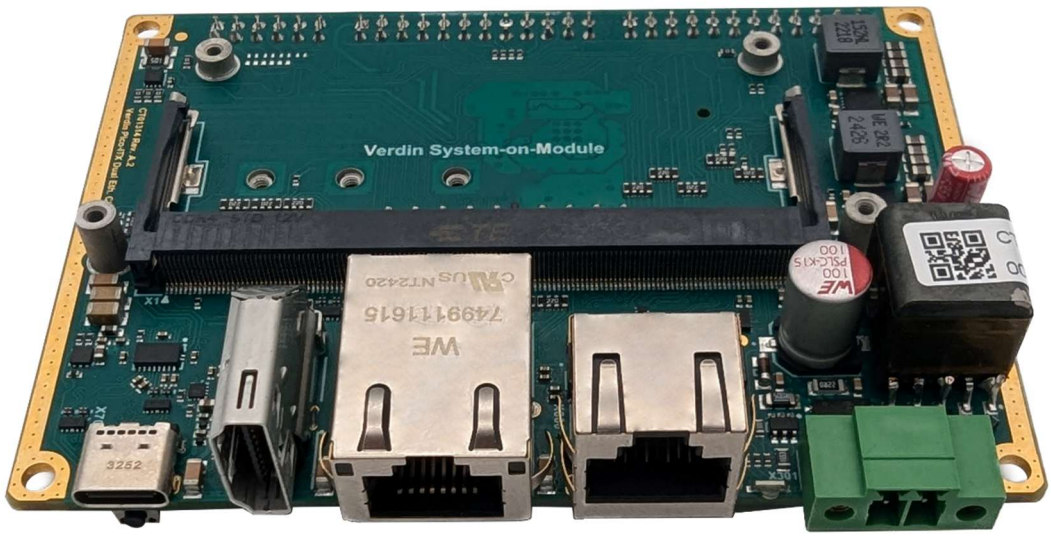
CARRIERTRONIC

Full Service Embedded Provider

Verdin Pico-ITX Dual Ethernet Carrier Board

Datasheet



Part Nr.: CT01364

Status: January.2026, v1.6

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	Initinal release
July	A.2	V1.1	Update Drawings
October	A.3	V1.2	Correction of the naming of the X1500 and X1501 connectors. Changed LVDS_EN Pin from SODIMM 46 to SODIMM 212
November	A.3	V1.3	LED – Signals Table added Add 3 pos. Connector for EHT1 Link & Act Signal
Jan. 2025	A.4	V1.4	Add CTRL_FORCE_OFF_MOCI# to the System CTRL Header Pin B4. Add X1503 for additional +V12 Extention Supply. Add ADC1, ADC2, ADC3 and ADC4 to Extention Header X1500. Pin assignment on System CTRL Header X400 changed Add UART4 to System CTRL Header X400
Jan. 2025	A.5	V1.5	# Added an additional P-Filter to +V12_BL to mitigate noise from the LCD backlight driver. # Changed USB-C current to 1.5A. # Add USB-Host Section (X600)
Jan. 2025	B.2	V1.6	# Changed Heartbeat LED Pin Assignment

1 Content

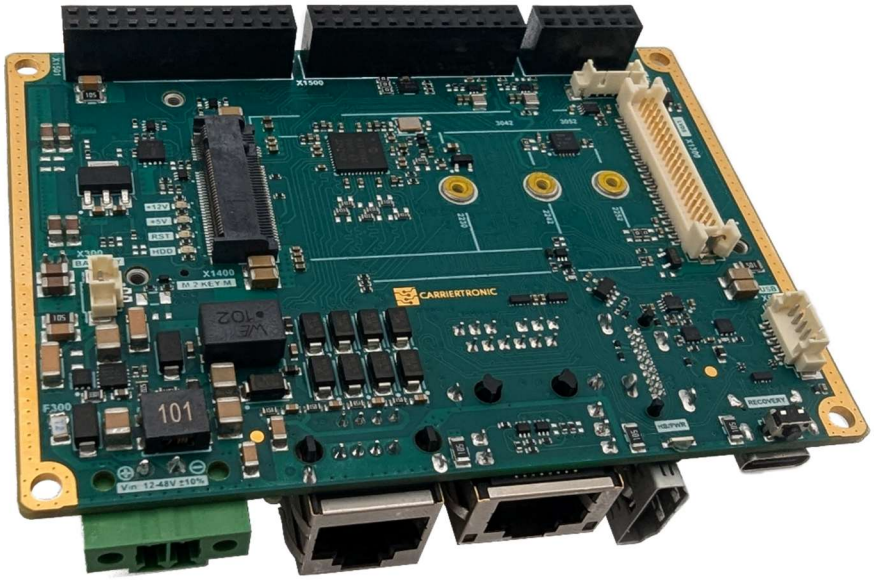
1 Content 3
2 Main Features 5
2.1 Hardware Architecture Block Diagram 6
3 Physical Drawing 7
3.1 Top Side Connectors 7
3.2 Bottom Side Connectors 8
4 Interface Description 9
4.1 Aux Power Input Connector X301 9
4.2 RTC Backup Supply 9
4.3 Ethernet 1 Connector with PoE and TSN (X800) 10
4.3.1 PoE Classification 10
4.4 Ethernet 2 Connector (X801) 10
4.5 USB 1 Interface Type-C Connector (X700) 11
4.6 USB 2.0 Host(X600) 11
4.7 HDMI Connector (X1100) 12
4.8 Capacitive Touch-/Ambient Light Sensor Connector(X1502) 13
4.9 UART-Interfaces 13
4.10 Audio 13
4.11 CAN 13
4.12 Primary Extension Headers X1500 and X1501 14
4.13 Secondary Extension Header X400 15
4.14 Power Supply Extension Header X1503 15
4.15 ETH ACT Connector X802 15
4.16 Standard PCIe M.2 Connector (X1400) 16
4.17 LVDS Connector (X1300) 17
4.18 Temperature Sensor 18
4.19 EEPROM 18
4.20 Kernel Heartbeat / PWR Rail LED 19
4.21 LEDs Signals 19
4.22 Backup-/ Resore the System 20
5 Technical specifications 21
5.1 Environmental specifications 21
5.1.1 Temperatures 21
5.2 Mechanical dimensions 21
5.3 Top Side Connectos 21
5.4 Bottom Side Connectos 22

6 Reference documents 24
7 Disclamer.....25

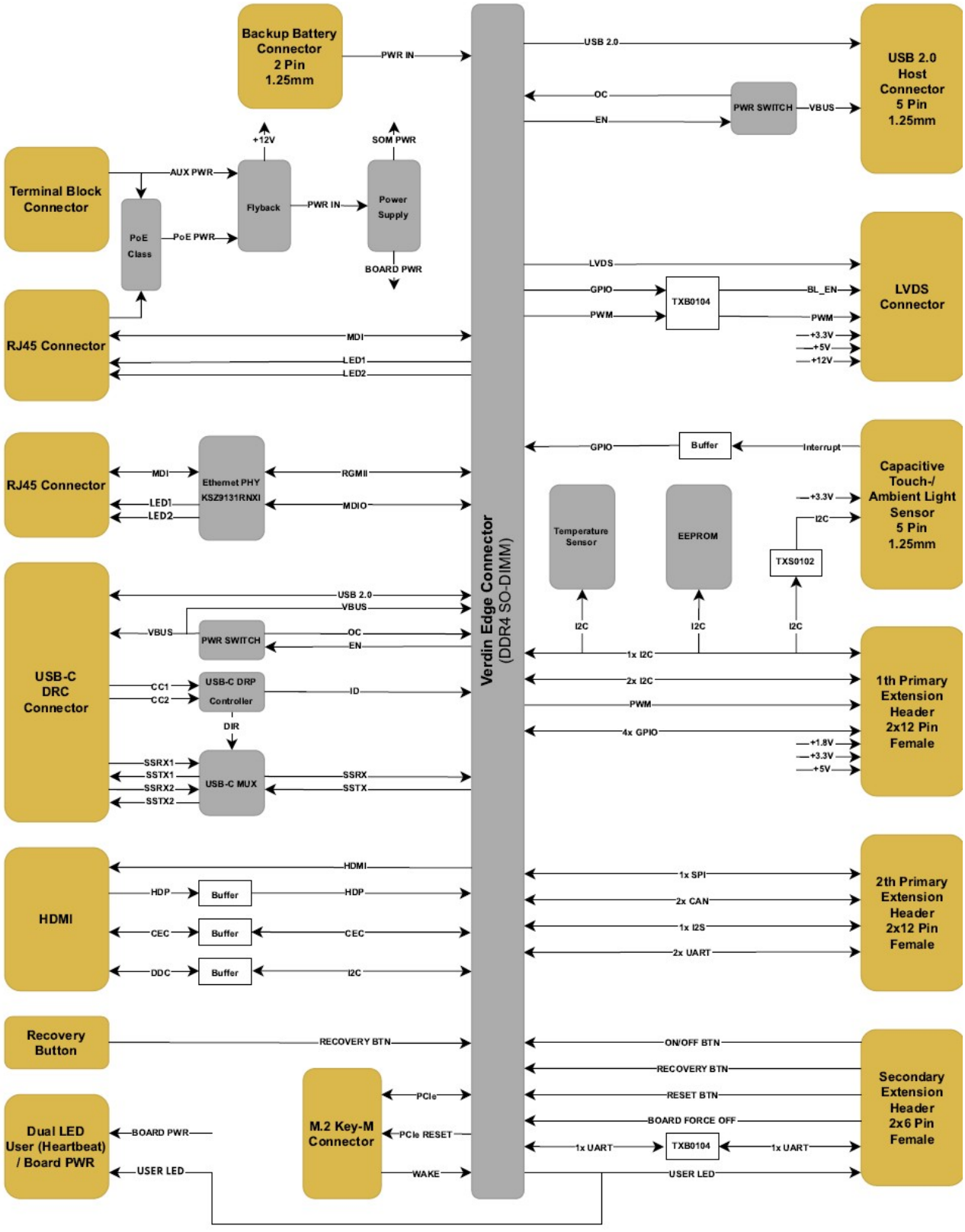
2 Main Features

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 (DC) 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, 4x ADC Inputs Up to 32 GPIOs, 3x UART, 1x I2S, 1x Open Drain Output, 2x CAN (without transceivers) 1x Power 2.54mm pitch female extension header
- 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

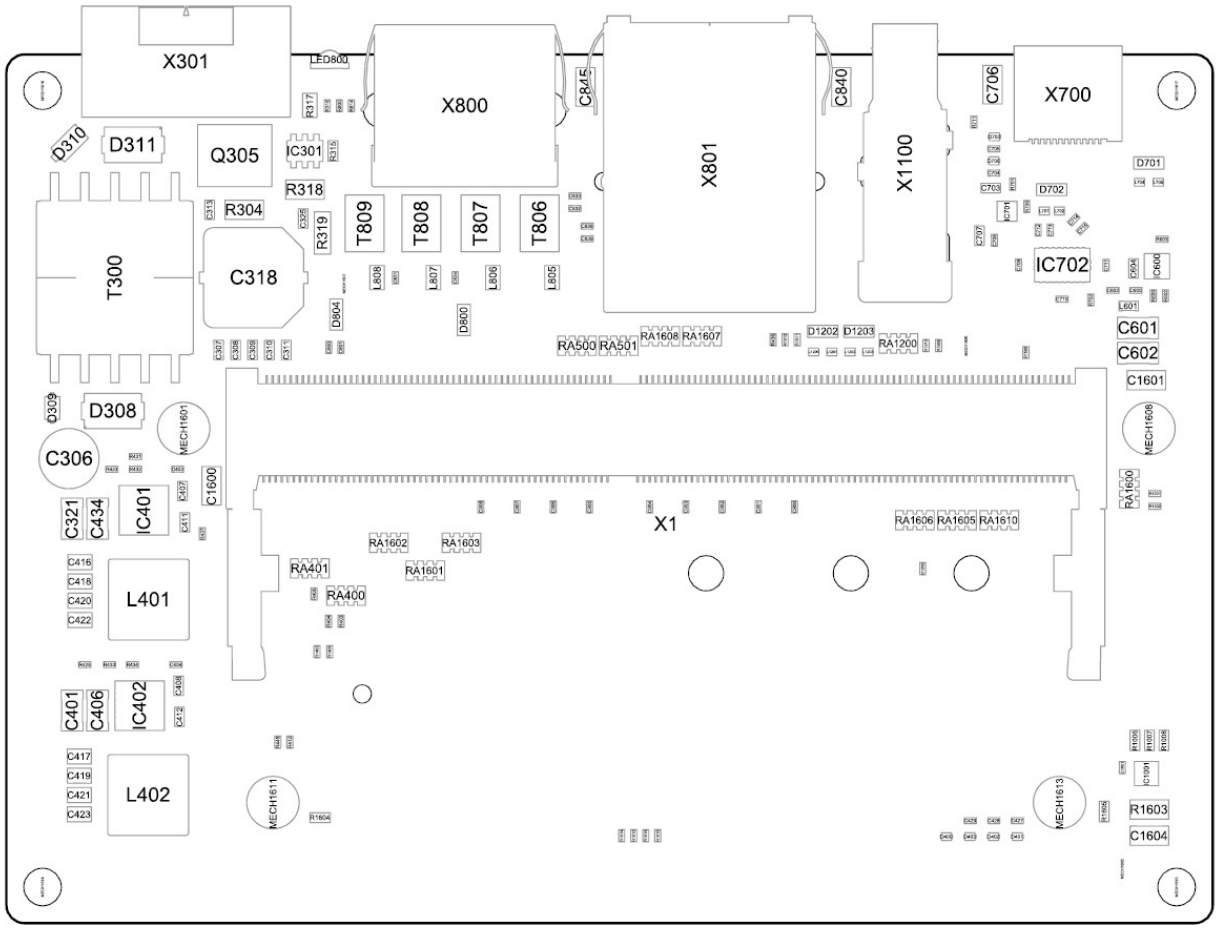


3 Physical Drawing

3.1 Top Side Connectors

Ref.	Top Side Interfaces	CT01364
X301	Aux Power Input	✔
X800	PoE Ethernet 1000 Mbit with TSN (RJ45)	✔
X801	Ethernet 1000Mbit*	✔
X1100	HDMI 2.0 (Type-A)*	✔
X700	USB-C 3.0 – Dual Role (Recovery)**	✔

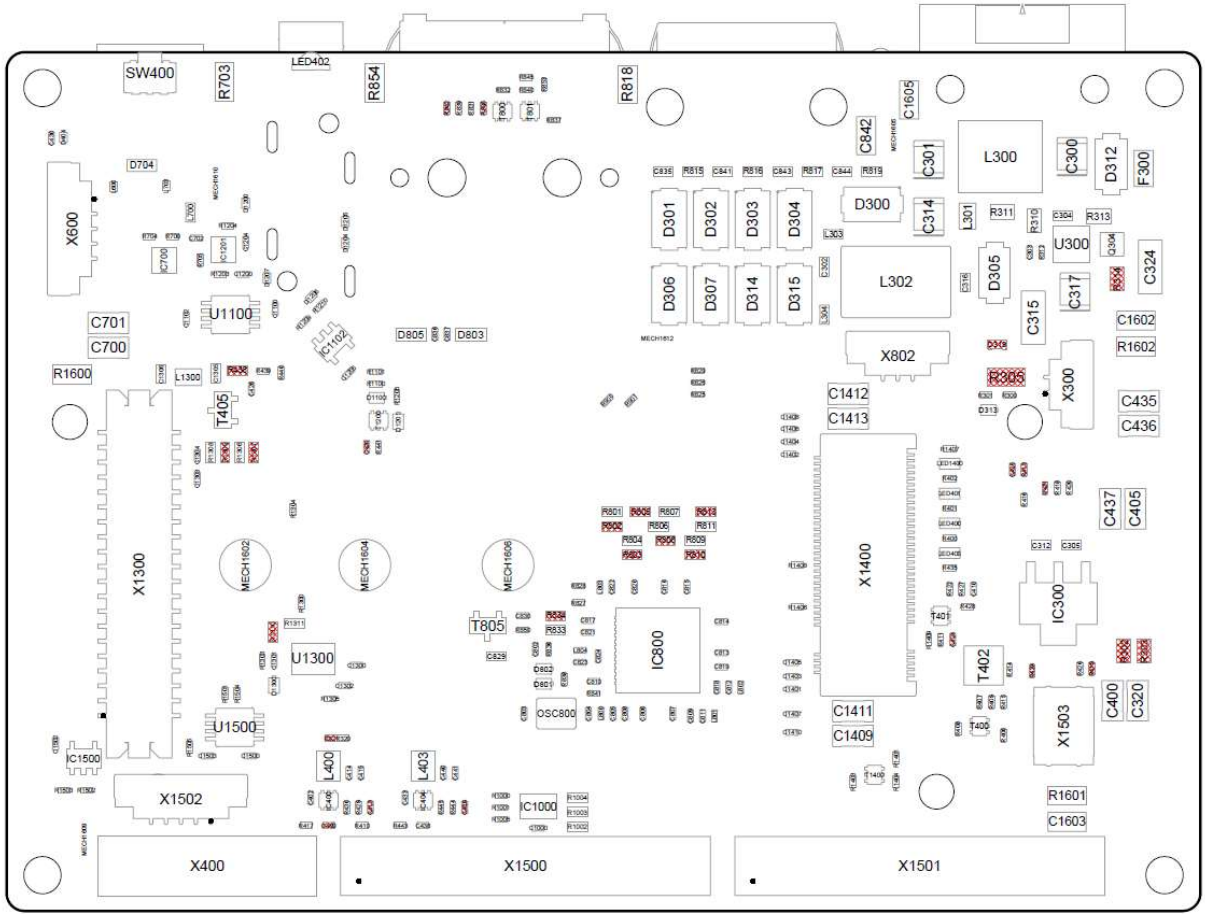
*not available on all SoMs
**USB 2.0 only when using an SoM with no USB 3.0 support



3.2 Bottom Side Connectors

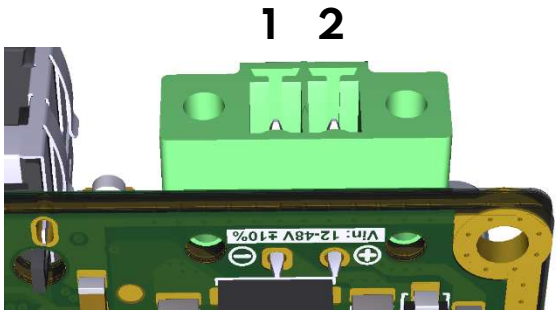
Ref.	Bottom Side Interfaces	CT01364
X400	Secondary Extension Header (Debug UART / System Control Signals)	✔
X1502	Capacitive Touch-/Ambient Light Sensor	✔
X1500	Primary Extension Header (Supplies / 2x I2C / 1x PWM / 4x GPIO)	✔
X1501	Primary Extension Header (1x SPI / 2x CAN / 1x I2S / 2x UART)	✔
X1503	Power Supply Extension Header	✔
X1400	1x PCIe M.2 Key-M*	✔
X1300	LVDS*	✔
X300	RTC Backup Power	✔
X600	USB 2.0 Host	✔
X802	ETH1 ACT	✔

*not available on all SoMs



4 Interface Description

4.1 Aux Power Input Connector X301



Pin	Singal	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 os switched off.

The connection can be used with standard CMOS batteries.

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	D0_P	225
2	D0_N	227
3	D1_P	233
4	D2_P	239
5	D2_N	241
6	D1_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 classiciation 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. (A829-1J1T-KM)

ETH2 Connector RJ45 pin assigment

Pin	Connection
1	D0+
2	D0-
3	D1+
4	D2+
5	D2-
6	D1-
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	O	180
A3	USB1_SSTX1_CON_N	O	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	I	184
A11	USB1_SSRX2_CON_P	I	186
A12	GND	PWR	
B1	GND	PWR	
B2	USB1_SSTX2_CON_P	O	180
B3	USB1_SSTX2_CON_N	O	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	I	184
B11	USB1_SSRX1_CON_P	I	186
B12	GND	PWR	
SH1/SH2	GND_CHASSIS	PWR	
SH3/SH4	GND_CHASSIS	PWR	

4.6 USB 2.0 Host(X600)

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

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	USB_2_D_N	IO	181		
2	USB_2_D_P	IO	183		
3	GND	PWR		0V	Ground
4	V5_VBUS_USB2	PWR		5V	I
5	GND	PWR		0V	Ground

4.7 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				

4.8 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

4.9 UART-Interfaces

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

- UART1 to Connector X1501
- UART2 to Connector X1501
- UART3 to Connector X400 (Primary debug log output for Cortex-A cores)
- UART4 to Connector X400 (Debug for the real-time OS (Cortex-M)

4.10 Audio

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

4.11 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.

4.12 Primary Extension Headers X1500 and X1501

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	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 X1500 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	ADC_1	I	2	+1.8V	Analog Input 1
6	ADC_2	I	4	+1.8V	Analog Input 2
7	ADC_3	I	6	+1.8V	Analog Input 3
8	ADC_4	I	8	+1.8V	Analog Input 4
9	GND	PWR			
10	I2C_1_SDA	IO	12	+1.8V	Generic I²C Data
11	I2C_1_SCL	IO	14	+1.8V	Generic I²C Data
12	I2C_2_DSI_SDA	IO	55	+1.8V	MIPI DSI I²C Data
13	I2C_2_DSI_SCL	IO	53	+1.8V	MIPI DSI I²C Data
14	Reserve				
15	Reserve				
16	I2C_4_CSI_SDA	IO	95	+1.8V	MIPI CSI I²C Data
17	I2C_4_CSI_SCL	IO	93	+1.8V	MIPI CSI I²C Data
18	PWM1	O	15	+1.8V	General-purpose PWM1
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

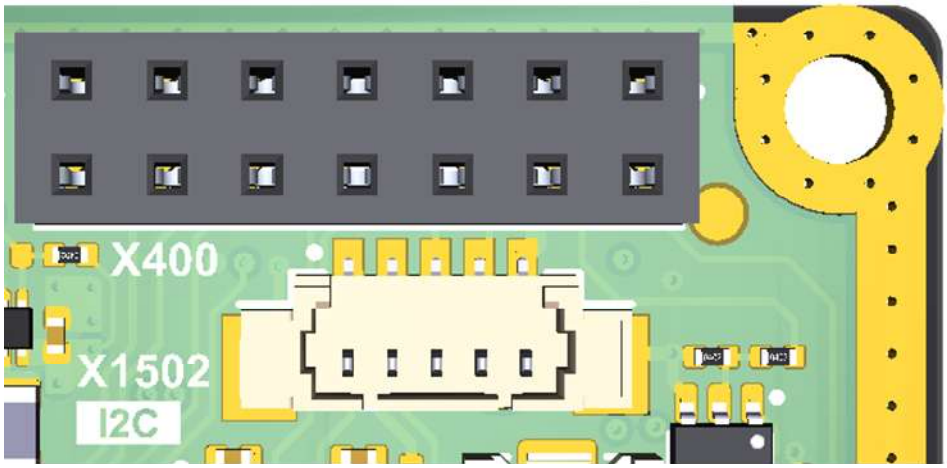
4.13 Secondary Extension Header X400

Connector Typ: 2x7 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	UART_4_TXD	I	+1V8	153	Cortex-M debug UART data transmit
B1	UART_4_RXD	O	+1V8	151	Cortex-M debug UART data receive
A2	CTRL_PWR_BTN_MICO#	IO	100k to +1.8V	248	Power button signal.
B2	GND	PWR	0V		
A3	CTRL_RECOVERY_MICO#	I (OD)	Open Drain +1.8V (on SoM)	246	SoM RECOVERY mode control
B3	GND	PWR	0V		
A4	CTRL_RESET_MICO#	I (OD)	Open Drain +1.8V (on SoM)	260	SoM's RESET signal
B4	GND	PWR	0V		
A5	CTRL_FORCE_OFF_MOCI#	I	100k to +5V (OD)	250	Force off main power-rail
B5	GND	PWR	0V		
A6	UART_3_TXD	I	+3V3	149	Cortex-A debug UART data transmit
B6	UART_3_RXD	O	+3V3	147	Cortex-A debug UART data receive
A7	CTRL_RESET_MOCI#	I	+5V	258	Open-drain
B7	Power LED-	O (OC)	Open-Collector (330R)	216	

A7 A6 A5 A4 A3 A2 A1
B7 B6 B5 B4 B3 B2 B1



4.14 Power Supply Extension Header X1503

Connector Typ: 2x2 Pin Header Female, 2.54mm Pitch

The pin assignments for X1503 shown in the table below.

Pin	Signal	IO-Type	Signal Voltage	Description
1	+12V	PWR	+12V	
2	+12V	PWR	+12V	
3	GND	PWR	0V	
4	GND	PWR	0V	

4.15 ETH ACT Connector X802

Connector Typ: 1x3 Pin Header, 1.25mm Pitch

The pin assignments for X802 shown in the table below.

Pin	Signal	IO-Type	Description
1	+3V3_SW	PWR	
3	ETH_1_ACT	PWR	Open-Drain
4	ETH_1_LINK	PWR	Open-Drain

4.16 Standard PCIe M.2 Connector (X1400)

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		Negative differential PCIe receive signal
42	N/A				
43	PCIE_1_LO_RX_P	O	234		Positive differential PCIe receive signal
44	N/A				
45	GND	PWR			
46	N/A				
47	PCIE_1_LO_TX_N	I	238		Negative differential PCIe transmit signal
48	N/A				
49	PCIE_1_LO_TX_P	I	240		Positive differential PCIe transmit signal
50	PERST#	I (OD)	244	10k to +V3.3_SW	PCIe Power enable/RESET
51	GND	PWR			
52	CLKREQ#	NC			
53	PCIE_1_CLK_N	I	226		Negative differential PCIe reference clock signal
54	PEWAKE#		252	10k to +V1.8_SW	Wake-up to SoM
55	PCIE_1_CLK_P	I	228		Positive differential PCIe reference clock signal
56	NC				

57	GND	PWR			
58	NC				
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

4.17 LVDS Connector (X1300)

Connector Type: DF13E-40DP-1.25(52)

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	LVDS1_A_TX3+	O		114	Differential LVDS channel A data lane 3 signal positive
2	GND	PWR			
3	LVDS1_A_TX3-	O		112	Differential LVDS channel A data lane 3 signal negative
4	LVDS1_B_CLK-	O		118	Differential LVDS channel B clock signal negative
5	GND	PWR			
6	LVDS1_B_CLK+	O		120	Differential LVDS channel B clock signal positive
7	LVDS1_A_TX2+	O		108	Differential LVDS channel A data lane 2 signal positive
8	GND	PWR			
9	LVDS1_A_TX2-	O		106	Differential LVDS channel A data lane 2 signal negative
10	LVDS1_B_TX0-	O		124	Differential LVDS channel B data lane 0 signal negative
11	GND	O			
12	LVDS1_B_TX0+	O		126	Differential LVDS channel B data lane 0 signal positive
13	LVDS1_A_TX1+	O		102	Differential LVDS channel A data lane 1 signal positive
14	GND	PWR			
15	LVDS1_A_TX1-	O		100	Differential LVDS channel A data lane 1 signal negative
16	LVDS1_B_TX1-	O		130	Differential LVDS channel B data lane 1 signal negative
17	GND	PWR			
18	LVDS1_B_TX1+	O		132	Differential LVDS channel B data lane 1 signal positive
19	LVDS1_A_TX0+	O		96	Differential LVDS channel A data lane 0 signal positive
20	GND	PWR			
21	LVDS1_A_TX0-	O		94	Differential LVDS channel A data lane 0 signal negative
22	LVDS1_B_TX2-	O		136	Differential LVDS channel B data lane 2 signal negative
23	GND	PWR			
24	LVDS1_B_TX2+	O		138	Differential LVDS channel B data lane 2 signal positive
25	LVDS1_A_CLK+	O		90	Differential LVDS channel A clock signal positive

26	GND	PWR			
27	LVDS1_A_CLK-	O		88	Differential LVDS channel A clock signal negative
28	LVDS1_B_TX3-	O		142	Differential LVDS channel B data lane 3 signal negative
29	GND	PWR			
30	LVDS1_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)	212	Display backlight ENABLE outpu
36	+3V3_LVDS	PWR	+3V3 (5V)		LVDS display power output
37	GND	PWR			
38	GND	PWR			
39	+12V_LVDS	PWR	+12V		Display Backlight Power Out
40	+12V_LVDS	PWR	+12V		Display Backlight Power Out

4.18 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_1 0x44

4.19 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.

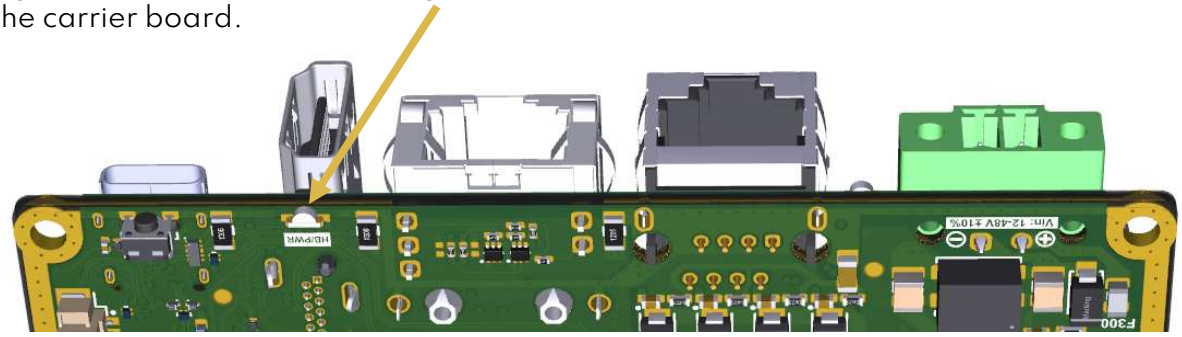
GPIO4_1003 can be used to deactivate the EEPROM write protection.

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

4.20 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.

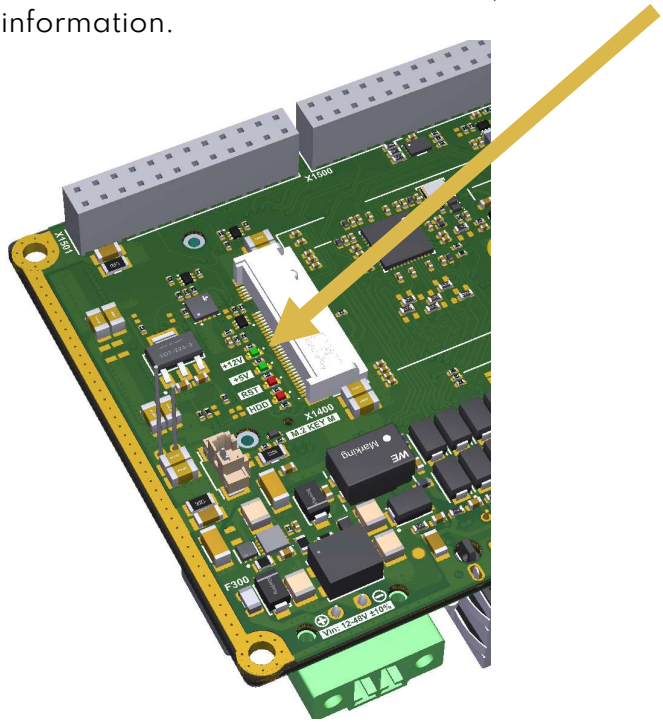


Signal-Name	IO-Type	SODIMM	Pull-up/Pull-down	Description
HEARTBEAT_LED	O	216	-	LED "double" flashes at a load average-based rate

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

4.21 LEDs Signals

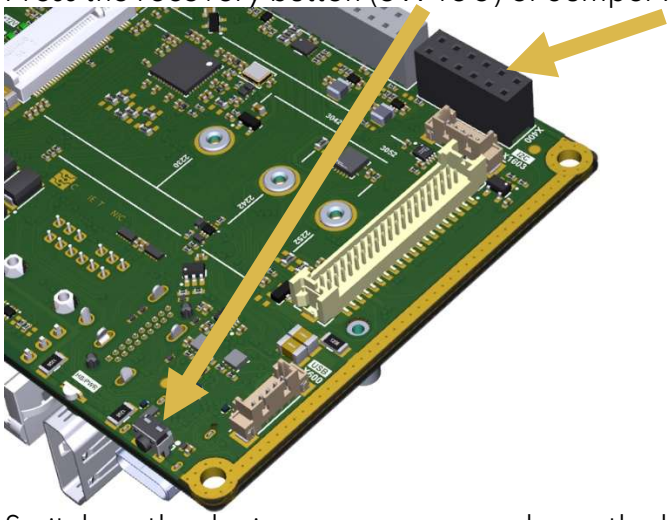
On the bottom of the carrier board, there are four LEDs that provide additional status information.



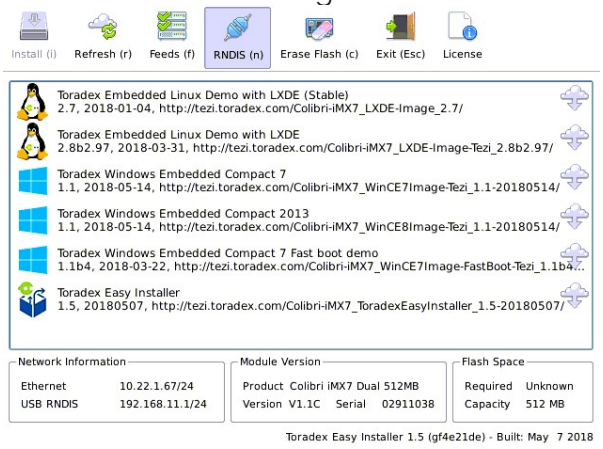
LED-Indicator	Function	State
+12V	Primary Supply	On: 12V primary supply active
+5V	SoM Supply	On: SoM 5V active
RST (Reset)	SoM Reset Signal	On: The system is in reset state
HDD	Storage Activity (Read/Write)	Blinks during activity

4.22 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.



5 Technical specifications

5.1 Environmental specifications

5.1.1 Temperatures

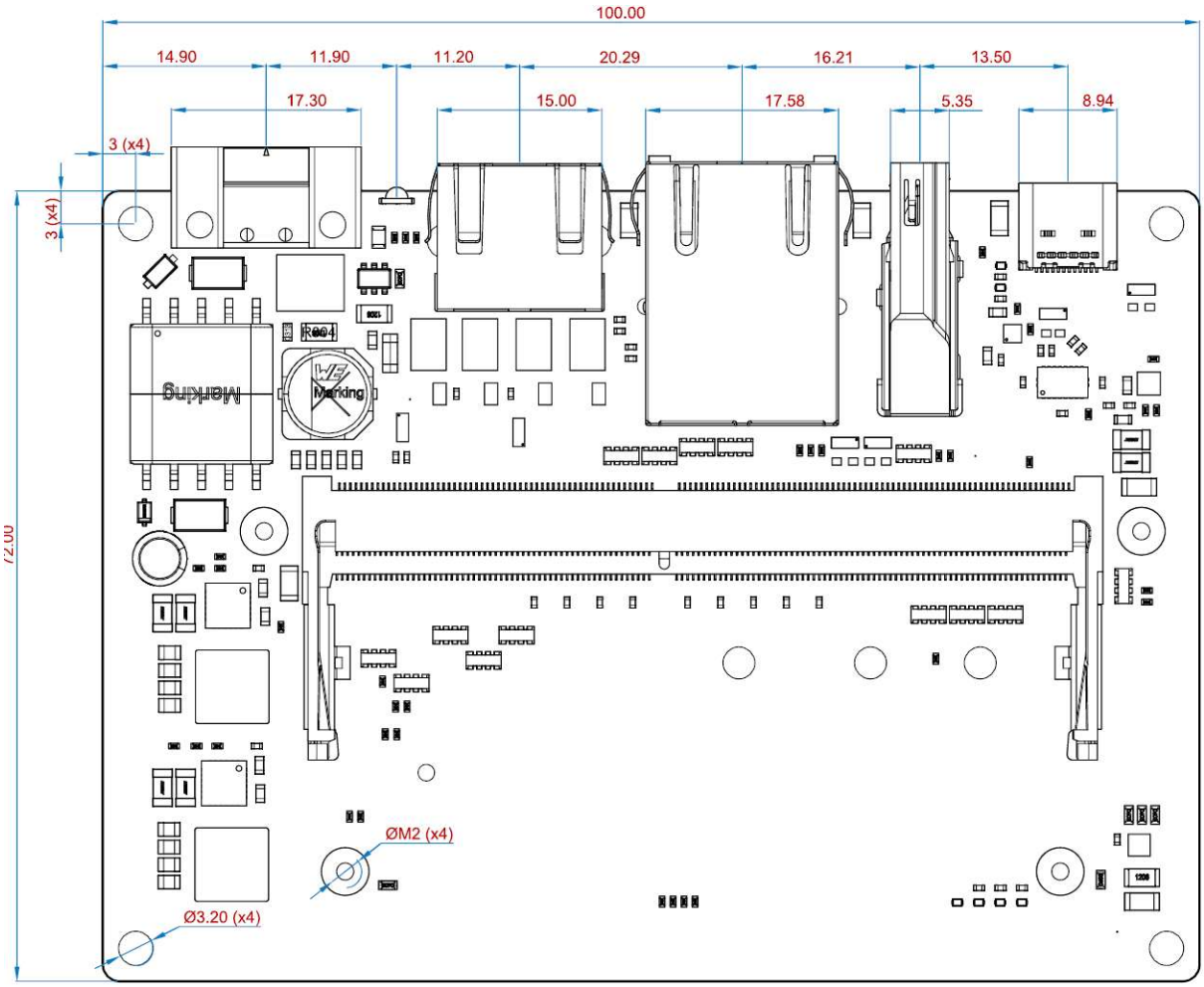
Operating temperature: -20°C bis +55°C
Storage temperature: -25 to +85°C

5.2 Mechanical dimensions

100x72mm (Pico-ITX)

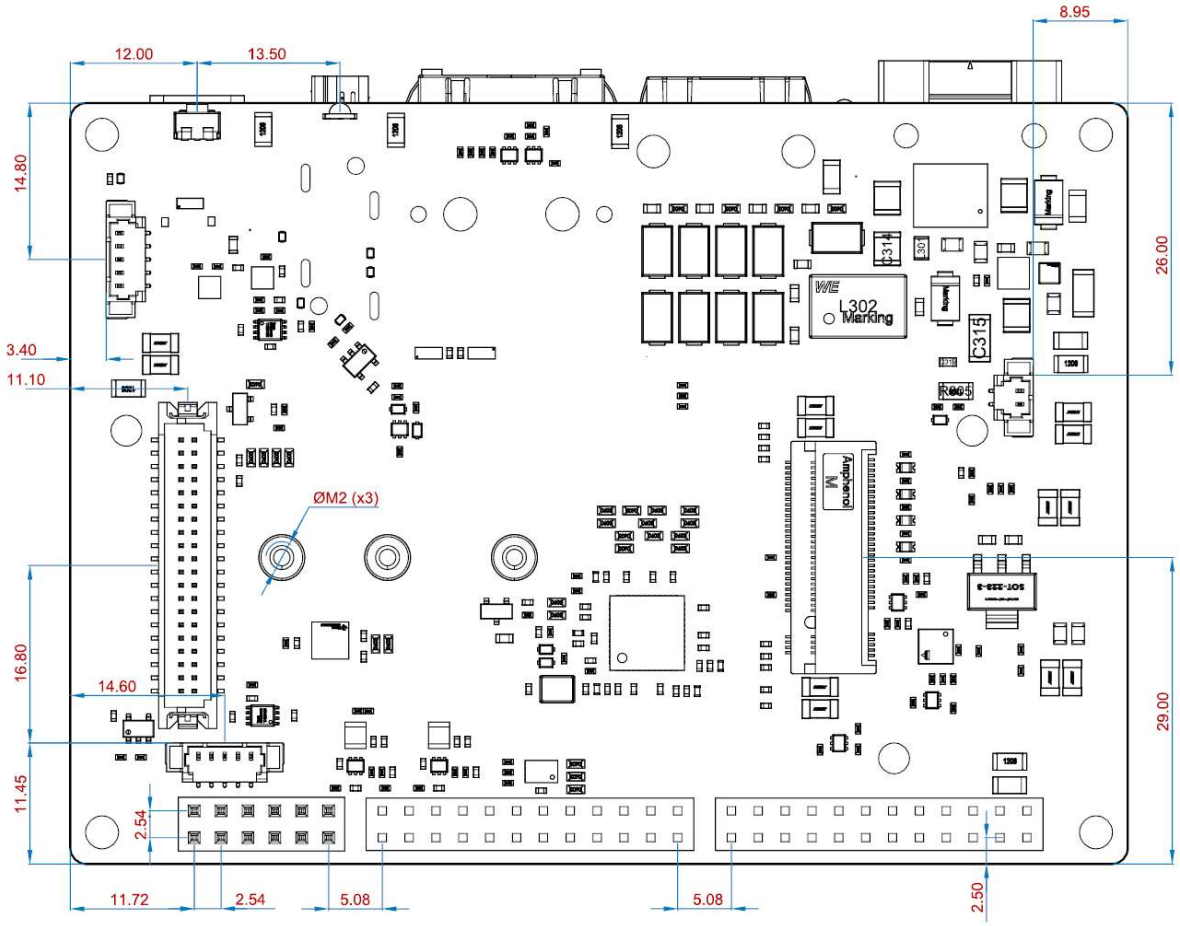
5.3 Top Side Connectos

Carrier Board dimesions (in millimeters) – top view

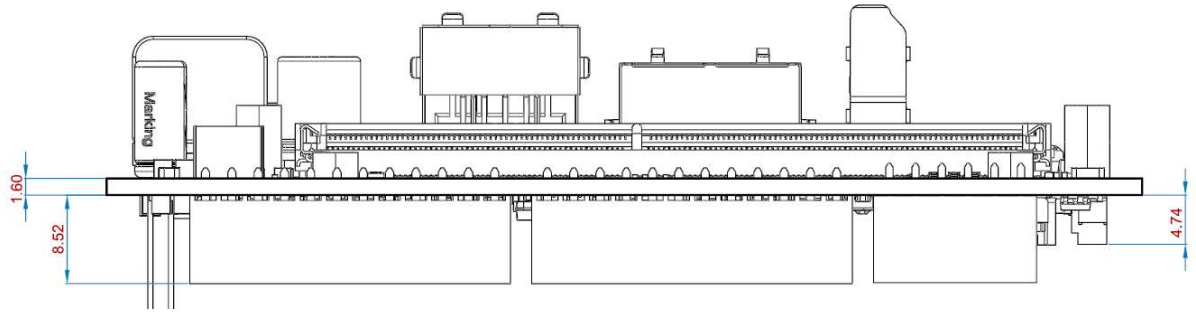


5.4 Bottom Side Connectos

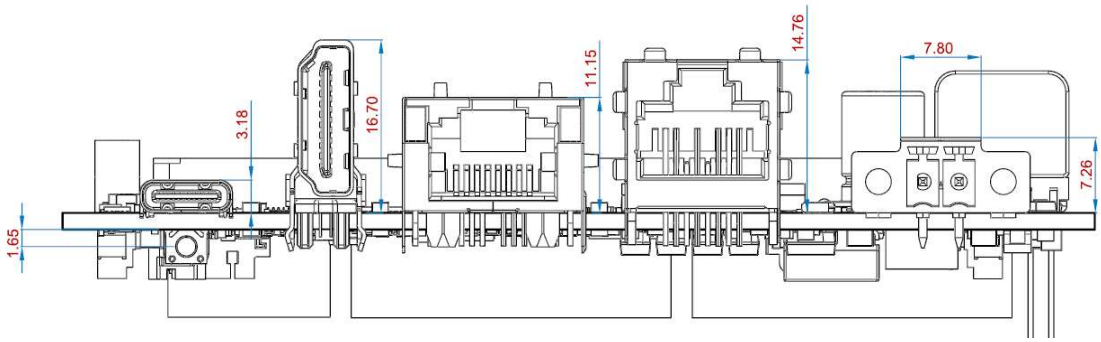
Carrier Board dimesions (in millimeters) – bottom view



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



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



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.we-online.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://www.molex.com/en-us/products/part-detail/2216100001?display=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.we-online.com/components/products/datasheet/61301221821.pdf
Low Speed Signal Con. (Primary Extension)	https://www.we-online.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://ww1.microchip.com/downloads/aemDocuments/documents/UNG/ProductDocuments/DataSheets/00002840C.pdf
EEPROM	https://www.st.com/resource/en/datasheet/m24c01-w.pdf

7 Disclamer

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