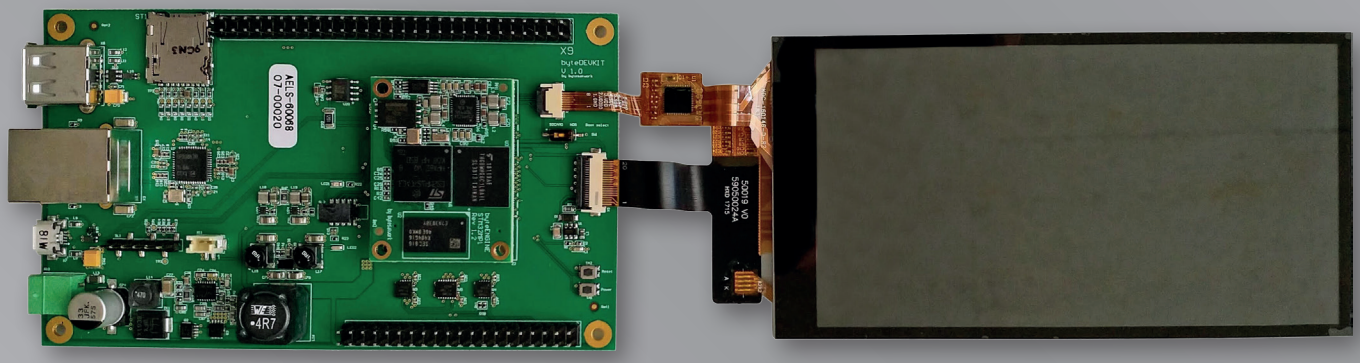
DataSheet

industrial development kit

byteDEVKIT 1

15.08.2023



bytesatwork

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Imprint

> bytes at work AG
Technoparkstrasse 7
CH-8406 Winterthur
+41 52 213 79 79

> info@bytesatwork.ch
www.bytesatwork.io

Symbols and typographic conventions

These symbols represent important details or aspects for working with bytes at work AG-products.

NOTICE
Follow instructions. Acting against the procedure described can lead to malfunction.

LINK
Hyper- or Chapter-Link.

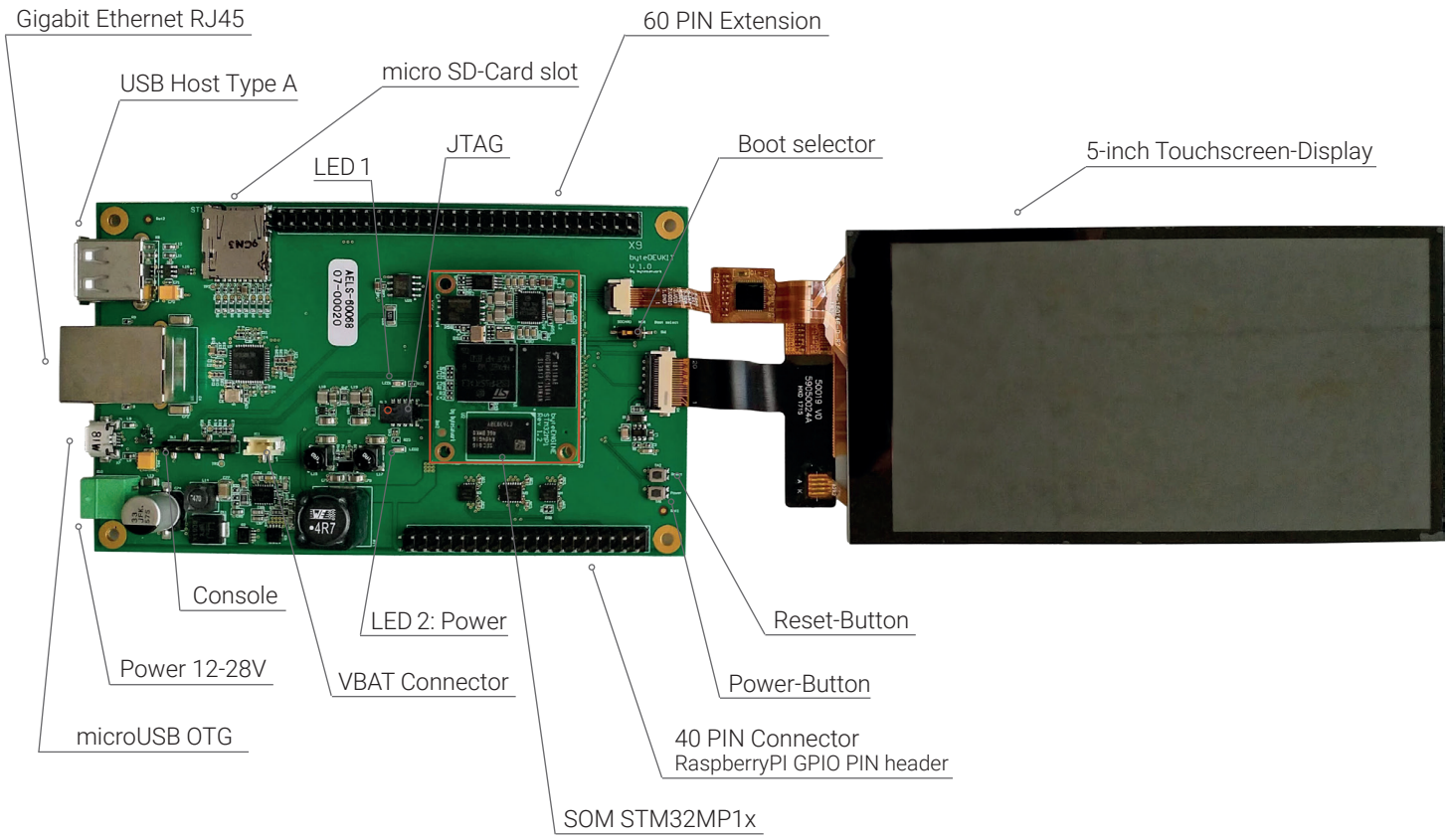
1. Table of Contents

2. Revisions history

Hardware Revision	Marking on PCB	Release Date	Note
1.4	byteDEVKIT V 1.4	2023	Improvements for production, no schematic changes
1.3	byteDEVKIT V 1.3	2022	New Ethernet PHY KSZ8081
1.1	byteDEVKIT V 1.1	2020	Ethernet RXD3 on PH7, Touch SCL on PH4, SDA on PH5, X9: PIN59 PH8, PIN58 PB1, USB Vbus driver: U20 - TPS2066
1.0	byteDEVKIT V 1.0	2019	First version available for sales.

NOTICE
This document refers to byteDEVKIT 1 Revision 1.4

3. Overview



3.1 General Information

Maximum flexibility and simplicity

> The byteDEVKIT-STM32MP1 enables you to work on your own projects while shortening time-to-market significantly. It is engineered for a huge variety of applications and the flexible structure allows easy implementations of even profound changes. Furthermore, it offers maximum flexibility and simplicity. The byteDEVKIT-STM32MP1 is available with the complete STM32MP1-family:
>
> - STM32MP151
> - STM32MP153
> - STM32MP157

Plenty of possibilities

> The byteDEVKIT-STM32MP1 includes the base board that features a strong array of interfaces for a variety of applications:
>
> - 1x 1Gbit Ethernet RJ45
> - 1x microSD Slot
> - 1x USB Host Type A
> - 1x USB OTG MicroUSB
> - 5-inch MIPI Touchscreen-Display
> - 40 PIN: GPIO Header RasperryPI Compatible
> - 60 PIN: Extension-Header with GPIO, SPI, I2C, ANG, 3.3V, 5V

Ready to start and use

> The byteDEVKIT package comes ready to start building, which includes a powersupply, a serial console and a microSD card with pre installed embedded Linux. As a result, you benefit from rapid prototyping, maximum flexibility and a very short time-to-market.

Low consumption & high performance

> The ARM Cortex CPUs from STMicroelectronics are on the cutting edge of their industry thanks to the combination of functional integration, performance and extremely low power consumption.

Two in one

> The SOM STM32MP1 features a combination of dual Cortex-A7 and Cortex-M4 with full access to the peripherals which is one-of-a-kind and enables a versatile range of designs. You can use a PIN in Cortex M4 for your real-time application or the same PIN in embedded Linux on Cortex-A7.

Easy to adapt to your project

> Rapid prototyping is easy thanks to the 60 PIN header. In addition to it's RaspberryPI GPIO 40 PIN header the byteDEVKIT provides a huge variety of interfaces such as I2C, SPI, CAN, UART, USART, PWM, GPIO, etc on it's 100 PINs. Fast prototyping made easy.

Quality which endures

> Our Swiss standard pays off. We only install components to the byteDEVKIT that will be still available in ten years. The byteDEVKIT is engineered with the focus on robustness and longevity.

3.2 Technical Data

DEVKIT SPECIFICATION

Ethernet	1x 1Gbit Ethernet RJ45
SD-Card	1x microSD Slot
USB 1	1x USB Host Type A
USB 2	1x USB OTG MicroUSB
Display/Touch	5,0 inch MIPI Touchscreen-Display
Connector 40 PIN	GPIO Header RasperryPI Compatible
Connector 60 PIN	Extension-Header with GPIO, SPI, I2C, Analog, 3.3V, 5V

3.3 Technical Data SOC STM32MP1x

NOTICE
For detailed information regarding the SOM STM32MP1x please refer to the document „STM32MP1x-DataSheet“.

STM32MP1x SPECIFICATION

CPU Cortex-M4	single 209 MHz
CPU Cortex-A7	STM32MP151, STM32MP153 or STM32MP157 @650/800 MHz single or dual
Memory	128 MB to 1028 MB
Flash eMMC	4 GB to 64 GB
SPI-NOR	16 to 128 MB
Temperature	-40° to +85° Celsius
Power	5 V, 2 Watts
Dimensions	40 x 30 x 5 mm

SOM-Versions	STM32MP151	STM32MP153	STM32MP157*
Cortex-A7	Single	Dual	Dual
Cortex-M4	Yes	Yes	Yes
GPU	No	No	Yes
Display	TFT	TFT	TFT/DSI
CAN	No	Yes	Yes

*Default Version with 512MB RAM & 8GB eMMC.

3.4 Decision guidance byteDEVKIT 1

The following three steps help identifying the suitable DEVKIT with the needed SOM for the specific customer application.

- Step 1: The choice of the 5-inch Touchscreen-Display
  - **With Display**
  - **Without Display**

- Step 2: The choice of needed SOM-Type
  - **SOM: STM32MP151**
  - **SOM: STM32MP153**
  - **SOM: STM32MP157**

- Step 3: For ordering details please refer to:

LINK:
„8. Ordering Info“

3.5 Quickstart guide

The Quickstart guide simplifies the startup process with step-by-step instructions. Should you have questions you are always welcome to ask our expert technical support. See Chapter „6. Connectors“ for connectors layout.

> Step 1: Connect the USB-RS232 cable to SL1 (black wire is marking PIN 1)

> Step 2: Optional - connect the network cable

> Step 3: Put a valid micro SD-Card into the SD-Card slot of the SOC

> Step 4: Connect the console cable to your computer serial or USB port if you‘re using the adapter. Start the Terminal Software and configure your serial port with the following port settings:

Port Settings	
Bits per second	115200
Data bits	8
Parity	N
Stop bits	1

> Step 5: Connect the power supply to X10

> Step 6: After connected to power supply – the console will show the boot up log

> Step 7: Login to the system with:

Login Data	
USER	root
Password	rootme

3.6 Yocto Project Quick Build

This short document steps you through the process for an image build using the Yocto Project.

LINK:
bytesatwork on github

> Step 1: Create the folder „yocto“ and change into directory using the following commands:

```
mkdir yocto
cd yocto
```

> Step 2: Download all necessary repositories using repo:

```
repo init -u https://github.com/bytesatwork/bsp-platform-st.git -b warrior
repo sync
```

> Step 3: When this commands are completed successfully, the following command will setup a Yocto Project environment for byteDEVKIT:

```
MACHINE=bytedevkit DISTRO=poky-bytesatwork EULA=1 . setup-environment build
```

> Step 4: The final command builds a development image:
(this will last several hours, depending on the build machine)

```
bitbake devbase-image-bytesatwork
```

> Step 5: Create and write the SD-Card Image (replace sdX with SD-Card drive)

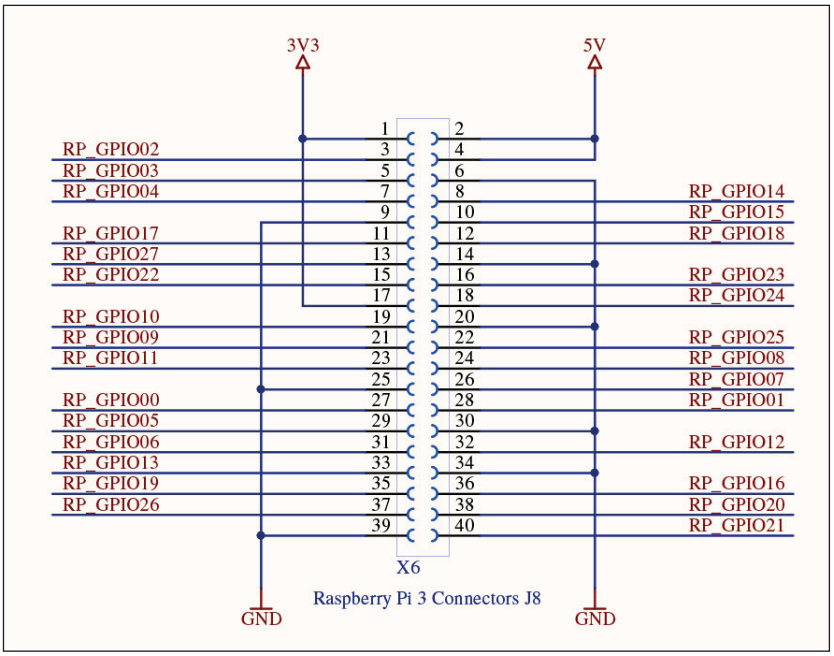
```
cd tmp/deploy/images/bytedevkit

sudo scripts/create_sdcard_from_flashlayout.sh
flashlayout_devbase-image-bytesatwork/FlashLayout_sdcard_stm32mp157c-bytedevkit.tsv

dd if=flashlayout_devbase-image-bytesatwork_FlashLayout_sdcard_stm32mp157c-byt
edevkit.raw of=/dev/sdX bs=1M && sync
```

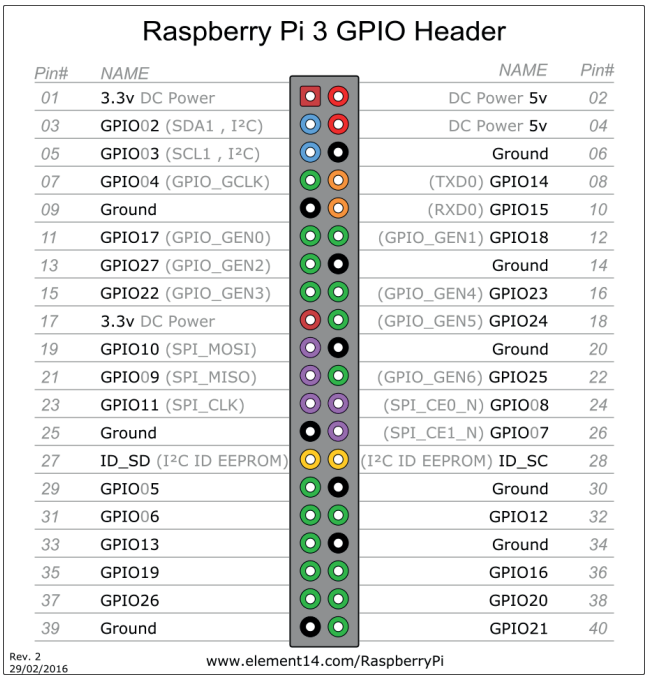
4. Pinouts Raspberry - 40 PIN connector

The Connector X6 provides a Raspberry Pi compatible interface to various available extensions.
SAI2, UART8 and SPI1 are sharing pins. The desired pinout can be selected with an enable PIN described in the table „4.1 Raspberry Extension Muxing“. The yellow marked column „Dual use PINs“ marks these PINs.

LINK:
byteDEVKIT 1 Schematic V1.3

> Raspberry Pi 3 GPIO Header - Connector X6





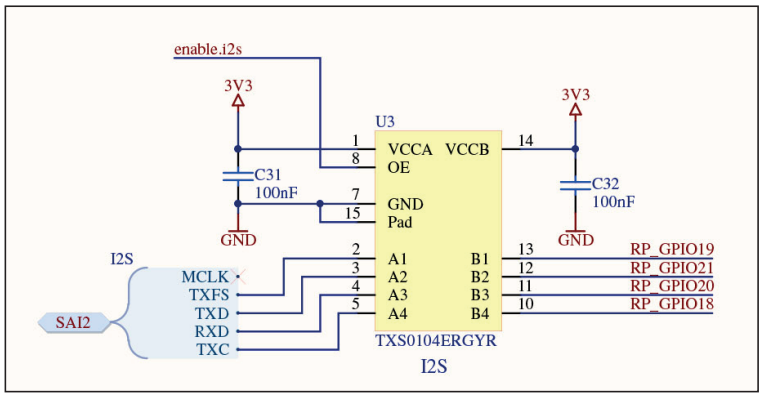
4.1 Raspberry Extension Muxing

NOTICE
SAI2, UART8 and SPI1 are sharing pins. The desired pinout can be selected with an enable PIN described in the table. The yellow marked column „Dual use PINs“ marks these PINs.

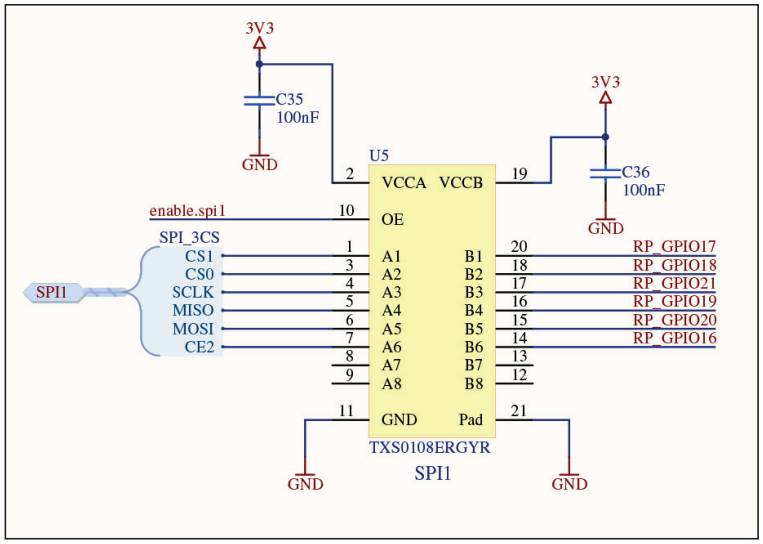
Direction	Bidir	Bidir	Bidir	Bidir	Bidir	Bidir	Bidir	M5	X6 Pin	Dual use PINs
Enable	PF2	na	na	PI0	na	PF5	na			
RP Pin	SAI2	MMC3	I2C	UART8	SPI2	SPI1	GPIO	STM32MP1		
GPIO00			SDA (PH5)					PH5	27	
GPIO01			SCL (PH4)					PH4	28	
GPIO02			SDA1 (PH12)					PH12	3	
GPIO03			SCL1 (PH11)					PH11	5	
GPIO04							PI1	PI1	7	
GPIO05							PZ7	PZ7	29	
GPIO06							PI3	PI3	31	
GPIO07					CS1			PE13	26	
GPIO08					CS0			PE12	24	
GPIO09					MISO			PI2	21	
GPIO10					MOSI			PC3	19	
GPIO11					SCLK			PA9	23	
GPIO12							PI9	PI9	32	
GPIO13							PZ6	PZ6	33	
GPIO14				TX (PE1)				PE1	8	
GPIO15				RX (PE0)				PE0	10	
GPIO16				CTS (PE15)		CS2 (PA3)		PA3	36	PE15
GPIO17				RTS (PE14)		CS1 (PH2)		PH2	11	PE14
GPIO18	TXC (PI5)					CS0 (PZ3)		PZ3	12	PI5
GPIO19	TXFS (PI7)					MISO (PZ1)		PZ1	35	PI7
GPIO20	RXD (PF11)					MOSI (PZ2)		PZ2	38	PF11
GPIO21	TXD (PI6)					SCLK (PZ0)		PZ0	40	PI6
GPIO22		CLK						PG15	15	
GPIO23		CMD						PF1	16	
GPIO24		DATA0						PF0	18	
GPIO25		DATA1						PD4	22	
GPIO26		DATA2						PD5	37	
GPIO27		DATA3						PD7	13	

4.2 Raspberry PI Extension GPIOs

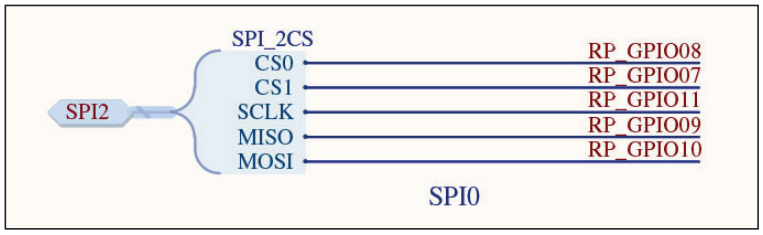
> I²S



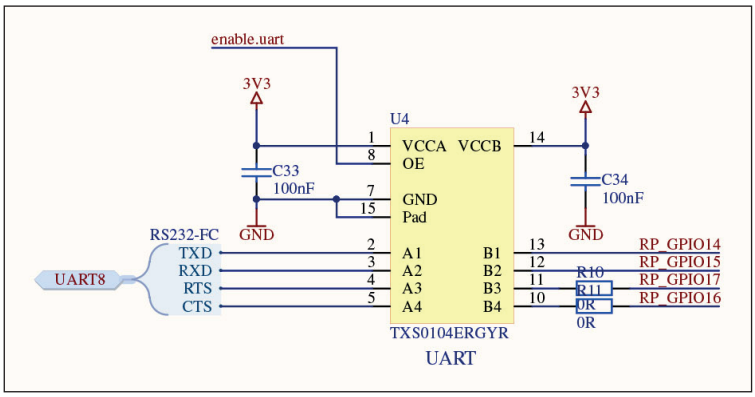
> SPI1



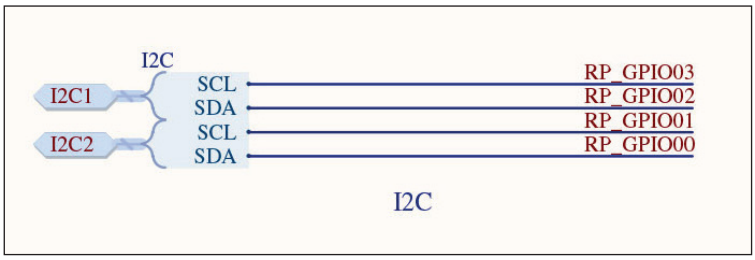
> SPI0



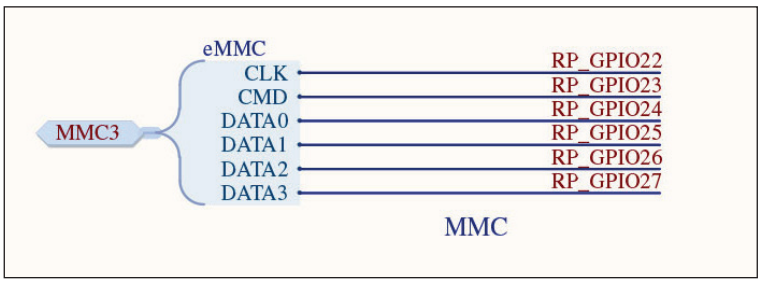
> UART



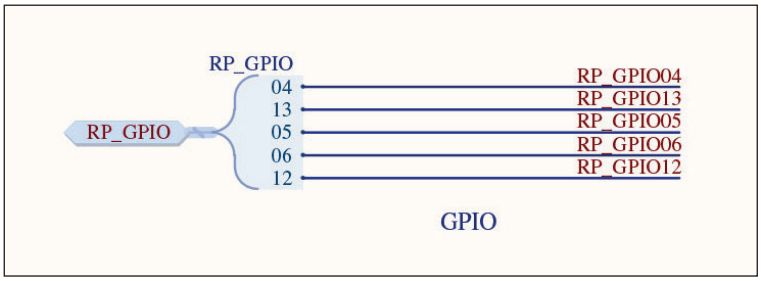
> I²C



> MMC



> GPI0



4.3 PIN functions X6 - 40 PIN connector

PIN functions X6: PIN 1 - 23 AF 0 - 7

Con	Pin	Enable Signal	Signal Name	Position	Type	Signal	Label	AF							
								0	1	2	3	4	5	6	7
X6	1		3V3												
X6	2		5V												
X6	3		PH12	B2	I/O	I2C1_SDA	RP_I2C	HDP_HDP2		TIM5_CH3		I2C4_SDA	I2C1_SDA		
X6	4		5V												
X6	5		PH11	C4	I/O	I2C1_SCL	RP_I2C			TIM5_CH2		I2C4_SCL	I2C1_SCL		
X6	6		GND												
X6	7		PI1	E3	Input	GPIO_Input	RP_GPIO04				TIM8_BKIN2		I2S2_CK/SPI2_SCK		
X6	8		PE1	C8	I/O	UART8_TX	RP_UART		LPTIM1_IN2				I2S2_MCK	SAI3_SD_B	
X6	9		GND												
X6	10		PE0	D6	I/O	UART8_RX	RP_UART		LPTIM1_ETR	TIM4_ETR		LPTIM2_ETR	I2S3_CK/SPI3_SCK	SAI4_MCLK_B	
X6	11	PF5	PH2	AB4	Input	GPIO_Input			LPTIM1_IN2						
X6	11	PI0	PE14	C6	I/O	UART8_RTS	RP_UART		TIM1_CH4				SPI4_MOSI		
X6	12	PF2	PI5	F3	I/O	SAI2_SCK_A	Audio				TIM8_CH1				
X6	12	PF5	PZ3	G4	Input	GPIO_Input	SPI1_CS0			I2C6_SDA	I2C2_SDA	I2C5_SDA	I2S1_WS	I2C4_SDA	USART1_CTS/USART1_NSS
X6	13		PD7	D10	I/O	SDMMC3_D3	RP_EMMC	DEBUG_TRACED6			DFSDM1_DATIN4	I2C2_SCL		DFSDM1_CKIN1	USART2_CK
X6	14		GND												
X6	15		PG15	B7	I/O	SDMMC3_CK	RP_EMMC	DEBUG_TRACED7		SAI1_D2		I2C2_SDA		SAI1_FS_A	USART6_CTS/USART6_NSS
X6	16		PF1	A5	I/O	SDMMC3_CMD	RP_EMMC					I2C2_SCL			
X6	17		3V3												
X6	18		PF0	D8	I/O	SDMMC3_D0	RP_EMMC					I2C2_SDA			
X6	19		PC3	W2	I/O	SPI2_MOSI		DEBUG_TRACE-CLK			DFSDM1_DATIN1		I2S2_SDO/SPI2_MOSI		
X6	20		GND												
X6	21		PI2	E2	I/O	SPI2_MISO					TIM8_CH4		I2S2_SDI/SPI2_MISO		
X6	22		PD4	B6	I/O	SDMMC3_D1	RP_EMMC							SAI3_FS_A	USART2_DE/USART2_RTS
X6	23		PA9	A8	I/O	SPI2_SCK			TIM1_CH2				I2S2_CK/SPI2_SCK		USART1_TX

PIN functions X6: PIN 1 - 23 AF 8 - 14

Con	Pin	Enable Signal	Signal Name	Position	Type	Signal	Label	AF						
								8	9	10	11	12	13	14
X6	1		3V3											
X6	2		5V											
X6	3		PH12	B2	I/O	I2C1_SDA	RP_I2C						DCMI_D3	LTDC_R6
X6	4		5V											
X6	5		PH11	C4	I/O	I2C1_SCL	RP_I2C						DCMI_D2	LTDC_R5
X6	6		GND											
X6	7		PI1	E3	Input	GPIO_Input	RP_GPIO04						DCMI_D8	LTDC_G6
X6	8		PE1	C8	I/O	UART8_TX	RP_UART	UART8_TX					DCMI_D3	
X6	9		GND											
X6	10		PE0	D6	I/O	UART8_RX	RP_UART	UART8_RX		SAI2_MCLK_A			DCMI_D2	
X6	11	PF5	PH2	AB4	Input	GPIO_Input			QUADSPI_BK2_IO0	SAI2_SCK_B	ETH1_CRS			LTDC_R0
X6	11	PI0	PE14	C6	I/O	UART8_RTS	RP_UART	UART8_RTS		SAI2_MCLK_B	SDMMC1_D123DIR	FMC_D11	LTDC_G0	LTDC_CLK
X6	12	PF2	PI5	F3	I/O	SAI2_SCK_A	Audio			SAI2_SCK_A			DCMI_VSYNC	LTDC_B5
X6	12	PF5	PZ3	G4	Input	GPIO_Input	SPI1_CS0	SPI6_NSS						
X6	13		PD7	D10	I/O	SDMMC3_D3	RP_EMMC		SPDIFRX_IN0	SDMMC3_D3				
X6	14		GND											
X6	15		PG15	B7	I/O	SDMMC3_CK	RP_EMMC			SDMMC3_CK			DCMI_D13	
X6	16		PF1	A5	I/O	SDMMC3_CMD	RP_EMMC		SDMMC3_CMD	SDMMC3_CDIR				
X6	17		3V3											
X6	18		PF0	D8	I/O	SDMMC3_D0	RP_EMMC		SDMMC3_D0	SDMMC3_CKIN				
X6	19		PC3	W2	I/O	SPI2_MOSI					ETH1_TX_CLK			
X6	20		GND											
X6	21		PI2	E2	I/O	SPI2_MISO							DCMI_D9	LTDC_G7
X6	22		PD4	B6	I/O	SDMMC3_D1	RP_EMMC			SDMMC3_D1	DFSDM1_CKIN0	FMC_NOE		
X6	23		PA9	A8	I/O	SPI2_SCK		SDMMC2_CDIR		SDMMC2_D5			DCMI_D0	LTDC_R5

PIN functions X6: PIN 24 - 40 AF 0 - 7

Con	Pin	Enable Signal	Signal Name	Position	Type	Signal	Label	AF							
								0	1	2	3	4	5	6	7
X6	24		PE12	B4	Input	GPIO_Input			TIM1_CH3N		DFSDM1_DATIN5		SPI4_SCK		
X6	25		GND												
X6	26		PE13	A3	Input	GPIO_Input	SPI2_CS1	HDP_HDP2	TIM1_CH3		DFSDM1_CKIN5		SPI4_MISO		
X6	27		PH5	A2	I/O	SDA	RP_I2C					I2C2_SDA	SPI5_NSS		
X6	28		PH4	B3	I/O	SCL	RP_I2C					I2C2_SCL			
X6	29		PZ7	J3	Input	GPIO_Input	RP_GPIO05			I2C6_SDA	I2C2_SDA				USART1_TX
X6	30		GND												
X6	31		PI3	E1	Input	GPIO_Input	RP_GPIO06				TIM8_ETR		I2S2_SDO/SPI2_MOSI		
X6	32		PI9	H4	Input	GPIO_Input	RP_GPIO12	HDP_HDP1							
X6	33		PZ6	H1	Input	GPIO_Input	RP_GPIO13			I2C6_SCL	I2C2_SCL	USART1_CK	I2S1_MCK		USART1_RX
X6	34		GND												
X6	35	PF2	PI7	F2	I/O	SAI2_FS_A	Audio				TIM8_CH3				
X6	35	PF5	PZ1	G1	I/O	SPI1_MISO				I2C6_SDA	I2C2_SDA	I2C5_SDA	I2S1_SDI/SPI1_MISO	I2C4_SDA	USART1_RX
X6	36	PF5	PA3	U2	Input	GPIO_Input	Serialselect_1		TIM2_CH4	TIM5_CH4	LPTIM5_OUT	TIM15_CH2			USART2_RX
X6	36	PI0	PE15	D3	I/O	UART8_CTS	RP_UART	HDP_HDP3	TIM1_BKIN			TIM15_BKIN			USART2_CTS/USART2_NSS
X6	37		PD5	A7	I/O	SDMMC3_D2	RP_EMMC								USART2_TX
X6	38	PF2	PF11	Y10	I/O	SAI2_SD_B	Audio						SPI5_MOSI		
X6	38	PF5	PZ2	J4	I/O	SPI1_MOSI				I2C6_SCL	I2C2_SCL	I2C5_SMBA	I2S1_SDO/SPI1_MOSI		USART1_TX
X6	39		GND												
X6	40	PF2	PI6	F4	I/O	SAI2_SD_A	Audio				TIM8_CH2				
X6	40	PF5	PZ0	G3	I/O	SPI1_SCK				I2C6_SCL	I2C2_SCL		I2S1_CK/SPI1_SCK		USART1_CK

PIN functions X6: PIN 24 - 40 AF 8 - 14

Con	Pin	Enable Signal	Signal Name	Position	Type	Signal	Label	AF						
								8	9	10	11	12	13	14
X6	24		PE12	B4	Input	GPIO_Input		SDMMC1_D0DIR		SAI2_SCK_B		FMC_D9		LTDC_B4
X6	25		GND											
X6	26		PE13	A3	Input	GPIO_Input	SPI2_CS1			SAI2_FS_B		FMC_D10	DCMI_D6	LTDC_DE
X6	27		PH5	A2	I/O	SDA	RP_I2C					SAI4_SD_B		
X6	28		PH4	B3	I/O	SCL	RP_I2C		LTDC_G5					LTDC_G4
X6	29		PZ7	J3	Input	GPIO_Input	RP_GPIO05							
X6	30		GND											
X6	31		PI3	E1	Input	GPIO_Input	RP_GPIO06						DCMI_D10	
X6	32		PI9	H4	Input	GPIO_Input	RP_GPIO12	UART4_RX	FDCAN1_RX					LTDC_VSYNC
X6	33		PZ6	H1	Input	GPIO_Input	RP_GPIO13							
X6	34		GND											
X6	35	PF2	PI7	F2	I/O	SAI2_FS_A	Audio			SAI2_FS_A			DCMI_D7	LTDC_B7
X6	35	PF5	PZ1	G1	I/O	SPI1_MISO		SPI6_MISO						
X6	36	PF5	PA3	U2	Input	GPIO_Input	Serialselect_1		LTDC_B2		ETH1_COL			LTDC_B5
X6	36	PI0	PE15	D3	I/O	UART8_CTS	RP_UART	UART8_CTS				FMC_D12		LTDC_R7
X6	37		PD5	A7	I/O	SDMMC3_D2	RP_EMMC			SDMMC3_D2		FMC_NWE		
X6	38	PF2	PF11	Y10	I/O	SAI2_SD_B	Audio			SAI2_SD_B			DCMI_D12	LTDC_G5
X6	38	PF5	PZ2	J4	I/O	SPI1_MOSI		SPI6_MOSI						
X6	39		GND											
X6	40	PF2	PI6	F4	I/O	SAI2_SD_A	Audio			SAI2_SD_A			DCMI_D6	LTDC_B6
X6	40	PF5	PZ0	G3	I/O	SPI1_SCK		SPI6_SCK						

5. Pinouts X9 - 60 PIN connector

PIN functions X9: **PIN 1 - 29** **AF 0 - 7**

Con	Pin	Signal Name	Posi-tion	Type	Signal	Label	AF							
							0	1	2	3	4	5	6	7
X9	1	3V3												
X9	2	5V												
X9	3	VREFP	Y18											
X9	4	VSSA	AA19											
X9	5	EXT_WAKEUP												
X9	6	PWR_ON	AC10											
X9	7	PD6	AC5	Input	GPIO_Input			TIM16_CH1N	SAI1_D1	DFSDM1_CKIN4	DFSDM1_DATIN1	I2S3_SDO/SPI3_MOSI	SAI1_SD_A	USART2_RX
X9	8	PD11	A8	Input	GPIO_Input					LPTIM2_IN2				USART3_CTS/USART3_NSS
X9	9	PD12	AB6	Input	GPIO_Input			LPTIM1_IN1	TIM4_CH1	LPTIM2_IN1	I2C4_SCL	I2C1_SCL		USART3_DE/USART3_RTS
X9	10	PG3	Y2	Input	GPIO_Input		DEBUG_TRACED3			TIM8_BKIN2	DFSDM1_CKIN1			
X9	11	PD9	C13	Input	GPIO_Input					DFSDM1_DATIN3			SAI3_SD_B	USART3_RX
X9	12	PG5	W2	Input	GPIO_Input			TIM1_ETR						
X9	13	PG10	L2	Input	GPIO_Input		DEBUG_TRACED10							
X9	14	PG9	AB7	Input	GPIO_Input		DEBUG_DBTRGO							USART6_RX
X9	15	PB0	T2	I/O	ETH1_RXD2	ETH		TIM1_CH2N	TIM3_CH3	TIM8_CH2N			DFSDM1_CKOUT	
X9	16	PH3	D18	Input	GPIO_Input					DFSDM1_CKIN4				
X9	17	PG13	L1	I/O			DEBUG_TRACED0	LPTIM1_OUT	SAI1_CK2		SAI4_CK1	SPI6_SCK	SAI1_SCK_A	USART6_CTS/USART6_NSS
X9	18	PE10	Y15	I/O	QUADSPI_CLK	SPI-NOR	TIM1_CH2N		DFSDM1_DATIN4				UART7_CTS	
X9	19	PE4	Y16	Input	GPIO_Input		DEBUG_TRACED1		SAI1_D2	DFSDM1_DATIN3	TIM15_CH1N	SPI4_NSS	SAI1_FS_A	SDMMC2_CKIN
X9	20	PE9	Y14	I/O	UART7_RTS	Serial		TIM1_CH1		DFSDM1_CKOUT				UART7_RTS
X9	21	PE7	B13	I/O	UART7_RX	Serial		TIM1_ETR	TIM3_ETR	DFSDM1_DATIN2				UART7_RX
X9	22	PE8	Y8	Input	GPIO_Input			TIM1_CH1N		DFSDM1_CKIN2				UART7_TX
X9	23	PD0	AC8	I/O	FDCAN1_RX	CAN			I2C6_SDA	DFSDM1_CKIN6	I2C5_SDA		SAI3_SCK_A	
X9	24	PD1	AB8	I/O	FDCAN1_TX	CAN			I2C6_SCL	DFSDM1_DATIN6	I2C5_SCL		SAI3_SD_A	
X9	25	PD15	AB1	Input	GPIO_Input				TIM4_CH4				SAI3_MCLK_A	
X9	26	PD14	Y3	Input	GPIO_Input				TIM4_CH3				SAI3_MCLK_B	
X9	27	PG1	K2	Input	GPIO_Input		DEBUG_TRACED1							
X9	28	PG0	D13	Input	GPIO_Input		DEBUG_TRACED0			DFSDM1_DATIN0				
X9	29	PF15	AA6	Input	GPIO_Input		DEBUG_TRACED7				I2C4_SDA	I2C1_SDA		

PIN functions X9: PIN 1 - 27 AF 8 - 14

Con	Pin	Signal Name	Position	Type	Signal	Label	AF						
							8	9	10	11	12	13	14
X9	1	3V3											
X9	2	5V											
X9	3	VREFP	Y18										
X9	4	VSSA	AA19										
X9	5	EXT_WAKEUP											
X9	6	PWR_ON	AC10										
X9	7	PD6	AC5	Input	GPIO_Input						FMC_NWAIT	DCMI_D10	LTDC_B2
X9	8	PD11	A8	Input	GPIO_Input			QUADSPI_BK1_IO0	SAI2_SD_A		FMC_CLE		
X9	9	PD12	AB6	Input	GPIO_Input			QUADSPI_BK1_IO1	SAI2_FS_A		FMC_ALE		
X9	10	PG3	Y2	Input	GPIO_Input					ETH1_TXD7			
X9	11	PD9	C13	Input	GPIO_Input						FMC_D14	DCMI_HSYNC	LTDC_B0
X9	12	PG5	W2	Input	GPIO_Input					ETH1_CLK125			
X9	13	PG10	L2	Input	GPIO_Input		UART8_CTS	LTDC_G3	SAI2_SD_B	QUADSPI_BK2_IO2		DCMI_D2	LTDC_B2
X9	14	PG9	AB7	Input	GPIO_Input		SPDIFRX_IN3	QUADSPI_BK2_IO2	SAI2_FS_B		FMC_NCE	DCMI_VSYNC	LTDC_R1
X9	15	PB0	T2	I/O	ETH1_RXD2	ETH	UART4_CTS	LTDC_R3		ETH1_RXD2			LTDC_G1
X9	16	PH3	D18	Input	GPIO_Input			QUADSPI_BK2_IO1	SAI2_MCLK_B	ETH1_COL			LTDC_R1
X9	17	PG13	L1	I/O					SAI4_MCLK_A	ETH1_TXD0			LTDC_R0
X9	18	PE10	Y15	I/O	QUADSPI_CLK	SPI-NOR		QUADSPI_BK2_IO3		FMC_D7			
X9	19	PE4	Y16	Input	GPIO_Input		SDMMC1_CKIN	SDMMC2_D4				DCMI_D4	LTDC_B0
X9	20	PE9	Y14	I/O	UART7_RTS	Serial			QUADSPI_BK2_IO2		FMC_D6		
X9	21	PE7	B13	I/O	UART7_RX	Serial			QUADSPI_BK2_IO0		FMC_D4		
X9	22	PE8	Y8	Input	GPIO_Input				QUADSPI_BK2_IO1		FMC_D5		
X9	23	PD0	AC8	I/O	FDCAN1_RX	CAN	UART4_RX	FDCAN1_RX	SDMMC3_CMD	DFSDM1_DATIN7	FMC_D2		
X9	24	PD1	AB8	I/O	FDCAN1_TX	CAN	UART4_TX	FDCAN1_TX	SDMMC3_D0	DFSDM1_CKIN7	FMC_D3		
X9	25	PD15	AB1	Input	GPIO_Input		UART8_CTS				FMC_D1		LTDC_R1
X9	26	PD14	Y3	Input	GPIO_Input		UART8_CTS				FMC_D0		
X9	27	PG1	K2	Input	GPIO_Input					ETH1_TXD5			

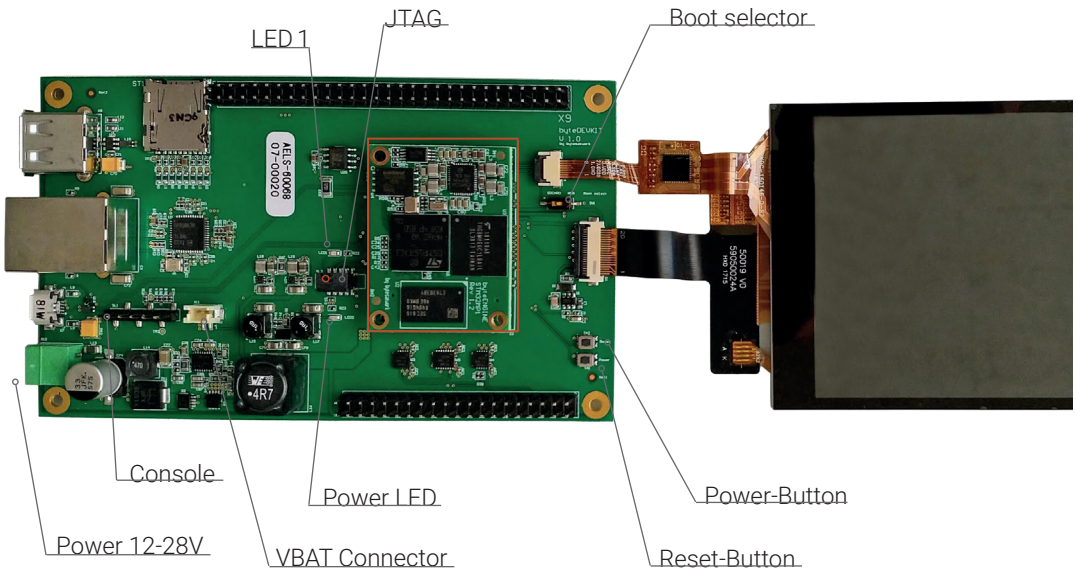
PIN functions X9: PIN 30 - 60 AF 0 - 7

Con	Pin	Signal Name	Posi-tion	Type	Signal	Label	AF							
							0	1	2	3	4	5	6	7
X9	30	PF14	AB5	Input	GPIO_Input		DEBUG_TRACED6			DFSDM1_CKIN6	I2C4_SCL	I2C1_SCL		
X9	31	PF13	B10	Input	GPIO_Input		DEBUG_TRACED5			DFSDM1_DATIN6			DFSDM1_DATIN3	
X9	32	PF12	AB10	Input	GPIO_Input		DEBUG_TRACED4							
X9	33	PF4	D16	Input	GPIO_Input	EN_i2c								USART2_RX
X9	34	PF3	D15	Input	GPIO_Input									
X9	35	PI10	B9	Input	GPIO_Input		HDP_HDP0							
X9	36	PD8	AA10	Input	GPIO_Input					DFSDM1_CKIN3			SAI3_SCK_B	USART3_TX
X9	37	PB8	U2	Input	GPIO_Input		HDP_HDP6	TIM16_CH1	TIM4_CH3	DFSDM1_CKIN7	I2C1_SCL	SDMMC1_CKIN	I2C4_SCL	SDMMC2_CKIN
X9	38	PD10	A13	Input	GPIO_Input		RTC_REFIN	TIM16_BKIN		DFSDM1_CKOUT	I2C5_SMBA	I2S3_SDI/SPI3_MISO	SAI3_FS_B	USART3_CK
X9	39	PH15	B11	Input	GPIO_Input	EN_mmc				TIM8_CH3N				
X9	40	PE11	B12	Input	GPIO_Input			TIM1_CH2		DFSDM1_CKIN4		SPI4_NSS		USART6_CK
X9	41	PA6	N2	Input	GPIO_Input			TIM1_BKIN	TIM3_CH1	TIM8_BKIN	SAI4_CK2	I2S1_SDI/SPI1_MISO		
X9	42	PH9	B8	Input	GPIO_Input	EN_spi0			TIM12_CH2					
X9	43	PH10	B14	Input	GPIO_Input	EN_gpio			TIM5_CH1					
X9	44	PG7	AC7	Input	GPIO_Input		DEBUG_TRACED5						SAI1_MCLK_A	USART6_CK
X9	45	PA13	AA4	Input	GPIO_Input		DEBUG_DBTRGO	DEBUG_DBTRGI	RCC_MCO_1					
X9	46	PA15	Y17	I/O	UART7_TX	Serial	DEBUG_DBTRGI	TIM2_CH1	SAI4_D2	SDMMC1_CDIR	CEC	I2S1_WS	I2S3_WS/SPI3_NSS	SPI6_NSS
X9	47	PA11	AB3	Input	GPIO_Input			TIM1_CH4	I2C6_SCL		I2C5_SCL	I2S2_WS	UART4_RX	USART1_CTS/USART1_NSS
X9	48	PD13	AA7	Input	GPIO_Input			LPTIM1_OUT	TIM4_CH2		I2C4_SDA	I2C1_SDA	I2S3_MCK	
X9	49	PB2	AC3	Input	GPIO_Input		DEBUG_TRACED4	RTC_OUT_ALARM2/RTC_OUT_CALIB2	SAI1_D1	DFSDM1_CKIN1	USART1_RX	I2S_CKIN	SAI1_SD_A	I2S3_SDO/SPI3_MOSI
X9	50	PE6	A11	Input	GPIO_Input		DEBUG_TRACED2	TIM1_BKIN2	SAI1_D1		TIM15_CH2	SPI4_MOSI	SAI1_SD_A	SDMMC2_D0
X9	51	PI8	B5	Input	GPIO_Input									
X9	52	PC13	V3	Input	GPIO_Input									
X9	53	PC0	V4	Input	GPIO_Input					DFSDM1_CKIN0	LPTIM2_IN2		DFSDM1_DATIN4	
X9	54	PA5	AB19	Input	GPIO_Input			TIM2_CH1		TIM8_CH1N	SAI4_CK1	I2S1_CK/SPI1_SCK		
X9	55	ANA0		MonoIO										
X9	56	PA4	AA18	Input	GPIO_Input	Serialse-lect_2	HDP_HDP0		TIM5_ETR		SAI4_D2	I2S1_WS	I2S3_WS/SPI3_NSS	USART2_CK
X9	57	ANA1		MonoIO										
X9	58	PB1	C19					TIM1_CH3N	TIM3_CH4	TIM8_CH3N			DFSDM1_DATIN1	
X9	59	PH8	D17						TIM5_ETR		I2C3_SDA			
X9	60	GND												

PIN functions X9: PIN 28 - 60 AF 8 - 14

Con	Pin	Signal Name	Position	Type	Signal	Label	AF						
							8	9	10	11	12	13	14
X9	28	PG0	D13	Input	GPIO_Input					ETH1_TXD4			
X9	29	PF15	AA6	Input	GPIO_Input					ETH1_RXD7			
X9	30	PF14	AB5	Input	GPIO_Input					ETH1_RXD6			
X9	31	PF13	B10	Input	GPIO_Input					ETH1_RXD5			
X9	32	PF12	AB10	Input	GPIO_Input					ETH1_RXD4			
X9	33	PF4	D16	Input	GPIO_Input	EN_i2c		SDMMC3_D1	SDMMC3_D123DIR				
X9	34	PF3	D15	Input	GPIO_Input					ETH1_TX_ER			
X9	35	PI10	B9	Input	GPIO_Input		USART3_CTS/USART3_NSS			ETH1_RX_ER			LTDC_HSYNC
X9	36	PD8	AA10	Input	GPIO_Input			SPDIFRX_IN1			FMC_D13		LTDC_B7
X9	37	PB8	U2	Input	GPIO_Input		UART4_RX	FDCAN1_RX	SDMMC2_D4	ETH1_TXD3		DCMI_D6	LTDC_B6
X9	38	PD10	A13	Input	GPIO_Input						FMC_D15		LTDC_B3
X9	39	PH15	B11	Input	GPIO_Input	EN_mmc						DCMI_D11	LTDC_G4
X9	40	PE11	B12	Input	GPIO_Input				SAI2_SD_B		FMC_D8	DCMI_D4	LTDC_G3
X9	41	PA6	N2	Input	GPIO_Input		SPI6_MISO	TIM13_CH1			SAI4_SCK_A	DCMI_PIXCLK	LTDC_G2
X9	42	PH9	B8	Input	GPIO_Input	EN_spi0						DCMI_D0	LTDC_R3
X9	43	PH10	B14	Input	GPIO_Input	EN_gpio						DCMI_D1	LTDC_R4
X9	44	PG7	AC7	Input	GPIO_Input		UART8_RTS	QUADSPI_CLK		QUADSPI_BK2_IO3		DCMI_D13	LTDC_CLK
X9	45	PA13	AA4	Input	GPIO_Input		UART4_TX						
X9	46	PA15	Y17	I/O	UART7_TX	Serial	UART4_RTS	SDMMC2_D5	SDMMC2_CDIR		SAI4_FS_A	UART7_TX	LTDC_R1
X9	47	PA11	AB3	Input	GPIO_Input			FDCAN1_RX					LTDC_R4
X9	48	PD13	AA7	Input	GPIO_Input			QUADSPI_BK1_IO3	SAI2_SCK_A				
X9	49	PB2	AC3	Input	GPIO_Input		UART4_RX	QUADSPI_CLK					
X9	50	PE6	A11	Input	GPIO_Input		SDMMC1_D2		SAI2_MCLK_B			DCMI_D7	LTDC_G1
X9	51	PI8	B5	Input	GPIO_Input								
X9	52	PC13	V3	Input	GPIO_Input								
X9	53	PC0	V4	Input	GPIO_Input		SAI2_FS_B		QUADSPI_BK2_NCS				LTDC_R5
X9	54	PA5	AB19	Input	GPIO_Input		SPI6_SCK				SAI4_MCLK_A		LTDC_R4
X9	55	ANA0		MonoIO									
X9	56	PA4	AA18	Input	GPIO_Input	Serialselect_2	SPI6_NSS				SAI4_FS_A	DCMI_HSYNC	LTDC_VSYNC
X9	57	ANA1		MonoIO									
X9	58	PB1	C19					LTDC_R6		ETH1_RXD3			LTDC_G0
X9	59	PH8	D17									DCMI_HSYNC	LTDC_R2
X9	60	GND											

6. Connectors



Power

X10.1	8-30 V
X10.2	Ground (GND)

VBAT (CR2032)

X11.1	3 V
X11.2	Ground (GND)

SL1: Console

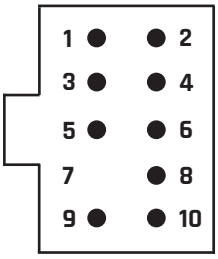
SL1.1	GND
SL1.4	UART4-RXD
SL1.5	UART4-TXD
Do not connect other pins	

Switch SW 1: Boot selector

ON:	Boot from SPI Nor Flash
OFF:	Boot from SD-Card

SL2: JTAG/SWD (ARM 10 PIN connector)

1	VTref
2	SWDIO/TMS
3	GND
4	SWCLK/TCK
5	GND
6	SWO/TDO
7	---
8	TDI
9	NC - TRSTN
10	nRESET



LEDs

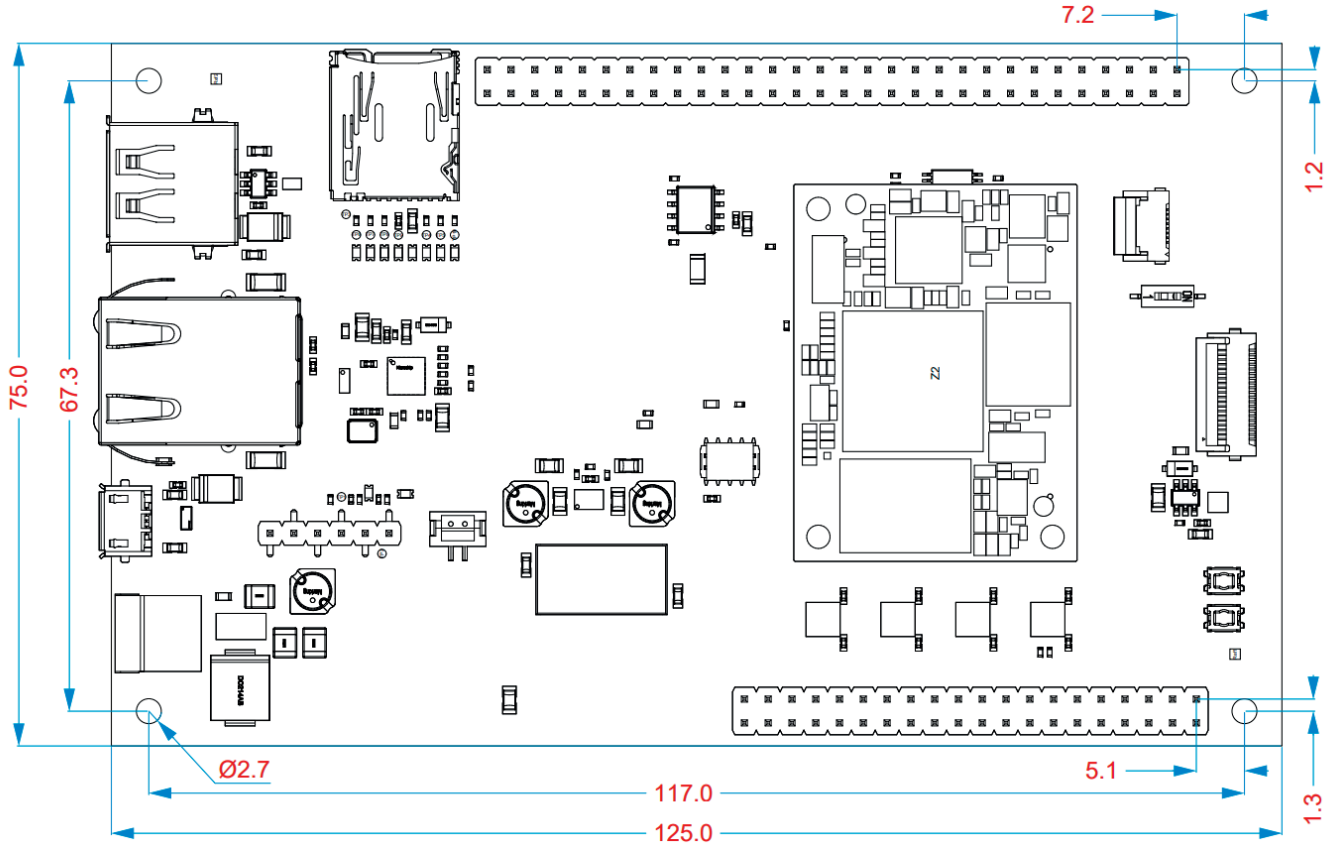
LED 1	Connected to PA13. A red light during bootup means, no valid boot source was found by the ROM loader
LED 2	Power LED. Indicates a valid 3.3V power supply

Buttons

TA 1:	Power: Connected to PONKEYn Signal of STPMIC1. Can be used as power switch
TA 2:	Reset

7. Mechanical dimensions

all dimensions in mm



8. Ordering Info

The Ordering Code allows the customer to recognize easily the detailed specification of the ordered DEV-Kit.

> with Display: byteDEVKIT-STM32MP157C-650-R512-E4-D5

> without Display: byteDEVKIT-STM32MP157C-650-R512-E4

byteDEVKIT[SOMx]_[SPEED]_R[xxx MB]_[E GB]_[D inch]

[SOMx]:	STM32MP151C, STM32MP153C, STM32MP157C
[SPEED]:	650/800 MHz
R[xxx MB]:	RAM size: 256, 512, 1024
[E GB]:	eMMC FLASH size: 4, 8 GB
[D inch]:	Display size (inch): 5

9. References byteDEVKIT 1

NOTICE
Files can only be downloaded with login credentials.
Please request your download credentials via
info@bytesatwork.ch or contact your sales representative.

9.1 References byteDEVKIT 1 - V1.3

- byteDEVKIT 1 Schematic V1.3:
  https://download.bytesatwork.io/documentation/byteENGINE/ressources/byteDEVKIT/Schematic-byteDEVKIT-1_V1.3.pdf
- byteDEVKIT 1 Connector Pinout V1.3
  https://download.bytesatwork.io/documentation/byteENGINE/ressources/byteDEVKIT/Connector-pinout-byteDEVKIT-1_V1.3.pdf

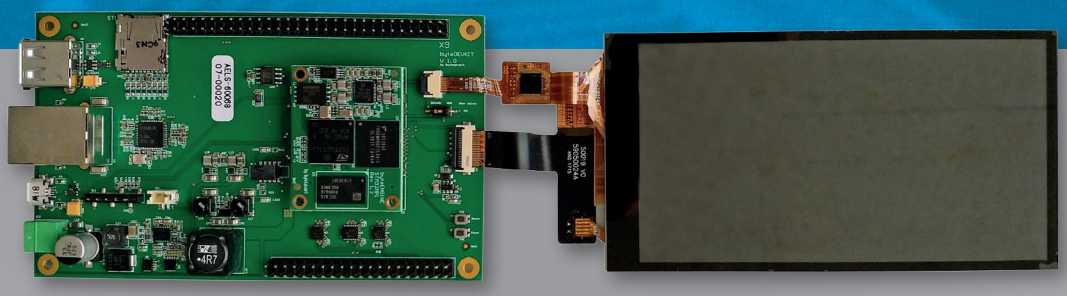
9.2 References byteDEVKIT 1 - V1.1

- bytesatwork on github:
  https://github.com/bytesatwork
- byteDEVKIT 1 Schematic V1.1:
  https://download.bytesatwork.io/documentation/byteENGINE/ressources/byteDEVKIT/Schematic-byteDEVKIT-1_V1.1.pdf
- Detailed Pinout X6:
  https://download.bytesatwork.io/documentation/byteENGINE/ressources/byteDEVKIT/pinfunctions-X6.xlsx
- Detailed Pinout X9 V1.1:
  https://download.bytesatwork.io/documentation/byteENGINE/ressources/byteDEVKIT/pinfunctions-X9-V1.1.xlsx
- RaspberryPI Extension Muxing:
  https://download.bytesatwork.io/documentation/byteENGINE/ressources/byteDEVKIT/RP-extension-muxing.xlsx

9.3 References byteDEVKIT 1 - V1.0

- byteDEVKIT 1 Schematic V1.0:
  https://download.bytesatwork.io/documentation/byteENGINE/ressources/byteDEVKIT/Schematic-byteDEVKIT-1_V1.0.pdf
- Detailed Pinout X9 V1.0:
  https://download.bytesatwork.io/documentation/byteENGINE/ressources/byteDEVKIT/pinfunctions-X9-V1.0.xlsx

10. Contact information



- bytes at work AG
  Technoparkstrasse 7
  CH-8406 Winterthur
  Switzerland
- Phone: +41 52 213 79 79
  Fax: +41 52 203 27 13
- eMail: info@bytesatwork.ch
- Product Information:
  www.bytesatwork.io
- Help:
  www.bytesatwork.io/support

bytesatwork