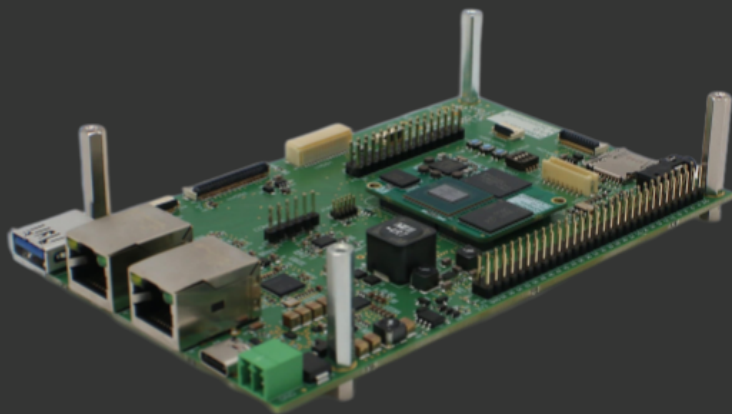
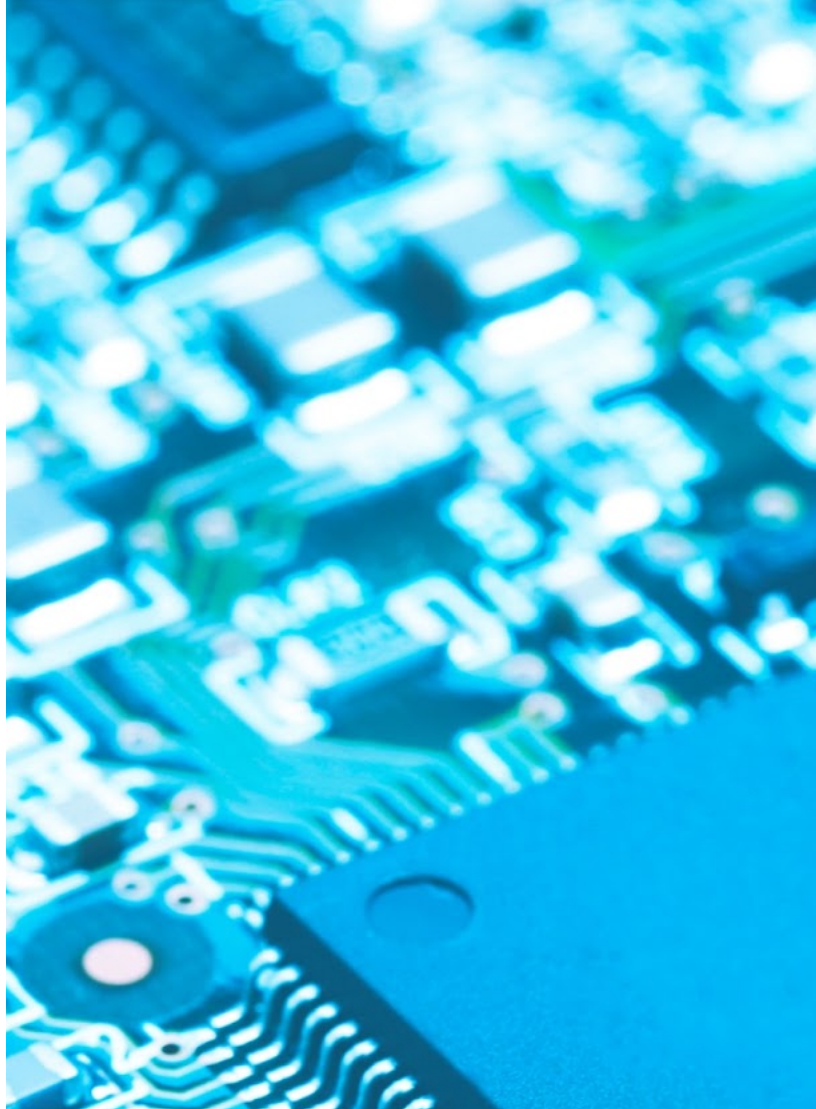


bytes**at**work

# Datasheet

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industrial development kit

byteDEVKIT 3



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## Symbols and Typographic Conventions

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



### NOTICE

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



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# Table of Contents

|                                                        |           |
|--------------------------------------------------------|-----------|
| <b>1. Revision History</b>                             | <b>4</b>  |
| <b>2. Overview</b>                                     | <b>4</b>  |
| 2.1. General Information                               | 5         |
| 2.2. Technical Data byteDEVKIT 3                       | 6         |
| 2.3. Technical Data of the SOM byteENGINE i.MX 8M Plus | 7         |
| 2.4. Decision guidance byteDEVKIT 3                    | 8         |
| 2.5. Quickstart guide                                  | 9         |
| <b>3. Pinout functions</b>                             | <b>10</b> |
| 3.1. X8 LVDS1 connector                                | 10        |
| 3.2. X9 5-inch LVDS0 connector                         | 11        |
| 3.3. X10 CSI Camera connector                          | 12        |
| 3.4. X11 LVDS Touch connector                          | 13        |
| 3.5. X12 MIPI Touch connector                          | 13        |
| 3.6. X13 MIPI DSI connector                            | 14        |
| 3.7. X14 60PIN Connector                               | 15        |
| 3.8. X15 30 PIN connector                              | 18        |
| 3.9. X17 Line in/out connector                         | 19        |
| <b>4. Connectors</b>                                   | <b>20</b> |
| <b>5. Boot modes byteENGINE i.MX 8M Plus</b>           | <b>21</b> |
| <b>6. Mechanical dimensions byteDEVKIT 3</b>           | <b>22</b> |
| 6.1. Mechanical dimensions of byteENGINE IMX8MP        | 23        |
| <b>7. Ordering info</b>                                | <b>24</b> |
| <b>8. References byteDEVKIT 3</b>                      | <b>25</b> |

# 1. Revision History

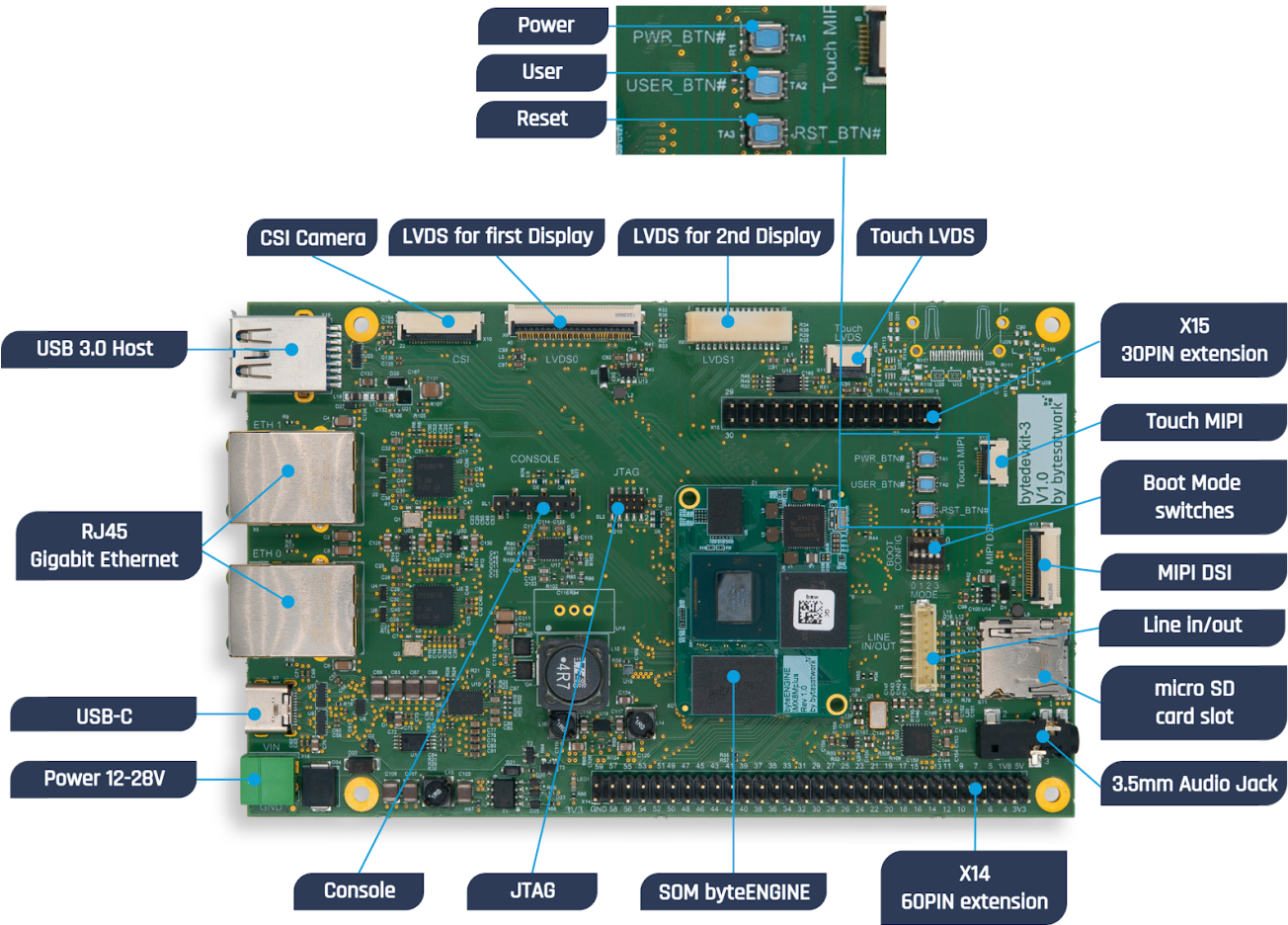
| Hardware Revision | Marking on PCB        | Release Date   | Info                              |
|-------------------|-----------------------|----------------|-----------------------------------|
| 1.0               | byteDEVKIT 3 Rev. 1.0 | September 2024 | First version available for sales |



**NOTICE**

This document refers to  
byteDEVKIT 3 V1.0

# 2. Overview



## 2.1. General Information

### Maximum flexibility and simplicity

The byteDEVKIT 3 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 3 is available with the complete i.MX 8M Plus-Module family:

- > IMX8ML8, IMX8ML6, IMX8ML5
- > IMX8ML4, IMX8ML3, IMX8ML2

### Plenty of possibilities

The byteDEVKIT 3 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-3.0 Host Type A
- > 1x USB-3.0 USB-C
- > 5-inch LVDS Touchscreen Display
- > 5-inch MIPI DSI Touchscreen Display
- > 1x 60 PIN Header: Extension-Header X14:GPIO, SAI, SAI5, I2C3, UART2, UART3, UART4, SPI1, SD1, CLK
- > 1x 30 PIN Header: Extension Header X15: CSI2, PCIE
- > Boot mode switches
- > CSI Camera 4lanes

### Ready to start and use

The byteDEVKIT 3 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 NXP i.MX 8M Plus processors 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 IMX8MP has up to four Cortex®-A53 cores for high system performance. The Cortex®-M7 core enables real-time applications with low performance at the same time.

### Easy to adapt to your project

Thanks to the two extension headers, rapid prototyping is easy and efficient. The byteDEVKIT 3 offers a variety of interfaces such as I2C, I2S, SPI - CAN, UART, PWM and GPIO.

### Quality which endures

Our Swiss standard pays off. We only install components to the byteDEVKIT 3 that will be still available in ten years. The byteDEVKIT 3 is engineered with the focus on robustness and longevity.

## 2.2. Technical Data byteDEVKIT 3

### byteDEVKIT 3

|                         |                                                                            |
|-------------------------|----------------------------------------------------------------------------|
| <b>Connectors</b>       | 2x Gigabit Ethernet RJ45                                                   |
| <b>Hardware Slot</b>    | 1x microSD slot                                                            |
| <b>Device Slot 1</b>    | 1x USB 3.0 Host Type A                                                     |
| <b>Device Slot 2</b>    | 1x USB 3.0 USB-C with Powerdelivery controller                             |
| <b>Display</b>          | 5-inch LVDS Display with Touch<br>or<br>5-inch MIPI DSI Display with Touch |
| <b>Connector 60 PIN</b> | X14: GPIO, SAI, SAI5, SPI1, UART, I2C3, SD1                                |
| <b>Connector 30 PIN</b> | X15: CSI2, PCIE                                                            |
| <b>WIFI</b>             | Wifi-ready with optional orderable bytesatwork WIFI-Extension              |

## 2.3. Technical Data of the SOM byteENGINE i.MX 8M Plus



### Notice

For detailed information regarding the i.MX8M Plus please refer to the document byteENGINE i.MX 8M Plus Datasheet.



[Datasheet byteENGINE i.MX 8M Plus](#)

### byteENGINE i.MX 8M Plus Specification

|                     |                                                       |
|---------------------|-------------------------------------------------------|
| <b>CPU</b>          | Up to Quad 64-bit ARM® Cortex® A53 processors 1.8 GHz |
| <b>Co-Processor</b> | Cortex® M7 up to 800 MHz                              |
| <b>Memory</b>       | 512 MB to 8192 MB LPDDR4                              |
| <b>Flash eMMC</b>   | up to 128 GB                                          |
| <b>Temperature</b>  | Industrial: -40° to +85° C, consumer: 0 to 85° C      |
| <b>Power Supply</b> | 5.0 V, 4 W                                            |
| <b>Dimensions</b>   | 30 x 40 mm                                            |

## 2.4. Decision guidance byteDEVKIT 3

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

> **Step 1:** Select the needed CPU for the SOM

> **Choose Options as described in**



[Datasheet byteENGINE i.MX 8M Plus](#)

> **Step 2:** Select the needed flash memory capacity

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

> **Step 3:** Select the needed RAM capacity

> **Choose 512 / 1024 /1536 / 2048/ 4096 / 6154 / 8192 MB**

> **Step 4:** Select the needed temperature range

> **Choose consumer or industrial**

> **Step 5:** Select the needed Display

> **Choose with or without**

> **Step 6:** Select the needed WIFI-Extension

> **Choose with or without**



[Ordering info](#)

## 2.5. 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 experts for technical support. See Chapter „[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
- > **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 X13
- > **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 |

## 3. Pinout functions

### 3.1. X8 LVDS1 connector

| Con | Pin | Signal Name   |
|-----|-----|---------------|
| X8  | 1   | GND           |
| X8  | 2   | GND           |
| X8  | 3   | LVDS1_D1_P    |
| X8  | 4   | LVDS1_D0_P    |
| X8  | 5   | LVDS1_D1_N    |
| X8  | 6   | LVDS1_D0_N    |
| X8  | 7   | GND           |
| X8  | 8   | GND           |
| X8  | 9   | LVDS1_D2_P    |
| X8  | 10  | N.C.          |
| X8  | 11  | LVDS1_D2_N    |
| X8  | 12  | N.C.          |
| X8  | 13  | GND           |
| X8  | 14  | N.C.          |
| X8  | 15  | LVDS1_CLK_P   |
| X8  | 16  | GND           |
| X8  | 17  | LVDS1_CLK_N   |
| X8  | 18  | N.C.          |
| X8  | 19  | GND           |
| X8  | 20  | Pull-Down 10k |
| X8  | 21  | LVDS1_D3_P    |
| X8  | 22  | GND           |
| X8  | 23  | LVDS1_D3_N    |
| X8  | 24  | Pull-Down 10k |
| X8  | 25  | GND           |
| X8  | 26  | GND           |
| X8  | 27  | GND           |
| X8  | 28  | 3V3           |
| X8  | 29  | 3V3           |
| X8  | 30  | 3V3           |

## 3.2. X9 5-inch LVDS0 connector

| Con | Pin | Signal Name   |
|-----|-----|---------------|
| X9  | 1   | LED+          |
| X9  | 2   | LED+          |
| X9  | 3   | N.C.          |
| X9  | 4   | N.C.          |
| X9  | 5   | N.C.          |
| X9  | 6   | N.C.          |
| X9  | 7   | Pull-Down 10k |
| X9  | 8   | Pull-Down 10k |
| X9  | 9   | LED-          |
| X9  | 10  | LED-          |
| X9  | 11  | GND           |
| X9  | 12  | N.C.          |
| X9  | 13  | N.C.          |
| X9  | 14  | N.C.          |
| X9  | 15  | N.C.          |
| X9  | 16  | GND           |
| X9  | 17  | N.C.          |
| X9  | 18  | N.C.          |
| X9  | 19  | GND           |
| X9  | 20  | LVDS0_D3_P    |
| X9  | 21  | LVDS0_D3_N    |
| X9  | 22  | GND           |
| X9  | 23  | LVDS0_CLK_P   |
| X9  | 24  | LVDS0_CLK_N   |
| X9  | 25  | GND           |
| X9  | 26  | LVDS0_D2_P    |
| X9  | 27  | LVDS0_D2_N    |
| X9  | 28  | GND           |
| X9  | 29  | LVDS0_D1_P    |
| X9  | 30  | LVDS0_D1_N    |
| X9  | 31  | GND           |
| X9  | 32  | LVDS0_D0_P    |

| Con | Pin | Signal Name |
|-----|-----|-------------|
| X9  | 33  | LVDS0_D0_N  |
| X9  | 34  | GND         |
| X9  | 35  | LVDS_ENABLE |
| X9  | 36  | LVDS_RESET  |
| X9  | 37  | N.C.        |
| X9  | 38  | 3V3         |
| X9  | 39  | 3V3         |
| X9  | 40  | N.C.        |

### 3.3. X10 CSI Camera connector

| Con | Pin | Signal Name |
|-----|-----|-------------|
| X10 | 1   | GND         |
| X10 | 2   | CSI1_D0_N   |
| X10 | 3   | CSI1_D0_P   |
| X10 | 4   | GND         |
| X10 | 5   | CSI1_D1_N   |
| X10 | 6   | CSI1_D1_P   |
| X10 | 7   | GND         |
| X10 | 8   | CSI1_CLK_N  |
| X10 | 9   | CSI1_CLK_P  |
| X10 | 10  | GND         |
| X10 | 11  | N.C.        |
| X10 | 12  | N.C.        |
| X10 | 13  | GND         |
| X10 | 14  | N.C.        |
| X10 | 15  | N.C.        |
| X10 | 16  | GND         |
| X10 | 17  | CAM_nRST    |
| X10 | 18  | CAM_MCLK    |
| X10 | 19  | GND         |
| X10 | 20  | I2C2_SCL    |
| X10 | 21  | I2C2_SDA    |
| X10 | 22  | 3.3V        |

### 3.4. X11 LVDS Touch connector

| Con | Pin | Signal Name | Alternative Modes |             |             |             |                          |
|-----|-----|-------------|-------------------|-------------|-------------|-------------|--------------------------|
|     |     |             | 1                 | 2           | 3           | 4           | 5                        |
| X11 | 1   | GND         |                   |             |             |             |                          |
| X11 | 2   | 3V3         |                   |             |             |             |                          |
| X11 | 3   | 3V3         |                   |             |             |             |                          |
| X11 | 4   | I2C2_SCL    | GPI05_I016        | I2C2_SCL    | USDHC3_CD_B | ECSPI1_MISO | ENET_QOS_1588_EVENT1_IN  |
| X11 | 5   | I2C2_SDA    | GPI05_I017        | I2C2_SDA    | USDHC3_WP   | ECSPI1_SS0  | ENET_QOS_1588_EVENT1_OUT |
| X11 | 6   | TOUCH_INT   | GPI05_I013        | ECSPI2_SS0  | UART4_RTS_B | UART4_CTS_B | I2C4_SDA                 |
| X11 | 7   | TOUCH_RESET | GPI05_I011        | ECSPI2_MOSI | UART4_TX    | UART4_RX    | I2C3_SDA                 |
| X11 | 8   | GND         |                   |             |             |             |                          |

### 3.5. X12 MIPI Touch connector

| Con | Pin | Signal Name    | Alternative Modes |              |                |              |                 |          |          |                 |
|-----|-----|----------------|-------------------|--------------|----------------|--------------|-----------------|----------|----------|-----------------|
|     |     |                | 1                 | 2            | 3              | 4            | 5               | 6        | 7        |                 |
| X12 | 1   | GND            |                   |              |                |              |                 |          |          |                 |
| X12 | 2   | N.C.           |                   |              |                |              |                 |          |          |                 |
| X12 | 3   | 3V3            |                   |              |                |              |                 |          |          |                 |
| X12 | 4   | I2C4_SCL       | GPI05_I020        | I2C4_SCL     | PCIE1_CLKREQ_B | ECSPI2_MISO  | PWM2_OUT        |          |          |                 |
| X12 | 5   | I2C4_SDA       | GPI05_I021        | I2C4_SDA     | ECSPI2_SS0     | PWM1_OUT     |                 |          |          |                 |
| X12 | 6   | MIPI_TOUCH_INT | GPI04_I022        | SAI2_RX_BCLK | SAI5_TX_BCLK   | CAN1_TX      | PDM_BIT_STREAM1 | UART1_RX | UART1_TX | PDM_BIT_STREAM2 |
| X12 | 7   | MIPI_TOUCH_RST | GPI04_I021        | SAI2_RX_SYNC | SAI2_RX_DATA1  | SAI5_TX_SYNC | SAI5_TX_DATA1   | UART1_TX | UART1_RX |                 |
| X12 | 8   | GND            |                   |              |                |              |                 |          |          |                 |

## 3.6. X13 MIPI DSI connector

| Con | Pin | Signal Name     |
|-----|-----|-----------------|
| X13 | 1   | N.C.            |
| X13 | 2   | LED-            |
| X13 | 3   | N.C.            |
| X13 | 4   | LED+            |
| X13 | 5   | N.C.            |
| X13 | 6   | 3V3             |
| X13 | 7   | 3V3             |
| X13 | 8   | N.C.            |
| X13 | 9   | DSI_RESET       |
| X13 | 10  | GND             |
| X13 | 11  | MIPI_DSI1_D1_P  |
| X13 | 12  | MIPI_DSI1_D1_N  |
| X13 | 13  | GND             |
| X13 | 14  | MIPI_DSI1_CLK_P |
| X13 | 15  | MIPI_DSI1_CLK_N |
| X13 | 16  | GND             |
| X13 | 17  | MIPI_DSI1_D0_P  |
| X13 | 18  | MIPI_DSI1_D0_N  |
| X13 | 19  | GND             |
| X13 | 20  | GND             |

## 3.7. X14 60PIN Connector

| Con        | Pin       | Signal Name | GPIOx /<br>Dedicated<br>function | Alternative Modes   |                      |                 |                                 |                             |   |   |
|------------|-----------|-------------|----------------------------------|---------------------|----------------------|-----------------|---------------------------------|-----------------------------|---|---|
|            |           |             |                                  | 1                   | 2                    | 3               | 4                               | 5                           | 6 | 7 |
| <b>X14</b> | <b>1</b>  | 5V          |                                  |                     |                      |                 |                                 |                             |   |   |
| <b>X14</b> | <b>2</b>  | 3V3         |                                  |                     |                      |                 |                                 |                             |   |   |
| <b>X14</b> | <b>3</b>  | 1V8         |                                  |                     |                      |                 |                                 |                             |   |   |
| <b>X14</b> | <b>4</b>  | SD1_CLK     | GPIO2_I00                        | USDHC1_CLK          | UART1_TX             | UART1_RX        | I2C5_SCL                        | ENET1_MDC                   |   |   |
| <b>X14</b> | <b>5</b>  | VDD_IO      |                                  |                     |                      |                 |                                 |                             |   |   |
| <b>X14</b> | <b>6</b>  | SD1_CMD     | GPIO2_I01                        | USDHC1_CMD          | UART1_RX             | UART1_TX        | I2C5_SDA                        | ENET1_MDIO                  |   |   |
| <b>X14</b> | <b>7</b>  | GPIO1_I000  | GPIO1_I000                       | ISP_FL_TRIG_0       | CCM_ENET_PHY_REF_CLK | CCM_REF_CLK_32K | CCM_EXT_CLK1                    |                             |   |   |
| <b>X14</b> | <b>8</b>  | SD1_DATA0   | GPIO2_I02                        | USDHC1_DATA0        | UART1_CTS_B          | UART1_RTS_B     | I2C6_SCL                        | ENET1_RGMII_TD1             |   |   |
| <b>X14</b> | <b>9</b>  | GPIO1_I001  | GPIO1_I001                       | ISP_SHUTTER_TRIG_0  | PWM1_OUT             | CCM_REF_CLK_24M | CCM_EXT_CLK2                    |                             |   |   |
| <b>X14</b> | <b>10</b> | SD1_DATA1   | GPIO2_I03                        | USDHC1_DATA1        | UART1_RTS_B          | UART1_CTS_B     | I2C6_SDA                        | ENET1_RGMII_TD0             |   |   |
| <b>X14</b> | <b>11</b> | GPIO1_I005  | GPIO1_I005                       | ISP_FL_TRIG_1       | CCM_PMIC_READY       | M7_NMI          |                                 |                             |   |   |
| <b>X14</b> | <b>12</b> | SD1_DATA2   | GPIO2_I04                        | USDHC1_DATA2        | UART2_TX             | UART2_RX        | I2C4_SCL                        | ENET1_RGMII_RD0             |   |   |
| <b>X14</b> | <b>13</b> | GPIO1_I006  | GPIO1_I006                       | ISP_SHUTTER_TRIG_1  | ENET_QOS_MDC         | USDHC1_CD_B     | CCM_EXT_CLK3                    |                             |   |   |
| <b>X14</b> | <b>14</b> | SD1_DATA3   | GPIO2_I05                        | USDHC1_DATA3        | UART2_RX             | UART2_TX        | I2C4_SDA                        | ENET1_RGMII_RD1             |   |   |
| <b>X14</b> | <b>15</b> | GPIO1_I007  | GPIO1_I007                       | ISP_FLASH_TRIG_1    | ENET_QOS_MDIO        | USDHC1_WP       | CCM_EXT_CLK4                    |                             |   |   |
| <b>X14</b> | <b>16</b> | SD1_DATA4   | GPIO2_I06                        | USDHC1_DATA4        | UART2_RTS_B          | UART2_CTS_B     | I2C1_SCL                        | ENET1_RGMII_TX_CTL          |   |   |
| <b>X14</b> | <b>17</b> | GPIO1_I008  | GPIO1_I008                       | ISP_PRELIGHT_TRIG_1 | PWM1_OUT             | USDHC2_RESET_B  | ENET_QOS_1588_E<br>VENT0_AUX_IN | ENET_QOS_1588_EVE<br>NT0_IN |   |   |
| <b>X14</b> | <b>18</b> | SD1_DATA5   | GPIO2_I07                        | USDHC1_DATA5        | UART2_CTS_B          | UART2_RTS_B     | I2C1_SDA                        | ENET1_TX_ER                 |   |   |
| <b>X14</b> | <b>19</b> | GPIO1_I009  | GPIO1_I009                       | ISP_SHUTTER_OPEN_1  | PWM2_OUT             | USDHC3_RESET_B  | ENET_QOS_1588_E<br>VENT0_OUT    | SDMA2_EXT_EVENT0            |   |   |
| <b>X14</b> | <b>20</b> | SD1_DATA6   | GPIO2_I08                        | USDHC1_DATA6        | UART3_TX             | UART3_RX        | I2C2_SCL                        | ENET1_RGMII_RX_CTL          |   |   |

| Con        | Pin       | Signal Name | GPIOx /<br>Dedicated<br>function | Alternative Modes |               |             |               |                 |               |                |
|------------|-----------|-------------|----------------------------------|-------------------|---------------|-------------|---------------|-----------------|---------------|----------------|
|            |           |             |                                  | 1                 | 2             | 3           | 4             | 5               | 6             | 7              |
| <b>X14</b> | <b>21</b> | CLKIN1      | NVCC.CLKIN1                      |                   |               |             |               |                 |               |                |
| <b>X14</b> | <b>22</b> | SD1_DATA7   | GPIO2_I09                        | USDHC1_DATA7      | UART3_RX      | UART3_TX    | I2C2_SDA      | ENET1_RX_ER     |               |                |
| <b>X14</b> | <b>23</b> | CLKIN2      | NVCC.CLKIN2                      |                   |               |             |               |                 |               |                |
| <b>X14</b> | <b>24</b> | SD1_RESET_B | GPIO2_I010                       | USDHC1_RESET_B    | UART3_RTS_B   | UART3_CTS_B | I2C3_SCL      | ENET1_TX_CLK    |               |                |
| <b>X14</b> | <b>25</b> | CLKOUT1     | NVCC.CLKOUT1                     |                   |               |             |               |                 |               |                |
| <b>X14</b> | <b>26</b> | SD1_STROBE  | GPIO2_I011                       | USDHC1_STROBE     | UART3_CTS_B   | UART3_RTS_B | I2C3_SDA      |                 |               |                |
| <b>X14</b> | <b>27</b> | CLKOUT2     | NVCC.CLKOUT2                     |                   |               |             |               |                 |               |                |
| <b>X14</b> | <b>28</b> | ECSPI1_SS0  | GPIO5_I09                        | ECSPI1_SS0        | UART3_RTS_B   | UART3_CTS_B | I2C2_SDA      | SAI7_TX_SYNC    |               |                |
| <b>X14</b> | <b>29</b> | UART2_RXD   | GPIO5_I024                       | UART2_RX          | UART2_TX      | ECSPI3_MISO | GPT1_COMPARE3 |                 |               |                |
| <b>X14</b> | <b>30</b> | ECSPI1_MOSI | GPIO5_I07                        | ECSPI1_MOSI       | UART3_TX      | UART3_RX    | I2C1_SDA      | SAI7_RX_BCLK    |               |                |
| <b>X14</b> | <b>31</b> | UART2_TXD   | GPIO5_I025                       | UART2_TX          | UART2_RX      | ECSPI3_SS0  | GPT1_COMPARE2 |                 |               |                |
| <b>X14</b> | <b>32</b> | ECSPI1_MISO | GPIO5_I08                        | ECSPI1_MISO       | UART3_CTS_B   | UART3_RTS_B | I2C2_SCL      | SAI7_RX_DATA0   |               |                |
| <b>X14</b> | <b>33</b> | UART3_RXD   | GPIO5_I026                       | UART3_RX          | UART3_TX      | UART1_CTS_B | UART1_RTS_B   | USDHC3_RESET_B  | CAN2_TX       | GPT1_CAPTURE2  |
| <b>X14</b> | <b>34</b> | ECSPI1_SCLK | GPIO5_I06                        | ECSPI1_SCLK       | UART3_RX      | UART3_TX    | I2C1_SCL      | SAI7_RX_SYNC    |               |                |
| <b>X14</b> | <b>35</b> | UART3_TXD   | GPIO5_I027                       | UART3_TX          | UART3_RX      | UART1_RTS_B | UART1_CTS_B   | USDHC3_VSELECT  | CAN2_RX       | GPT1_CLK       |
| <b>X14</b> | <b>36</b> | SAI5_MCLK   | GPIO3_I025                       | SAI5_MCLK         | SAI1_TX_BCLK  | I2C5_SDA    | PWM1_OUT      | CAN2_RX         |               |                |
| <b>X14</b> | <b>37</b> | UART4_RXD   | GPIO5_I028                       | UART4_RX          | UART4_TX      | UART2_CTS_B | UART2_RTS_B   | I2C6_SCL        | GPT1_COMPARE1 | PCIE1_CLKREQ_B |
| <b>X14</b> | <b>38</b> | SAI5_RXFS   | GPIO3_I019                       | SAI5_RX_SYNC      | SAI1_TX_DATA0 | I2C6_SCL    | PWM4_OUT      |                 |               |                |
| <b>X14</b> | <b>39</b> | UART4_TXD   | GPIO5_I029                       | UART4_TX          | UART4_RX      | UART2_RTS_B | UART2_CTS_B   | I2C6_SDA        | GPT1_CAPTURE1 |                |
| <b>X14</b> | <b>40</b> | SAI5_RXC    | GPIO3_I020                       | SAI5_RX_BCLK      | SAI1_TX_DATA1 | I2C6_SDA    | PWM3_OUT      | PDM_CLK         |               |                |
| <b>X14</b> | <b>41</b> | I2C3_SCL    | GPIO5_I018                       | I2C3_SCL          | ECSPI2_SCLK   | PWM4_OUT    | GPT2_CLK      |                 |               |                |
| <b>X14</b> | <b>42</b> | SAI5_RXD0   | GPIO3_I021                       | SAI5_RX_DATA0     | SAI1_TX_DATA2 | I2C5_SCL    | PWM2_OUT      | PDM_BIT_STREAM0 |               |                |
| <b>X14</b> | <b>43</b> | I2C3_SDA    | GPIO5_I019                       | I2C3_SDA          | ECSPI2_MOSI   | PWM3_OUT    | GPT3_CLK      |                 |               |                |

| Con        | Pin       | Signal Name | GPIOx /<br>Dedicated<br>function | Alternative Modes |                       |                 |                 |                 |         |   |
|------------|-----------|-------------|----------------------------------|-------------------|-----------------------|-----------------|-----------------|-----------------|---------|---|
|            |           |             |                                  | 1                 | 2                     | 3               | 4               | 5               | 6       | 7 |
| <b>X14</b> | <b>44</b> | SAI5_RXD1   | GPIO3_I022                       | SAI5_RX_DATA1     | SAI1_TX_DATA3         | SAI1_TX_SYNC    | SAI5_TX_SYNC    | PDM_BIT_STREAM1 | CAN1_TX |   |
| <b>X14</b> | <b>45</b> | SAI1_TXD6   | GPIO4_I018                       | SAI1_TX_DATA6     | ENET1_RX_ER           | SAI6_RX_SYNC    | SAI6_TX_SYNC    |                 |         |   |
| <b>X14</b> | <b>46</b> | SAI5_RXD2   | GPIO3_I023                       | SAI5_RX_DATA2     | SAI1_TX_DATA4         | SAI1_TX_SYNC    | SAI5_TX_BCLK    | PDM_BIT_STREAM2 | CAN1_RX |   |
| <b>X14</b> | <b>47</b> | SAI1_TXD7   | GPIO4_I019                       | SAI1_TX_DATA7     | ENET1_TX_ER           | SAI6_MCLK       | PDM_CLK         |                 |         |   |
| <b>X14</b> | <b>48</b> | SAI5_RXD3   | GPIO3_I024                       | SAI5_RX_DATA3     | SAI1_TX_DATA5         | SAI1_TX_SYNC    | SAI5_TX_DATA0   | PDM_BIT_STREAM3 | CAN2_TX |   |
| <b>X14</b> | <b>49</b> | SAI1_RXFS   | GPIO4_I00                        | SAI1_RX_SYNC      | ENET1_1588_EVENT0_IN  |                 |                 |                 |         |   |
| <b>X14</b> | <b>50</b> | SPDIF_TX    | GPIO5_I03                        | SPDIF1_OUT        | PWM3_OUT              | I2C5_SCL        | CAN1_TX         | GPT1_COMPARE1   |         |   |
| <b>X14</b> | <b>51</b> | SAI1_RXC    | GPIO4_I01                        | SAI1_RX_BCLK      | ENET1_1588_EVENT0_OUT | PDM_CLK         |                 |                 |         |   |
| <b>X14</b> | <b>52</b> | N.C.        |                                  |                   |                       |                 |                 |                 |         |   |
| <b>X14</b> | <b>53</b> | SAI1_RXD0   | GPIO4_I02                        | SAI1_RX_DATA0     | ENET1_1588_EVENT1_IN  | SAI1_TX_DATA1   | PDM_BIT_STREAM0 |                 |         |   |
| <b>X14</b> | <b>54</b> | N.C.        |                                  |                   |                       |                 |                 |                 |         |   |
| <b>X14</b> | <b>55</b> | SAI1_RXD1   | GPIO4_I03                        | SAI1_RX_DATA1     | ENET1_1588_EVENT1_OUT | PDM_BIT_STREAM1 |                 |                 |         |   |
| <b>X14</b> | <b>56</b> | VSELECT     |                                  |                   |                       |                 |                 |                 |         |   |
| <b>X14</b> | <b>57</b> | N.C.        |                                  |                   |                       |                 |                 |                 |         |   |
| <b>X14</b> | <b>58</b> | N.C.        |                                  |                   |                       |                 |                 |                 |         |   |
| <b>X14</b> | <b>59</b> | N.C.        |                                  |                   |                       |                 |                 |                 |         |   |
| <b>X14</b> | <b>60</b> | GND         |                                  |                   |                       |                 |                 |                 |         |   |

## 3.8. X15 30 PIN connector

| Con | Pin | Signal Name |
|-----|-----|-------------|
| X15 | 1   | GND         |
| X15 | 2   | 3V3         |
| X15 | 3   | PCIE_RXN_N  |
| X15 | 4   | VDD_IO      |
| X15 | 5   | PCIE_RXN_P  |
| X15 | 6   | GND         |
| X15 | 7   | GND         |
| X15 | 8   | PCIE_TXN_N  |
| X15 | 9   | PCIE_CLK_N  |
| X15 | 10  | PCIE_TXN_P  |
| X15 | 11  | PCIE_CLK_P  |
| X15 | 12  | GND         |
| X15 | 13  | GND         |
| X15 | 14  | GND         |
| X15 | 15  | CSI2_D0_N   |
| X15 | 16  | GND         |
| X15 | 17  | CSI2_D0_P   |
| X15 | 18  | GND         |
| X15 | 19  | GND         |
| X15 | 20  | CSI2_D3_N   |
| X15 | 21  | CSI2_D1_N   |
| X15 | 22  | CSI2_D3_P   |
| X15 | 23  | CSI2_D1_P   |
| X15 | 24  | GND         |
| X15 | 25  | GND         |
| X15 | 26  | CSI2_D2_N   |
| X15 | 27  | CSI2_CLK_N  |
| X15 | 28  | CSI2_D2_P   |
| X15 | 29  | CSI2_CLK_P  |
| X15 | 30  | GND         |

## 3.9. X17 Line in/out connector

| Con | Pin | Signal Name |
|-----|-----|-------------|
| X17 | 1   | LINEOUT_R   |
| X17 | 2   | GND         |
| X17 | 3   | LINEOUT_L   |
| X17 | 4   | LINEIN_R    |
| X17 | 5   | GND         |
| X17 | 6   | LINEIN_L    |
| X17 | 7   | 5V          |
| X17 | 8   | VIN_12V     |

## 4. Connectors

### Power

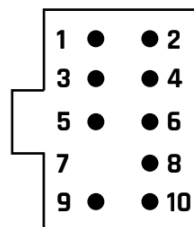
|              |              |
|--------------|--------------|
| <b>X16.1</b> | 8-30 V       |
| <b>X16.2</b> | Ground (GND) |

### SL1: Console

|                                  |            |
|----------------------------------|------------|
| <b>SL1.1</b>                     | GND        |
| <b>SL1.4</b>                     | UART0-RXD_ |
| <b>SL1.5</b>                     | UART0-TXD_ |
| <b>Do not connect other pins</b> |            |

### SL2: JTAG/SWD (ARM 10 Pin connector)

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



### X7: USB-C

USB-3 dual role function with Powerdelivery 5V is implemented  
byteDEVKIT 3 can be powered via USB-C

### Buttons

|            |                                    |
|------------|------------------------------------|
| <b>TA1</b> | Power Button (iMX ONOFF)           |
| <b>TA2</b> | User Button (SD2_WP / GPIO2_IO20 ) |
| <b>TA3</b> | Reset Button                       |

### LEDs

|             |                         |
|-------------|-------------------------|
| <b>LED1</b> | Green: Powersupply 3.3V |
|-------------|-------------------------|

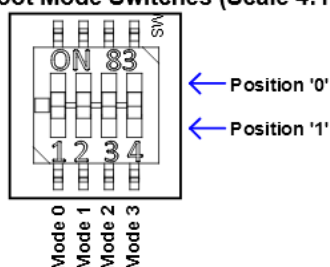
## 5. Boot modes byteENGINE i.MX 8M Plus

The Module is designed to boot from SDCARD. If a valid u-boot is placed in NOR Flash it will boot from NOR. If a valid u-boot is present on SDCARD it always boots from SD-CARD regardless of the content of the NOR Flash. The boot sequence can be redefined with OPT flashing.



[Datasheet byteENGINE i.MX 8M Plus](#)

**DETAIL Boot Mode Switches (Scale 4:1)**

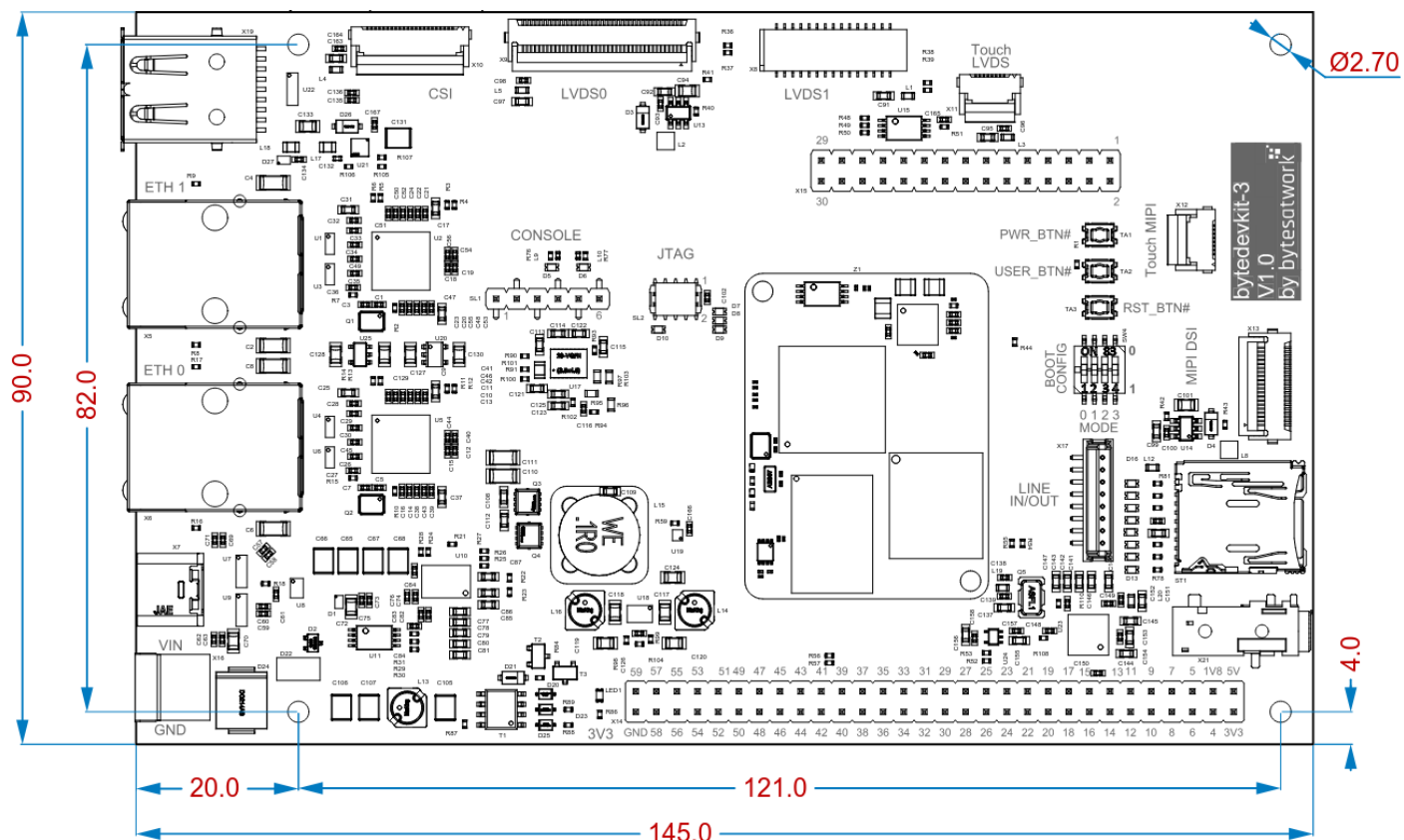


| BOOT_MODE [3:0] | BOOT Source                   |
|-----------------|-------------------------------|
| 0000            | Internal fuses                |
| 0001            | USB Serial Download           |
| 0010            | eMMC (USDHC3)                 |
| 0011            | SD Card (USDHC2)              |
| 0100            | 8-Bit NAND (256 Pages)        |
| 0101            | 8-Bit NAND (512 pages)        |
| 0110            | FlexSPI 3B                    |
| 0111            | FlexSPI Hyperflash            |
| 1000            | eCSPI                         |
| 1001            | Reserved                      |
| 1010            | FlexSPI Serial NAND (2k page) |
| 1011            | FlexSPI Serial NAND (4k page) |

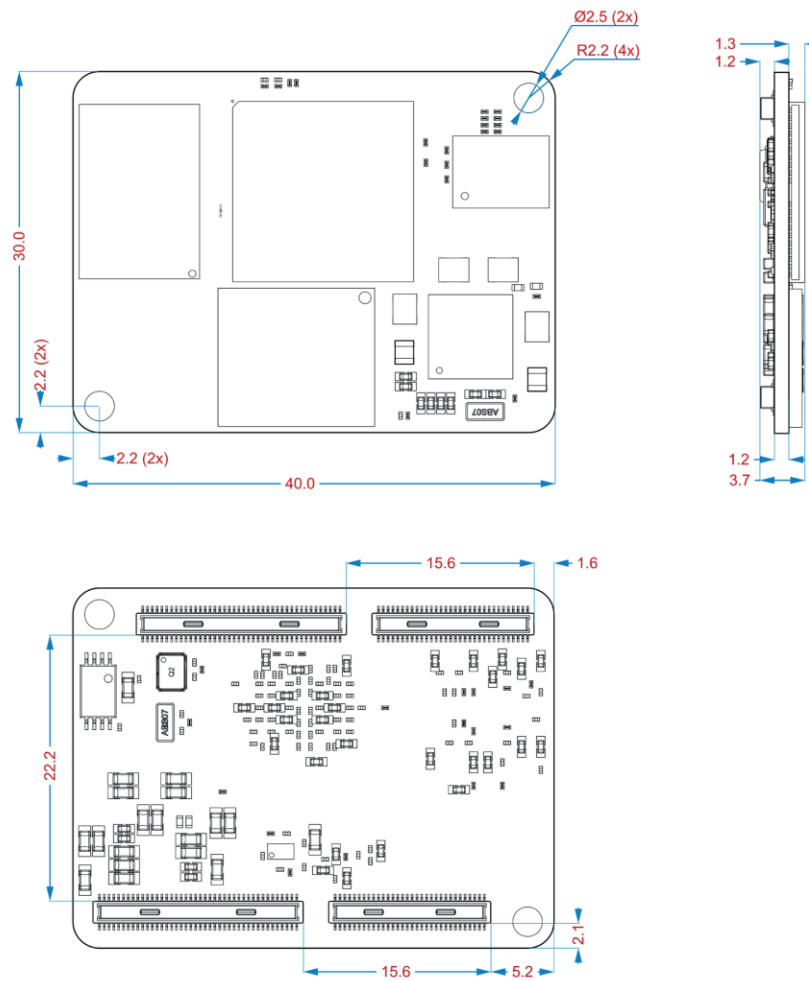
## 6. Mechanical dimensions byteDEVKIT 3

The following illustration shows all important dimensions for mounting and installation of the byteDEVKIT 3.

> All dimensions are indicated in millimetres (mm)



## 6.1. Mechanical dimensions of byteENGINE IMX8MP



## 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 3](#) for further information.

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

|              |                   |                                                             |
|--------------|-------------------|-------------------------------------------------------------|
| [KIT]        | Display Option    | DEVKIT: With Display<br>STARTKIT: Without Display           |
| [CPU]        | CPU Type          | Comprehensive, see Datasheet of byteENGINE i.MX 8M Plus     |
| [SPEED]      | Clock speed       | 1.6 Ghz / 1.8 GHz                                           |
| [RAM]        | RAM size          | 512 / 768 / 1024 / 1536 / 2048 / 4096 / 8192 MB             |
| [FLASH]      | eMMC flash size   | 8 / 16 / 32 / 64 / 128 GB                                   |
| [temp-range] | Temperature range | [C] Consumer 0° to +85° C<br>[I] Industrial -40°C to +85 °C |
| [revision]   | Revision          | 1.0                                                         |
| [WIFI]       | Wifi-Option       | WIFI: With WIFI Extension<br>[: Without WIFI Extension      |

## 8. References byteDEVKIT 3



### NOTICE

Files can only be downloaded with login credentials. Please request your download credentials via [support@bytesatwork.ch](mailto:support@bytesatwork.ch) or contact your sales representative.



### Links

- > bytewiki:  
<https://github.com/bytesatwork/bytewiki>
- > Readthedocs:  
<https://bytewiki.readthedocs.io/en/latest/yocto/5.0/bytedevkit-imx8mp.html>
- > bytesatwork on github:  
<https://github.com/bytesatwork>
- > byteDEVKIT 3 Schematic V1.0:  
[byteDEVKIT 3 Schematic V1.0](#)
- > byteDEVKIT 3 Connector Pinout:  
[byteDEVKIT 3 Connector Pinout](#)



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## Product Information

[www.bytesatwork.io](http://www.bytesatwork.io)



## Help

[bytewiki.readthedocs.io](http://bytewiki.readthedocs.io)

