bytesatwork

Datasheet



industrial development kit

byteDEVKIT 2

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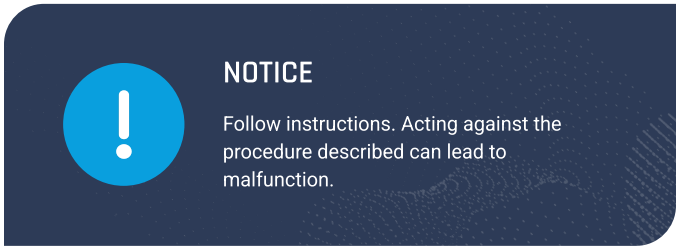
Imprint

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Symbols and Typographic Conventions

These symbols represent important details or aspects for working with bytesatwork-products.





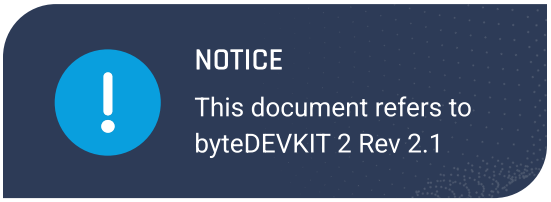
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1. Revision History

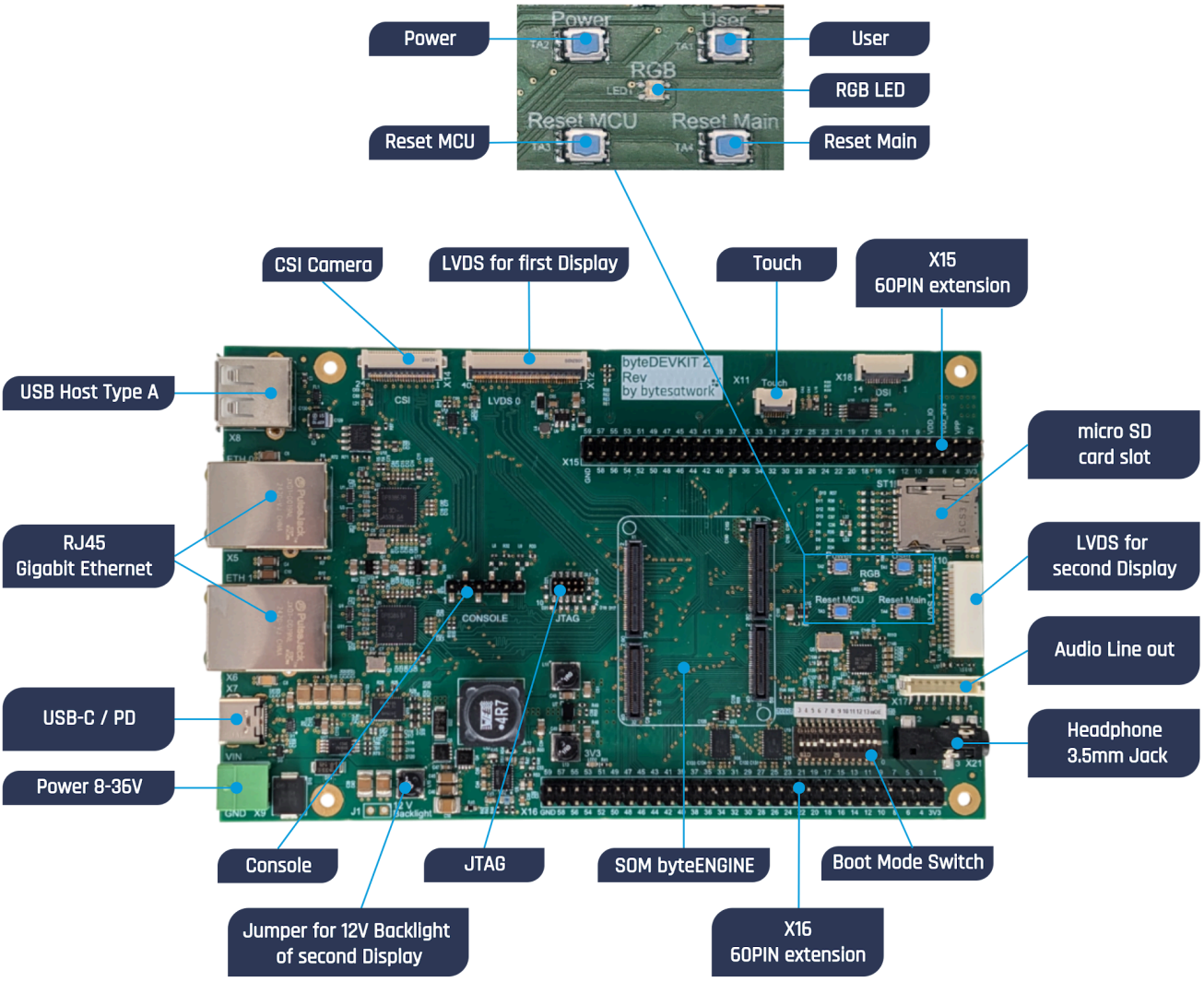
Hardware Revision	Marking on PCB	Release Date	Info
2.1	byteDEVKIT 2 Rev. 2.1	November 2026	Corrected boot switch silk screen
2.0	byteDEVKIT 2 Rev 2.0	September 2025	New features: audio codec, USB-C support, Gigabit Ethernet, RGB LED, support for byteENGINE AM62P
1.0	byteDEVKIT 2 Rev. 1.0	June 2023	First version available for sales



2. Overview

The byteDEVKIT 2 is a versatile evaluation and development platform designed specifically for rapid prototyping and seamless integration of the byteENGINE AM62x and AM62Px System-on-Modules (SOM). It offers a comprehensive set of interfaces to provide developers with an easy entry into application development and significantly shorten time-to-market.

The following graphic provides an overview of the diverse connectivity options.



2.1. General Information

Maximum flexibility and simplicity

The byteDEVKIT 2 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 2 is available with the complete AM62x- and AM62P-Module family:

> AM6231, AM6232, AM6234
> AM6251, AM6252, AM6254
> AM62P52, AM62P54
> AM62P32, AM62P34

Plenty of possibilities

The byteDEVKIT 2 includes the base board that features a strong array of interfaces for a variety of applications:

- 2x Gigabit Ethernet RJ45
- 1x microSD Slot
- 1x USB Host Type A
- 1x USB-C with Powerdelivery
- 5-inch LVDS Touchscreen Display
- extension connector for second Display
- 2x 60 PIN Header: Extension-Header X15: LCD, OSPI, MMC2, SPIO, MCAN, MCASP X16: GPMC, I2C1, MCU_I2C0, MCU_SPIO, MCU_UART0, MCU-MCAN0, MCU-MCAN1, WKUP, RESET
- Audio Codec with Line Out and Headphone Jack
- Boot mode switch
- CSI Camera 4lanes

Ready to start and use

The byteDEVKIT 2 package comes ready to run, which includes a power supply, 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 Texas Instruments are on the cutting edge of their industry thanks to the combination of functional integration, high performance and extremely low power consumption.

Two in one

The byteENGINE AM62x has up to four Cortex®-A53 cores for exceptionally high system performance. The Cortex®-M4 core enables real-time applications with low performance at the same time.

Easy to adapt to your project

Thanks to the two 60PIN headers, rapid prototyping is easy and efficient. The byteDEVKIT 2 offers on its 112 PINs a variety of interfaces such as I2C, SPI - CAN, UART, USART, PWM and GPIO.

Quality which endures

Our Swiss standard pays off. We only install components to the byteDEVKIT 2 that will be still available in ten years. The byteDEVKIT 2 is engineered with the focus on robustness and longevity.

2.2. Technical Data byteDEVKIT 2

byteDEVKIT 2

Connectors	2x Gigabit Ethernet RJ45
Hardware Slot	1x microSD slot
Device Slot 1	1x USB 2.0 Host Type A
Device Slot 2	1x USB-C with Powerdelivery
Display	5-inch LVDS Display with Touch; Extension connectors for second Display
Audio	Headphone Jack 3.5mm Line Out Connector
Connector 60 PIN	X15: LCD, OSPI, MMC2, SPIO, MCAN, MCASP X16: GPMC, I2C1, MCU_I2CO, MCU_SPIO, MCU_UART0, MCU_MCANO, MCU_MCAN1, WKUP, RESET

2.3. Technical Data of the SOM byteENGINE AM62x

Notice

For detailed information regarding the AM62x please refer to the document byteENGINE AM62x Datasheet.

Datasheet byteENGINE AM62x

byteENGINE AM62x Specification

CPU	Up to Quad 64-bit ARM® Cortex® A53 processors 1.4 GHz
Co-Processor	Cortex®-M4F MCU 400 MHz
Memory	512 MB to 2048 MB LPDDR4
Flash eMMC	up to 128 GB
Temperature	Industrial: -40° to +85° C, consumer: 0 to 85° C
Power Supply	5.0 V, 4 W
Dimensions	30 x 40 x 4 mm

2.4. Technical Data of the SOM byteENGINE AM62Px

Notice

For detailed information regarding the AM62Px please refer to the document byteENGINE AM62Px Datasheet.

Datasheet byteENGINE AM62Px

byteENGINE AM62Px Specification

CPU	Up to Quad core 64-bit ARM® Cortex® A53 processors up to 1.4 GHz
Co-Processor	Cortex®-R5F MCU 800 MHz
Memory	512 MB to 8192 MB LPDDR4
Flash eMMC	up to 128 GB
Temperature	Industrial: -40° to +85° C, consumer: 0 to 85° C
Power Supply	5.0 V, 4 W
Dimensions	30 x 40 x 3.5 mm

2.5. Decision guidance byteDEVKIT 2

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

> Step 1: Select the needed CPU Family and CPU

AM62x	AM62Px
> Choose up to quad Arm® Cortex®-A53 > Choose with or without Graphics Engine > Choose the needed CPU speed	> Choose up to quad ARM® Cortex®-A53 > Choose with or without Graphics Engine

> Step 2: Select the needed flash memory capacity

> **Choose eMMC 8 / 16 / 32 / 64 GB / 128 GB**

> Step 3: Select the needed RAM capacity

AM62x	AM62Px
> Choose 512 / 1024 / 1536 / 2048 MB	> Choose 512 / 1024 / 1536 / 2048 / 4096 / 6144 / 8192 MB

> Step 4: Select the needed temperature range

> **Choose consumer or industrial**

> Step 5: Select the needed Display

> **Choose with or without**

2.6. 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 experts for technical support. See Chapter „Connectors“ for the 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

> 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 X9

> Step 6: After connected to power supply, the console shows the boot log

> Step 7: Login to the system with:

Login Data

User	root
Password	rootme

2.7. Yocto Project Quick Build

These steps guide you through the process for an image build using the Yocto Project. The following example is valid for the byteDEVKIT with a byteENGINE AM62x. For further information please visit our byteWIKI.



byteWIKI

> 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-ti.git -b kirkstone repo sync
```

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

```
MACHINE=bytedevkit-am62xx 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 bytesatwork-minimal-image
```

> Step 5: Create and write the SD-Card Image:

(replace sdX with SD-Card drive)

```
cd tmp/deploy/images/bytedevkit-am62xx xzcat
bytesatwork-minimal-image-bytedevkit-am62xx.wic.xz | dd of =/dev/sdX bs=1M conv=fsync
```

3. Pinout functions

This chapter provides an overview over the pinout functions on the byteDEVKIT 2.

NOTICE

For alternative modes, please refer to the datasheets of the byteENGINE AM62 or byteENGINE AM62P.

3.1. X10 LVDS1 connector for optional second Display

Con	Pin	Signal Name
X10	1	GND
X10	2	GND
X10	3	OLDI0_A5N
X10	4	OLDI0_A4N
X10	5	OLDI0_A5P
X10	6	OLDI0_A4P
X10	7	GND
X10	8	GND
X10	9	OLDI0_A6N
X10	10	NC
X10	11	OLDI0_A6P
X10	12	NC
X10	13	GND
X10	14	NC
X10	15	OLDI0_CLK1P
X10	16	GND
X10	17	OLDI0_CLK1N
X10	18	NC
X10	19	GND
X10	20	SEL6/8
X10	21	OLDI0_A7P
X10	22	GND
X10	23	OLDI0_A7N
X10	24	Reserve
X10	25	GND
X10	26	GND
X10	27	GND
X10	28	3V3
X10	29	3V3
X10	30	3V3

3.2. X11 Touch Connector

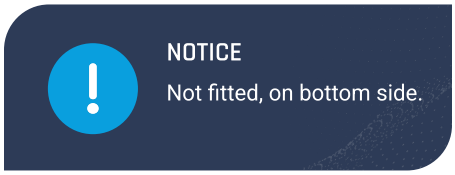
Con	Pin	Signal Name
X11	1	GND
X11	2	VDDIO
X11	3	VDD
X11	4	I2C1_SCL
X11	5	I2C1_SDA
X11	6	TOUCH_INT
X11	7	TOUCH_RESET
X11	8	GND

3.3. X12 5-inch Display Connector

Con	Pin	Signal Name
X12	1	LEDA
X12	2	LEDA
X12	3	YU(NC)
X12	4	XL(NC)
X12	5	YD(NC)
X12	6	XR(NC)
X12	7	U/D/HDIR
X12	8	L/R/VDIR
X12	9	LED
X12	10	LED
X12	11	GND
X12	12	NC
X12	13	NC
X12	14	NC
X12	15	NC
X12	16	GND
X12	17	NC
X12	18	NC
X12	19	GND
X12	20	OLDI0_A3P
X12	21	OLDI0_A3N
X12	22	GND
X12	23	OLDI0_CLK0P
X12	24	OLDI0_CLK0N
X12	25	GND
X12	26	OLDI0_A2N
X12	27	OLDI0_A2P
X12	28	GND
X12	29	OLDI0_A1N
X12	30	OLDI0_A1P
X12	31	GND
X12	32	OLDI0_A0N
X12	33	OLDI0_A0P
X12	34	GND
X12	35	DISPLAY1_ENABLE
X12	36	DISPLAY1_RESET
X12	37	NC
X12	38	3V3
X12	39	3V3
X12	40	NC

3.4. X13 Backlight Connector for optional second Display

Con	Pin	Signal Name
X13	1	VIN_12V
X13	2	VIN_12V
X13	3	VIN_12V
X13	4	VIN_12V
X13	5	GND
X13	6	GND
X13	7	GND
X13	8	GND
X13	9	DISPLAY2_ENABLE
X13	10	DISPLAY2_PWM



3.5. X14 Camera

Con	Pin	Signal Name
X14	1	GND
X14	2	CSI0_RXN0
X14	3	CSI0_RXP0
X14	4	GND
X14	5	CSI0_RXCLKN
X14	6	CSI0_RXCLKP
X14	7	GND
X14	8	CSI0_RXN1
X14	9	CSI0_RXP1
X14	10	GND
X14	11	CSI0_RXN2
X14	12	CSI0_RXP2
X14	13	GND
X14	14	CSI0_RXN3
X14	15	CSI0_RXP3
X14	16	GND
X14	17	CAMERA_nPWDN
X14	18	NC
X14	19	GND
X14	20	I2C1_SCL
X14	21	I2C1_SDA
X14	22	NC
X14	23	CAMERA_RESET
X14	24	3V3

3.6. X15 60PIN Connector

Con	Pin	Signal Name
X15	1	5V
X15	2	3V3
X15	3	VPP
X15	4	VOUT0_DATA0
X15	5	VDD_3V3
X15	6	VOUT0_DATA1
X15	7	VDD_IO
X15	8	VOUT0_DATA2
X15	9	OSPI0_CLK
X15	10	VOUT0_DATA3
X15	11	OSPI0_IO0
X15	12	VOUT0_DATA4
X15	13	OSPI0_IO1
X15	14	VOUT0_DATA5
X15	15	OSPI0_IO2
X15	16	VOUT0_DATA6
X15	17	OSPI0_IO3
X15	18	VOUT0_DATA7
X15	19	OSPI0_IO4
X15	20	VOUT0_DATA8
X15	21	OSPI0_IO5
X15	22	VOUT0_DATA9
X15	23	OSPI0_IO6
X15	24	VOUT0_DATA10
X15	25	OSPI0_IO7
X15	26	VOUT0_DATA11
X15	27	OSPI0_CS1
X15	28	VOUT0_DATA12
X15	29	OSPI0_CS2
X15	30	VOUT0_DATA13
X15	31	OSPI0_DQS
X15	32	VOUT0_DATA14
X15	33	OSPI0_LBCLKO
X15	34	VOUT0_DATA15
X15	35	MMC2_CLK
X15	36	VOUT0_PCLK

X15	37	MMC2_CMD
X15	38	VOUT0_DE
X15	39	MMC2_DATA0
X15	40	VOUT0_VSYNC
X15	41	MMC2_DATA1
X15	42	VOUT0_HSYNC
X15	43	MMC2_DATA2
X15	44	MCAN0_RX
X15	45	MMC2_DATA3
X15	46	MCAN0_TX
X15	47	MMC2_WP
X15	48	EMU0
X15	49	MMC2_CD
X15	50	EMU1
X15	51	SPI0_CS1
X15	52	MCASPO_AXR0
X15	53	SPI0_CS0
X15	54	MCASPO_ACLKX
X15	55	SPI0_D0
X15	56	MCASPO_ACLKR
X15	57	SPI0_D1
X15	58	VSELECT
X15	59	SPI0_CLK
X15	60	GND

3.7. X16 60PIN Connector

Con	Pin	Signal Name
X16	1	GPMC0_CLK
X16	2	3V3
X16	3	GPMC0_AD0
X16	4	I2C1_SCL
X16	5	GPMC0_AD1
X16	6	I2C1_SDA
X16	7	GPMC0_AD2
X16	8	MCU_I2C0_SCL
X16	9	GPMC0_AD3
X16	10	MCU_I2C0_SDA
X16	11	GPMC0_AD4
X16	12	MCU_SPI0_CS1
X16	13	GPMC0_AD5
X16	14	MCU_SPI0_CS0
X16	15	GPMC0_AD6
X16	16	MCU_SPI0_D1
X16	17	GPMC0_AD7
X16	18	MCU_SPI0_D0
X16	19	GPMC0_AD8
X16	20	MCU_SPI0_CLK
X16	21	GPMC0_AD9
X16	22	MCU_UART0_RXD
X16	23	GPMC0_AD10
X16	24	MCU_UART0_TXD
X16	25	GPMC0_AD11
X16	26	MCU_UART0_CTSN
X16	27	GPMC0_AD12
X16	28	MCU_UART0_RTSN
X16	29	GPMC0_AD13
X16	30	MCU_MCAN0RX
X16	31	GPMC0_AD14
X16	32	MCU_MCAN0TX
X16	33	GPMC0_AD15
X16	34	MCU_MCAN1_RX
X16	35	GPMC0_CSN0
X16	36	MCU_MCAN1_TX
X16	37	GPMC0_CSN1
X16	38	WKUP_I2C0_SCL
X16	39	GPMC0_CSN2
X16	40	WKUP_I2C0_SDA
X16	41	GPMC0_CSN3
X16	42	WKUP_UART0_RXD
X16	43	GPMC0_ADV_ALE
X16	44	WKUP_UART0_TXD
X16	45	GPMC0_BE0N_CLE
X16	46	WKUP_UART0_RTSN
X16	47	GPMC0_BE1N
X16	48	WKUP_UART0_CTSN
X16	49	GPMC0_DIR
X16	50	Nmcu_safety_error
X16	51	GPMC0_WAIT0
X16	52	PORZ_OUT
X16	53	GPMC0_WAIT1
X16	54	WKUP_CLKOUT0
X16	55	GPMC0_WPN
X16	56	MCU_RESETSTATZ
X16	57	GPMC0_OEN_REN
X16	58	EXT_REFCLK1
X16	59	GPMC0_WEN
X16	60	GND

4. Connectors

Power

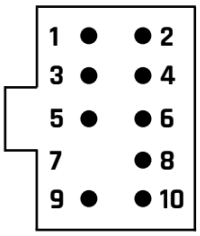
X9.1	8-36 V, default power supply 12 V
X9.2	Ground (GND)

SL1: Console

SL1.1	GND
SL1.4	UART0_RXD
SL1.5	UART0_TXD
Do not connect other pins	

SL2: JTAG/SWD (ARM 10 Pin connector)

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

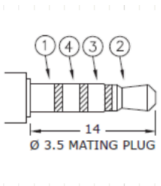


LEDs

LED1	RGB LED with LP5815 on I2C1 with address 0X2D

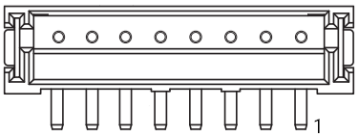
Audio Pinout

1	GND
2	Left Audio
3	Right Audio
4	Mic



X17 Line Out

1	Line Out R
2	GND
3	Line Out L
4	Line In R
5	GND
6	Line In L
7	5V
8	VPWR (12V Plugin Supply or 20V USB-C Powerdelivery)



Buttons

User Button	Connected to MMC1.WP
Power Button	Connected to PMIC.EN
RESET_MCU	Connected to MCU_RESETZ
Reset Button	Connected to RESET_REQZ

5. Boot modes

This chapter provides an overview over the bootmodes for byteENGINE AM62x and byteENGINE Am62Px. For more detailed information, please refer to the datasheets of byteENGINE AM62x and byteENGINE AM62Px.

5.1. Boot modes byteENGINE AM62x

> Bootmode Pins are GPMC0_AD[0..15].

BOOTMODE Pin Mapping															
B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
Reserved		Backup Boot Mode Config	Backup Boot Mode			Primary Boot Mode Config			Primary Boot mode				PLL Config		



See chapter 5.3.1 of the Technical Reference Manual for more Details:
Technical Reference Manual

Primary Boot Mode	**B9**	**B8**	**B7**	**B6**	**B5**	**B4**	**B3**
MMCSD	1	0	0	1	0	0	0
QSPI	0	1	0	0	0	1	0
UART	0	0	0	0	1	1	1
Ethernet RMII	0	0	0	0	1	0	1
eMMC	0	0	0	1	0	0	1
USB	0	0	0	1	0	1	0

Backup BootMode	**B13**	**B12**	**B11**	**B10**
MMCSD	1	1	0	1
UART	0	0	1	1
USB DFU	0	0	0	1

5.2. Boot Modes byteENGINE AM62Px

> Bootmode Pins B[0…15] are GPMC0_AD[0…15]

BOOTMODE Pin Mapping															
B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
Reserved		Backup Boot Mode Config	Backup Boot Mode			Primary Boot Mode Config			Primary Boot mode				PLL Config (b011 → 25 MHz on SOM)		



See chapter 5.3.1 of the Technical Reference Manual for more Details:
Technical Reference Manual

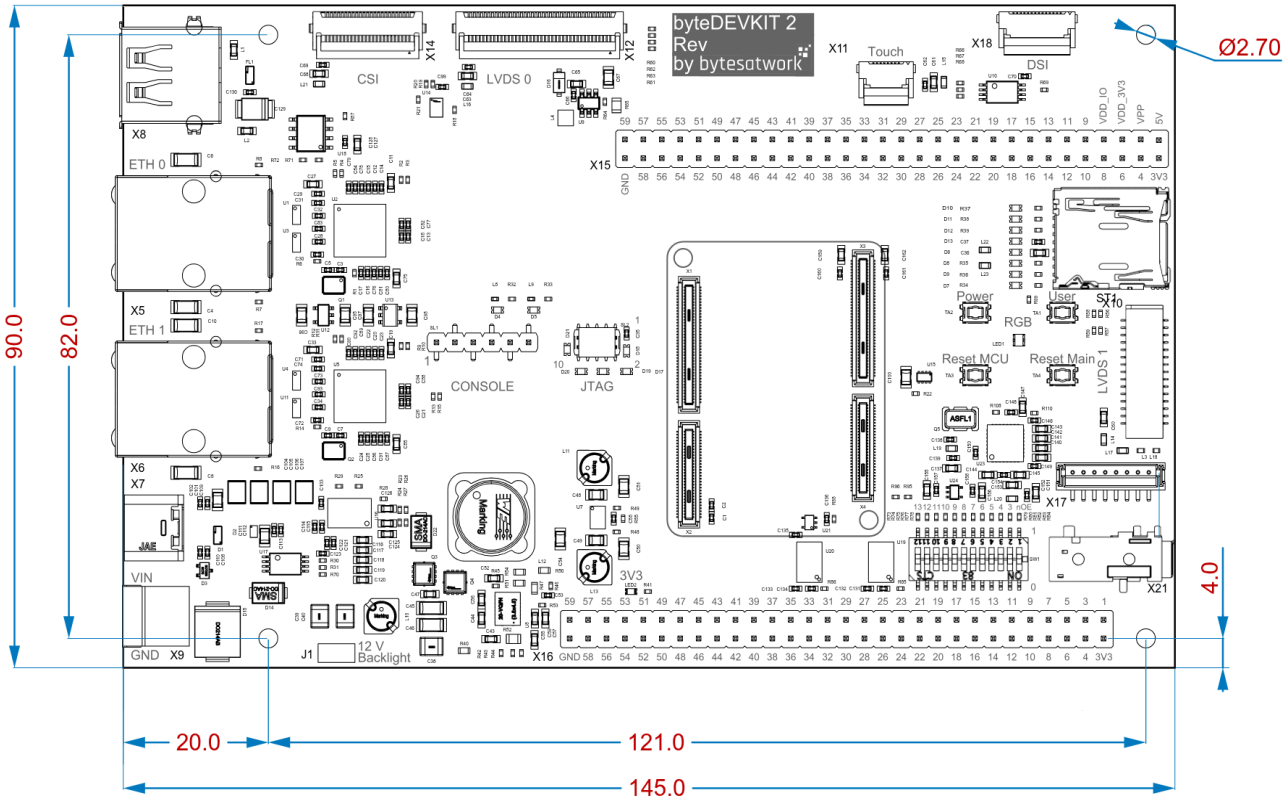
Primary Boot Mode	**B9**	**B8**	**B7**	**B6**	**B5**	**B4**	**B3**
MMCSD	1	0	0	1	0	0	0
QSPI	0	0	0	0	0	1	0
UART	0	0	0	0	1	1	1
Ethernet RMII	0	0	0	0	1	0	1
eMMC	0	0	0	1	0	0	1
USB	0	0	0	1	0	1	0

Backup BootMode	**B13**	**B12**	**B11**	**B10**
MMCSD	1	1	0	1
UART	0	0	1	1
USB DFU	0	0	0	1

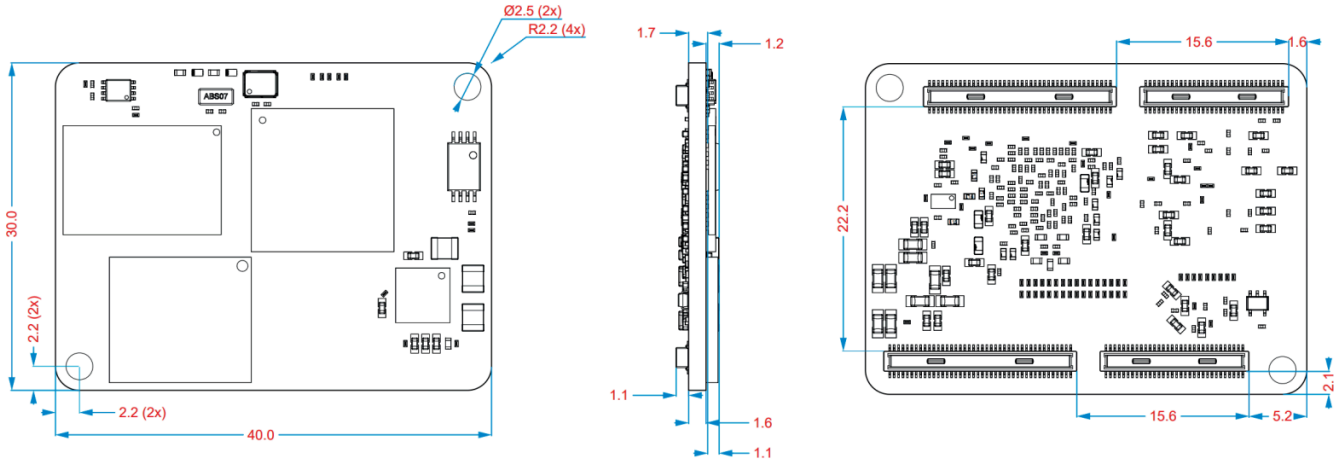
6. Mechanical dimensions byteDEVKIT 2

The following illustration shows all important dimensions for mounting and installation of the byteDEVKIT2.

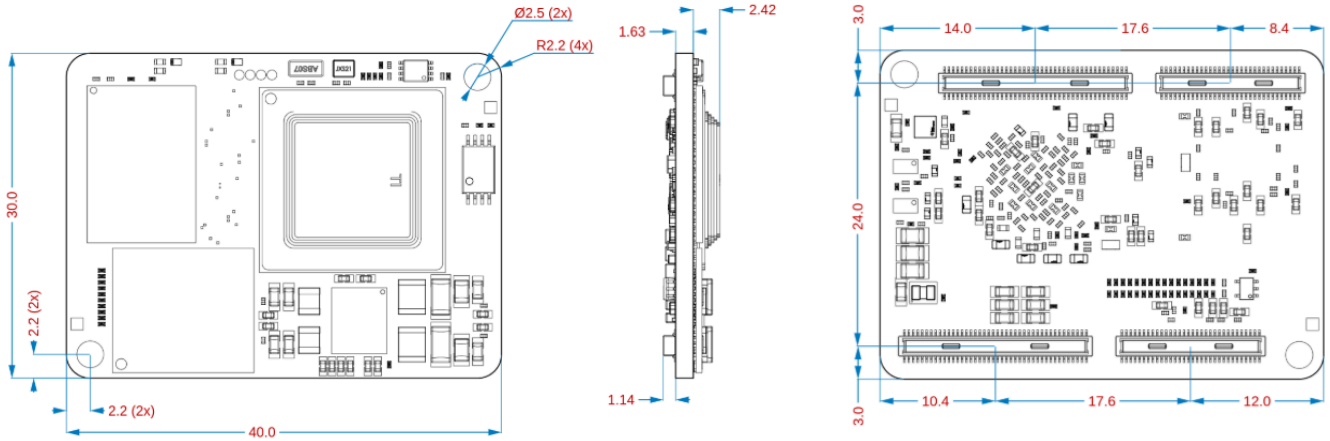
> All dimensions are indicated in millimetres (mm)



6.1. Mechanical dimensions of byteENGINE AM62x



6.2. Mechanical dimensions of byteENGINE AM62Px



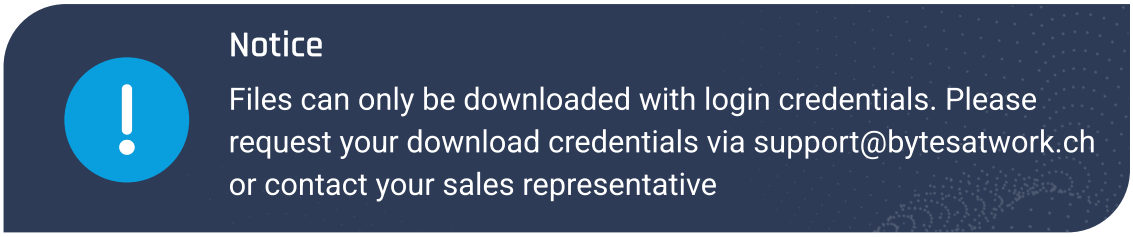
7. Ordering info

The Order Code allows customers to easily recognize the detailed specification of the ordered SOM. Please refer to chapter Decision guidance byteDEVKIT 2 for further information.

byte[KIT]-[CPU]-[SPEED]-[RAM]-[FLASH]-[temp-range]-[revision]

[KIT]	**Display Option**	DEVKIT: With Display STARTKIT: Without Display
[CPU]	**CPU Type**	AM6231 / AM6232 / AM6234 / AM6251 / AM6252 / AM6254 AM62P32 / AM62P34 / AM62P52 / AM62P54
[SPEED]	**Clock speed**	1.0 Ghz / 1.4 GHz
[RAM]	**RAM size**	512 / 1024 /1536 / 2048 4096 / 6144 / 8192 MB (depending on system on module variant)
[FLASH]	**eMMC flash size**	8 / 16 / 32 / 64 / 128 GB
[temp-range]	**Temperature range**	[C] Consumer 0° to +85° C [I] Industrial -40°C to +85 °C
[revision]	**Revision**	2.1

8. References byteDEVKIT 2





Links

Hardware Design

byteDEVKIT 2 Schematic V2.1

byteDEVKIT 2 Connector Pinout X15 and X16

Component Documentation

Datasheet byteENGINE AM62x

Datasheet byteENGINE AM62Px

Software & Configuration

byteWIKI

meta-bytesatwork on github

bytesatwork

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Help

bytewiki.readthedocs.io

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