DIGI CONNECTCORE 6N SBC

Reliable and compact NXP i.MX6 SBC family with integrated Ethernet, Wi-Fi, Bluetooth, Digi XBee and cellular connectivity options

Digi ConnectCore® 6N SBC is an ultra-compact and versatile off-the-shelf Single Board Computer (SBC) family. It offers significantly reduced time-to-market by virtually eliminating the traditional risk, effort and complexity of custom board designs without sacrificing flexibility or capabilities.
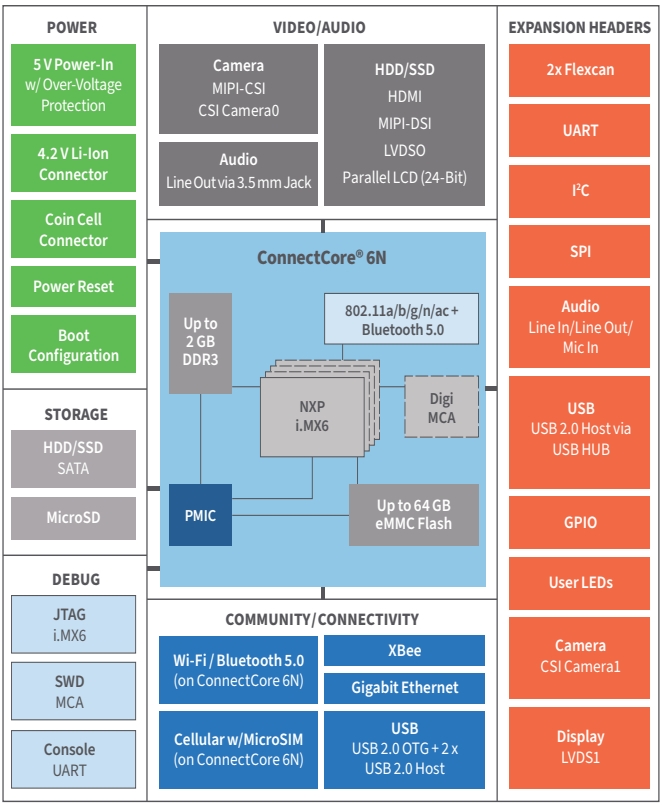
Built on the **Digi ConnectCore 6N** System-On-Module (SOM), it provides a common platform with scalable NXP® i.MX6 performance, pre-certified Wi-Fi 5 and Bluetooth® 5.0 integration, **Digi XBee®** RF module and cellular connectivity options, Gigabit Ethernet support, multi-display/camera and audio support, external storage, expansion connectors and reliability in harsh environments.

Leading and innovative features such as Digi Microcontroller Assist™ (MCA) enable the development of connected products with highly optimized power footprints. Optional **Digi Remote Manager®** integration provides secure remote OTA firmware updates, device management and health capabilities for the Internet of Things.

BLOCK DIAGRAM

POWER	VIDEO/AUDIO		EXPANSION HEADERS
5 V Power-In w/ Over-Voltage Protection	Camera MIPI-CSI CSI Camera0	HDD/SSD HDMI MIPI-DSI LVDSO Parallel LCD (24-Bit)	2x Flexcan
4.2 V Li-Ion Connector	Audio Line Out via 3.5 mm Jack		UART
Coin Cell Connector			I²C
Power Reset	ConnectCore® 6N		SPI
Boot Configuration	Up to 2 GB DDR3 / 802.11a/b/g/n/ac + Bluetooth 5.0 / NXP i.MX6 / Digi MCA / PMIC / Up to 64 GB eMMC Flash		Audio Line In/Line Out/ Mic In
STORAGE			USB USB 2.0 Host via USB HUB
HDD/SSD SATA			GPIO
MicroSD			User LEDs
DEBUG	**COMMUNITY/CONNECTIVITY**		Camera CSI Camera1
JTAG i.MX6	Wi-Fi / Bluetooth 5.0 (on ConnectCore 6N)	XBee / Gigabit Ethernet	Display LVDS1
SWD MCA			
Console UART	Cellular w/MicroSIM (on ConnectCore 6N)	USB USB 2.0 OTG + 2 x USB 2.0 Host	

BENEFITS

– Compact off-the-shelf SBC family

– Scalable capabilities and i.MX6Quad/Dual performance

– Gigabit Ethernet and pre-certified dual-band Wi-Fi 5 and Bluetooth 5.0

– Ready for cellular connectivity and **Digi XBee** RF

– Complete set of available peripherals and interfaces with customization options

– Designed for flexibility and reliability

– Windows® Embedded Compact, Yocto Project Linux® and Android™ software platform support

– Industrial operating temperature available

RELATED PRODUCTS

ConnectCore® 6N

ConnectCore® 6UL SBC PRO

ConnectCore® 8 SOM Family

Digi XBee® Modules

Wireless Design Services

SPECIFICATIONS	Digi ConnectCore® 6N SBC
APPLICATION PROCESSOR	On-board Digi ConnectCore® 6N multi-chip module with NXP i.MX6Quad/Dual; Industrial (Dual - 800 MHz) / Extended Commercial (Quad - 1.2 GHz) options
MEMORY	4 GB eMMC flash, 1 GB DDR (64-bit)
GRAPHICS	Multi-stream-capable HD video engine with 1080p60 decode; 1080p30 encode and 3D video playback in HD in high-performance families; Superior 3D graphics performance with up to 4 shaders at 200 Mt/s with OpenCL support; Separate 2D and/or Vertex acceleration engines for UI support; Stereoscopic image sensor support for 3D imaging
SECURITY	RNG, TrustZone, Ciphers, Security Cntrl, Secure RTC, Secure JTAG, eFuses (OTP)
DISPLAYS	1x HDMI (Type A); 2x LVDS with backlight control and I2C touch interface (HIROSE DF14A-20P-1.25H); 1x Parallel LCD (24-bit) with backlight control and I2C touch interface (Omron XF2M-4015-1A); 1x MIPI-DSI with backlight control and I2C touch interface (FCI SFW15S-2STE1LF, compatible with Raspberry Pi DSI)
CAMERA	1x 8-Bit Parallel Camera Interface 1 (Omron XF2M-2015-1A); 1x 8-Bit Parallel Camera Interface 0 (Molex 53047-1410); 1x MIPI CSI-2 (FCI SFW15S-2STE1LF, compatible with Raspberry Pi CSI)
USB 2.0	2x USB Host (Dual Type A), 1x USB OTG (Micro AB); 1x USB Host (Molex 53047-0610)
AUDIO	1x Line-In; (3.5 mm stereo jack, CUI SJ1-3515-SMT), 1x Line-In, 1x Line-Out, 1x Mic-In (Molex 53047-0810); On-board NXP SGTL5000 audio codec
CONSOLE (RS232)	Molex 53047-0310
SATA 3.0	3M 5607-5102-SH
MICRO-SIM	Yes
PCI EXPRESS MINI CARD	Foxconn AS0B226-S68Q-7H; Provides 1x PCI Express, USB 2.0 Host, I2C, SIM, Reset, Wake-Up signals; Supports mounting of half-size and full-size PCI Express Mini Cards
BOOT CONFIGURATION	eMMC / SD / SATA
DIGI XBEE SOCKET	Samtec MMS-110-01-L-SV
WI-FI	802.11a/b/g/n/ac
BLUETOOTH	Bluetooth 5.0
ANTENNA CONNECTORS	1x U.FL / 2x U.FL
GIGABIT ETHERNET	RJ-45 with two LEDs for link/speed/activity
CAN BUS	2x FlexCAN (Molex 53047-0610)
GPIO / I²C / SPI / UART	1x GPIO (8x i.MX GPIOs and 4x Kinetis GPIOs, Molex 53047-1410); 1x I²C (Molex 53047-0310), 1x SPI (Molex 53047-0610); 3x UART (4-wire TX/RX/RTS/CTS, one shared with Digi XBee® socket, Molex 53047-1410)
DEBUG	1x JTAG for i.MX6 (FCI 20021111-00010T4LF); 1x SWD for Digi MCA (FCI 20021111-00010T4LF); Headers populated on development units only; Production units without header for plug of nails (Tag-Connect TC2050-IDC-NL)
POWER BUTTON	Power on, power off, sleep, wake-up
RESET BUTTON	Yes
USER LEDS	1x Red, 1x Yellow, 1x Green
COIN CELL CONNECTOR	Molex 53047-0210
SUPPLY VOLTAGE	5 V @ 3.2 A (typical, depending on use-case)
POWER SUPPLY CONNECTOR	Main power supply via 2mm locking barrel connector
OPERATING TEMPERATURE	Ext. Commercial: -20° C to 70° C (-4° F to 158° F) / Industrial: -40° C to 85° C (-40° F to 185° F)
STORAGE TEMPERATURE	-50° C to 125° C (-58° F to 257° F)
RELATIVE HUMIDITY	5% to 90% (non-condensing)
RADIO APPROVALS	US, Canada, EU, Japan, Australia/New Zealand, Brazil
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 (IEC 62368-1)
PRODUCT WARRANTY	1-year

CONNECTCORE® SBC SELECTION GUIDE

		ConnectCore 6UL SBC Pro	ConnectCore 6N SBC for i.MX6Quad	ConnectCore 6N SBC for i.MX6Dual
PERFORMANCE	Processor	NXP i.MX6UL-2 (Cortex-A7)	NXP i.MX6Quad (Cortex-A9)	NXP i.MX6Dual (Cortex-A9)
	Clock Speed	528 MHz	1.2 GHz	800 MHz
	Microcontroller Assist™	✓	✓	-
MEMORY	Flash	256 MB NAND SLC 4 GB eMMC[1,7]	4 GB eMMC[1]	4 GB eMMC[1]
	RAM	256 MB DDR3	1 GB DDR3	1GB DDR3
NETWORKING	Ethernet	2 x 10/100 Mbit	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/ac 1x1
	Bluetooth	5.0	5.0	5.0
	Wi-Fi / Bluetooth Antenna	U.FL/MMCX[6]	U.FL	U.FL
	NFC Forum Type 2 Tag	✓	-	-
	NFC Antenna	External	-	-
	Digi XBee® Socket	✓	✓	✓
SECURITY	Digi TrustFence™	✓	✓	✓
CELLULAR[2]	Micro SIM Card Slot	✓	✓	✓
COMMUNICATION	USB 2.0 Host	3	3	3
	USB 2.0 OTG	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	2/1	2/1	2/1
	Console	✓	✓	✓
	I²C	✓	✓	✓
	SPI	✓	✓	✓
	GPIO	✓	✓	✓
	Dual CAN	✓	✓	✓
	Grove	-	-	-
	Expansion Connector[4]	-	-	-
GRAPHICS	2D/3D Hardware Acceleration (GPU)	-	✓	✓
	Hardware Video Encoding/ Decoding	-	✓	✓
	Resolution	Up to 1366 x 768	Up to 1920 x 1080	
DISPLAY	HDMI	-	✓	✓
	LVDS[3]	1	2	1
	MIPI DSI[3]	-	✓	✓
	RGB Parallel	18-/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	✓	✓
	JTAG (via Tag-Connect)	✓	✓	✓
	SWD (via Tag-Connect)	✓	✓	✓
ENVIRONMENTAL	Operating Temperature	-40° C to 85° C	-20° C to 70°C	-40° C to 85° C
MECHANICAL	Dimensions	100 x 72 mm		
	Form Factor	Pico-ITX		
DIGI SKUS		CC-SBP-WMX-JN58	CC-SB-WMX-J97C-N	CC-SB-WMX-L87C-N

1. pSLC mode option for industrial reliability
2. Via PCI Express Mini Card Connector, or Digi Digi XBee® Cellular
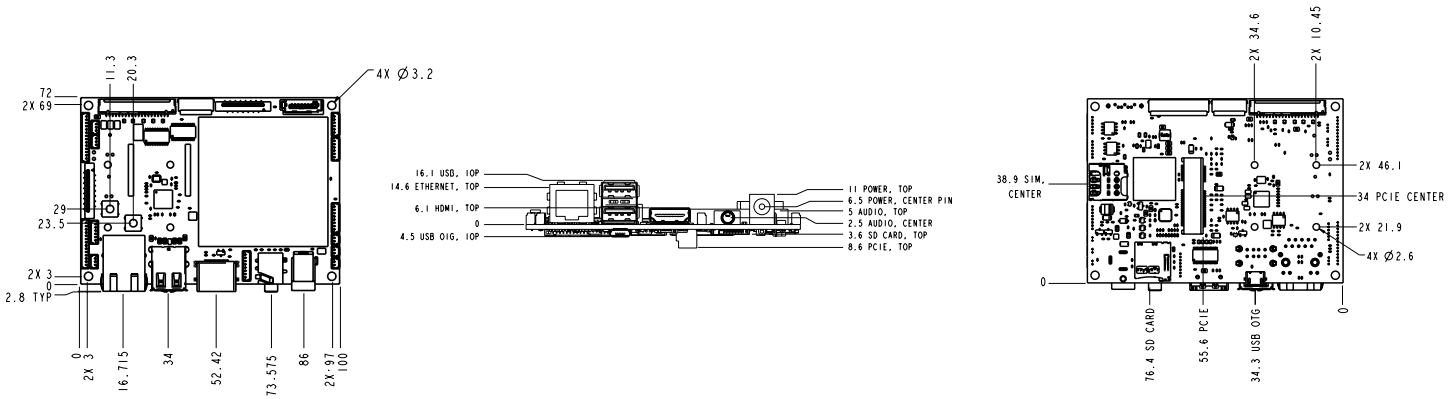3. With Touch (I2C) + Backlight Control
4. Raspberry Pi HAT compatible header (and mounting holes)
5. USB Device via USB Type AB connector
6. On-board antenna switch configuration
7. Software-selectable: on-board eMMC or microSD

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MECHANICAL DRAWINGS

PART NUMBERS	DESCRIPTION
SINGLE BOARD COMPUTERS	
CC-SB-WMX-J97C-N	ConnectCore 6N SBC, i.MX6Quad, Ext Commercial, 1.2 GHz, -20° C to 70° C, 4 GB eMMC flash, 1 GB DDR3, Digi Microcontroller Assist (MKL14Z32VFT4), 802.11a/b/g/n/ac, Bluetooth 5.0, Gigabit Ethernet
CC-SB-WMX-L87C-N	ConnectCore 6N SBC, i.MX6Dual, Industrial, 800 MHz, -40° C to 85° C, 4 GB eMMC flash, 1 GB DDR3, 802.11a/b/g/n/ac, Bluetooth 5.0, Ethernet
KIT	
CC-WMX6N-KIT	ConnectCore 6N Development Kit (SBC with ConnectCore 6N module. i.MX6Quad, 1.2 GHz, -20° to 70° C, 4 GB eMMC flash, 1 GB DDR3, 802.11a/b/g/n/ac, Bluetooth 5.0, Digi Microcontroller Assist, software support for Yocto Project Linux and Android, accessories)
ACCESSORIES	
CC-ACC-LCDH-10	LCD Application Kit, including 10 in WXGA (high resolution) LCD panel

FOR MORE INFORMATION
PLEASE VISIT DIGI.COM

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