Hardware Documentation

PicoCore Base Board
PicoCoreBBDSI

Version 013
(2023-01-09)

Preliminary

This document is subject to change without notice

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About This Document

This document describes how to use the PicoCore™ start interface board with mechanical and electrical information. The latest version of this document can be found at:

http://www.fs-net.de.

PicoCoreBBDSI can be used in combination with 2x 100 pin and 2x 100 pin + 1x 30 pin PicoCore modules.

ESD Requirements

All F&S hardware products are ESD (electrostatic sensitive devices). All products are handled and packaged according to ESD guidelines. Please do not handle or store ESD-sensitive material in ESD-unsafe environments. Negligent handling will harm the product and warranty claims become void.

History

Date	V	Platform	A,M,R	Chapter	Description	Au
02.04.2019	001	All		-	Initial Version	TM
25.10.2019	002	All	M	4.17.1, 4.22	Changes for PCB revision 1.10	TM
25.11.2019	003	All	M	4.17	Minor Changes	MD
20.02.2020	004	All	M	3, 4.8, 4.9, 4.11	Minor Updates	MD
21.04.2020	005	All	M	4.9	Changing for the obsolete connector	MD
07.05.2020	006	All	M	4.4	Correction of serial connector pin layout	MD
18.09.2020	007	All	M	All	Changes for PCB revision 1.20	TM
10.05.2020	008	All	M	3	Correct Table 3	TM
10.05.2020	009	All	M	All	Changes for PCB revision 1.30	TM
14.12.2021	010	All	M	4.14 All	I2C_SDA and I2C_SCL swapped Changes for PCB revision 1.40	TM
08.03.2022	011	All	M	4.17.2	Add pin description for dual channel lvds	TM
08.03.2022	011	All	A	4.17.3	Add pin description for HDMI	TM
31.03.2022	012	All	M	4.14	Pinout for J11 corrected	TM
01.04.2022	012	All	M	4.6	Add information to change functionality of T12	TM
14.11.2022	013	All	M	4.19	Correct information for touch reset	TM

V Version
A,M,R Added, Modified, Removed
Au Author

Table of Contents

1 Main Features

1.1 Interfaces

The following table shows the maximum possible number of each interface. Not all interfaces are available at the same time and depends on the appropriate assembly variant.

Feature	Description
SD Card	1x micro SD
Ethernet	2x 1Gb
USB Host	2x USB 2.0
USB Device	1x USB3.0* / USB2.0*
CAN	1x
UART	3x RS232 / 2x RS232 and 1x RS485
I2C	2x
Audio	Headphone / Microphone
LCD	MIPI-DSI or LVDS* (2 channel with 4 lanes)
Camera	2x MIPI-CSI with 4 lanes*
mPCIe	1x (mPCIe-F1 connector) with SIM socket

Table 1: Main Features

*Depends on the PicoCore Module

2 Mechanical Dimension

PicoCoreBBDSI Rev 1.10 mechanical dimension

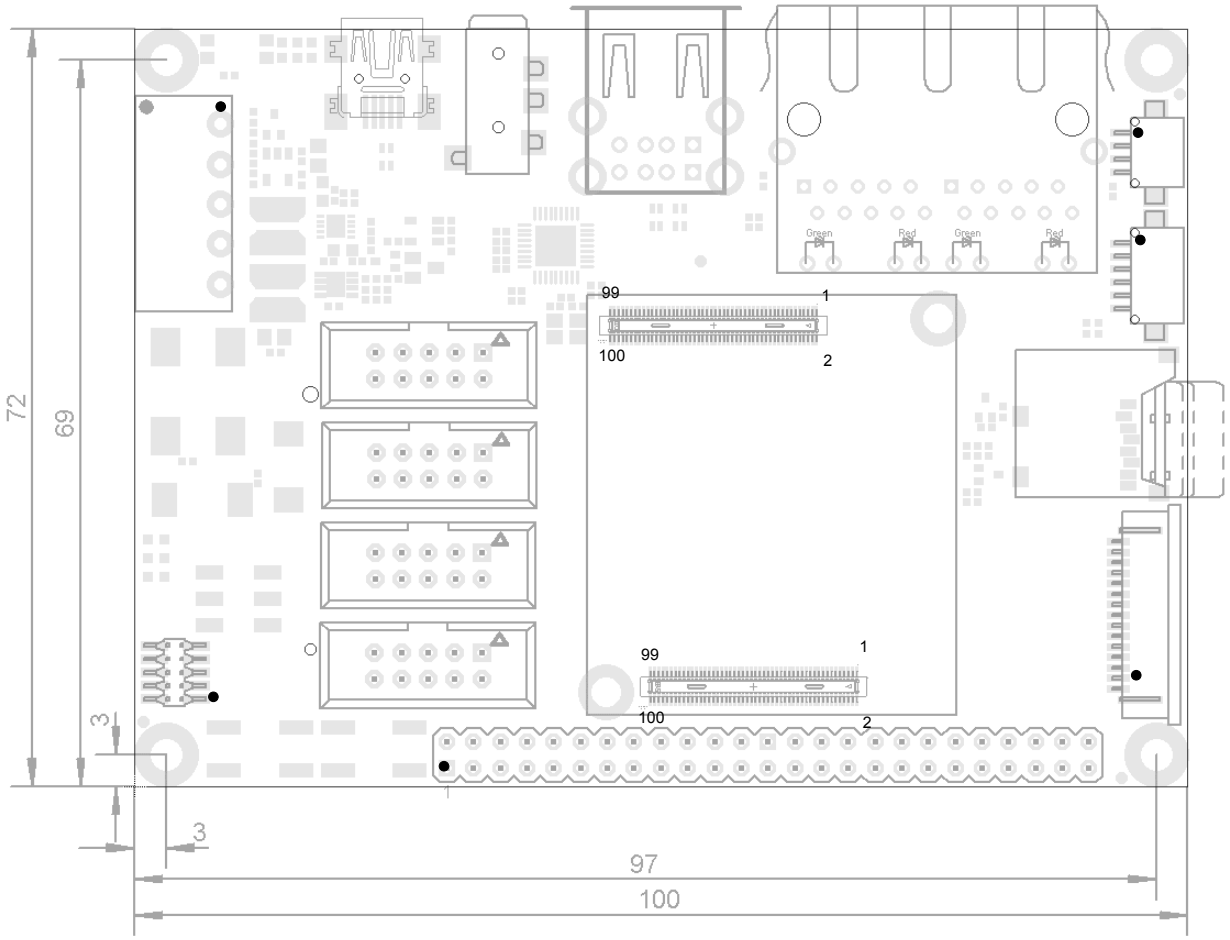


Figure 1: Mechanical Dimensions in mm Rev 1.10

PicoCoreBBDSI Rev 1.20 mechanical dimension

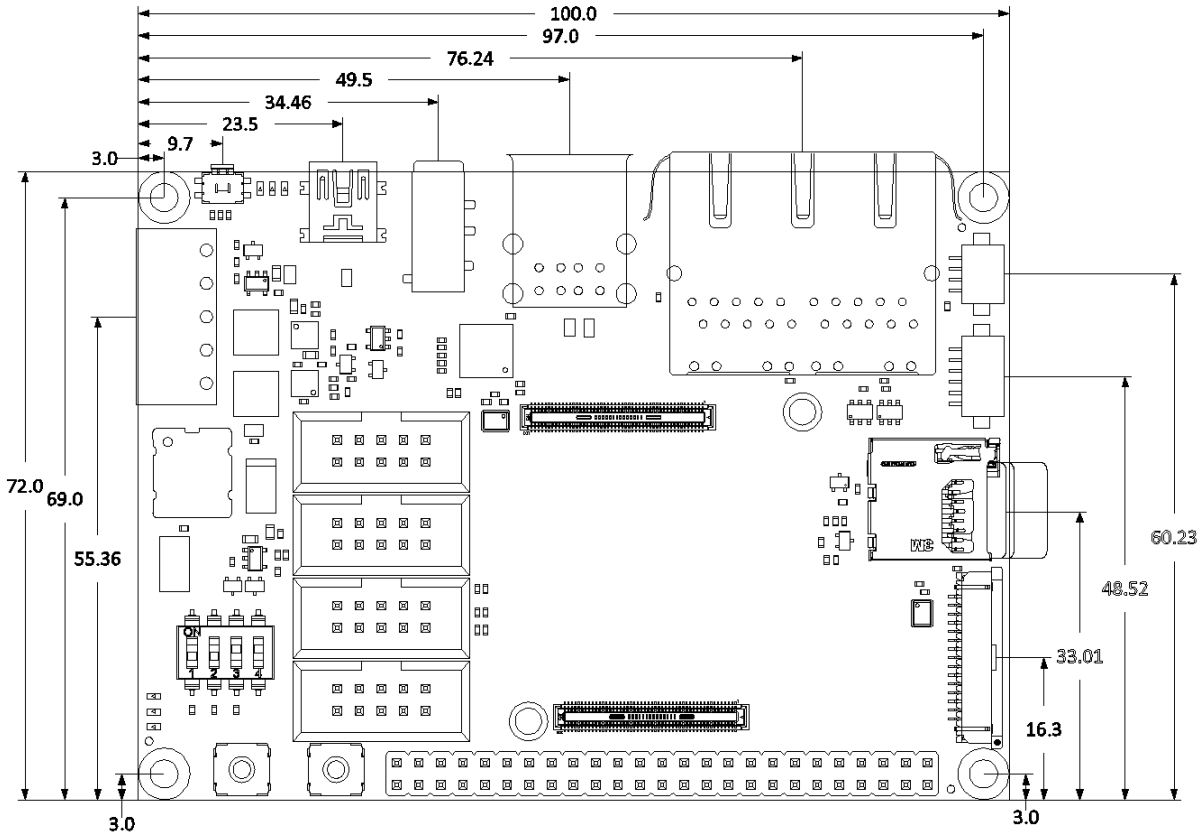


Figure 2: Mechanical Dimensions in mm Rev 1.20

PicoCoreBBDSI Rev 1.30 / 1.40 mechanical dimension

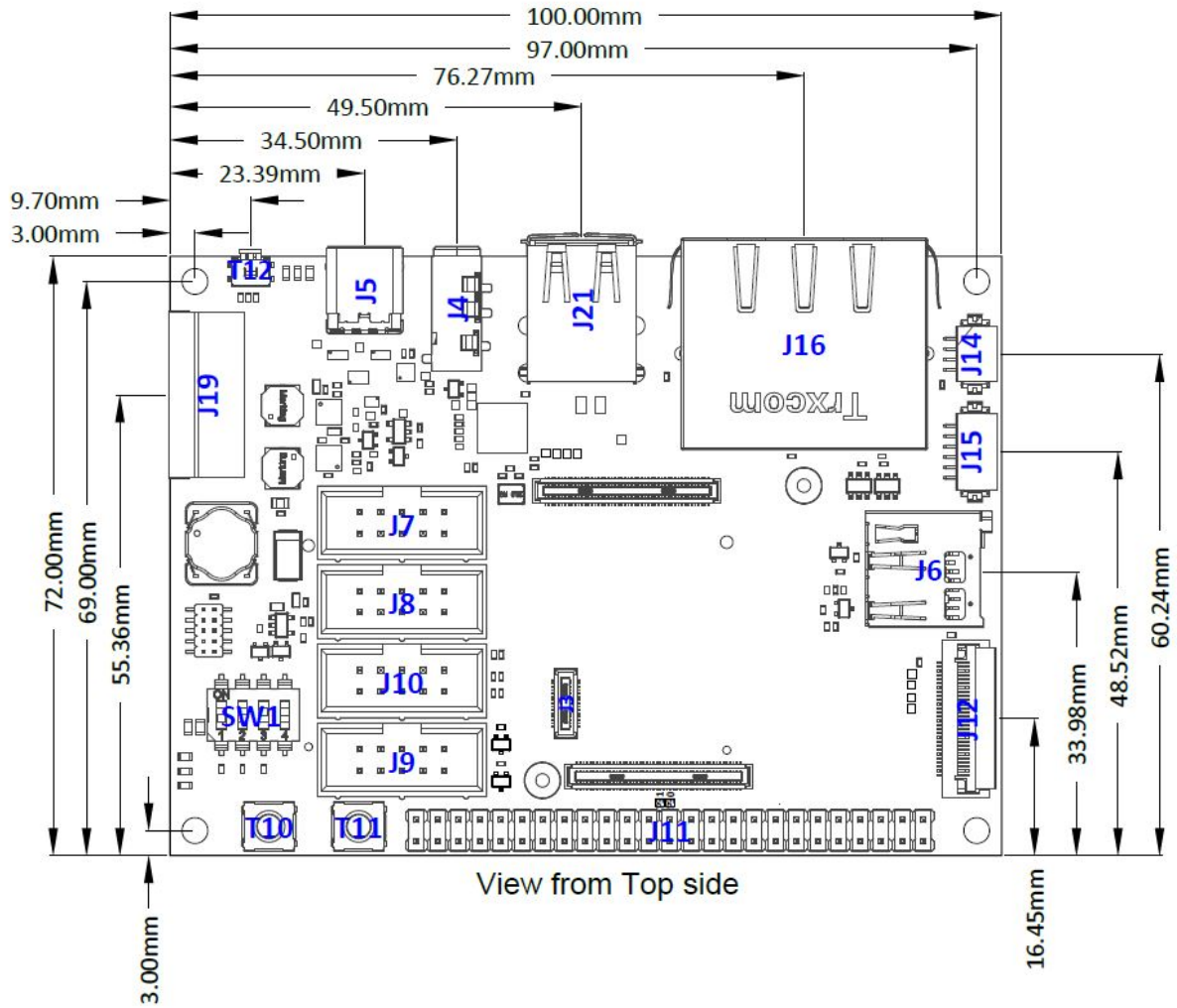


Figure 3: Mechanical Dimensions in mm Rev 1.30 / 1.40

Dimensions	Description
Size	100mm x 72mm
Mounting holes	3.2mm
PCB thickness	1.5 ± 0.1mm
Height of the parts on the top side	16.5mm
Height of the parts on the bottom side	6.6mm
Weight	65g

Table 2: Mechanical Dimensions

3 Connector Layout

PicoCoreBBDSI Rev 1.10 connector layout

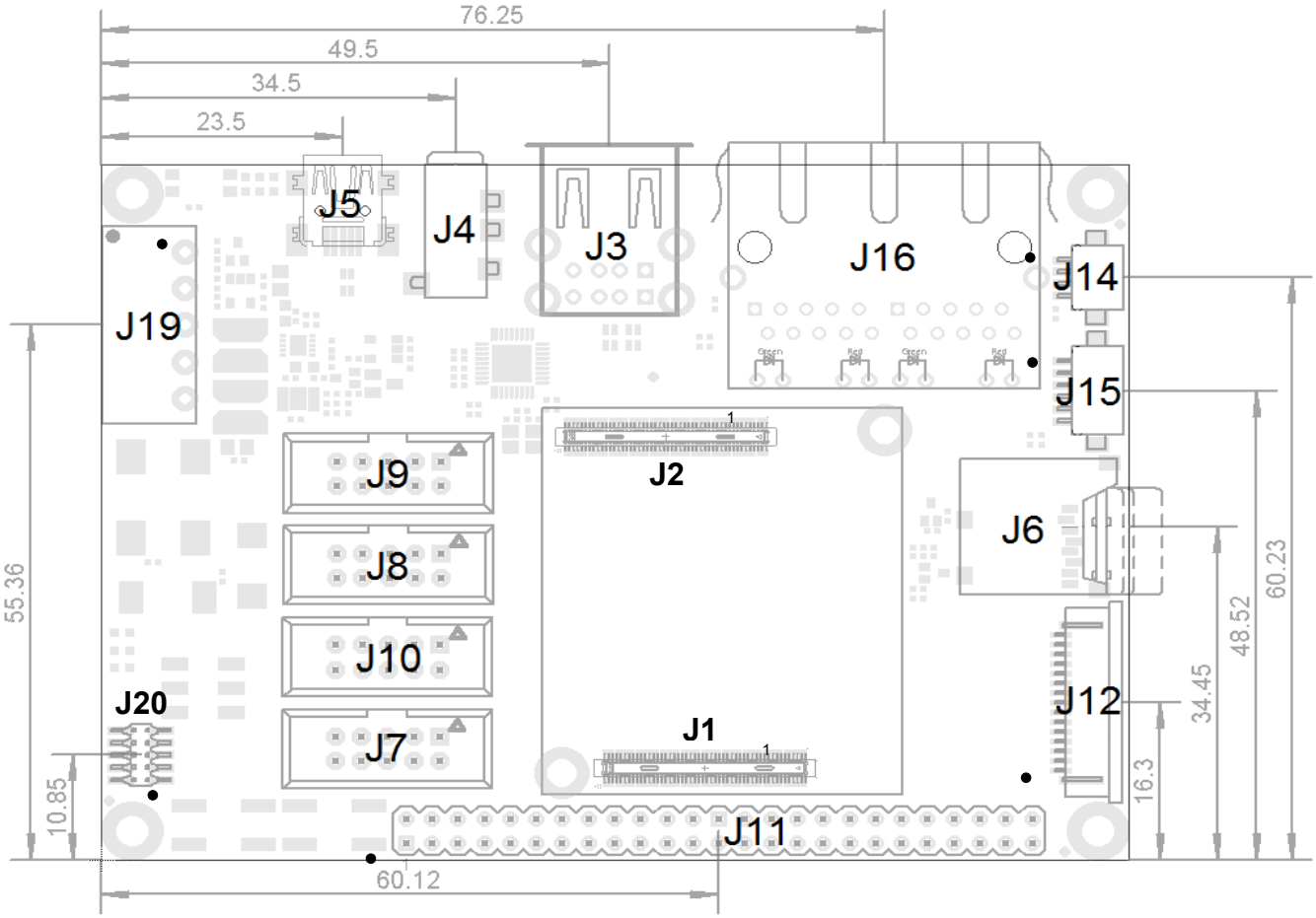


Figure 4: Connector layout Rev 1.10

PicoCoreBBDSI Rev 1.20 connector layout

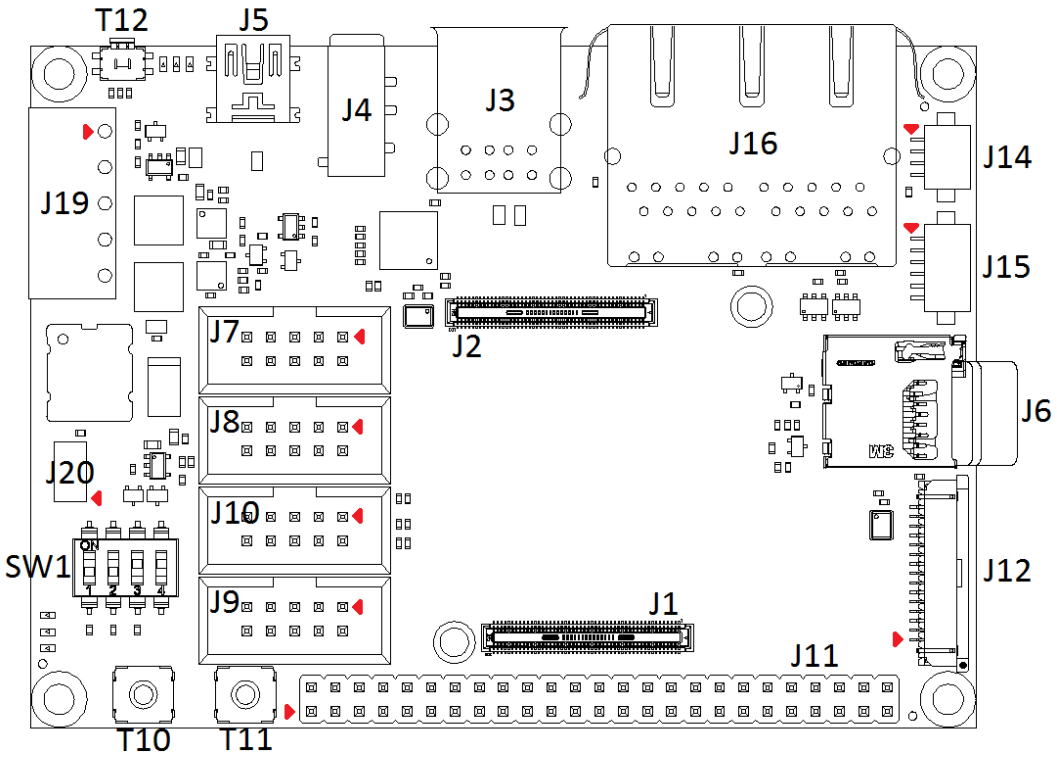


Figure 5: Connector layout Rev 1.20

PicoCoreBBDSI Rev 1.30 / 1.40 connector layout

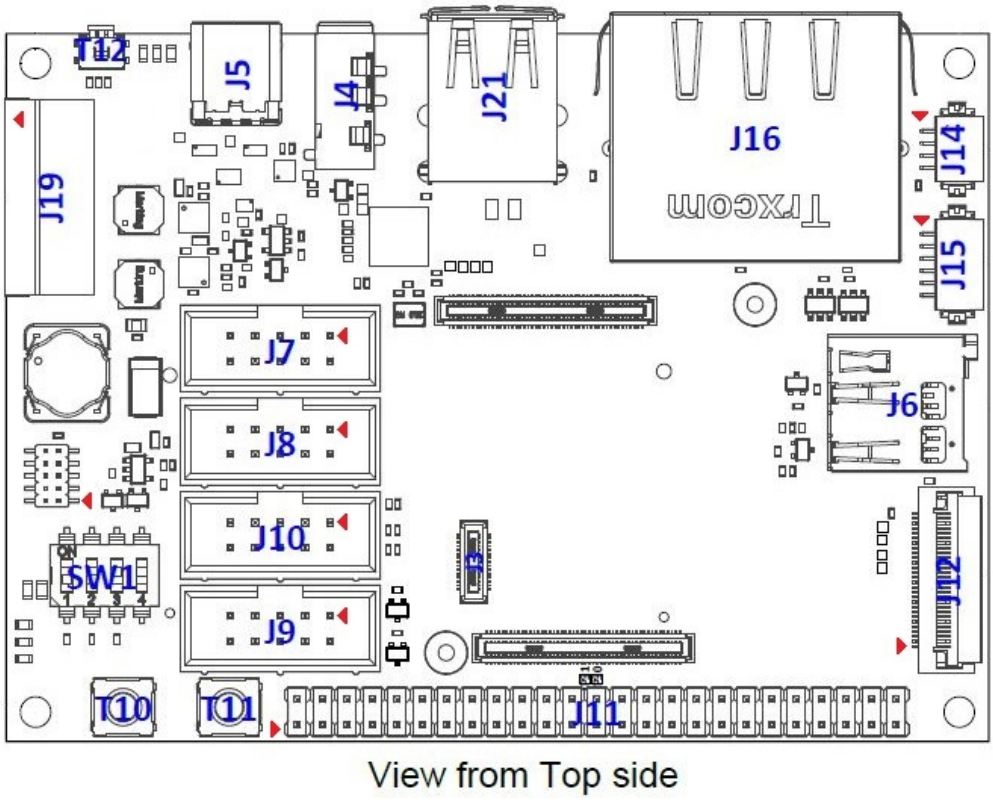


Figure 6: Connector layout Rev 1.30 / 1.40 Top

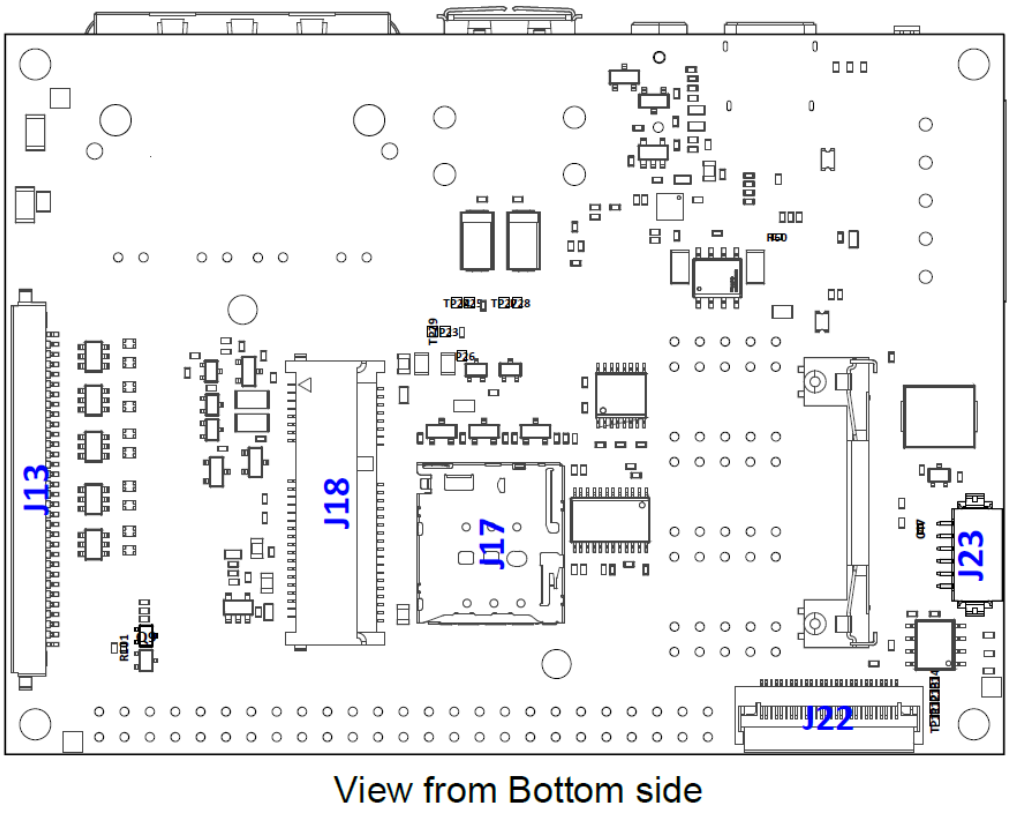


Figure 7: Connector layout Rev 1.30 / 1.40 Bottom

Ref.	Description	Remarks
J1	PicoCore B2B Connector	Top Side, 100 pins
J2	PicoCore B2B Connector	Top Side, 100 pins
J3	**Rev 1.10 and Rev 1.20:** 2x USB Host Connector	Top Side, USB 2.0 Type A
	Rev 1.30 / Rev 1.40: PicoCoreB2B Connector	Top Side, 30 pins
J4	Audio, Headphone and MIC	Top Side, 3.5mm Jack CTAI Standard
J5	**Rev 1.00 - Rev 1.20:** USB-OTG Connector	Top Side, USB Mini
	Rev 1.30 - Rev 1.40: USB-OTG Connector	Top Side, USB Type-C
J6	Micro-SD Connector push-pull	Top Side
J7	CAN Connector	Top Side, 10 pins
J8	**Rev 1.10:** UART A (Debug Port), RS232 only RXD and TXD **Rev 1.20 & Rev 1.30:** UART B, RS232 only RXD and TXD	Top Side, 9 pins
J9	**Rev 1.10:** UART B, RS232 only RXD and TXD **Rev 1.20 - Rev 1.40:** UART A (Debug Port), RS232 only RXD and TXD	Top Side, 9 pins
J10	UART C, RS232 with RXD, TXD, RTS and CTS	Top Side, 9 pins
J11	50 Pin Feature Connector	Top Side (standard not assembled)
J12	MIPI-CSI Connector	Top Side, 28 pins
J13	MIPI-DSI / LVDS Connector	Bottom Side, 30 pins
J14	Backlight Control Connector	Top Side, 4 pins
J15	Touchscreen I2C Connector	Top Side, 6 pins
J16	Ethernet, 2xRJ45 With Integrated Magnetics	Top Side
J17	SIM Card Connector	Bottom Side
J18	mPCIe Connector	Bottom Side
J19	Power Connector	Top Side, 5 pins
J20	JTAG Connector	Top Side, 10 pins
J21	**Rev 1.30 & Rev 1.40:** 2x USB Host Connector	Top Side, USB 2.0 Type A
J22	MIPI-CSI Connector	Bottom Side, 28 pins
J23	SPI Connector	Bottom Side, 6 pins
T10	Reset Switch	
T11	BOOTSEL Switch	
T12	RESET Switch by default	Opt. ON/OFF
SW1	DIP-Switch	

Table 3: Connectors & Switches List

4 Interface and Signal Description

4.1 PicoCore Connectors (J1, J2, J3)

Type: DF40C-100DS-0.4V
Manufacturer: Hirose
F&S web shop: picocore-100-connector

Type: DF40C-30DS-0.4V
Manufacturer: Hirose

Please refer the PicoCore module datasheet for pin-out assignments.

4.2 J19 Power Supply

The PicoCore base board has a 5 way connector with 3,81mm pitch for an external DC power supply.

Connector Base Board: Phoenix Contact (MC 1,5/ 5-G-3,81)

Matching Connector: Phoenix Contact (MC 1,5/ 5-ST-3,81)

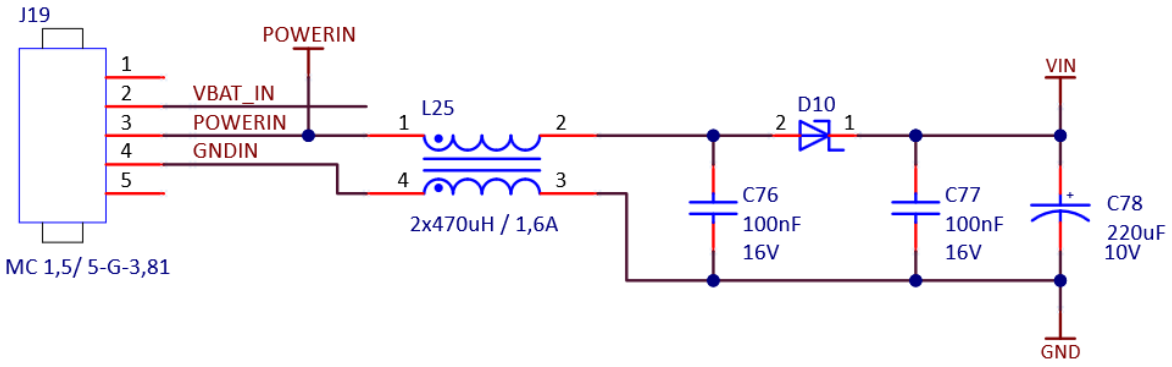


Figure 8: Power Supply

J19 Pin	Signal Name	I/O	Remarks
1	NC		
2	VBAT_IN	PWR	Leave open if not used. Note
3	POWERIN	PWR	Note
4	GNDIN	PWR	
5	NC		

Table 4: Power Connector Pin Layout

4.3 SW1 DIP Switch

The PicoCore baseboard Rev 1.20 – Rev 1.40 has one DIP-Switch for configurations.
Switch 1 & 2 have to be in the ON position. Otherwise the board will not work properly.
Switch 3 is for the mPCIe W_DISABLE signal. Setting this switch ON will threw the signal low.
Switch 4 is not connected.

In Rev 1.30 and Rev 1.40 the switches 1 & 2 are off by default. This means the Serial port B is a RS232 interface. This port can also operate as RS485 Half- and Full-Duplex interface.

- RS232 : SW1 = OFF / SW2 = OFF
- RS485 Half-Duplex: SW1 = ON / SW2 = OFF
- RS485 Full-Duplex : SW1 = ON / SW1 = ON

4.4 T10 Reset Switch

This switch is for the reset the PicoCore module.

4.5 T11 BOOTSEL Switch

This switch is only necessary to get the module into the service state.

4.6 T12 Reset / ON/OFF Switch

This switch is a reset switch by default. By changing the assembly of the PicoCore baseboard it is also possible to give this switch the ON/OFF functionality.

To change the functionality to Power ON/OFF the red marked resistor (0R) has to be removed and the green resistor (0R) has to be mounted.
Remove also the blue marked resistor if mounted.

Please note that this feature is only tested with the PicoCoreMX8MP and PicoCoreMX8MM.

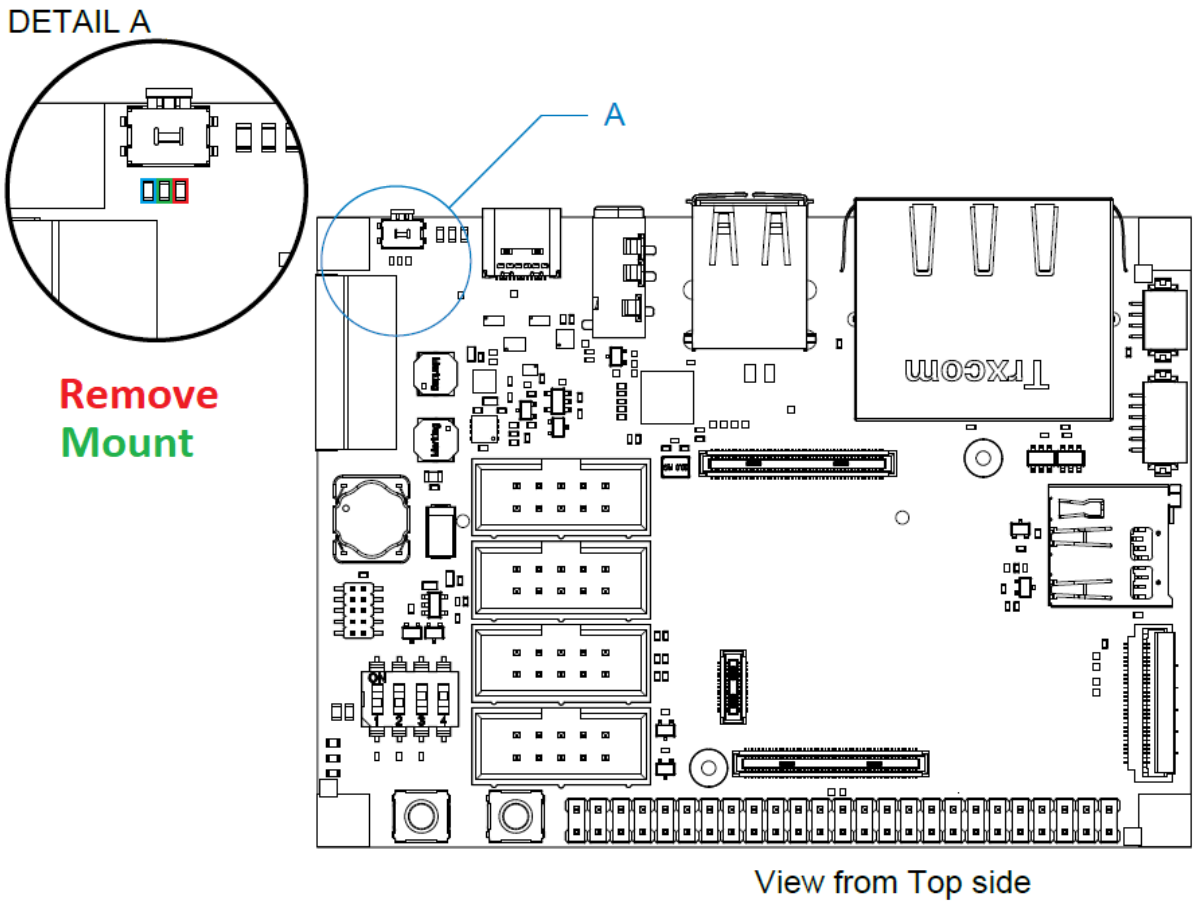


Figure 9: Power ON/OFF mounting option

4.7 J3 USB Host

All USB ports follow the USB 2.0 specification.

With a Hub, the single USB-Port of the PicoCore module is expanded to two USB Ports (A/B).

Port A (top) and port B (bottom) are connected to the USB Host front connector.

The 90 Ohm differential pair of USB signals doesn't need any termination. For external ports, EMV protection is required nearby the USB connector.

The usb.org webpage provides "High Speed USB Platform Design Guidelines" with highly recommended information for a proper working USB design.

J3 Pin	Signal Name	I/O Type	Voltage	Remarks
T1	USB_PWR_A*	PWR	+5V	Input in device mode and output in host mode. Maximum current 500mA.
T2	USB_DN_A	I/Odiff	5V	Differential data line routed with 90Ω
T3	USB_DP_A			
T4	GND		GND	
B1	USB_PWR_B*	PWR	+5V	Maximum current 500mA.
B2	USB_DN_B	I/Odiff	5V	Differential data line routed with 90Ω
B3	USB_DP_B			
B4	GND		GND	

Table 5: USB HOST Interface

* switched

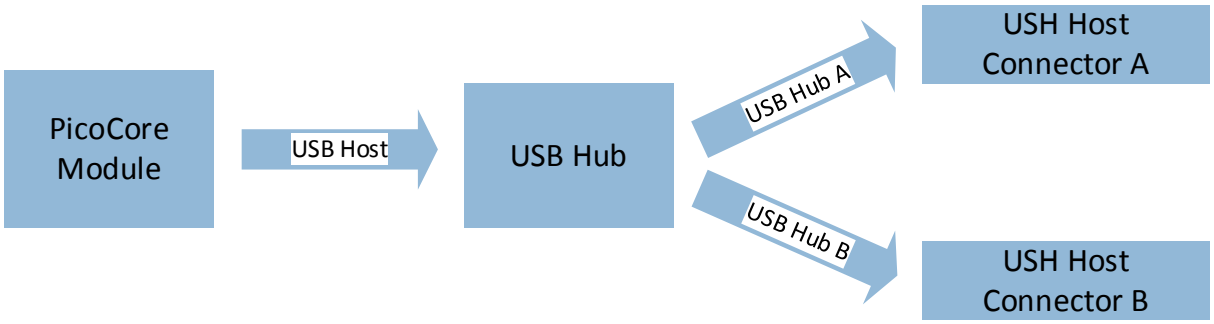


Figure 10: USB Host with USB Hub

4.8 J4 Audio

The PicoCore base board provides a 3.5mm audio jack with headphone and mic.
To improve the sound quality the voltage regulator for the audio codec is placed on the PicoCore base board.

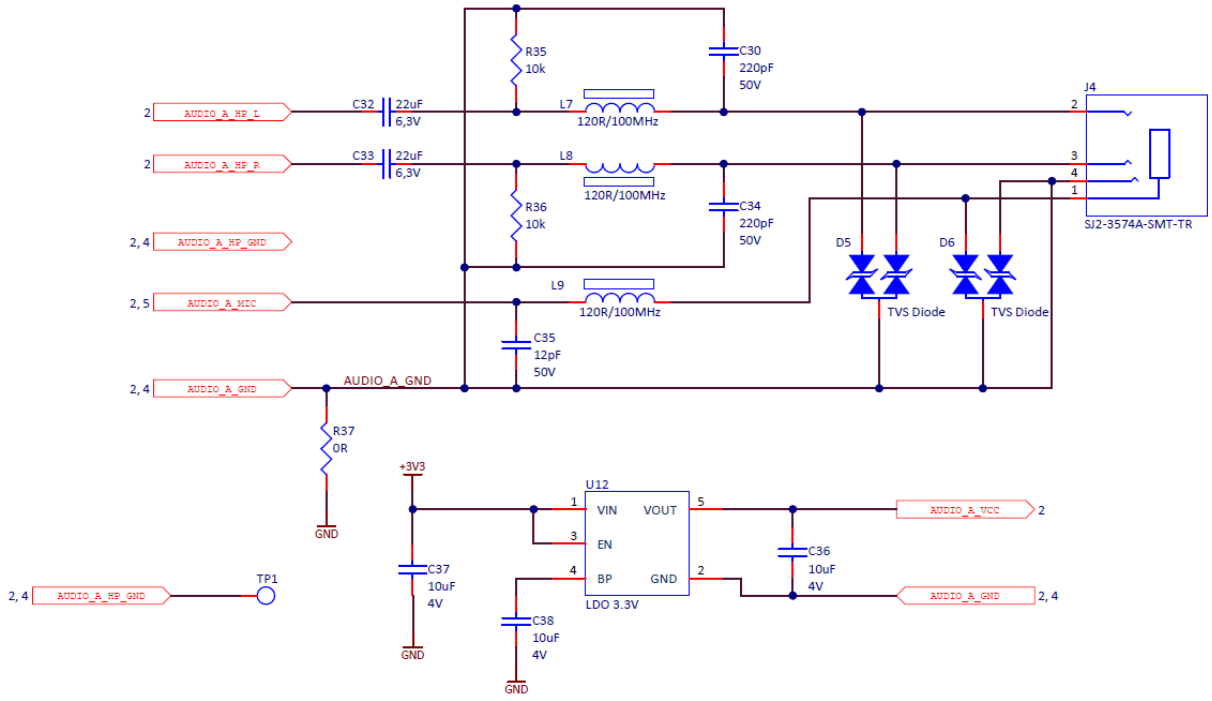


Figure 11: Audio

Connector type: CUI SJ2-3574A-SMT-TR

J4 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	AUDIO_A_MIC	J2-10	I		was Pin4 in REV1.00
2	AUDIO_A_HP_L	J2-18	O		
3	AUDIO_A_HP_R	J2-20	O		
4	AUDIO_A_GND	J2-4	O		was Pin1 in REV1.00

Table 6: Audio Interface

4.9 J5 USB OTG Rev 1.20

The USB OTG port can operate as device or as a host port. To control the USB_VBUS is only necessary if this feature is needed. In device only mode this part is not needed. The USB differential signals are routed with an impedance of 90Ω.

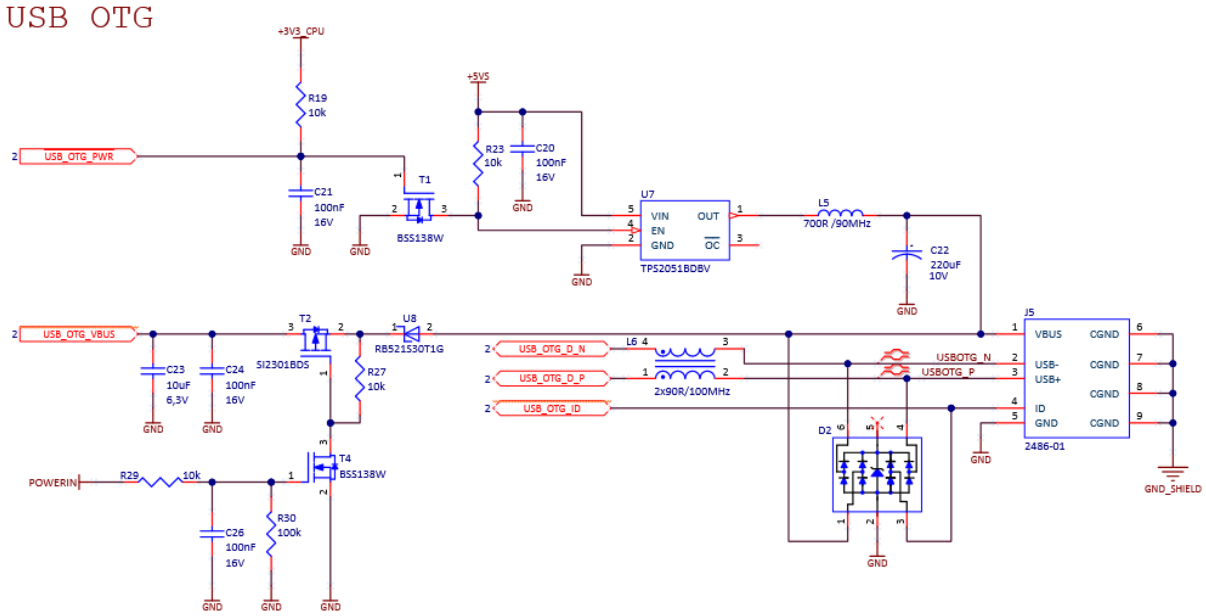


Figure 12: USB-OTG

Connector type: Würth Elektronik eiSos 651 005 161 21

J5 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	USB_OTG_VBUS	J2-51	PWR	5V	Input in device mode and output in host mode. Max 500mA
2	USB_OTG_N	J2-59	I/Odiff	5V	Differential data line routed with 90Ω
3	USB_OTG_P	J2-57			
4	USB_OTG_ID	J2-55	PWR	5V	
5	GND		PWR		

Table 7: USB OTG Interface Rev 1.20

4.10 J5 USB OTG Rev 1.30 / Rev 1.40

The USB OTG port is realised on a USB Type-C connector. USB 3.0 is only available with 230 pin PicoCore modules.

Rev 1.30:
This Port can operate in host or device mode with PicoCore modules which have the J3 connector. Otherwise this port can only operate in device mode. To get the OTG functionality running on PicoCore modules without J3 you have to use another GPIO for the USB_TYPEC_ALERT# signal on your baseboard.

Connector type rev 1.30: Amphenol 12401548E4#2A

Rev 1.40:
This Port can operate in host or device mode.

Connector type rev 1.40: Winconn UC-3019-2GNB-RR

J5 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
A1 B1	GND		PWR		
A2 B2	USB_OTG_SS_TX_P*	J3-27	O		Differential data line routed with 90Ω.
A3 B3	USB_OTG_SS_TX_N*	J3-29			
A4 B4	USB1_OTG_VBUS		PWR	5V	Note
A5	CC1		I		
B5	CC2		I		
A6 B6	USB_OTG_D_P	J2-57	I/Odiff		Differential data line routed with 90Ω
A7 B7	USB_OTG_D_N	J2-59			
A8	SBU1				Connected to TP2
B8	SBU2				Connected to TP2
A9 B9	USB1_OTG_VBUS		PWR	5V	Note
A10 B10	USB_OTG_SS_RX_P*	J3-21	I		Differential data line routed with 90Ω
A11 B11	USB_OTG_SS_RX_N*	J3-23			
A12 B12	GND		PWR		

* On PicoCore modules without J3 these pins are not connected

Table 8: USB OTG Interface Rev 1.30 / Rev 1.40

4.11 J6 SD Card

For the SD Card the PicoCore base board provides a Push-Pull micro SD Card connector. The SD Card voltage of the PicoCore module is generated on the base board. The SD Card interface can operate with 3.3V and 1.8V. The voltage is controlled with the SD_A_VSEL signal. All Pull-Ups on the SD Card signals must be connected to SD_A_VCC.

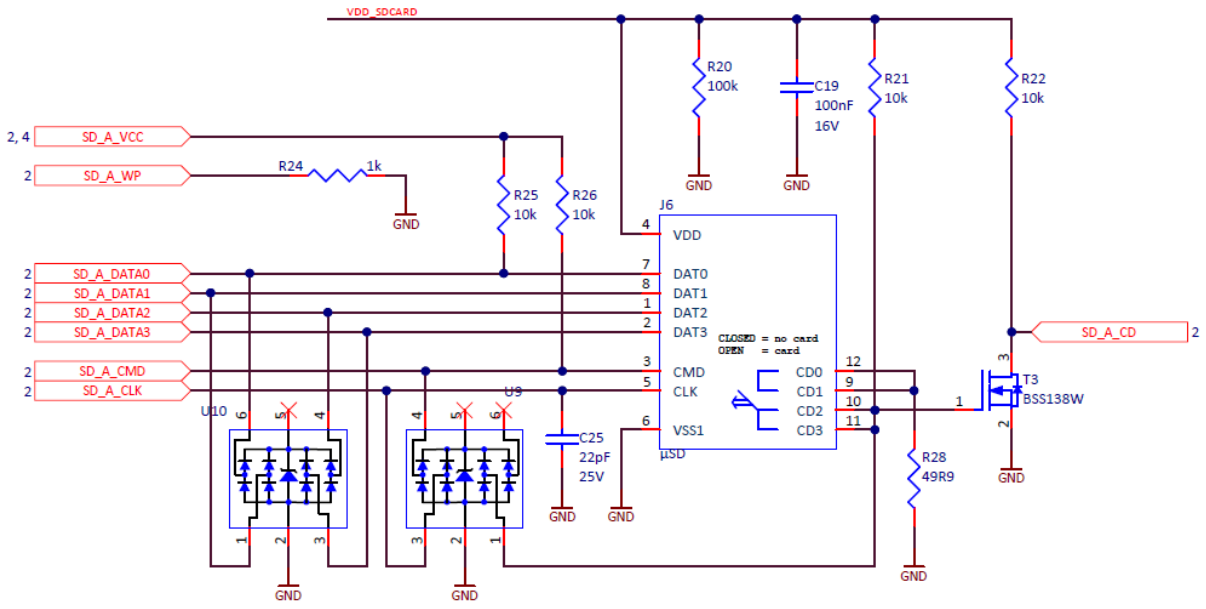


Figure 13: SD Card

J6 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	SD_A_DAT2	J2-70	I/O	3.3V / 1.8V	
2	SD_A_DAT3	J2-72	I/O	3.3V / 1.8V	
3	SD_A_CMD	J2-62	I/O	3.3V / 1.8V	
4	SD_A_VCC	J2-52	PWR	3.3V / 1.8V	
5	SD_A_CLK	J2-64	O	3.3V / 1.8V	
6	GND		PWR	3.3V / 1.8V	
7	SD_A_DAT0	J2-66	I/O	3.3V / 1.8V	
8	SD_A_DAT1	J2-68	I/O	3.3V / 1.8V	
CD1	SD_A_CD	J2-60	O	3.3V / 1.8V	Active LOW

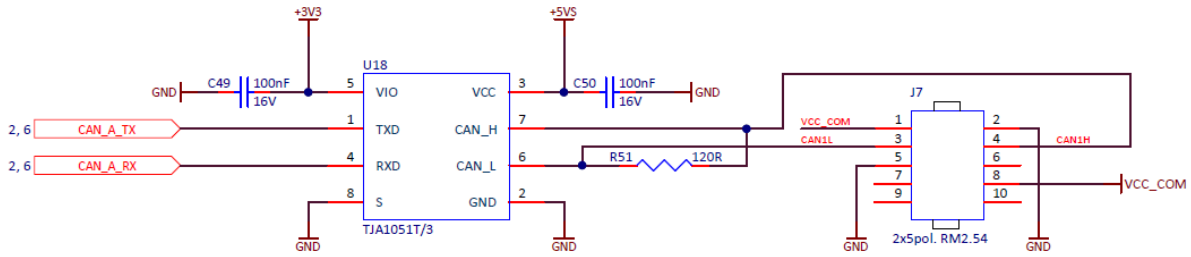
Table 9: SDIO A Interface

4.12 J7 CAN Interface

The PicoCoreBBDSI provides a 10-pin connector with Hi-Speed CAN signals. These signals are produced via SPI CAN-Controller.

The SPI-CAN controller was removed in Rev 1.30 and the signals are directly routed to the PicoCore module.

The CAN connector is a standard 2.54 mm 10 pin header and pin 1 is marked on the connector with an arrow.



J7 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	VCC_COM		PWR	5V	Note
2	GND		PWR		
3	CAN1L		I/O	Max. ± 58V	
4	CAN1H		I/O	Max. ± 58V	
5	GND		PWR		
6	N.C.				
7	N.C.				
8	VCC_COM		PWR	5V	Note
9	N.C.				
10	N.C.				

Table 10: CAN Interface

*Please calculate maximum current. The PicoCoreBBDSI can only provide 800mA @ 5V.

4.13 COM Ports

The PicoCore base board offers 3 COM ports (A-C). All ports are RS232.

4.13.1 J8/J9 - COM A/C Interface

The first two ports are RS232 ports without RTS/CTS. Whereas COM A (J9) is typically used as Debug-port. The COM connector is a standard 2.54 mm 10 pin header to connect a free hanging IDC DSUB-9 connector. Pin 1 is marked on the connector with an arrow.
Pin 10 is removed from the connector by default.

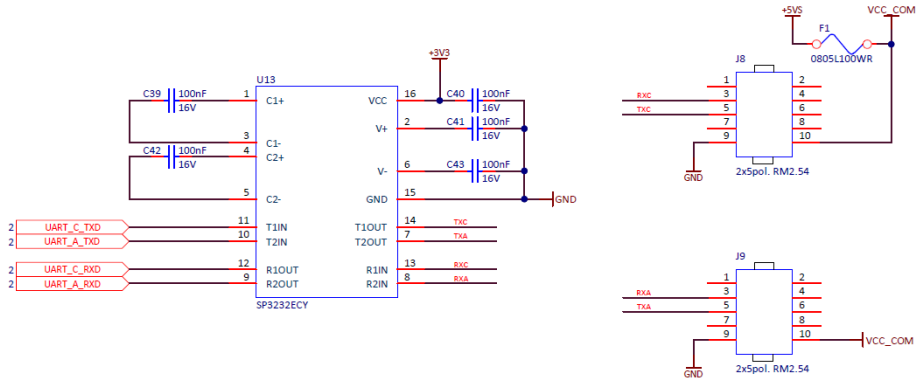


Figure 14: J8/J9 Connector layout

J8 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	N.C.				
2	N.C.				
3	RX_C	J1-34	I	Max. ±25V	
4	N.C.				
5	TX_C	J1-36	O	Max. ±13.2V	
6	N.C.				
7	N.C.				
8	N.C.				
9	GND		GND		
10	VCC_COM		PWR	+5V	Note

Table 11: UART C Interface

J9 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	N.C.				
2	N.C.				
3	RX_A	J1-18	I	Max. ±25V	
4	N.C.				
5	TX_A	J1-20	O	Max. ±13.2V	
6	N.C.				
7	N.C.				
8	N.C.				

9	GND		GND		
10	VCC_COM		PWR	+5V	Note

Table 12: UART A Interface

4.13.2 J10 - COM B Interface Rev 1.20

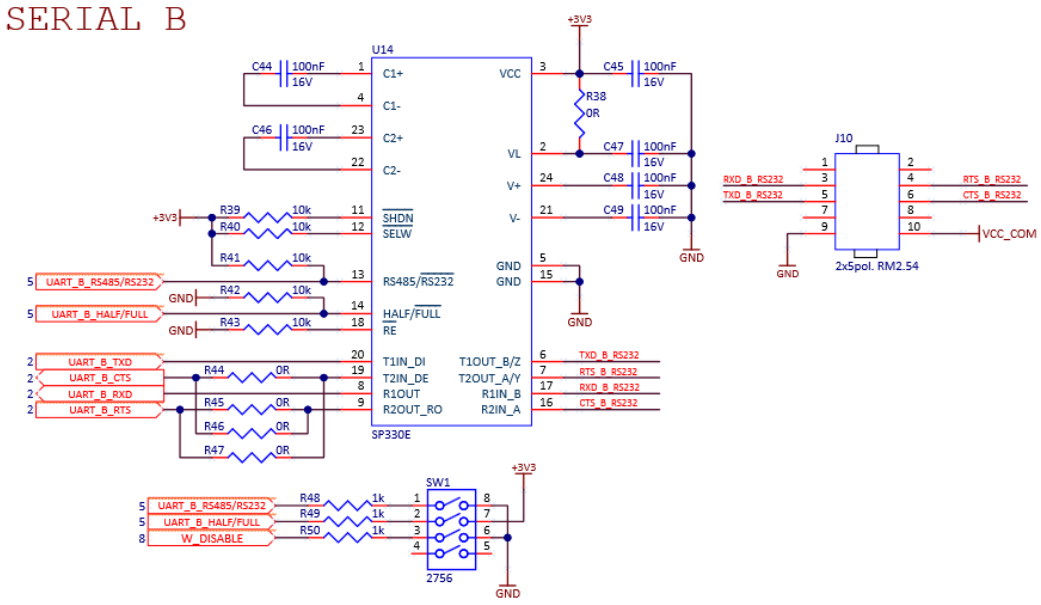


Figure 15: COM B Interface Rev 1.20

J10 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	N.C.				
2	N.C.				
3	RXD_B	J1-26	I	Max. ±18V	Was named RXD_C in Rev 1.10
4	RTS_B	J1-22	O	Max. ±18V	Was named RTS_C in Rev 1.10
5	TXD_B	J1-28	O	Max. ±18V	Was named TXD_C in Rev 1.10
6	CTS_B	J1-24	I	Max. ±18V	Was named CTS_C in Rev 1.10
7	N.C.				
8	N.C.				
9	GND		GND		
10	VCC_COM		PWR	+5V (Note)	

Table 13: Serial B Interface Rev 1.20

4.13.3 J10 - COM B Interface Rev 1.30

The Serial port B provides one RS232 port with RTS and CTS. This port can also be used as a RS485 port by switching SW1_1 on. This switch is off by default. To get a RS485 Full-Duplex port you also have to switch SW1_2 on.

Pin 10 is removed from the connector by default.

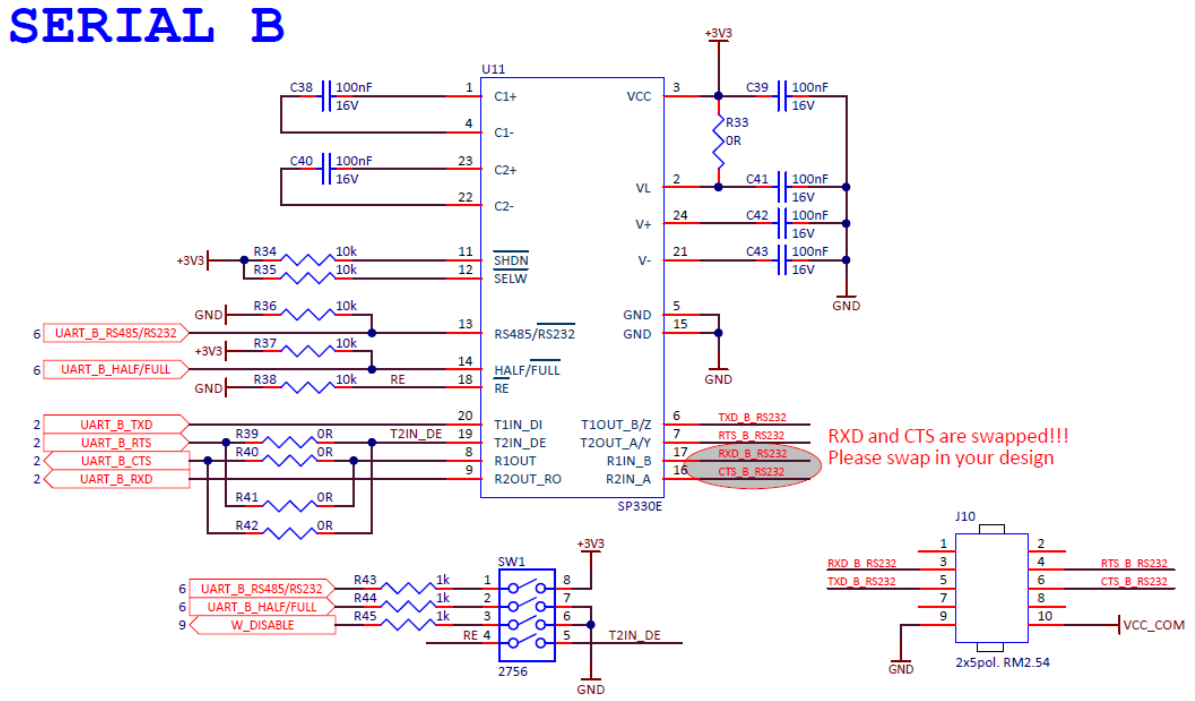


Figure 16: J10 Serial Port B Rev 1.30

J10 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	RS485 Full-Duplex	RS485 Half-Duplex
1	N.C.					
2	N.C.					
3	RXD_B	J1-26	I	Max. ±18V	RX+	
4	RTS_B	J1-22	O	Max. ±18V	TX+	Data+
5	TXD_B	J1-28	O	Max. ±18V	TX-	Data-
6	CTS_B	J1-24	I	Max. ±18V	RX-	
7	N.C.					
8	N.C.					
9	GND		GND			
10	VCC_COM		PWR	+5V (Note)		

Table 14: Serial B Interface Rev 1.30

4.13.4 J10 - COM B Interface Rev 1.40

The Serial port B provides one RS232 port with RTS and CTS. This port can also be used as a RS485 port by switching SW1_1 on. This switch is off by default. To get a RS485 Full-Duplex port you also have to switch SW1_2 on.

Pin 10 is removed from the connector by default.

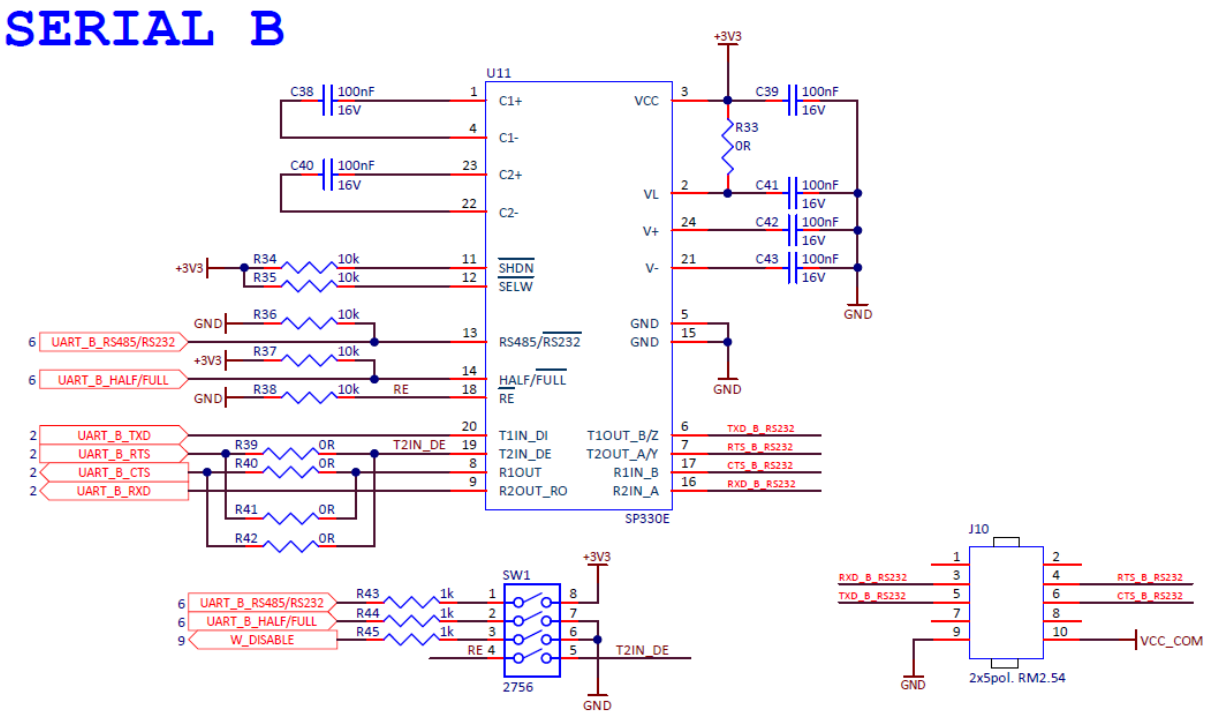


Figure 17: J10 Serial Port B Rev 1.40

J10 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	RS485 Full-Duplex	RS485 Half-Duplex
1	N.C.					
2	N.C.					
3	RXD_B	J1-26	I	Max. ±18V	RX+	
4	RTS_B	J1-22	O	Max. ±18V	TX+	Data+
5	TXD_B	J1-28	O	Max. ±18V	TX-	Data-
6	CTS_B	J1-24	I	Max. ±18V	RX-	
7	N.C.					
8	N.C.					
9	GND		GND			
10	VCC_COM		PWR	+5V (Note)		

Table 15: Serial B Interface Rev 1.40

4.14 J11 Feature connector

The PicoCore base board provides a 50 pol. feature connector. This connector is by default not mounted.

In PCB Rev1.00 this connector has no connections.

PicoCoreBBDSI Rev 1.10 feature connector pinout

J11 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	+3V3		PWR	3.3V	Note
2	+5VS		PWR	5V	Note
3	SPI_B_SCLK	J1-62	I/O	3.3V	
4	SPI_B_SS0	J1-56	I/O	3.3V	
5	SPI_B_MISO	J1-58	I/O	3.3V	
6	SPI_B_MOSI	J1-60	I/O	3.3V	
7	GPIO_J1_52	J1-52	I/O	3.3V	
8	GPIO_J1_54	J1-54	I/O	3.3V	
9	NC				
10	NC				
11	GND		PWR		
12	NC				
13	UART_D_TXD	J1-36	I/O	3.3V	
14	NC				
15	UART_D_RXD	J1-34	I/O	3.3V	
16	I2C_A_SCL	J1-4	I/O	3.3V	
17	I2C_A_SDA	J1-6	I/O	3.3V	
18	GPIO_J1_2	J1-2	I/O	3.3V	
19	SD_A_DATA4	J2-74	I/O	1.8V/3.3V	
20	SD_A_DATA5	J2-76	I/O	1.8V/3.3V	
21	SD_A_DATA6	J2-78	I/O	1.8V/3.3V	
22	SD_A_DATA7	J2-80	I/O	1.8V/3.3V	
23	NC				
24	NC				
25	NC				
26	NC				
27	GND		PWR		
28	NC				
29	NC				
30	NC				
31	NC				
32	NC				
33	NC				
34	NC				
35	NC				
36	NC				
37	GND		PWR		
38	NC				
39	+3V3		PWR	3.3V	Note
40	+5VS		PWR	5V	Note

J11 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
41	AUDIO_A_MIC	J2-10	I		
42	GND		PWR		
43	NC				
44	AUDIO_A_LIN_R	J2-14	I		
45	AUDIO_A_LOUT_R	J2-8	O		
46	GND		PWR		
47	GND		PWR		
48	AUDIO_A_LIN_L	J2-12	I		
49	AUDIO_A_LOUT_L	J2-6	O		
50	GND		PWR		

Table 16: Feature Connector Rev 1.10

PicoCoreBBDSI Rev 1.20 feature connector pinout

J11 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	+3V3		PWR	3.3V	Note
2	+5VS		PWR	5V	Note
3	SPI_B_SCLK	J1-62	I/O	3.3V	
4	SPI_B_SS0	J1-56	I/O	3.3V	
5	SPI_B_MISO	J1-58	I/O	3.3V	
6	SPI_B_MOSI	J1-60	I/O	3.3V	
7	NC				
8	GPIO_J1_54	J1-54	I/O	3.3V	
9	NC				
10	NC				
11	GND		PWR		
12	NC				
13	UART_D_TXD	J1-36	I/O	3.3V	
14	NC				
15	UART_D_RXD	J1-34	I/O	3.3V	
16	I2C_A_SCL	J1-4	I/O	3.3V	
17	I2C_A_SDA	J1-6	I/O	3.3V	
18	GPIO_J1_2	J1-2	I/O	3.3V	
19	SD_A_DATA4	J2-74	I/O	1.8V/3.3V	
20	SD_A_DATA5	J2-76	I/O	1.8V/3.3V	
21	SD_A_DATA6	J2-78	I/O	1.8V/3.3V	
22	SD_A_DATA7	J2-80	I/O	1.8V/3.3V	
23	SD_B_DATA3	J2-100	I/O	1.8V/3.3V	
24	CAN_A_RX	J1-10	I	3.3V	
25	SD_B_DATA2	J2-98	I/O	1.8V/3.3V	
26	CAN_A_TX	J1-12	O	3.3V	
27	GND		PWR		
28	SD_B_DATA1	J2-96	I/O	1.8V/3.3V	
29	SD_B_DATA0	J2-94	I/O	1.8V/3.3V	
30	SD_B_CLK	J2-92	O	1.8V/3.3V	
31	SD_B_CMD	J2-90	I/O	1.8V/3.3V	
32	SD_B_CD		I	1.8V/3.3V	

J11 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
33	SD_WP		I	1.8V/3.3V	
34	PWM		O	3.3V	
35	SD_RST		O	1.8V/3.3V	
36	UART_A_RTS		O	3.3V	
37	GND		PWR		
38	UART_A_CTS		I	3.3V	
39	+3V3		PWR	3.3V	Note
40	+5VS		PWR	5V	Note
41	AUDIO_A_MIC	J2-10	I		
42	GND		PWR		
43	NC				
44	AUDIO_A_LIN_R	J2-14	I		
45	AUDIO_A_LOUT_R	J2-8	O		
46	GND		PWR		
47	GND		PWR		
48	AUDIO_A_LIN_L	J2-12	I		
49	AUDIO_A_LOUT_L	J2-6	O		
50	GND		PWR		

Table 17: Feature Connector Rev 1.20

PicoCoreBBDSI Rev 1.30 / 1.40 feature connector pinout

J11 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	+3V3		PWR	3.3V	Note
2	+5VS		PWR	5V	Note
3	SPI_B_SCLK	J1-62	I/O	3.3V	
4	SPI_B_SS0	J1-56	I/O	3.3V	
5	SPI_B_MISO	J1-58	I/O	3.3V	
6	SPI_B_MOSI	J1-60	I/O	3.3V	
7	I2S_B_TXD0	J2_73			
8	GPIO_J1_54	J1-54	I/O	3.3V	
9	I2S_B_RXD0	J2_75			
10	I2S_B_MCLK	J2_65			
11	GND		PWR		
12	I2S_B_TXFS	J2_67			
13	UART_D_TXD	J1-36	I/O	3.3V	
14	I2S_B_TXC	J2_69			
15	UART_D_RXD	J1-34	I/O	3.3V	
16	I2C_A_SCL	J1-4	I/O	3.3V	
17	I2C_A_SDA	J1-6	I/O	3.3V	
18	GPIO_J1_52	J1_52	I/O	3.3V	
19	SD_A_DATA4	J2-74	I/O	1.8V/3.3V	
20	SD_A_DATA5	J2-76	I/O	1.8V/3.3V	
21	SD_A_DATA6	J2-78	I/O	1.8V/3.3V	
22	SD_A_DATA7	J2-80	I/O	1.8V/3.3V	
23	SD_B_DATA3	J2-100	I/O	1.8V/3.3V	
24	CAN_A_RX	J1-10	I	3.3V	

J11 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
25	SD_B_DATA2	J2-98	I/O	1.8V/3.3V	
26	CAN_A_TX	J1-12	O	3.3V	
27	GND		PWR		
28	SD_B_DATA1	J2-96	I/O	1.8V/3.3V	
29	SD_B_DATA0	J2-94	I/O	1.8V/3.3V	
30	SD_B_CLK	J2-92	O	1.8V/3.3V	
31	SD_B_CMD	J2-90	I/O	1.8V/3.3V	
32	SD_B_CD	J2_88	I	1.8V/3.3V	
33	SD_B_WP	J2_86	I	1.8V/3.3V	
34	PWM	J2_63	O	3.3V	
35	SD_B_RST	J2_84	O	1.8V/3.3V	
36	UART_A_RTS	J1_14	O	3.3V	
37	GND		PWR		
38	UART_A_CTS	J1_16	I	3.3V	
39	+3V3		PWR	3.3V	Note
40	+5VS		PWR	5V	Note
41	AUDIO_A_MIC	J2-10	I		
42	GND		PWR		
43	NC				
44	AUDIO_A_LIN_R	J2-14	I		
45	AUDIO_A_LOUT_R	J2-8	O		
46	GND		PWR		
47	GND		PWR		
48	AUDIO_A_LIN_L	J2-12	I		
49	AUDIO_A_LOUT_L	J2-6	O		
50	GND		PWR		

Table 18: Feature Connector Rev 1.40

4.15 J12 Camera Interface (MIPI-CSI) Rev 1.20

The PicoCoreBBDSI provides a 15-pin connector RM 1.0mm for a MIPI-CSI camera with 24MHz clock signal and one I2C interface.

Connector type: Amphenol ICC (FCI) SFW15R-1STE1LF

J12 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	GND		PWR		
2	CSI_DATA0_N	J1_76	I/O		Differential data line routed with 100Ω
3	CSI_DATA0_P	J1_74			
4	GND		PWR		
5	CSI_DATA1_N	J1_82	I/O		Differential data line routed with 100Ω
6	CSI_DATA1_P	J1_80			
7	GND		PWR		
8	CSI_CLK_N	J1_88	O		Differential data line routed with 100Ω
9	CSI_CLK_P	J1_86			
10	GND		PWR		
11	GPIO_J1_44	J1_44	I/O		
12	24MHz CLK		O		Output of 24MHz Crystal
13	I2C_D_SCL	J1_48	I/O		
14	I2C_D_SDA	J1_50	I/O		
15	+3V3		PWR	3.3V	Note

Table 19: MIPI-CSI Connector

4.16 J12 Camera Interface A (MIPI-CSI) Rev 1.30 / 1.40

The PicoCoreBBDSI provides a 28-pin connector RM 0.5mm for a MIPI-CSI camera. You can directly connect a Basler dart BCON for MIPI camera.

Connector type: Hirose FH41-28S-0.5SH(05)

Matching cable: 200mm or 400mm

J12 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	GND		PWR		
2	CSI_A_DATA3_P	J1_98	I/O		Differential data line routed with 100Ω
3	CSI_A _DATA3_N	J1_100			
4	GND		PWR		
5	CSI_A _DATA2_P	J1_92	I/O		Differential data line routed with 100Ω
6	CSI_A _DATA2_N	J1_94			
7	GND		PWR		
8	CSI_A _CLK_P	J1_74	O		Differential data line routed with 100Ω
9	CSI_A _CLK_N	J1_76			
10	GND		PWR		
11	CSI_A _DATA1_P	J1_86	I/O		Differential data line routed with 100Ω
12	CSI_A _DATA1_N	J1_88			
13	GND		PWR		
14	CSI_A _DATA0_P	J1_80	I/O		
15	CSI_A _DATA0_N	J1_82	I/O		
16	GND		PWR		
17	NC				Connected to TP15
18	NC				Connected to TP16
19	GND		PWR		
20	I2C_B_SCL	J1_3	I/O	1.8V	
21	I2C_B_SDA	J1_5	I/O	1.8V	
22	GND		PWR		
23	NC				Connected to TP17
24	NC				Connected to TP18
25	VIN		PWR	5V	Directly connected to J19
26	VIN				
27	VIN				
28	GND		PWR		

Table 20: Canera connector J12 Rev 1.30 / 1.40

4.17 J13 Display Interface

The PicoCore base board provides a 30 pol. Connector for a MIPI-DSI display interface (2 channels with 4 lanes) a dual channel LVDS display interface (2 channels with 4 lanes) or a HDMI interface. MIPI-DSI, LVDS or HDMI depends on the used PicoCore module. Please refer the hardware documentation of the related PicoCore module for further information.

Connector type: FI-X30SSLA-HF-R2500

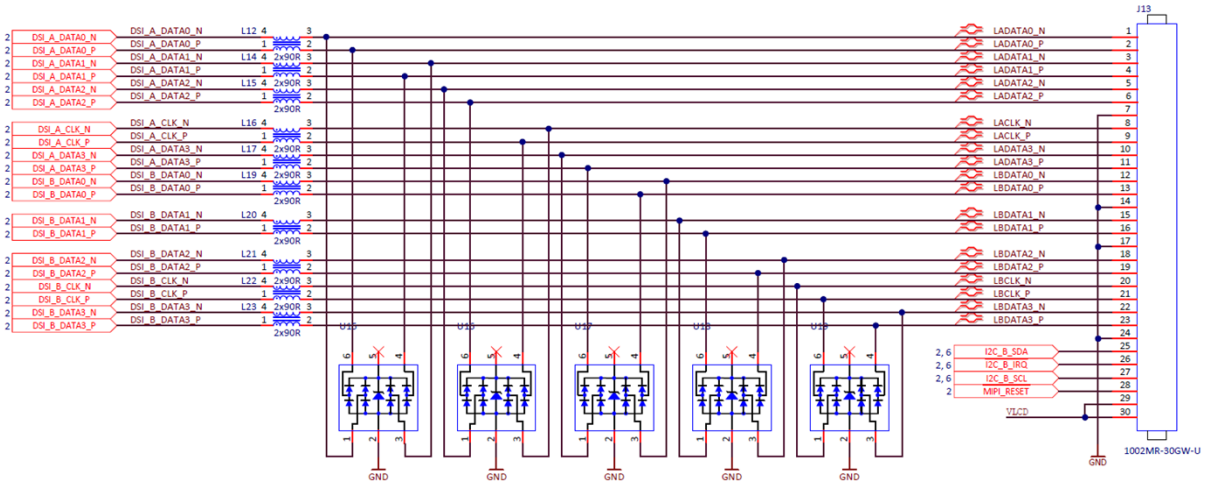


Figure 18: J13 Display Interface

4.17.1 MIPI-DSI

J13 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	DSI_A_DATA0_N	J1-25	I/Odiff	*	Differential data line routed with 100Ω
2	DSI_A_DATA0_P	J1-23			
3	DSI_A_DATA1_N	J1-31	I/Odiff	*	Differential data line routed with 100Ω
4	DSI_A_DATA1_P	J1-29			
5	DSI_A_DATA2_N	J1-37	I/Odiff	*	Differential data line routed with 100Ω
6	DSI_A_DATA2_P	J1-35			
7	GND		PWR		
8	DSI_A_CLK_N	J1-19	I/Odiff	*	Differential data line routed with 100Ω
9	DSI_A_CLK_P	J1-17			
10	DSI_A_DATA3_N	J1-43	I/Odiff	*	Differential data line routed with 100Ω
11	DSI_A_DATA3_P	J1-41			
12	DSI_B_DATA0_N	J1-55	I/Odiff	*	Differential data line routed with 100Ω
13	DSI_B_DATA0_P	J1-53			
14	GND		PWR		
15	DSI_B_DATA1_N	J1-61	I/Odiff	*	Differential data line routed with 100Ω
16	DSI_B_DATA1_P	J1-59			
17	GND		PWR		
18	DSI_B_DATA2_N	J1-67	I/Odiff	*	Differential data line routed with 100Ω
19	DSI_B_DATA2_P	J1-65			
20	DSI_B_CLK_N	J1-49	I/Odiff	*	Differential data line routed with 100Ω
21	DSI_B_CLK_P	J1-47			
22	DSI_B_DATA3_N	J1-73	I/Odiff	*	Differential data line routed with 100Ω
23	DSI_B_DATA3_P	J1-71			
24	GND		PWR		
25	I2C_B_SDA	J1-5	I/O	*	Shared with J15

26	!I2C_B_IRQ	J1-1	I/O	*	Shared with J15
27	I2C_B_SCL	J1-3	I/O	*	Shared with J15
28	!MIPI_RESET	J1-7	I/O	*	was VLCD in PCB REV1.00
29	VLCD		PWR	3.3V	Note
30	VLCD		PWR	3.3V	Note

Table 21: MIPI-DSI Interface

* The voltage depends on the used PicoCore module. Please refer the hardware documentation of the PicoCore module.

4.17.2 LVDS

J13 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	LVDS0_DATA0_N	J1-25	I/Odiff	*	Differential data line routed with 100Ω
2	LVDS0_DATA0_P	J1-23			
3	LVDS0_DATA1_N	J1-31	I/Odiff	*	Differential data line routed with 100Ω
4	LVDS0_DATA1_P	J1-29			
5	LVDS0_DATA2_N	J1-37	I/Odiff	*	Differential data line routed with 100Ω
6	LVDS0_DATA2_P	J1-35			
7	GND		PWR		
8	LVDS0_CLK_N	J1-19	I/Odiff	*	Differential data line routed with 100Ω
9	LVDS0_CLK_P	J1-17			
10	LVDS0_DATA3_N	J1-43	I/Odiff	*	Differential data line routed with 100Ω
11	LVDS0_DATA3_P	J1-41			
12	LVDS1_DATA0_N	J1-55	I/Odiff	*	Differential data line routed with 100Ω
13	LVDS1_DATA0_P	J1-53			
14	GND		PWR		
15	LVDS1_DATA1_N	J1-61	I/Odiff	*	Differential data line routed with 100Ω
16	LVDS1_DATA1_P	J1-59			
17	GND		PWR		
18	LVDS1_DATA2_N	J1-67	I/Odiff	*	Differential data line routed with 100Ω
19	LVDS1_DATA2_P	J1-65			
20	LVDS1_CLK_N	J1-49	I/Odiff	*	Differential data line routed with 100Ω
21	LVDS1_CLK_P	J1-47			
22	LVDS1_DATA3_N	J1-71	I/Odiff	*	Differential data line routed with 100Ω
23	LVDS1_DATA3_P	J1-73			
24	GND		PWR		
25	I2C_B_SDA	J1-5	I/O	*	Shared with J15
26	!I2C_B_IRQ	J1-1	I/O	*	Shared with J15
27	I2C_B_SCL	J1-3	I/O	*	Shared with J15
28	!MIPI_RESET	J1-7	I/O	*	was VLCD in PCB REV1.00
29	VLCD		PWR	3.3V	Note
30	VLCD		PWR	3.3V	Note

Table 22: LVDS Interface

* The voltage depends on the used PicoCore module. Please refer the hardware documentation of the PicoCore module.

4.17.3 HDMI

J13 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	NC				
2	NC				
3	NC				
4	NC				
5	NC				
6	NC				
7	NC				
8	NC				
9	NC				
10	NC				
11	NC				
12	HDMI_TXD0_N	J1-55	I/Odiff	*	Differential data line routed with 100Ω
13	HDMI_TXD0_P	J1-53			
14	GND		PWR	*	
15	HDMI_TXD1_N	J1-61	I/Odiff	*	Differential data line routed with 100Ω
16	HDMI_TXD1_P	J1-59			
17	GND		PWR		
18	HDMI_TXD2_N	J1-67	I/Odiff	*	Differential data line routed with 100Ω
19	HDMI_TXD2_P	J1-65			
20	HDMI_TXC_N	J1-49	I/Odiff	*	Differential data line routed with 100Ω
21	HDMI_TXC_P	J1-47			
22	EARC_N_HPD	J1-71	O	*	
23	EARC_P_UTIL	J1-73	I	*	
24	GND		PWR		
25	I2C_B_SDA	J1-5	I/O	*	Shared with J15
26	!I2C_B_IRQ	J1-1	I/O	*	Shared with J15
27	I2C_B_SCL	J1-3	I/O	*	Shared with J15
28	!MIPI_RESET	J1-7	I/O	*	was VLCD in PCB REV1.00
29	VLCD		PWR	3.3V	Note
30	VLCD		PWR	3.3V	Note

Table 23: HDMI Interface

* The voltage depends on the used PicoCore module. Please refer the hardware documentation of the PicoCore module.

4.18 J14 LCD Backlight Control

The PicoCore base board provides a 4 pol. Connector for LCD backlight.

Connector type: Hirose DF13-4P-1.25H(20)

J14 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	VLCD_ON	J1-13	O	3.3V	
2	BL_ON	J1-9	O	3.3V	
3	BL_PWM	J1-11	O	3.3V	
4	GND		PWR		

Table 24: LCD Backlight Interface

4.19 J15 I²C Touch

The PicoCore base board provides a 6 pol. Connector with I²C signals.

Connector type: Hirose DF13-6P-1.25H(20)

PicoCoreBBDSI Rev 1.10 J15 pinout

J15 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	+3V3		PWR	3.3V	Note
2	I2C_B_SDA	J1-5	I/O	3.3V	Shared with J13
3	I2C_B_SCL	J1-3	O	3.3V	Shared with J13
4	!MIPI_RESET	J1-7	I/O	3.3V	*GPIO_J1_7 on PicoCoreMX8MM
5	I2C_B_IRQ	J1-1	I	3.3V	Shared with J13
6	GND		PWR		

Table 25: J15 I2C Touch Interface Rev 1.10

PicoCoreBBDSI Rev 1.20 / 1.30 / 1.40 J15 pinout

J15 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	+3V3		PWR	3.3V	Note
2	I2C_B_SDA	J1-5	I/O	3.3V	Shared with J13
3	I2C_B_SCL	J1-3	O	3.3V	Shared with J13
4	!TOUCH_RESET	J1-7	I/O	3.3V	Rev 1.20: GPIO_J1_52 Rev 1.30 & Rev 1.40: GPIO_J1_2
5	I2C_B_IRQ	J1-1	I	3.3V	Shared with J13
6	GND		PWR		

Table 26: J15 I2C Touch Interface Rev 1.20 / 1.30 / 1.40

4.20 J16 Ethernet

The PicoCore base board provides two GBit RJ-45 connectors with integrated magnetics. The maximum transmission speed depends on the PicoCore module. All signals are routed with an impedance of 100Ω ±10% and a maximum length difference between pairs of 0.2mm.

4.20.1 J16L LAN1

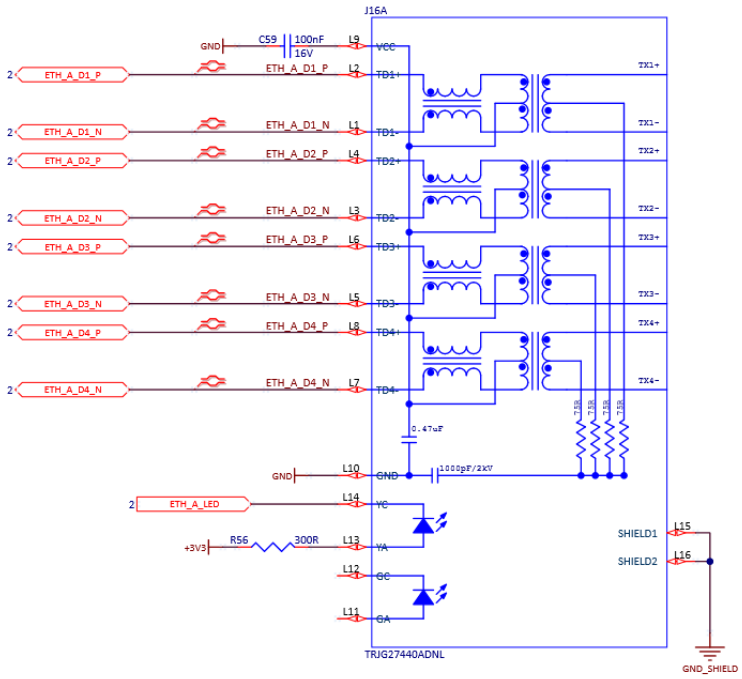


Figure 19: J16L LAN1

Connector type: 2x RJ-45, Trxcom TRJG27440ADNL

J16L Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	ETH_A_D1_N	J2-3	I/Odiff	3.3V	Differential data line routed with 100Ω
2	ETH_A_D1_P	J2-1			
3	ETH_A_D2_N	J2-7	I/Odiff	3.3V	Differential data line routed with 100Ω
4	ETH_A_D2_P	J2-5			
5	ETH_A_D3_N	J2-11	I/Odiff	3.3V	Differential data line routed with 100Ω
6	ETH_A_D3_P	J2-9			
7	ETH_A_D4_N	J2-15	I/Odiff	3.3V	Differential data line routed with 100Ω
8	ETH_A_D4_P	J2-13			
9	GND				
10	GND				
11	ETH_A_LED	J2-17	O	3.3V	
12	+3V3_CPU	J2-40	PWR	3.3V	Connected via 300Ω serial resistor to +3V3_CPU
13	NC				
14	NC				

Table 27: LAN1 Interface

4.20.2 J16R LAN2

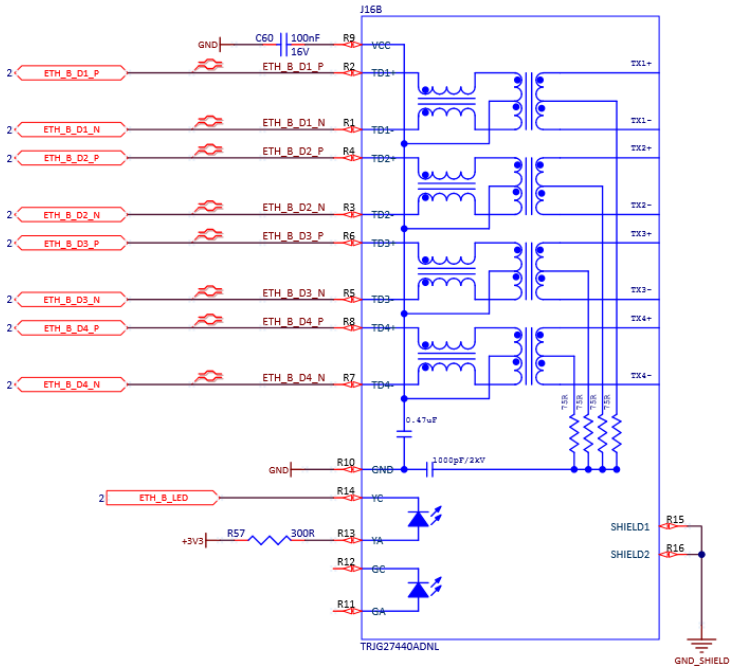


Figure 20: J16R LAN2

Connector type: 2x RJ-45, Trxcom TRJG27440ADNL

J16R Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	ETH_B_D1_N	J2-25	I/Odiff	3.3V	Differential data line routed with 100Ω
2	ETH_B_D1_P	J2-23			
3	ETH_B_D2_N	J2-29	I/Odiff	3.3V	Differential data line routed with 100Ω
4	ETH_B_D2_P	J2-27			
5	ETH_B_D3_N	J2-33	I/Odiff	3.3V	Differential data line routed with 100Ω
6	ETH_B_D3_P	J2-31			
7	ETH_B_D4_N	J2-37	I/Odiff	3.3V	Differential data line routed with 100Ω
8	ETH_B_D4_P	J2-35			
9	GND				
10	GND				
11	ETH_B_LED	J2-21	O	3.3V	
12	+3V3_CPU	J2-40	PWR	3.3V	Connected via 300Ω serial resistor to +3V3_CPU
13	NC				
14	NC				

Table 28: LAN2 Interface

4.21 J18 mPCIe Connector

The PicoCore carrier board provides a 52 pol. full size mPCIe connector. The signals can differ between the PicoCore modules. Please refer the PicoCore module datasheet.

J18 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	!MPCIE_WAKE	J1-97	I		
2	+3V3		PWR	+3.3V	Note
3	N.C				
4	GND		GND		
5	N.C				
6	+1V5		PWR	+1.5V	Note
7	N.C				
8	UIM_PWR		PWR		
9	GND		GND		
10	UIM_DATA		I/O		
11	MPCIE_CLK_N	J1-91	I/Odiff	0.7V	Differential data line routed with 100Ω
12	UIM_CLK		O		
13	MPCIE_CLK_P	J1-89	I/Odiff	0.7V	Differential data line routed with 100Ω
14	UIM_RESET		O		
15	GND		GND		
16	UIM_VPP		O		
17	N.C.				
18	GND		GND		
19	N.C.				
20	!W_DISABLE		I	+3.3V	
21	GND		GND		
22	!MPCIE_PERST	J1-95	I	+3.3V	
23	MPCIE_CRX_N	J1-85	I/Odiff	0.7V	Differential data line routed with 100Ω
24	+3V3		PWR	+3.3V	Note
25	MPCIE_CRX_P	J1-83	I/Odiff	0.7V	Differential data line routed with 100Ω
26	GND		GND		
27	GND		GND		
28	+1V5		PWR	+1.5V	Note
29	GND		GND		
30	SMB_CLK		I/O	+3.3V	
31	MPCIE_CTX_N	J1-79	I/Odiff	0.7V	Differential data line routed with 100Ω
32	SMB_DATA		I/O	+3.3V	
33	MPCIE_CTX_P	J1-77	I/Odiff	0.7V	Differential data line routed with 100Ω
34	GND		GND		
35	GND		GND		
36	USB_D_N		I/Odiff	5V	Differential data line routed with 90Ω
37	GND		GND		
38	USB_D_N		I/Odiff	5V	Differential data line routed with 90Ω
39	+3V3		PWR	+3.3V	Note
40	GND		GND		
41	+3V3		PWR	+3.3V	Note
42	!LED_WWAN		O	+3.3V	
43	GND		GND		
44	!LED_WLAN		O	+3.3V	
45	N.C.				
46	!LED_WPAN		O	+3.3V	
47	N.C.				
48	+1V5		PWR	+1.5V	Note

J18 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
49	N.C.				
50	GND		GND		
51	N.C.				
52	+3V3		PWR	+3.3V	Note

Table 29: Mini PCIe Connector

4.22 J22 Camera Interface B (MIPI-CSI) Rev 1.30 / 1.40

The PicoCoreBBDSI optional provides a second 28-pin connector RM 0.5mm for a MIPI-CSI camera. These connector is only available on the assembly variant with the J3 connector.

On this connector you can also directly connect a Basler dart BCON for MIPI camera.

Connector type: Hirose FH41-28S-0.5SH(05)

Matching cable: 200mm or 400mm

J12 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	GND		PWR		
2	CSI_B_DATA3_P	J3_28	I/O		Differential data line routed with 100Ω
3	CSI_B _DATA3_N	J3_30			
4	GND		PWR		
5	CSI_B _DATA2_P	J3_22	I/O		Differential data line routed with 100Ω
6	CSI_B _DATA2_N	J3_24			
7	GND		PWR		
8	CSI_B _CLK_P	J3_4	O		Differential data line routed with 100Ω
9	CSI_B _CLK_N	J3_6			
10	GND		PWR		
11	CSI_B _DATA1_P	J3_16	I/O		Differential data line routed with 100Ω
12	CSI_B _DATA1_N	J3_18			
13	GND		PWR		
14	CSI_B _DATA0_P	J3_10	I/O		Differential data line routed with 100Ω
15	CSI_B _DATA0_N	J3_12			
16	GND		PWR		
17	NC				Connected to TP11
18	NC				Connected to TP12
19	GND		PWR		
20	I2C_B_SCL	J1_3	I/O	1.8V	
21	I2C_B_SDA	J1_5	I/O	1.8V	
22	GND		PWR		
23	NC				Connected to TP13
24	NC				Connected to TP14
25	VIN		PWR	5V	
26	VIN		PWR	5V	
27	VIN		PWR	5V	
28	GND		PWR		

Table 30: Canera connector J22 Rev 1.30 / 1.40

4.23 J23 SPI A Connector

The PicoCoreBBDSI Rev 1.30 / 1.40 provides a 6 pol. SPI connector.

Connector type: Hirose DF13-6P-1.25H(20)

Matching connector: Hirose DF13-6S-1.25C

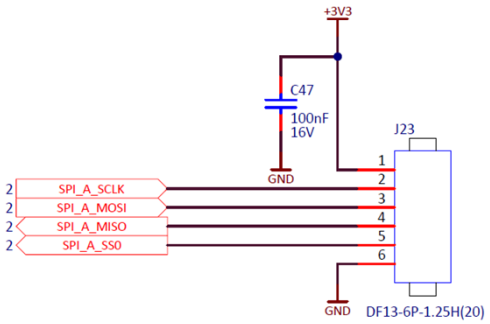


Figure 21: J23 SPI A Interface

J23 Pin	Signal Name	PicoCore Pin Number	I/O Type	Voltage	Remarks
1	+3V3		PWR	3.3V	Note
2	SPI_A_SCLK	J1_70	O	3.3V	
3	SPI_A_MOSI	J1_68	O	3.3V	
4	SPI_A_MISO	J1_66	I	3.3V	
5	SPI_A_SS0	J1_64	O	3.3V	
6	GND		PWR		

Table 31: SPI A connector J23

5 ADP-NT24V2

To power the PicoCoreBBDSI with 7,5…36V F&S provides the ADP-NT24V2:

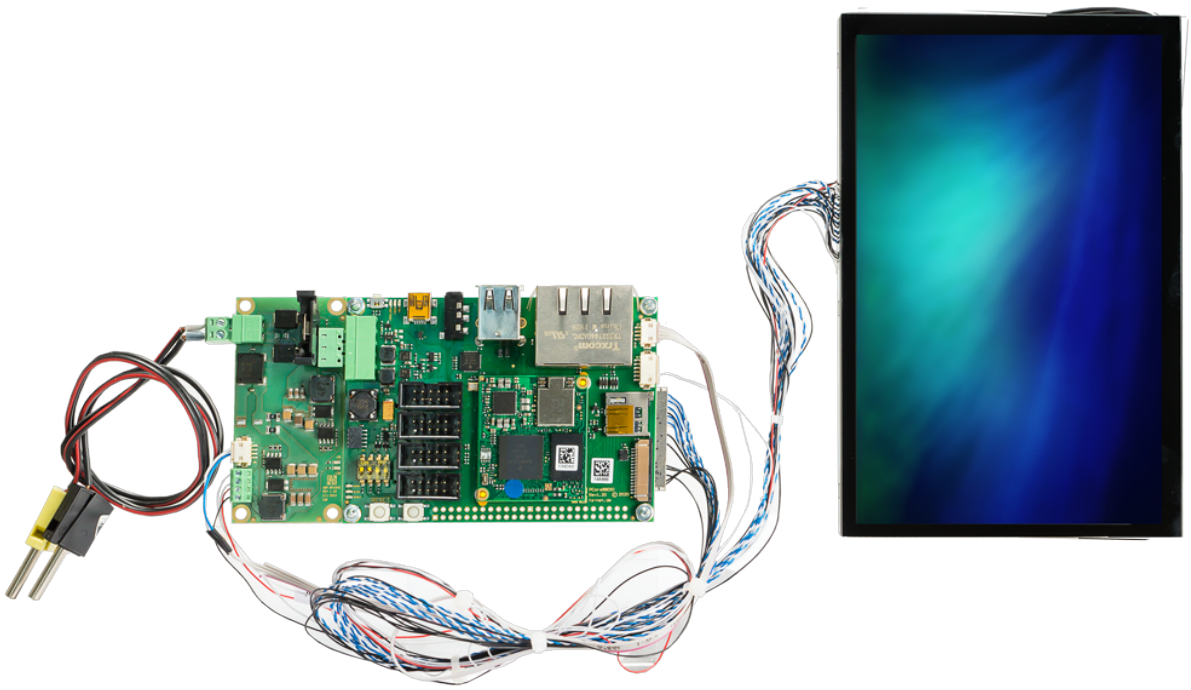


Figure 22: ADP-NT24V2

The extension board is designed to fit into the power Connector of the PicoCoreBBDSI. For more information check the F&S website:

https://www.fs-net.de/de/produkte/zubehoer/power-adapter-2

6 Electrical characteristic

6.1 Recommended Operation Conditions

Parameter	Description	Min	Typ	Max	Unit
POWERIN	Power supply voltage	4.75	5.0	5.25	V
VBAT_IN	RTC supply voltage	2.2	3.0	3.45	V

Table 32: Recommended Operation Conditions

6.2 Absolute Maximum Ratings

Parameter	Description	Min	Typ	Max	Unit
+5VS	Onboard 5V Buck-Boost Converter	-	-	800	mA
+3V3	Onboard 3.3V DC/DC	-	-	1.2	A
+1V5	Onboard 1.5V LDO (only for mPCIe)	-	-	200	mA
VLCD	+3V3 switched with VLCD_ON	-	-	1.2	A
VCC_COM	1A Fused +5VS	-	-	800	mA

7 Review Service

F&S provide a schematic review service for your baseboard implementation. Please send your schematic as searchable PDF to support@fs-net.de.

8 ESD and EMC Implementing

Because there is no connector to „out of case“ there is no ESD protection for any interface. It needs ESD protection on every connector out of the case on your baseboard. To reduce EMI the PicoCore supports Spread spectrum. This will normally reduce EMI between 9 and 12 dB and so this decrease your shielding requirements. We strictly recommend having your baseboard with controlled impedance and wires as short as possible.

A helpful guide is available from TI: ESD Protection Layout Guide

9 Second source rules

F&S qualifies their second sources for parts autonomously, as long as this does not touch the technical characteristics of the product. This is necessary to guarantee delivery times and product life. A setup of release samples with released second sources is not possible.

F&S does not use broker components without the consent of the customer.

10 Storage conditions

Maximum storage on room temperature with non-condensing humidity: 6 months

Maximum storage on controlled conditions 25 ±5 °C, max. 60% humidity: 12 months

For longer storage we recommend vacuum dry packs.

11 ROHS and REACH Statement

All F&S designs are created from lead-free components and are completely ROHS compliant.

The products we supply do not contain any substance on the latest candidate list published by the European Chemicals Agency according to Article 59(1,10) of Regulation (EC) 1907/2006 (REACH) in a concentration above 0.1 mass %.

Consequently, the obligations in No. 1 and 2 paragraphs in Annex are not relevant here.

Please understand that F&S is not performing any chemical analysis on its products to testify REACH compliance and is therefore not able to fill out any detailed inquiry forms.

12 Packaging

All F&S ESD-sensitive products are shipped either in trays or bags. The modules are shipped in trays. One tray can hold 20 boards. An empty tray is used as top cover.

13 Matrix Code Sticker

All F&S hardware is shipped with a matrix code sticker including the serial number. Enter your serial number here https://www.fs-net.de/en/support/serial-number-info-and-rma/ to get information on shipping date and type of board.

Figure 23: Matrix Code Sticker

14 Appendix

Important Notice

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