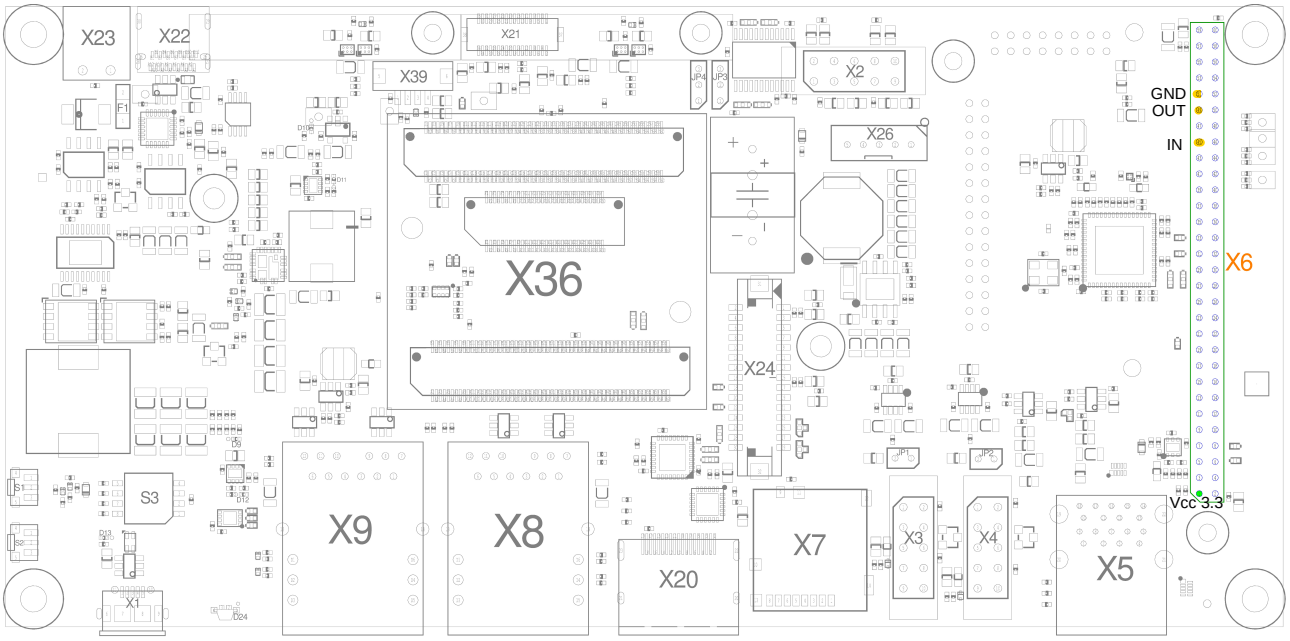
21.3.16 Expansion Connector (X6)

FIGURE 30: Expansion Connector (X6)



The expansion connector X6 provides an easy way to add other functions and features to the phyBOARD-Pollux. Standard interfaces such as SPI, USB, JTAG, UART, SDIO, and I2C are available at the expansion connector. The expansion connector is intended to be used with a phyBOARD Evaluation Adapter. The expansion connector can also add specific functions with custom expansion boards. Information on the Evaluation Adapter for the expansion connector can be found in the Application Guide for phyBOARD Expansion Boards (L-793e).

The pinout of the expansion connector is shown in the table below:

TABLE 57: X6 Expansion Pinout

Interface Pin #	Signal name	Signal Type	Signal Level	Description
1	VCC_3V3_SW	PWR_O	3.3 V	3.3 V supply
2	VCC_5V_SW	PWR_O	5 V	5 V supply
3	VCC_1V8_EXP_CON	PWR_O	1.8 V	1.8 V supply
4	GND	-	-	Ground
5	X_UART3_TXD	I/O	3.3 V	Default connected to X_UART3_TXD via J47
6	X_SD1_STROBE/UART3_CTS_B	I/O	3.3 V	MOSI

Interface Pin #	Signal name	Signal Type	Signal Level	Description
7	X_SD1_RESET_B/UART3_RTS_B	I/O	3.3 V	MISO
8	X_UART3_RXD	I/O	3.3 V	Default connected to X_UART3_RXD via J46
9	GND	-	-	Ground
10	X_CLKOUT1	O	3.3 V	Monitor output clock
11	X_I2C2_SDA	OD-BI-PU	3.3 V	I^2C Data
12	X_CLKOUT2	O	3.3 V	Monitor output clock
13	X_I2C2_SCL	OD-BI-PU	3.3 V	I^2C Clock
14	GND	-	-	Ground
15	X_JTAG_TMS	I	3.3 V	JTAG TMS
16	JTAG_TRST	I	3.3 V	JTAG TRST Default conneced to Global Board Reset X_nRESET via J35
17	X_JTAG_TDI	I	3.3 V	JTAG TDI
18	X_JTAG_TDO	O	3.3 V	JTAG TDO
19	GND	-	-	Ground
20	X_JTAG_TCK	I	3.3 V	JTAG TCK
21	USB_HUB_DN2_D+	USB_I/O	-	USB 2.0 Data positive
22	USB_HUB_DN2_D-	USB_I/O	-	USB 2.0 Data Negative

Interface Pin #	Signal name	Signal Type	Signal Level	Description
23	X_nRESET	OD-BI-PU	3.3 V	Global Board Reset
24	GND	-	-	Ground
25	X_SD1_CMD/GPIO2_IO01	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options
26	X_SD1_DATA0/GPIO2_IO02/ EXP_CON	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options
27	X_SD1_CLK/GPIO2_IO00	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options
28	X_SD1_DATA1/GPIO2_IO03/ EXP_CON	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options
29	GND	-	-	Ground
30	X_SD1_DATA2/GPIO2_IO04	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options
31	X_UART3_RXD	I/O	3.3 V	Default connected to X_UART3_RXD via J34
32	X_SD1_DATA3/GPIO2_IO05	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options
33	X_UART3_TXD	I/O	3.3 V	Default connected to X_UART3_TXD via J33
34	GND	-	-	Ground
35	X_SD1_DATA4/GPIO2_IO06	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options

Interface Pin #	Signal name	Signal Type	Signal Level	Description
36	X_SD1_DATA5/GPIO2_IO07	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options
37	USB_HUB_nPWRCTL2	O	3.3 V	PWRCTL2/BATEN2 output of Ti TUSB8042A USB hub belonging to USB_HUB_DN2 and USB_HUB_nOVERCUR2
38	X_SD1_DATA6/GPIO2_IO08	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options
39	USB_HUB_nOVERCUR2	OD-I-PU	3.3 V	nOVERCUR2 input of Ti TUSB8042A USB hub belonging to USB_HUB_DN2 and USB_HUB_nPWRCTL2
40	X_EARC_AUX	-	-	-
41	GND	-	-	Ground
42	X_SPDIF_EXT_CLK/PWM1_OUT/GPIO5_IO05	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options
43	X_ECSPI2_SCLK	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options
44	X_SD1_DATA7/GPIO2_IO09	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options
45	X_ECSPI2_MOSI	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options

Interface Pin #	Signal name	Signal Type	Signal Level	Description
46	GND	-	-	Ground
47	X_ECSPI2_MISO	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options
48	X_ONOFF	I	1.8 V	ONOFF input of phyCORE i.MX 8M Plus
49	X_ECSPI2_SS0	I/O	3.3 V	Refer to the i.MX 8M Plus Datasheet for all muxing options
50	X_PMIC_ON_REQ	I	1.8 V	PMIC_ONREQ input of phyCORE i.MX 8M Plus PMIC can be used to power up phyCORE i.MX8 M Plus from power-off state
51	GND	-	-	Ground
52	X_GPIO1_IO02/PMIC_WDOG	I	3.3 V	PMIC_WDOG input of phyCORE i.MX 8M Plus PMIC can be used to power off phyCORE i.MX8 M Plus from any power state
53	X_ETH1_GPIO0	I/O	1.8 V	GPIO_0 pin of phyCORE i.MX 8M Plus Ethernet-PHY Ti DP83867
54	X_nTEMP_ALERT	I/OD	3.3 V	ALERT output of phyCORE i.MX 8M Plus temperature sensors, if ALERT is enabled

Interface Pin #	Signal name	Signal Type	Signal Level	Description
55	X_ETH1_GPIO1	I/O	1.8 V	GPIO_1 pin of phyCORE i.MX 8M Plus Ethernet-PHY Ti DP83867
56	GND	-	-	Ground
57	VCC_IN	PWR_O	12 V to 24 V	Input Supply Voltage of phyBOARD
58	ETH0_LED_1	O	1.8 V	LED_1 pin of phyBOARD-Pollux Ethernet-PHY Ti DP83867
59	GND	-	-	Ground
60	VCC_5V_MAIN	PWR_O	5 V	5 V Supply (always on)

21.3.17 Fan (X39)

If heatsinking is required for the phyCORE-i.MX 8M Plus, a PWM-controlled fan can be connected to the phyBOARD-Pollux. The fan's supply voltage is 5 V and the PWM signal is brought out as open-drain. The frequency generator signal which can be used to monitor fan rotation is connected to test pad TP55 and comes with a pull-up resistor to 3.3 V.

A Hirose DF13-4P-1.25V (75) socket is used as a connector with the following pinout:

TABLE 58: X39 Fan Pinout

Interface Pin #	Signal Name	Signal Type	Signal Level	Description
1	VCC_5V_SW	PWR_O	5 V	5 V Supply
2	GND	-	-	Ground
3	FAN_FG	OD-PU	3.3 V	Frequency Generator 'speedo'-signal of a PWM Fan. Connected to TP55