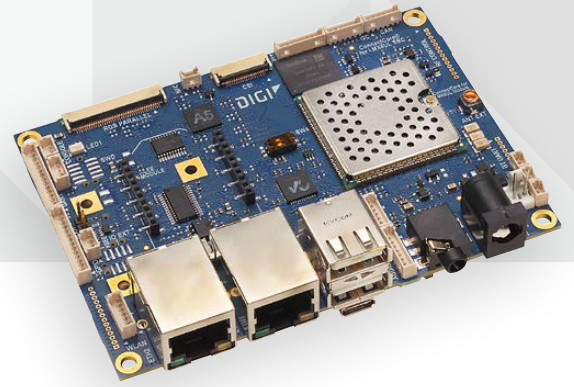




PRE-CERTIFIED  
CONNECTIVITY WITH  
DESIGN FLEXIBILITY.



# DIGI CONNECTCORE 6UL SBC PRO

Secure and pre-certified Single Board Computer for total design flexibility and connectivity in industrial applications

Digi ConnectCore® 6UL SBC Pro delivers the ultimate connected off-the-shelf NXP i.MX6UL single board computer in standard form factor for unparalleled design flexibility.

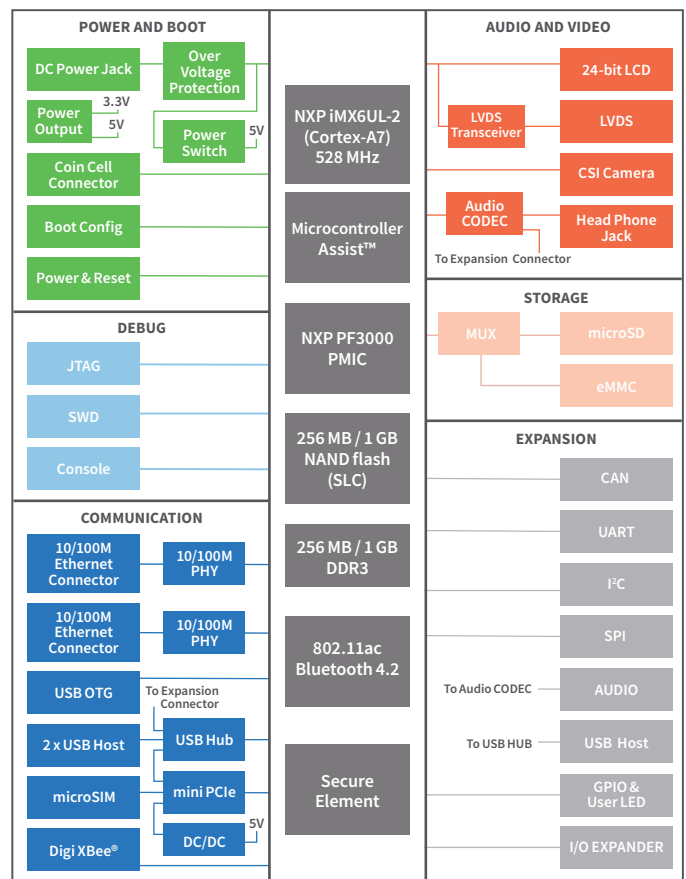
Its unique pre-certified wireless connectivity options offer 802.11a/b/g/n/ac Wi-Fi and Bluetooth 5, including Bluetooth Low Energy. Out-of-box cellular integration options using the pre-certified Digi XBee® Cellular module or third-party PCI Express Mini Card modem allows you to integrate cellular connectivity with less cost and complexity.

Digi Linux support includes TrustFence® device security framework with secure boot, encrypted file systems, protected ports and more.

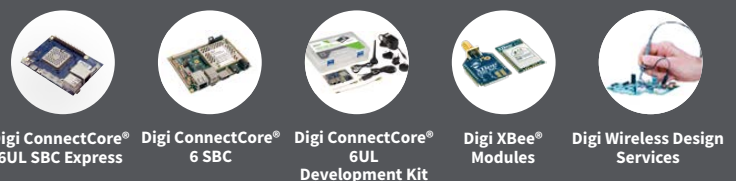
## FEATURES AND BENEFITS

- Powerful and flexible off-the-shelf solution in Pico-ITX form factor
- Production-ready with minimal hardware design effort
- Rugged design with industrial operating temperature range
- Pre-certified dual-band 802.11ac Wi-Fi connectivity
- Bluetooth 5, with Bluetooth Low Energy support
- Out-of-box support for cellular connectivity
- On-board NFC Forum Type 2 compliant tag
- Dual 10/100 Mbit Ethernet networking
- Integrated display and camera capabilities
- Rich interface and peripheral support
- Complete Yocto Project Linux BSP with source code
- Digi TrustFence® device security framework

## BLOCK DIAGRAM



## RELATED PRODUCTS



## SPECIFICATIONS

## Digi ConnectCore® 6UL SBC PRO

## PERFORMANCE\*

**APPLICATION PROCESSOR** NXP i.MX6UL-2, ARM® Cortex®-A7 @ 528 MHz, 128 KB L2 cache, with NEON™ MPE (Media Processor Engine) co-processor

**MEMORY** 256 MB NAND flash, 256 MB DDR3 (CC-SBP-WMX-JN58); 1 GB NAND flash, 1 GB DDR (CC-SBP-WMX-JN7A)

## WIRED NETWORK CONNECTIVITY

**ETHERNET** 2 x 10/100 Mbit Ethernet

## WIRELESS NETWORK CONNECTIVITY

**WI-FI** Dual-band 802.11a/b/g/n/ac 1x1 (MCS 0-9)

**BLUETOOTH** Bluetooth 5, with Bluetooth Low Energy support

**ANTENNAS** On-module U.FL or on-board MMCX antenna connector for Wi-Fi and Bluetooth, external NFC antenna option

**NFC** Energy-harvesting NXP NTAG, field detection trigger, ISO 14443A and NFC Forum Type 2 Tag compliant

**DIGI XBEE® RF** Standard Digi XBee socket

## PERIPHERALS/INTERFACES

**ETHERNET** 2 x RJ-45 (10/100 Mbit)

**USB** 2 x USB Host (Dual Type-A), 1 x USB Host (6-pin header), 1 x USB OTG (Micro-USB)

**DISPLAY** 24-bit Parallel RGB (40-pin header), and 18-bit LVDS (20-pin header)

**CAMERA** 8-bit Parallel CSI (20-pin header)

**GPIO** 14-pin header (8 x GPIO, 1 x Touch)

**UART / CONSOLE** 14-pin header (1 x two-wire, 2 x four-wire, one shared with XBee socket), 3-pin header (Console)

**OTHER CONNECTIVITY** 1 x I2C (6-pin header), 1 x SPI (8-pin header), 2 x CAN (6-pin header)

**PCI EXPRESS MINI CARD** Half-size and full-size card support, with on-board Micro SIM slot support

**RF CONTROL** 14-pin header (Wi-Fi Enable/Disable, Bluetooth Enable/Disable, Wakeup, PCM, LTE Control, GPS Co-Existence)

**EXTERNAL STORAGE** microSD, on-board 4 GB eMMC flash for data storage

**AUDIO** 3.5 mm headphone jack, 6-pin header (speaker), 8-pin header (line-in, microphone, line-out)

**BUTTONS / SWITCHES** Power, reset, user, boot select (NAND/microSD), RF (Wi-Fi enable, Bluetooth enable), antenna select (U.FL on-module/MMCX on-board)

**DEBUG** Tag-connect for JTAG and SWD

**POWER** 3.3 V out (2-pin header), 5 V out (2-pin header), battery (2-pin header)

**LEDS** Power, 3 x user

## CERTIFICATIONS\*\*

**RADIO APPROVALS** US, Canada, EU, Japan, Australia, New Zealand

**EMISSIONS / IMMUNITY / SAFETY** FCC Part 15 Class B, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, ICES-003 Class B, VCCI Class II, AS 3548, FCC Part 15 Subpart C Section 15.247, IC (Industry Canada), RSS-210 Issue 5 Section 6.2.2(o), EN 300 328, EN 301 489-17, EN 55024, EN 301 489-3, Safety (UL/UL equivalent)

## POWER REQUIREMENTS

**SUPPLY VOLTAGE** 5 VDC @ 300 mA (typical); See ConnectCore 6UL module product brief for module-only power consumption guidance.

**POWER CONNECTORS** Locking barrel connector (2 mm), or dedicated power connector (3-pin header)

## ENVIRONMENTAL

**OPERATING TEMPERATURE** -40° C to 85° C (-40° F to 185° F)

**STORAGE TEMPERATURE** -50° C to 125° C (-58° F to 257° F)

**RELATIVE HUMIDITY** Relative humidity 5% to 90% (non-condensing)

**DESIGN VERIFICATION** Temperature: IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-78; Vibration/Shock: IEC 60068-2-6, IEC 60068-2-64, IEC 60068-2-27, HALT

## MECHANICAL

**DIMENSIONS** 100 mm x 72 mm (3.9 in x 2.8 in)

## WARRANTY

**PRODUCT WARRANTY** 1-year

\* Populates ConnectCore 6UL module P/N CC-WMX-JN58-NE (LGA mounting). \*\*Final certifications pending.

# DIGI CONNECTCORE® SBC SELECTION GUIDE

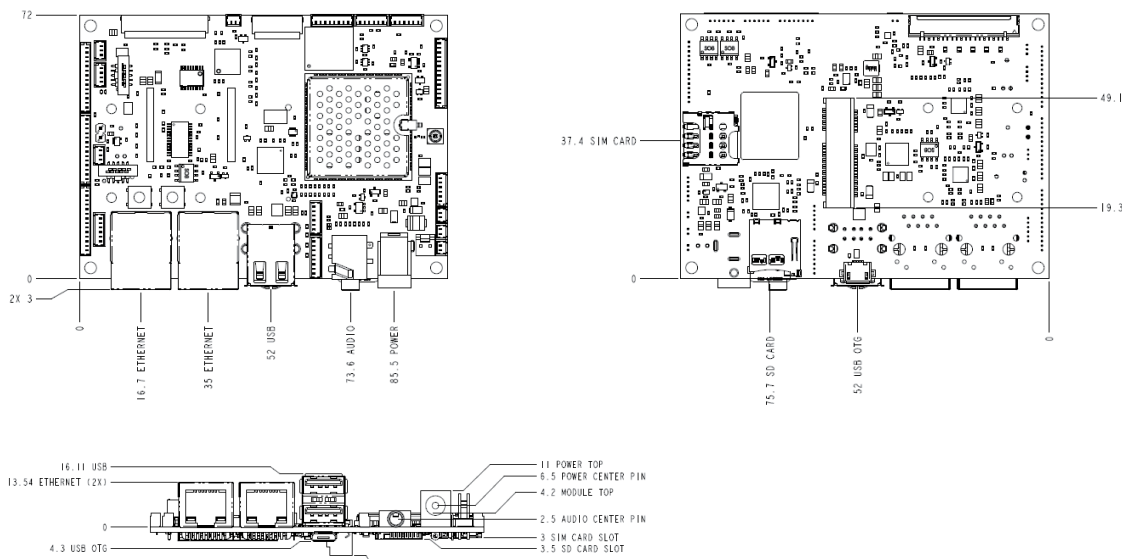
|                       |  | Digi ConnectCore 6UL SBC Express      | Digi ConnectCore 6UL SBC Pro                       | Digi ConnectCore 6 SBC for i.MX6Quad | Digi ConnectCore 6 SBC for i.MX6Dual  | Digi ConnectCore 6 SBC for i.MX6DualLite |
|-----------------------|--|---------------------------------------|--|--------------------------------------|---------------------------------------|--|
| PERFORMANCE           | Processor                              | NXP i.MX6UL-2 (Cortex-A7)             | NXP i.MX6UL-2 (Cortex-A7)                          | NXP i.MX6Quad (Cortex-A9)            | NXP i.MX6Dual (Cortex-A9)             | NXP i.MX6DualLite (Cortex-A9)            |
|                       | Clock speed                            | 528 MHz                               | 528 MHz  | 1.2 GHz                              | 800 MHz                               | 800 MHz                                  |
|                       | Microcontroller Assist™                | ✓                                     | ✓  | ✓                                    | -                                     | -  |
| MEMORY                | Flash                                  | 256 MB NAND (SLC)                     | 256 MB / 1 GB NAND SLC<br>4 GB eMMC <sup>1,7</sup> | 4 GB eMMC <sup>1</sup>               | 4 GB eMMC <sup>1</sup>                | 4 GB eMMC <sup>1</sup>                   |
|                       | RAM                                    | 256 MB DDR3                           | 256 MB / 1 GB DDR3                                 | 1 GB DDR3                            | 1GB DDR3                              | 512 MB DDR3                              |
| NETWORKING            | Ethernet                               | 1 x 10/100 Mbit                       | 2 x 10/100 Mbit                                    | 1 x Gigabit                          | 1 x Gigabit                           | 1 x Gigabit                              |
|                       | Wi-Fi                                  | 802.11a/b/g/n/ac 1x1                  | 802.11a/b/g/n/ac 1x1                               | 802.11a/b/g/n 1x1                    | 802.11a/b/g/n 1x1                     | 802.11a/b/g/n 1x1                        |
|                       | Bluetooth                              | 5                                     | 5  | 4.0                                  | 4.0                                   | 4.0                                      |
|                       | Wi-Fi / Bluetooth antenna              | On-board/U.FL                         | U.FL/MMCX <sup>6</sup>                             | U.FL                                 | U.FL                                  | U.FL                                     |
|                       | NFC Forum Type 2 Tag                   | -                                     | ✓  | -                                    | -                                     | -  |
|                       | NFC antenna                            | -                                     | External   | -                                    | -                                     | -  |
|                       | XBee® socket                           | -                                     | ✓  | ✓                                    | ✓                                     | ✓  |
| SECURITY              | Digi TrustFence®                       | ✓                                     | ✓  | ✓                                    | ✓                                     | ✓  |
| CELLULAR <sup>2</sup> | Micro SIM card slot                    | -                                     | ✓  | ✓                                    | ✓                                     | -  |
| COMMUNICATION         | USB 2.0 host                           | 1                                     | 3  | 3                                    | 3                                     | 2  |
|                       | USB 2.0 OTG                            | 1                                     | 1  | 1                                    | 1                                     | 1  |
|                       | PCI Express Mini Card 2.1              | -                                     | ✓<br>(USB 2.0 host)                                | ✓<br>(USB host 2.0/x1 PCIe)          | ✓<br>(USB host 2.0/x1 PCIe)           | -  |
|                       | RS232/TTL                              | -/2 <sup>4</sup>                      | 2/1  | 2/1                                  | 2/1                                   | 2/1                                      |
|                       | Console                                | ✓ <sup>5</sup>                        | ✓  | ✓                                    | ✓                                     | ✓  |
|                       | I <sup>2</sup> C                       | ✓ <sup>4</sup>                        | ✓  | ✓                                    | ✓                                     | -  |
|                       | SPI                                    | ✓ <sup>4</sup>                        | ✓  | ✓                                    | ✓                                     | -  |
|                       | GPIO                                   | ✓ <sup>4</sup>                        | ✓  | ✓                                    | ✓                                     | ✓  |
|                       | Dual CAN                               | -                                     | ✓  | ✓                                    | ✓                                     | -  |
|                       | Grove                                  | 3                                     | -  | -                                    | -                                     | -  |
| GRAPHICS              | Expansion connector <sup>4</sup>       | ✓ <sup>4</sup>                        | -  | -                                    | -                                     | -  |
|                       | 2D/3D hardware acceleration (GPU)      | -                                     | -  | ✓                                    | ✓                                     | ✓  |
|                       | Hardware video encoding/decoding       | -                                     | -  | ✓                                    | ✓                                     | ✓  |
| DISPLAY               | Resolution                             | Up to 1366 x 768                      |  |                                      | Up to 1920 x 1080                     |  |
|                       | HDMI                                   | -                                     | -  | ✓                                    | ✓                                     | ✓  |
|                       | LVDS <sup>3</sup>                      | -                                     | 1  | 2                                    | 1                                     | -  |
|                       | MIPI DSI <sup>3</sup>                  | -                                     | -  | ✓                                    | ✓                                     | -  |
| CAMERA                | RGB parallel                           | 8-bit <sup>4</sup>                    | 18-/24-bit   | 24-bit                               | 24-bit                                | 24-bit                                   |
|                       | MIPI CSI                               | -                                     | -  | ✓                                    | ✓                                     | -  |
| AUDIO                 | 8-Bit parallel                         | -                                     | ✓  | 2                                    | 1                                     | -  |
|                       | Headphone jack                         | -                                     | ✓  | ✓                                    | ✓                                     | -  |
|                       | Line-in / line-out / microphone header | -                                     | ✓  | ✓                                    | ✓                                     | -  |
| STORAGE               | microSD                                | ✓                                     | ✓  | ✓                                    | ✓                                     | ✓  |
|                       | SATA 3.0                               | -                                     | -  | ✓                                    | -                                     | -  |
| OTHER                 | Power / reset buttons                  | ✓                                     | ✓  | ✓                                    | ✓                                     | ✓  |
|                       | Power / reset header                   | ✓                                     | ✓  | ✓                                    | ✓                                     | ✓  |
|                       | Coin cell battery header               | ✓                                     | ✓  | ✓                                    | ✓                                     | ✓  |
|                       | Power / user LEDs                      | ✓                                     | ✓  | ✓                                    | ✓                                     | ✓  |
|                       | Boot configuration switch              | Population options                    | Population options                                 | ✓                                    | ✓                                     | ✓  |
|                       | JTAG (via Tag-Connect)                 | ✓                                     | ✓  | ✓                                    | ✓                                     | ✓  |
|                       | SWD (via Tag-Connect)                  | ✓                                     | ✓  | ✓                                    | ✓                                     | ✓  |
| ENVIRONMENTAL         | Operating temperature                  | -40° C to 85° C<br>(-40° F to 185° F) | -40° C to 85° C<br>(-40° F to 185° F)              | -20° C to 70° C<br>(-4° F to 158° F) | -40° C to 85° C<br>(-40° F to 185° F) | -40° C to 85° C<br>(-40° F to 185° F)    |
| MECHANICAL            | Dimensions                             | 87 mm x 63 mm<br>(3.4 in x 2.5 in)    |  |                                      |                                       | 100 x 72 mm<br>(3.9 in x 2.8 in)         |
|                       | Form factor                            | SBC                                   |  |                                      |                                       | Pico-ITX                                 |
| DIGI SKUS             |  | CC-SBE-WMX-JN58                       | CC-SBP-WMX-JN58<br>CC-SBP-WMX-JN&A                 | CC-SB-WMX-J97C-1                     | CC-SB-WMX-L87C-1                      | CC-SB-WMX-L76C-1                         |

1. pSLC mode option for industrial reliability  
2. Via PCI Express Mini Card connector, or Digi XBee® cellular  
3. With Touch (I2C) + backlight control  
4. Raspberry Pi HAT compatible header (and mounting holes)

5. USB device via USB Type AB connector  
6. On-board antenna switch configuration  
7. Software-selectable: on-board eMMC or microSD

| PART NUMBERS    | DESCRIPTION   |
|-----------------|---|
| CC-SBP-WMX-JN58 | Digi ConnectCore 6UL SBC Pro, Pico-ITX form factor, i.MX6UL-2, 528 MHz, Secure element, Microcontroller Assist™, 256 MB NAND flash (SLC), 256 MB DDR3, Dual 10/100 Mbit Ethernet, 802.11a/b/g/n/ac, Bluetooth 5, industrial operating temperature   |
| CC-SBP-WMX-JN7A | Digi ConnectCore 6UL SBC Pro, Pico-ITX form factor, i.MX6UL-2, 528 MHz, Secure element, Microcontroller Assist™, 1 GB NAND flash (SLC), 1 GB DDR3, Dual 10/100 Mbit Ethernet, 802.11a/b/g/n/ac, Bluetooth 5, industrial operating temperature   |
| CC-WMX6UL-KIT   | Digi ConnectCore 6UL SBC Pro, Pico-ITX (100 x 72 mm), industrial temp, 256 MB SLC NAND, 256 MB DDR3, Dual 10/100 Ethernet, 802.11a/b/g/n/ac, Bluetooth 5, XBee socket, cellular connectivity support via PCI Express Mini Card, SIM, NFC, microSD, USB Host, USB OTG, UART, DualCAN, SPI, I2C, LVDS, camera, antenna connector, battery connector, power supply and accessories |
| CC-ACC-LCD-70WV | 7" LCD accessory kit, with projected capacitive touch, WVGA (800 x 480)   |

## MECHANICAL DRAWINGS



FOR MORE INFORMATION  
PLEASE VISIT [DIGI.COM](http://DIGI.COM)



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