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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





FAST AND SIMPLIFIED  
INTEGRATION



# CONNECTCORE® 6UL SBC EXPRESS

Secure and pre-certified connected Single Board Computer for fast and simple design integration in industrial applications.

The ConnectCore 6UL SBC Express delivers a powerful, secure and extremely cost-effective off-the-shelf single board computer with complete Linux support, including the Digi TrustFence™ device security framework with out-of-box support for secure boot, encrypted filesystems, protected ports, and more.

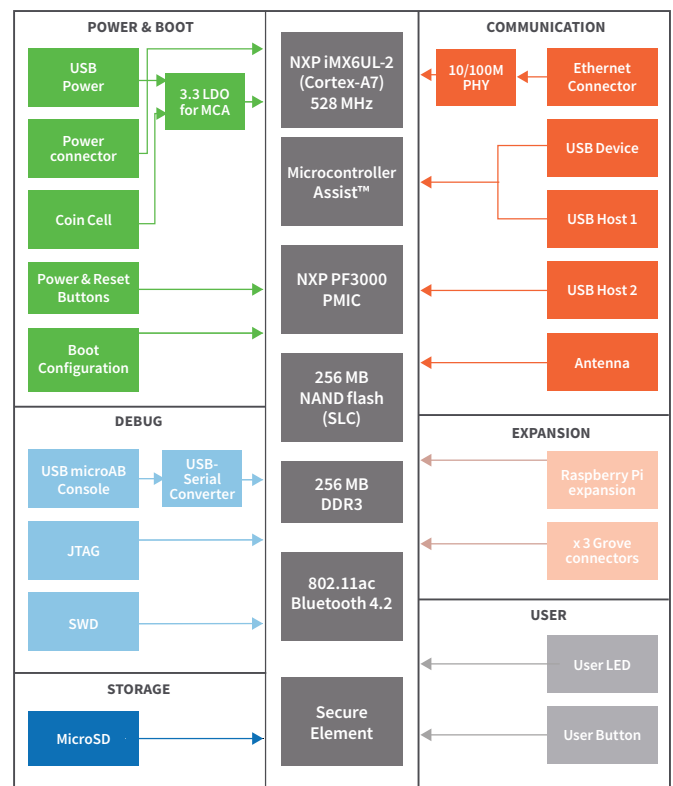
Built on the NXP i.MX6UL processor, it combines 10/100 Ethernet networking and pre-certified wireless 802.11a/b/g/n/ac Wi-Fi and Bluetooth 4.2 connectivity, including Bluetooth Low Energy.

The extremely compact form factor integrates an on-board dual-band antenna option, USB connectivity, Grove sensor connectors, and an expansion connector for unique integration flexibility into a wide range of industrial applications.

## FEATURES AND BENEFITS

- Cost-effective off-the-shelf solution
- Limited hardware design effort
- Highly accelerated time-to-market
- Rugged design with mounting options
- Industrial operating temperature range
- Pre-certified dual-band 802.11ac Wi-Fi connectivity
- Bluetooth 4.2, with Bluetooth Low Energy support
- Integrated on-board high-efficiency antenna
- On-board 10/100 Mbit Ethernet networking
- Grove and expansion connectors for flexibility
- Complete Yocto Project Linux BSP with source code
- Digi TrustFence™ device security framework

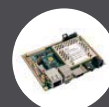
## BLOCK DIAGRAM



## RELATED PRODUCTS



ConnectCore® 6UL SBC PRO



ConnectCore® 6 SBC



ConnectCore® 6UL Starter Kit



ConnectCore® 6UL Development Kit



Wireless Design Services

## SPECIFICATIONS

## ConnectCore® 6UL SBC Express

## FEATURES

<b>APPLICATION PROCESSOR</b>	NXP i.MX6UL-2, ARM® Cortex®-A7 @ 528 MHz, 128 KB L2 cache, with NEON™ MPE (Media Processor Engine) co-processor
<b>MEMORY</b>	256 MB high-reliability NAND flash (SLC), 256 MB DDR3
<b>WIRED NETWORK CONNECTIVITY</b>	
<b>ETHERNET</b>	Single 10/100 Mbit Ethernet
<b>WIRELESS NETWORK CONNECTIVITY</b>	
<b>WI-FI</b>	Dual-band 802.11a/b/g/n/ac 1x1 (MCS 0-9)
<b>BLUETOOTH</b>	Bluetooth 4.2, with Bluetooth Low Energy support
<b>ANTENNA</b>	On-board dual-band Isolated Magnetic Dipole™ (IMD) stamped metal antenna / U.FL connector
<b>COMMUNICATION/PERIPHERALS</b>	
<b>USB HOST</b>	Dual Type-A
<b>USB OTG</b>	Micro-AB
<b>CONSOLE</b>	Micro-AB
<b>EXTERNAL STORAGE</b>	microSD
<b>GROVE</b>	3 standard Grove connectors (I/D/A)
<b>DISPLAY</b>	Optional, through Raspberry Pi HAT compatible display accessories
<b>EXPANSION CONNECTOR*</b>	
<b>INTERFACES</b>	GPIO, I <sup>2</sup> C, SPI, UART, PWM, ADC, JTAG
<b>PINOUT</b>	Raspberry Pi HAT compatible
<b>CONNECTOR TYPE</b>	2-row, 40-pin, 2.54 mm pitch
<b>OTHER</b>	
<b>BUTTONS</b>	Power / Suspend, Reset, User
<b>LEDS</b>	User, Console TX/RX
<b>COIN CELL</b>	2-pin, 1.25 mm pitch connector
<b>BOOT SELECT</b>	USB/NAND
<b>DEBUG</b>	JTAG and SWD via Tag-Connect
<b>POWER SUPPLY</b>	
<b>5V DC IN</b>	2-pin, 2.54 mm pitch, latched connector
<b>USB 5V DC IN**</b>	Console USB Micro-AB
<b>CURRENT DRAW</b>	TBD
<b>CERTIFICATIONS</b>	
<b>RADIO APPROVALS</b>	US, Canada, EU, Japan, Australia, New Zealand
<b>EMISSIONS / IMMUNITY / SAFETY</b>	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/UR (or equivalent)
<b>ENVIRONMENTAL</b>	
<b>OPERATING TEMPERATURE</b>	-40° C to 85° C
<b>STORAGE TEMPERATURE</b>	-50° C to +125° C
<b>RELATIVE HUMIDITY</b>	5% to 90% (non-condensing)
<b>ALTITUDE</b>	Altitude 12,000 feet (3,658 meters)
<b>DESIGN VERIFICATION</b>	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
<b>MECHANICAL</b>	
<b>DIMENSIONS</b>	87 x 63 mm

\* Additional interfaces available through muxing options

\*\* Standard USB current may not be sufficient for specific use-case



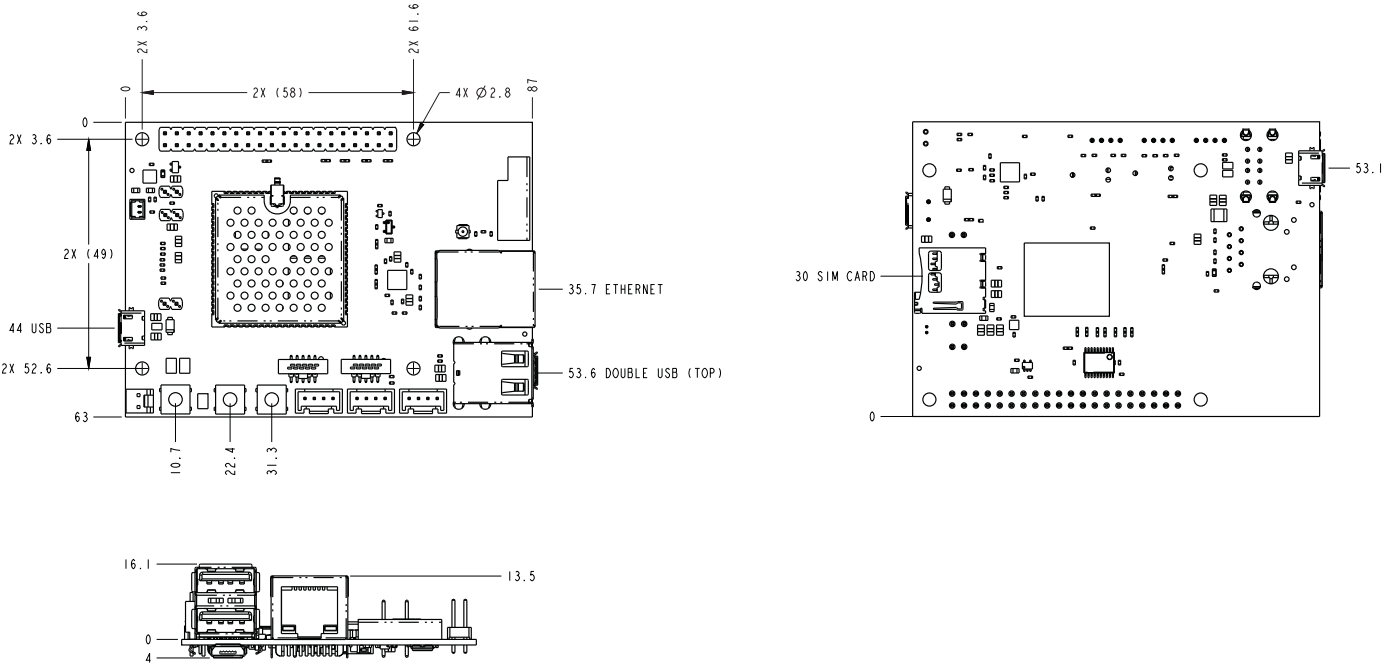
# CONNECTCORE® SBC SELECTION GUIDE

		ConnectCore 6UL SBC Express	ConnectCore 6UL SBC Pro	ConnectCore 6 SBC for i.MX6Quad	ConnectCore 6 SBC for i.MX6Dual	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 NAND SLC 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 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	4.2	4.2	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	-	✓ (USB 2.0 Host)	✓ (USB Host 2.0/x1 PCIe)	✓ (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	-	-	-	-
Expansion Connector <sup>4</sup>	✓ <sup>4</sup>	-	-	-	-	
GRAPHICS	2D/3D Hardware Acceleration (GPU)	-	-	✓	✓	✓
	Hardware Video Encoding/Decoding	-	-	✓	✓	✓
	Resolution	Up to 1366 x 768			Up to 1920 x 1080	
DISPLAY	HDMI	-	-	✓	✓	✓
	LVDS <sup>3</sup>	-	1	2	1	-
	MIPI DSI <sup>3</sup>	-	-	✓	✓	-
	RGB Parallel	8-bit <sup>4</sup>	18-/24-bit	24-bit	24-bit	24-bit
CAMERA	MIPI CSI	-	-	✓	✓	-
	8-Bit Parallel	-	✓	2	1	-
AUDIO	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	-40° C to 85° C	-20° C to 70° C	-40° C to 85° C	-40° C to 85° C
MECHANICAL	Dimensions	87 x 63 mm	100 x 72 mm			
	Form Factor	SBC	Pico-ITX			
DIGI SKUS		CC-SBE-WMX-JN58	CC-SBP-WMX-JN58	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-SBE-WMX-JN58	ConnectCore 6UL SBC Express, i.MX6UL-2, 528 MHz, Secure Element, Microcontroller Assist™, 256 MB NAND flash (SLC), 256 MB DDR3, Single 10/100 Mbit Ethernet, 802.11a/b/g/n/ac, Bluetooth 4.2, on-board antenna, Micro SD, USB Host, USB OTG, Grove connectors, Expansion connector, Industrial operating temperature

## MECHANICAL DRAWINGS



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DIGI INTERNATIONAL WORLDWIDE HQ  
877-912-3444 / 952-912-3444 / [www.digi.com](http://www.digi.com)

DIGI INTERNATIONAL GERMANY  
+49-89-540-428-0

DIGI INTERNATIONAL JAPAN  
+81-3-5428-0261 / [www.digi-intl.co.jp](http://www.digi-intl.co.jp)

DIGI INTERNATIONAL SINGAPORE  
+65-6213-5380

DIGI INTERNATIONAL CHINA  
+86-21-50492199 / [www.digi.com.cn](http://www.digi.com.cn)

