

OSMEVK Hardwaremanual

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Created by: Felix Netsch

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ABOUT THIS MANUAL

1.1 Imprint

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1.2 Disclaimer

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1.5 Care and Maintenance

- Keep the device dry. Precipitation, humidity, and all types of liquids or moisture can contain minerals that will corrode electronic circuits. If your device does get wet, allow it to dry completely.
- Do not use or store the device in dusty, dirty areas. Its moving parts and electronic components can be damaged.
- Do not store the device in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.
- Do not store the device in cold areas. When the device returns to its normal temperature, moisture can form inside the device and damage electronic circuit boards.
- Do not attempt to open the device.
- Do not drop, knock, or shake the device. Rough handling can break internal circuit boards and fine mechanics.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the device.
- Do not paint the device. Paint can clog the moving parts and prevent proper operation.
- Unauthorized modifications or attachments could damage the device and may violate regulations governing radio devices.

1.6 Change Log

Revision	Date	Revised	Comment
1.0	06.05.2025	fn	Initial creation

CHAPTER**TWO**

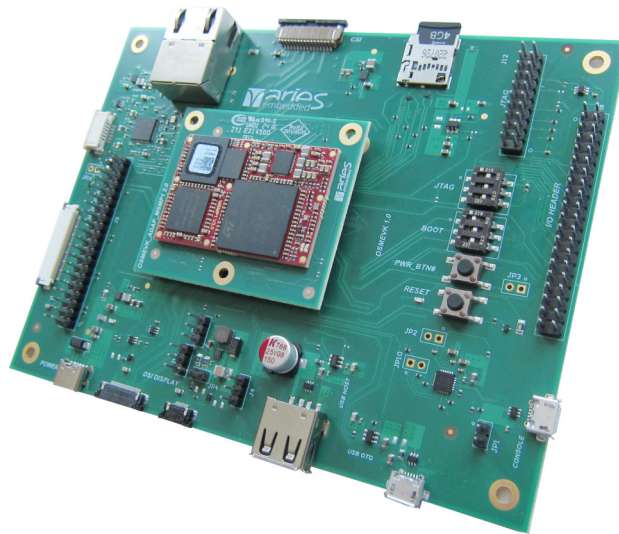
OVERVIEW

2.1 OSMEVK - Evaluation Kit for all MTrion SoMs

The OSMEVK is the flexible platform for a quick and smooth startup with your new System on Module. Due to its functionality it supports developers for a quick startup, helps developing software and can also be used as a platform for rapid prototyping.

The baseboard supports SoMs which are compatible to the OSM specification as well as SoMs compliant to proprietary implementations.

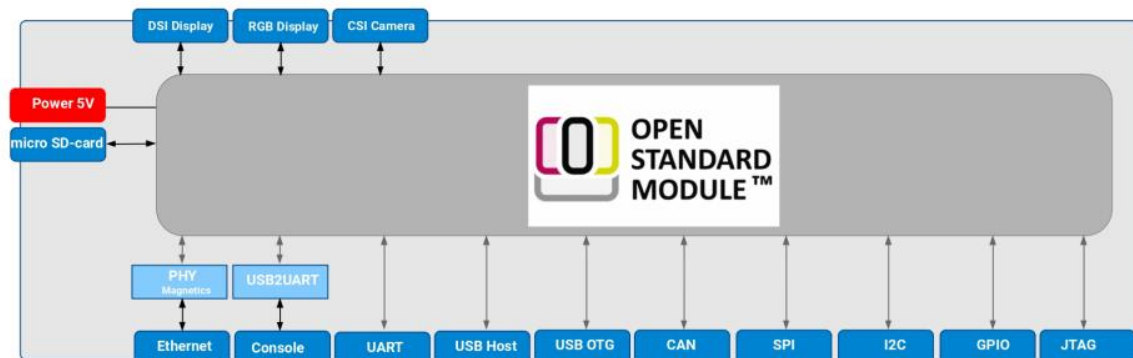
In order to be able to use the SoM on your OSMEVK, the respective adapter board is required to convert interfaces and/or voltage levels to the correct value / direction so that the SoM functionality can be used on the baseboard



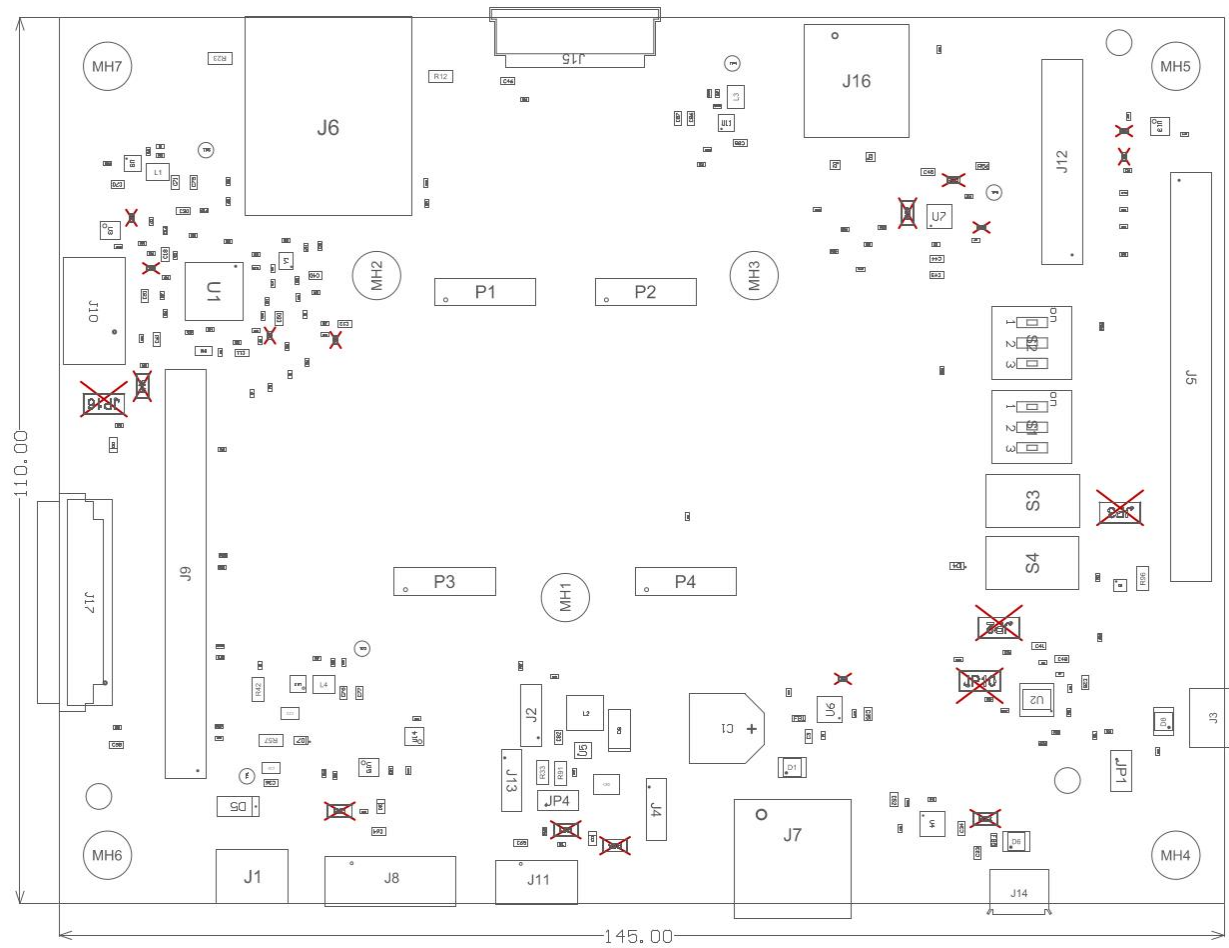
2.2 Feature Set

- Ethernet on RJ45 connector
- display on FPC connector or pin header
- USB Host on USB A connector
- USB OTG interface on USB microAB connector
- console interface on USB microAB connector
- UART on pin header
- CAN on pin header
- SPI on pin header
- I2C on pin header
- GPIO on pin header
- JTAG on pin header

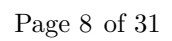
2.3 Block Diagram



2.4 Dimensions



Chapter 2. Overview



CHAPTER

THREE

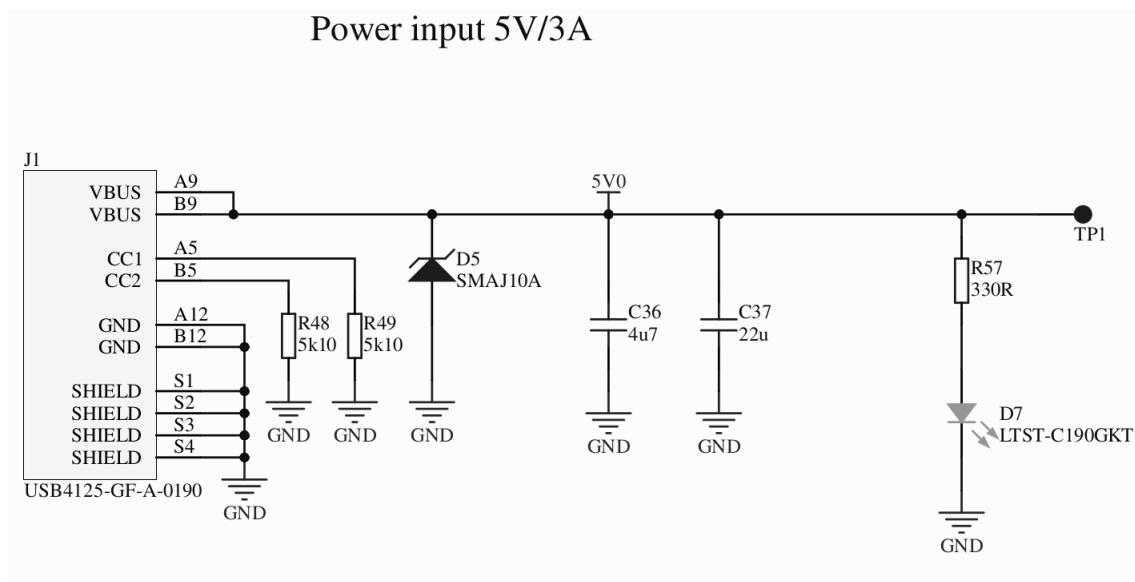
OSM MODULE ON ADAPTERBOARD

To use the OSM module on the baseboard, it has to be soldered onto the corresponding adapter board and can then be connected to the OSMEVK baseboard. The OSM modules soldered onto the adapter board are available for purchase in our shop.

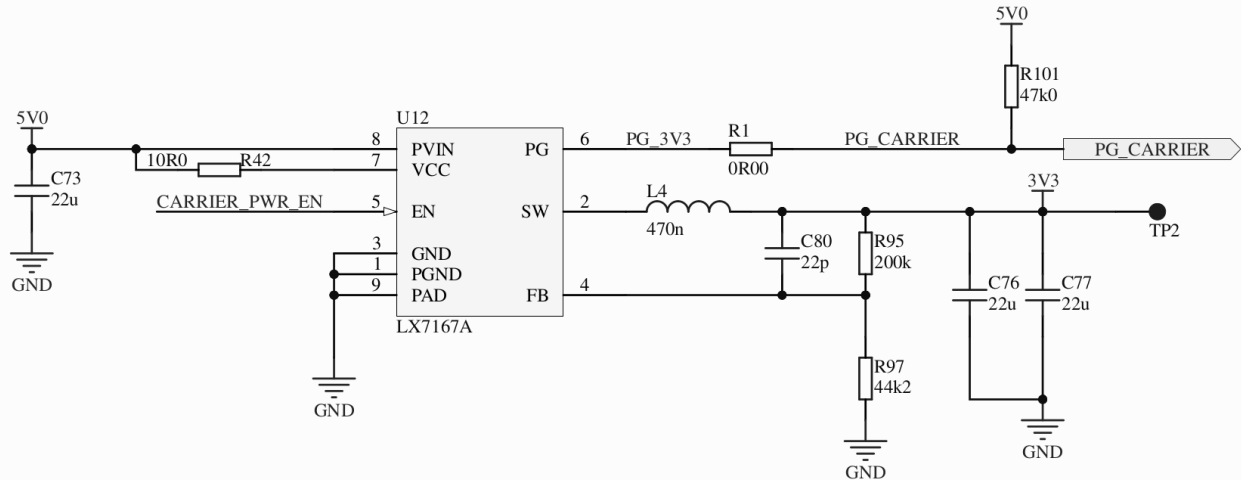
CHAPTER

FOUR

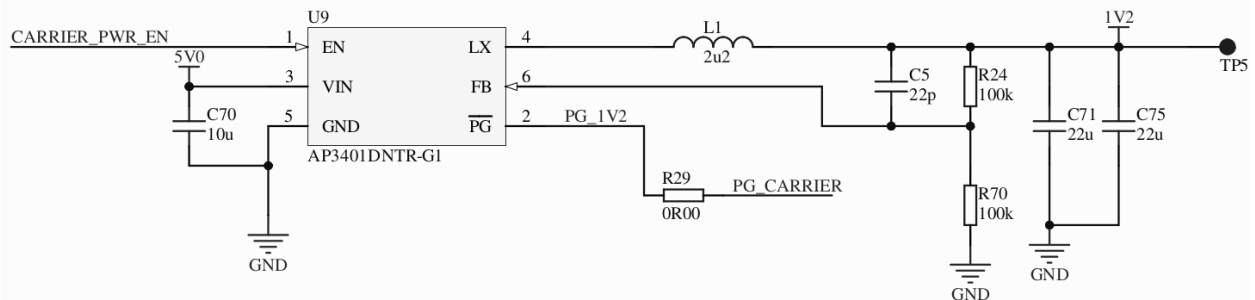
POWER



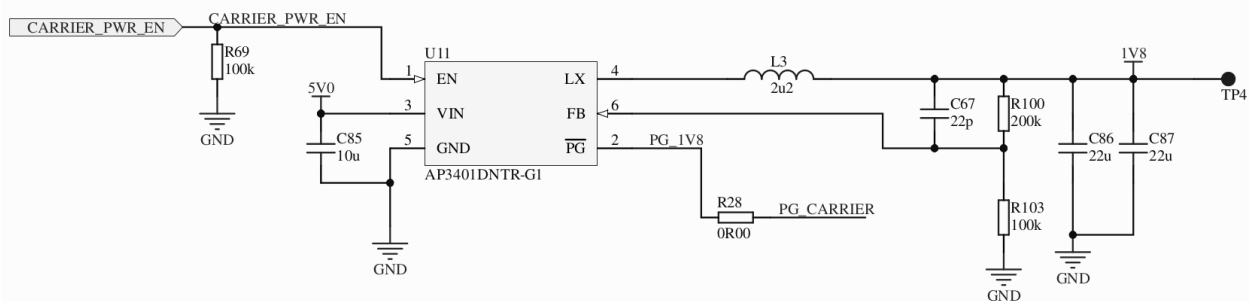
3.3V power supply



1.2V power supply



1.8V power supply



CHAPTER

FIVE

INTERFACES

Note: This manual only specifies the interface-to-connector pin assignment. Further details on signal routing to the OSM module via the appropriate adapter board can be found in the respective hardware manuals of the modules.

5.1 Ethernet

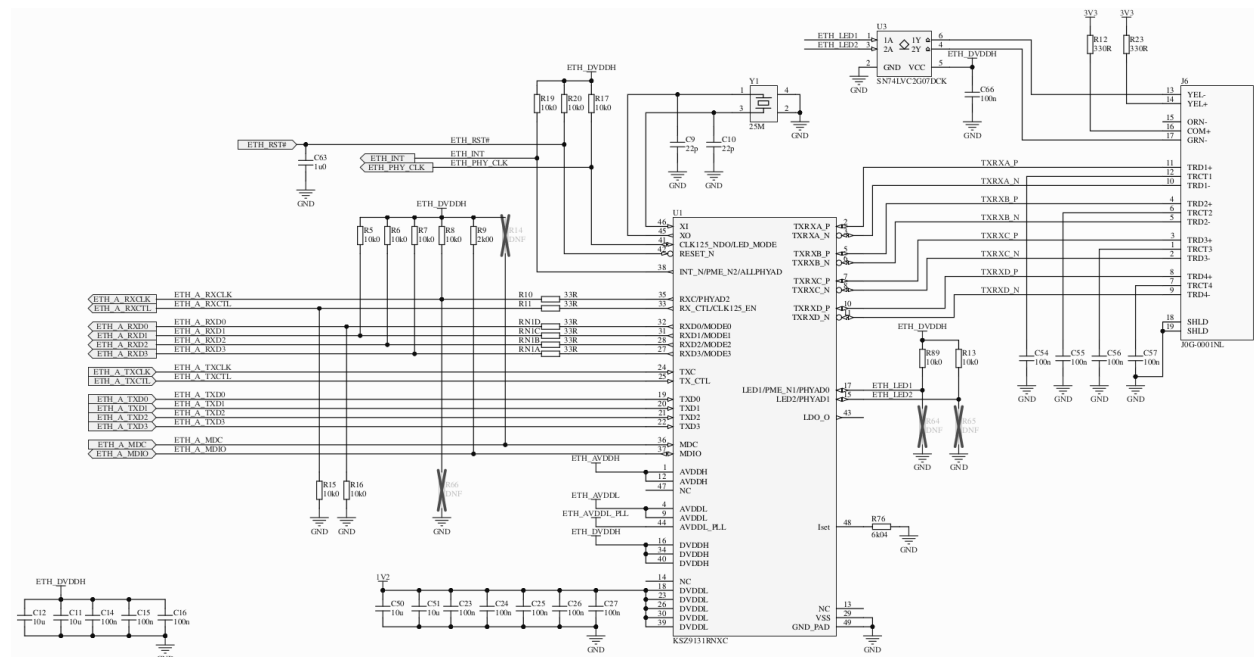
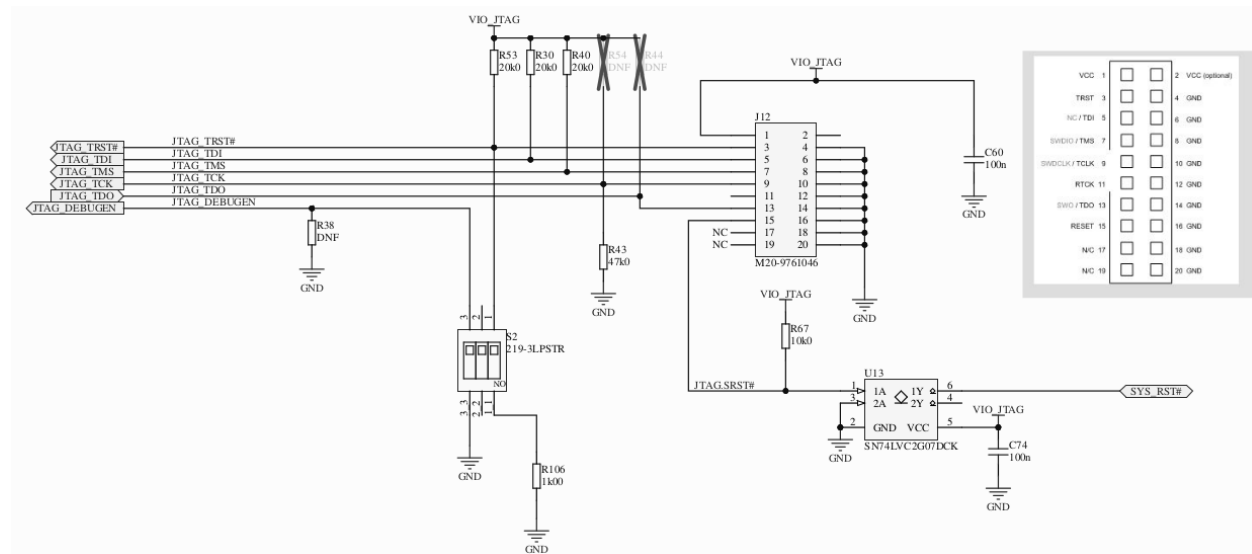


TABLE 3-8: DEVICE MODE SELECTIONS

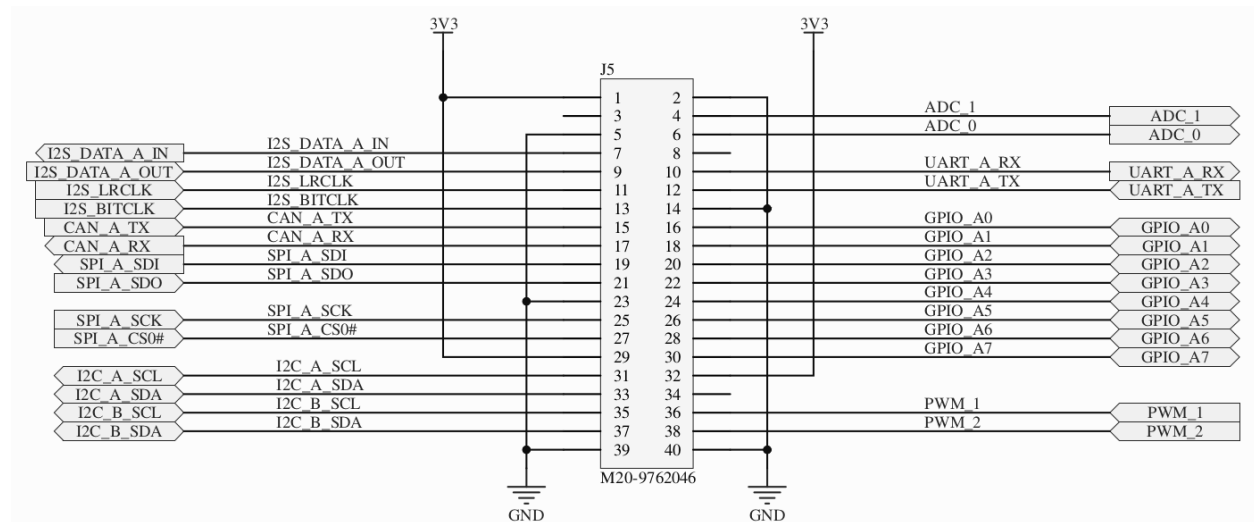
Functional Modes							
MODE[3:0]	Mode	Pin 17 Function	Pin 38 Function	Auto-negotiation Advertisement			
				1000BT Full Duplex	1000BT Half Duplex	10/100BT Full Duplex	10/100BT Half Duplex
0000	RESERVED			-	-	-	-
0001	RESERVED			-	-	-	-
1000	RGMII	LED1 (PME_N1)		no	no	yes	yes
1001	RESERVED			-	-	-	-
1010	RGMII		INT_N (PME_N2)	no	no	yes	yes
1011	RESERVED			-	-	-	-
1100	RGMII			yes	no	no	no
1101	RESERVED			-	-	-	-
1110	RGMII			yes	no	yes	yes
1111	RESERVED			-	-	-	-

5.3 JTAG



P2 Connector Pin	OSMEVK Function	J12 Pin
10	JTAG_TRST#	3
14	JTAG_TDI	5
16	JTAG_TMS	7
18	JTAG_TCK	9
12	JTAG_TDO	13
8	JTAG_DEBUGEN	3 (S2)
29 (P4)	SYS_RST#	15 (via U13 "6")

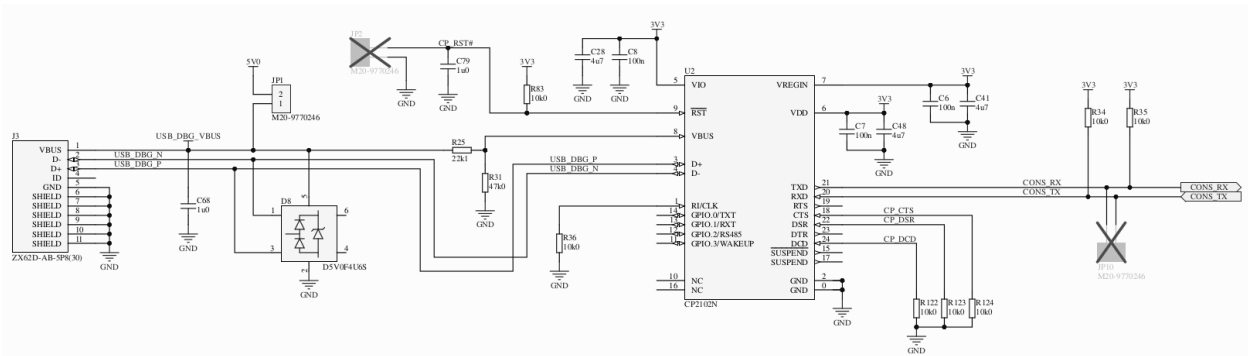
5.4 GPIO



P4 Connector Pin	OSMEVK Function	J5 Pin
41	I2S_DATA_A_IN	7
45	I2S_DATA_A_OUT	9
47	I2S_LRCLK	11
43	I2S_BITCLK	13
1	CAN_A_TX	15
2	CAN_A_RX	17
17	SPI_A_SDI	19
15	SPI_A_SDO	21
11	SPI_A_SCK	25
13	SPI_A_CS0#	27
35	I2C_A_SCL	31
37	I2C_A_SDA	33
38	I2C_B_SCL	35
40	I2C_B_SDA	37

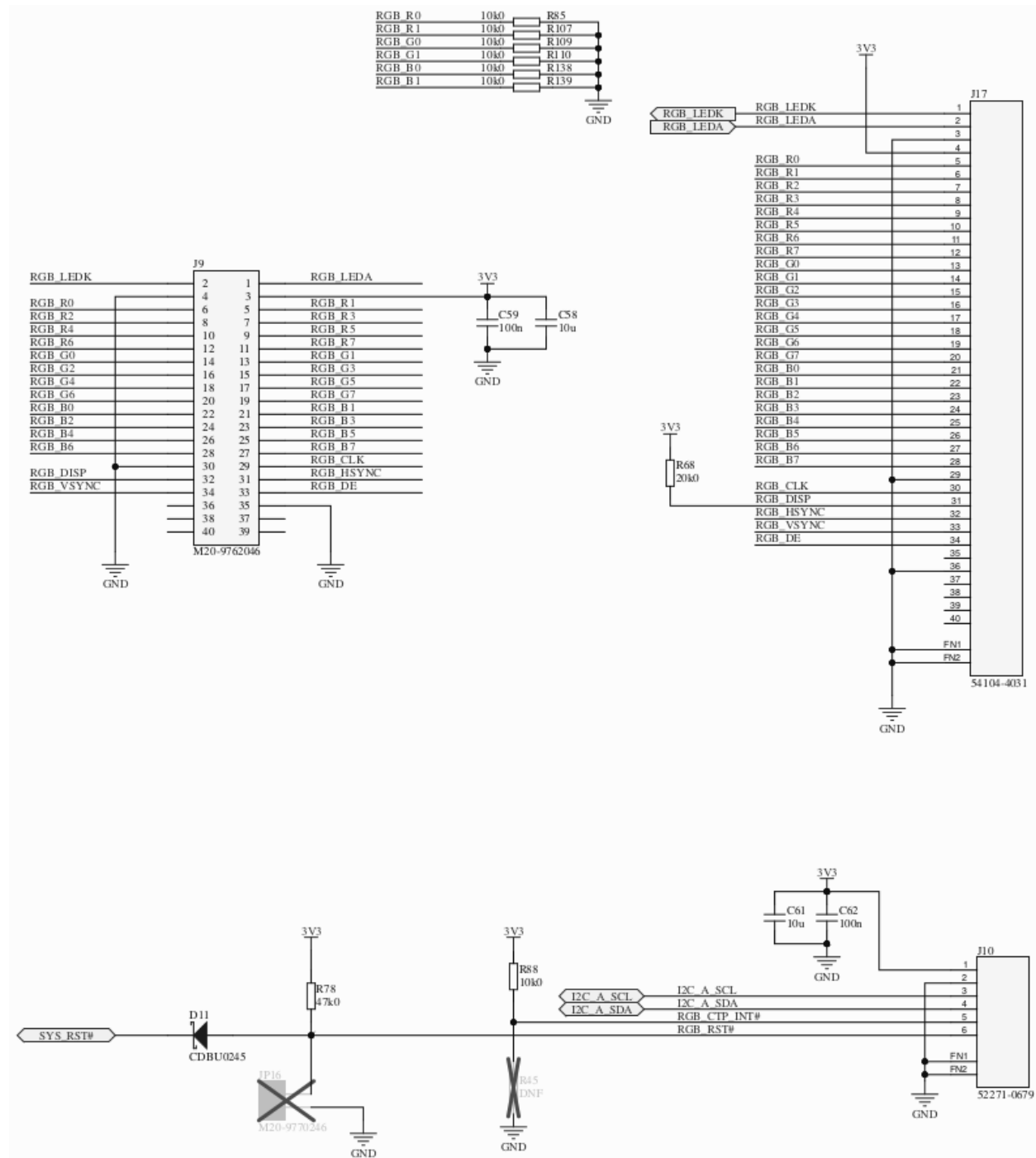
P2 Connector Pin	OSMEVK Function	J5 Pin
45	ADC_1	4
43	ADC_0	6
40	UART_A_RX	10
38	UART_A_TX	12
5	GPIO_A0	16
7	GPIO_A1	18
9	GPIO_A2	20
11	GPIO_A3	22
13	GPIO_A4	24
15	GPIO_A5	26
17	GPIO_A6	28
19	GPIO_A7	30
24	PWM_1	36
26	PWM_2	38

5.5 USB to UART converter (console)



P2 Connector Pin	OSMEVK Function	U2 Pin
48	CONS_RX	21
46	CONS_TX	20

5.7 RGB Display



FFC & FPC plug connector

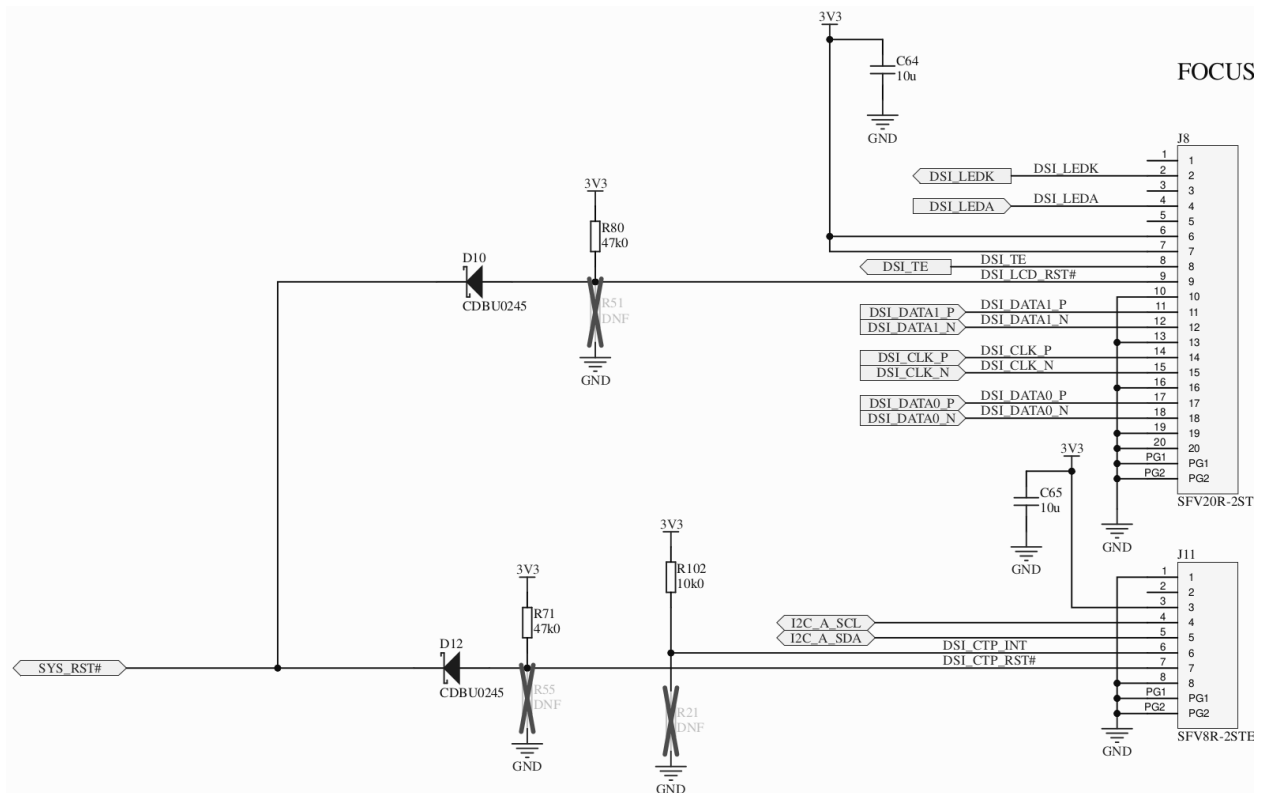
P3 Connector Pin	OSMEVK Function	J17 Pin
–	RGB_LEDK	1
–	RGB_LED A	2
–	RGB_R0	5
–	RGB_R1	6
50	RGB_R2	7
48	RGB_R3	8
46	RGB_R4	9
44	RGB_R5	10
42	RGB_R6	11
40	RGB_R7	12
–	RGB_G0	13
–	RGB_G1	14
36	RGB_G2	15
34	RGB_G3	16
32	RGB_G4	17
30	RGB_G5	18
28	RGB_G6	19
26	RGB_G7	20
–	RGB_B0	21
–	RGB_B1	22
22	RGB_B2	23
20	RGB_B3	24
18	RGB_B4	25
16	RGB_B5	26
14	RGB_B6	27
12	RGB_B7	28
8	RGB_CLK	30
–	RGB_DISP	31
4	RGB_HSYNC	32
6	RGB_VSYNC	33
2	RGB_DE	34

P4 Connector Pin	OSMEVK Function	J10 Pin
35	I2C_A_SCL	3
37	I2C_A_SDA	4
29	SYS_RST#	6

Vertical pin header

P3 Connector Pin	OSMEVK Function	J9 Pin
–	RGB_LEDK	2
–	RGB_LED A	1
–	RGB_R0	6
–	RGB_R1	5
50	RGB_R2	8
48	RGB_R3	7
46	RGB_R4	10
44	RGB_R5	9
42	RGB_R6	12
40	RGB_R7	11
–	RGB_G0	14
–	RGB_G1	13
36	RGB_G2	16
34	RGB_G3	15
32	RGB_G4	18
30	RGB_G5	17
28	RGB_G6	20
26	RGB_G7	19
–	RGB_B0	22
–	RGB_B1	21
22	RGB_B2	24
20	RGB_B3	23
18	RGB_B4	26
16	RGB_B5	25
14	RGB_B6	28
12	RGB_B7	27
8	RGB_CLK	29
–	RGB_DISP	32
4	RGB_HSYNC	31
6	RGB_VSYNC	34
2	RGB_DE	33

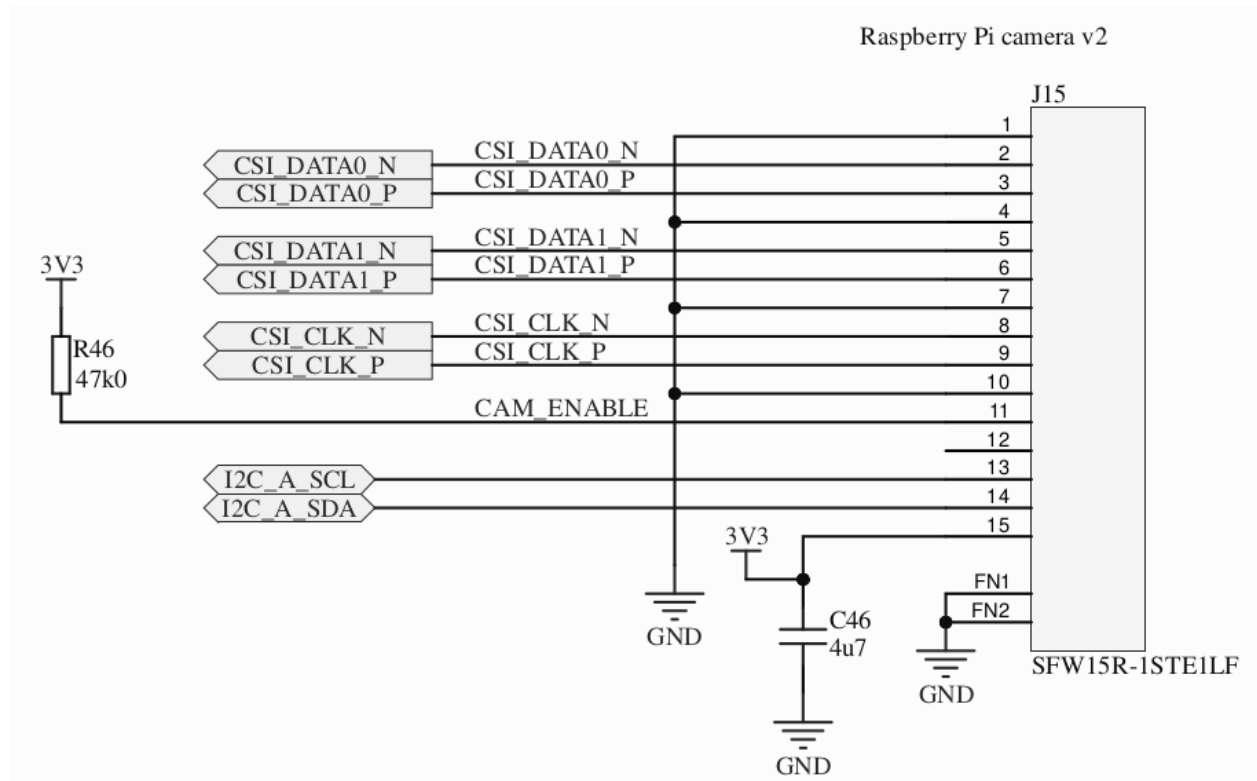
5.8 DSI Display



P3 Connector Pin	OSMEVK Function	J8 Pin
—	DSI_LEDK	2
—	DSI_LEDA	4
31	DSI_TE	8
29 (P4)	SYS_RST#	9
41	DSI_DATA1_P	11
43	DSI_DATA1_N	12
35	DSI_CLK_P	14
37	DSI_CLK_N	15
47	DSI_DATA0_P	17
49	DSI_DATA0_N	18

P4 Connector Pin	OSMEVK Function	J11 Pin
35	I2C_A_SCL	4
37	I2C_A_SDA	5
29	SYS_RST#	7

5.10 CSI Camera



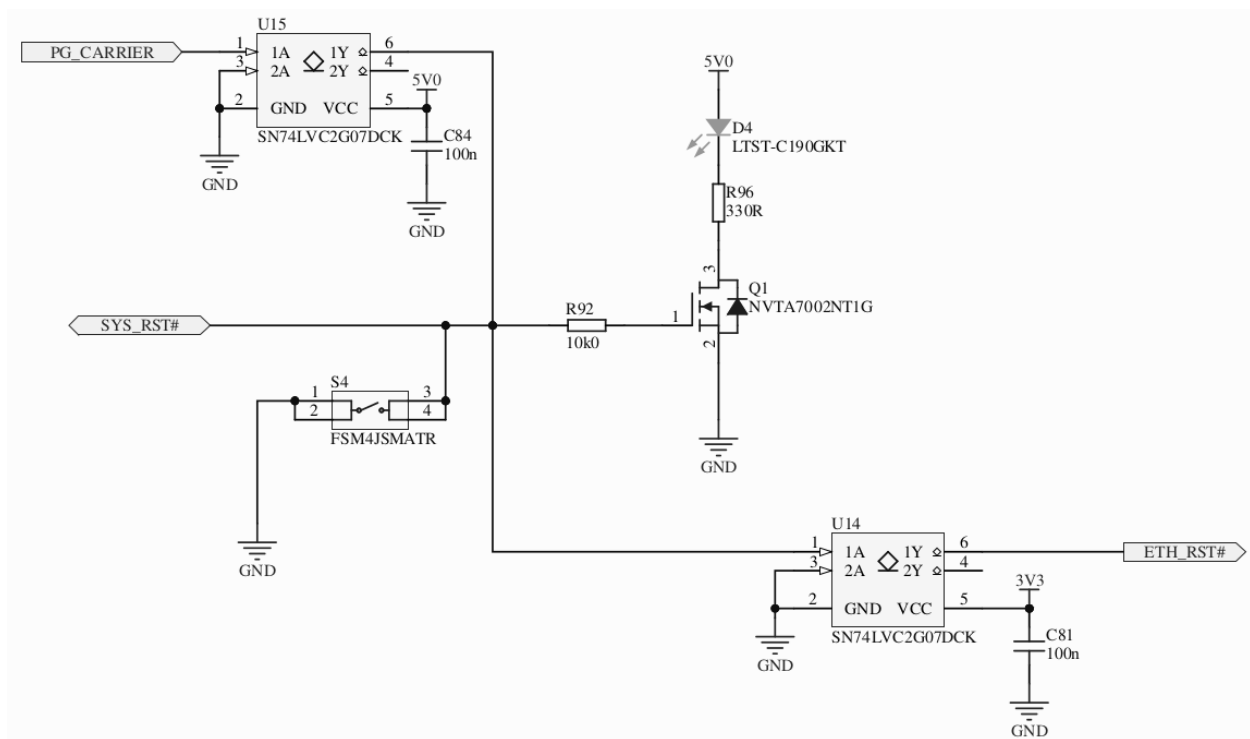
P1 Connector Pin	OSMEVK Function	J15 Pin
18	CSI_DATA0_N	2
16	CSI_DATA0_P	3
12	CSI_DATA1_N	5
10	CSI_DATA1_P	6
6	CSI_CLK_N	8
4	CSI_CLK_P	9
35 (P4)	I2C_A_SCL	13
37 (P4)	I2C_A_SDA	14

CHAPTER

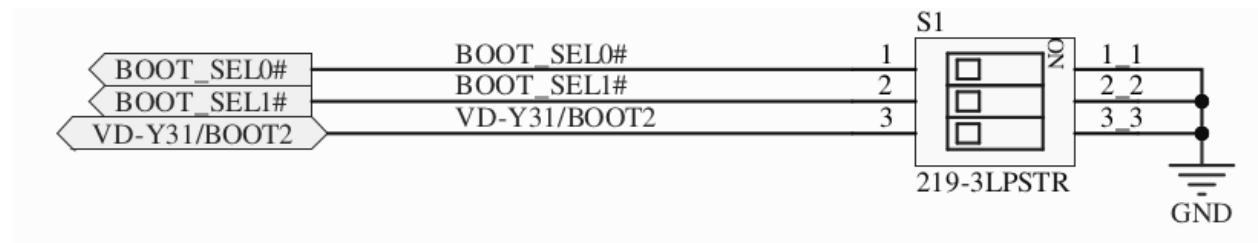
SIX

BUTTONS & SWITCHES

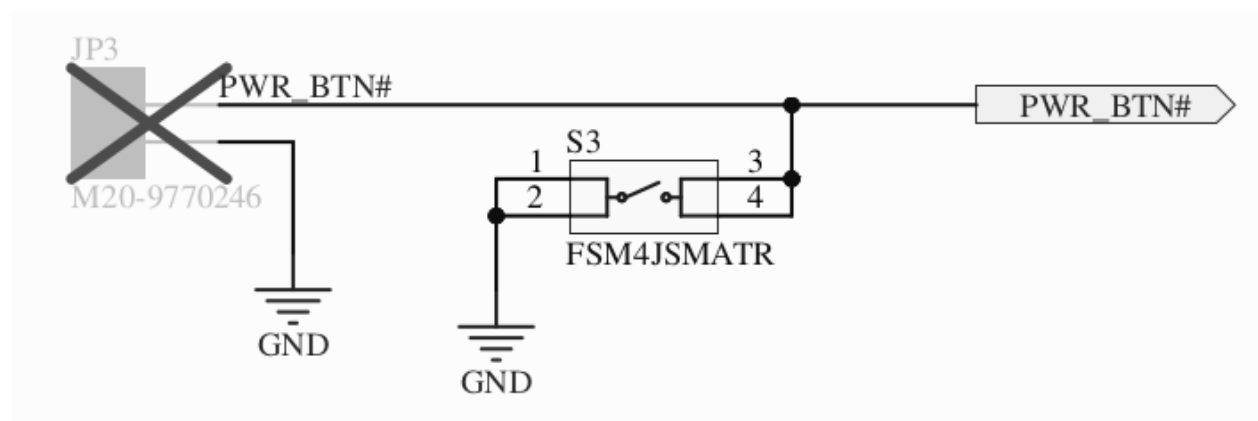
6.1 Reset button



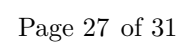
6.2 Boot switches



6.3 Power button



JUMPER SETTINGS



Note: Pin 1 of each pin header is marked with a yellow number in the illustration. This pin can also be identified by the white circle on the baseboard.

Pin Header	Function/Description
J13 + J4	Select the display backlight connection. Set jumpers on pins 1-2 for RGB or on pins 2-3 for DSI (The jumpers must be set on both headers)
JP4	Set the jumper to enable higher backlight current when using an RGB display
J2	Set the jumper on pins 1-2 to enable the backlight driver; set it on pins 2-3 to control the backlight with the PWM_1 signal
JP1	The jumper enables a 5 V supply from the console. Please make sure that either the jumper is set or the module is supplied with power via the USB type-C cable

CHAPTER

EIGHT

SCHEMATICS

Below the connector schematics footprint is shown. For more questions please contact sales@aries-embedded.de.

