



ConnectCore 95

SMARC DVK

Hardware Reference Manual

Revision history—90002659

Revision	Date	Description
1P	June 2026	Initial release.

Trademarks and copyright

Digi, Digi International, and the Digi logo are trademarks or registered trademarks in the United States and other countries worldwide. All other trademarks mentioned in this document are the property of their respective owners.

© 2026 Digi International Inc. All rights reserved.

Disclaimers

Information in this document is subject to change without notice and does not represent a commitment on the part of Digi International. Digi provides this document “as is,” without warranty of any kind, expressed or implied, including, but not limited to, the implied warranties of fitness or merchantability for a particular purpose. Digi may make improvements and/or changes in this manual or in the product(s) and/or the program(s) described in this manual at any time.

Warranty

To view product warranty information, go to the following website:

www.digi.com/howtobuy/terms

Customer support

Gather support information: Before contacting Digi technical support for help, gather the following information:

- Product name and model
- Product serial number (s)
- Firmware version
- Operating system/browser (if applicable)
- Logs (from time of reported issue)
- Trace (if possible)
- Description of issue
- Steps to reproduce

Contact Digi technical support: Digi offers multiple technical support plans and service packages. Contact us at +1 952.912.3444 or visit us at www.digi.com/support.

Feedback

To provide feedback on this document, email your comments to

techcomm@digicom.com

Include the document title and part number (ConnectCore 95 SMARC DVK, 90002659 1P) in the subject line of your email.

Contents

About the ConnectCore 95 DVK

Features and functionality	5
Safety instructions	6
Block diagram	7
Placement	8
Connectors	8

Interfaces

Power	11
DC-in connector	11
RTC	11
Power, reset, and sleep buttons	12
System boot	12
Debug interfaces	12
Console	12
USB Recovery	12
Multimedia	12
MIPI/HDMI display	12
LVDS	13
MIPI CSI	13
Audio	15
Storage	16
MicroSD	16
Communication	16
Gigabit Ethernet	16
10G Ethernet	16
RS-485	16
CAN FD	16
USB	17
XBee	18
User interfaces	19
Wireless	19

Specifications

Electrical specification	20
Mechanical specification	20
Environmental specification	20
WLAN specification	20

About the ConnectCore 95 DVK

The Digi ConnectCore® 95 Development Kit, together with the SMARC module solution, is a highly integrated, cost-effective, connected, secure embedded solution, built on the i.MX95 MPU family. It integrates memory, power management, the Digi Microcontroller Assist™, pre-certified wireless connectivity and advanced Digi TrustFence device security with a complete, open-source Linux software platform based on the Yocto Project.

Note While the ConnectCore 95 system-on-module is designed to be used in a production environment, the ConnectCore 95 Development Kit is designed only for development and testing in a pre-production environment.

Features and functionality

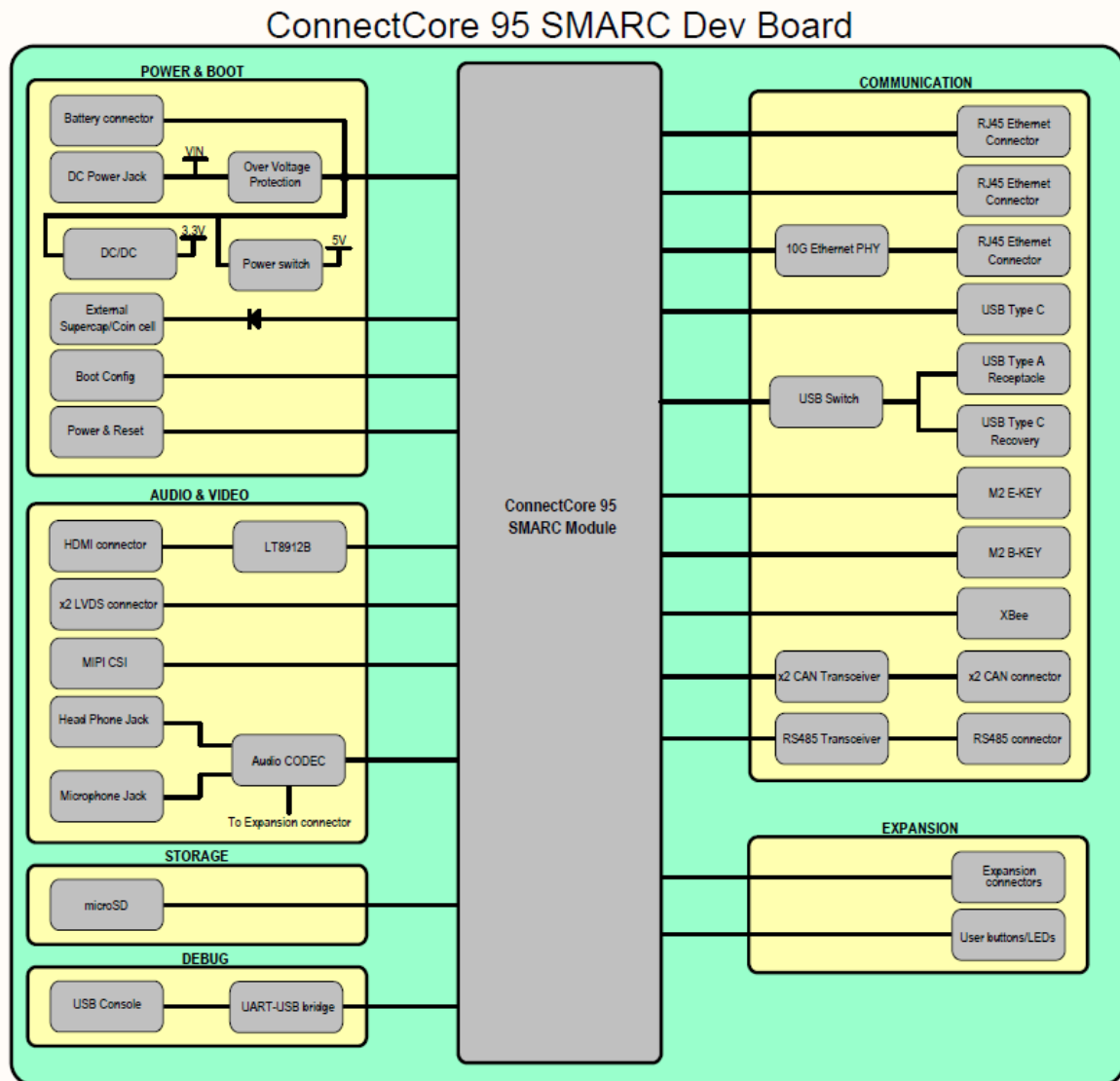
- ConnectCore 95 SMARC module
 - i.MX95 six cores ARM Cortex-A55 operating at speeds up to 2 GHz
 - Up to 2 GB, 16-bit LPDDR5 memory
 - Up to 16 GB, 8-bit eMMC memory
 - IEEE 802.11 a/b/g/n/ac/ax WLAN and Bluetooth 5.3
- Power
 - 12V DIN connector
 - On-board RTC with coin cell connector
 - Power and reset buttons
- Boot source configuration
 - On-module eMMC
 - microSD
 - USB
- Debug
 - Serial console at USB type-C connector
- Multimedia
 - HDMI display (through MIPI-to-HDMI transceiver)
 - Two LVDS interfaces with up to four differential data pairs
 - MIPI CSI camera
 - Audio CODEC with the following functionality
 - One 3.5 mm headphone jack
 - One 3.5 mm microphone jack
 - Two speaker outputs
 - One line-out output
 - Two line-in inputs

- Storage
 - On-module eMMC
 - microSD card slot
- Communication
 - Dual Gigabit Ethernet
 - 10G Ethernet
 - RS-485
 - Dual CAN FD
 - Dual USB Host 2.0 interfaces through a stacked USB A type connector
 - USB type-C port controller supporting USB 3.0
 - Dual M2 card slot: one E-Key and one B-Key sockets.
 - XBee socket supporting XBee Cellular
 - SISO IEEE 802.11 a/b/g/n/ac/ax + Bluetooth 5.3 with on-module U.FL or external SMA antenna connector
- User interface
 - One user LED
 - One user button
- Dimensions:
 - 210 x 140 mm

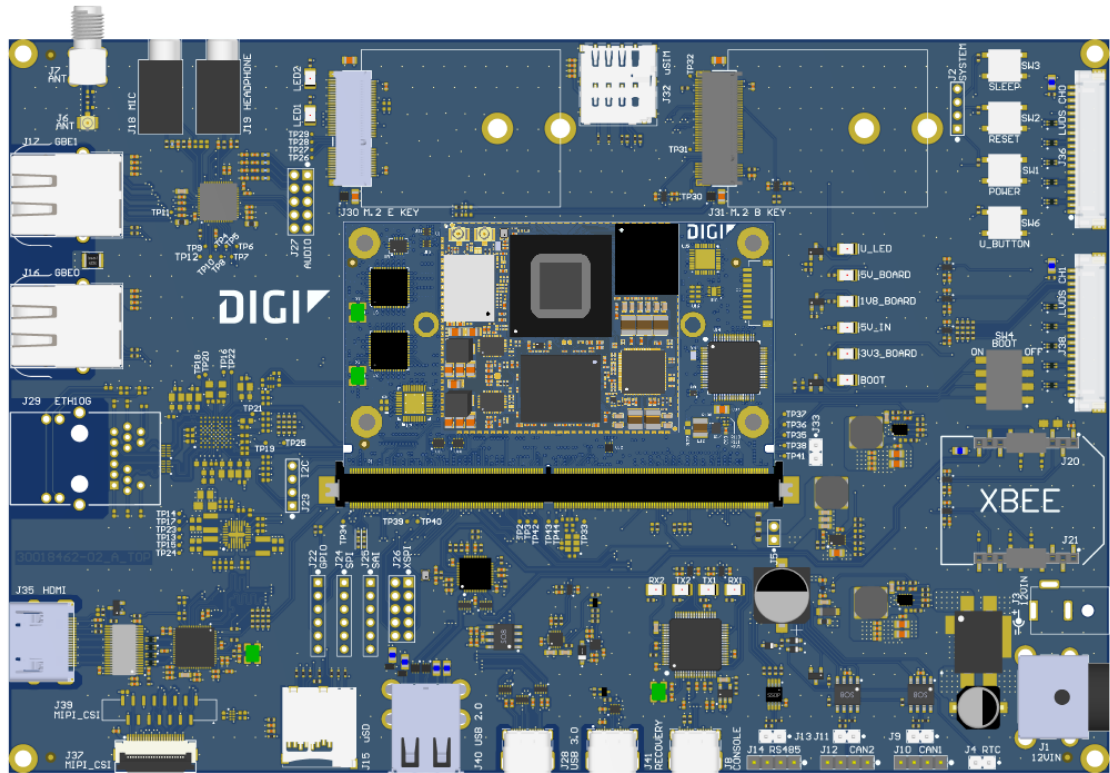
Safety instructions

- The ConnectCore 95 SMARC DVK cannot be guaranteed operation due to the radio link and so should not be used for interlocks in safety critical devices such as machines or automotive applications.
- The ConnectCore 95 SMARC DVK has not been approved for use in (this list is not exhaustive):
 - nuclear applications
 - explosive or flammable atmospheres
- There are no user serviceable components inside the ConnectCore 95 SOM. Do not modify the ConnectCore 95 in any way. Modifications may exclude the SMARC DVK from any warranty and can cause the ConnectCore 95 to operate outside of regulatory compliance for a given country, leading to the possible illegal operation of the radio.
- Use industry standard ESD protection when handling the ConnectCore 95 SMARC DVK.
- Take care while handling to avoid electrical damage to the PCB and components.
- Do not expose ConnectCore 95 SMARC DVK to water or moisture.
- Use this product with the antennas specified in the ConnectCore 95 SOM user guides.

Block diagram



Placement



Connectors

The following table lists all connectors on the ConnectCore 95 SMARC DVK:

Connector	Interface
J1	Input 12V DIN connector
J2	Power, reset and sleep buttons
J3	Alternative input power jack connector
J4	Coin cell
J5	5V SMARC module input power supply series jumper
J6	u.FL
J7	SMA
J8	USB console
J9	CAN1 termination resistor

Connector	Interface
J10	CAN1
J11	CAN0 termination resistor
J12	CAN0
J13	RS485 termination resistor
J14	RS485
J15	microSD
J16	Gigabit 0 RJ-45
J17	Gigabit 1 RJ-45
J18	Microphone jack
J19	Headphone jack
J20-J21	XBee socket
J22	GPIO expansion
J23	I2C expansion
J24	SPI expansion
J25	SAI expansion
J26	XSPI expansion
J27	Audio expansion
J28	USB type-C
J29	10G RJ-45
J30	M2 E-Key slot
J31	M2 B-Key slot
J32	Micro SIM
J33	SMARC TEST jumper
J35	HDMI
J36	LVDS0 display
J37	MIPI camera
J38	LVDS1 display
J39	Alternative MIPI camera connector
J40	Dual USB A-type

Connector	Interface
J41	USB Recovery
SW1	Power button
SW2	Reset button
SW3	Sleep button
SW4	Boot switches
SW6	User button

Interfaces

The following interfaces are available on the ConnectCore 95 SMARC DVK:

Power

DC-in connector

The input voltage of the ConnectCore 95 Development Kit is 12V. This input power supply is provided by a DC-in DIN connector:

Pin	Signal name	Description
1	GND	
2	VIN_12V	12V power supply
3	GND	
4	VIN_12V	12V power supply

From this 12V input power supply, a number of regulators/switches generate the following power supplies on the carrier board:

- 5V Buck regulator (U1): 5V buck regulator that generates the 5V input power supply for the ConnectCore 95 SMARC module.
- 3.3V Buck regulator (U2): step-down regulator that provides 3.3V to different peripherals of the development board.
- 1.8V Buck regulator (U3): step-down regulator that provides 1.8V to different peripherals of the development board.
- 5V Load switch (U4): 5V load switch that controls the power delivery to different interfaces on the carrier board.

RTC

The ConnectCore 95 Development Kit supports an external RTC which is powered from an on-board supercap. An external power source for the RTC can be added at connector J4.

Power, reset, and sleep buttons

One power button (SW1), one reset button (SW2) and one sleep button (SW3) are included on the development board

System boot

The ConnectCore 95 SMARC module supports different boot modes, as defined by the SMARC standard. The development board supports these boot modes through a quadruple switch (SW4):

SW4.1	SW4.2	SW4.3	SW4.4	Boot mode
Close	Open	Open	Open	On-module eMMC
Open	Close	Open		FUSES
Open	Close	Close		MicroSD
Any other combination			Close	USB

Note Switch S4.4 controls the FORCE_RECOV# line, which force the system to boot from USB.

Debug interfaces

Console

A dedicated USB type-C connector (J8) provides access to the console port of the ConnectCore 95 module. This USB port is routed directly to the FT2232 dual USB-TTL bridge, which converts the USB bus into TTL level. UART1 is used as the console debug port of the i.MX95 CPU, while UART2 is used as the console port for the M33 microcontroller embedded on the i.MX95 SoC.

USB Recovery

A dedicated USB Type-C connector (J41) is populated on the ConnectCore 95 Development Kit in order to boot the system from USB. The USB bus connected to the Recovery port is the same as the one connected by default to the USB host. When a cable is attached to the recovery port, a USB switch physically disconnects the bus from the USB Hub and connects it to J41.

Note Refer to [Multiplexing controlled by FORCE_RECOV#](#) for a detailed explanation of USB bus connection/multiplexing on the ConnectCore 95 SMARC DVK/module ecosystem.

Multimedia

MIPI/HDMI display

The ConnectCore 95 SMARC module supports one MIPI-DSI display interface. On the development board, this MIPI-DSI interface is tied to the Lontium LT8912B HDMI bridge so that HDMI is available over a standard HDMI connector.

LVDS

The ConnectCore 95 SMARC module has two native LVDS display interfaces, which are available through 20-pin, 1.25 mm pitch connectors (J36 and J38):

Pin	Signal name	Description
1	3V3_BOARD	3.3V power supply
2	LVDSx_D0_N	Transmission pair data line 0 (-)
3	LVDSx_D0_P	Transmission pair data line 0 (+)
4	GND	
5	LVDSx_D1_N	Transmission pair data line 1 (-)
6	LVDSx_D1_P	Transmission pair data line 1 (+)
7	GND	
8	LVDSx_D2_N	Transmission pair data line 2 (-)
9	LVDSx_D2_P	Transmission pair data line 2 (+)
10	GND	
11	LVDSx_CLK_N	Transmission pair clock line (-)
12	LVDSx_CLK_P	Transmission pair clock line (+)
13	GND	
14	LVDSx_D3_N	Transmission pair data line 3 (-)
15	LVDSx_D3_P	Transmission pair data line 3 (+)
16	LVDSx_BKLT_PWM	Backlight PWM
17	LVDSx_I2C_SCL	I2C bus clock line
18	LVDSx_I2C_SDA	I2C bus data line
19	LVDSx_IRQ#	Interrupt line
20	5V_BOARD	5V power supply

MIPI CSI

The ConnectCore 95 Development Kit provides a 4-lane MPI camera serial interface (MIPI-CSI) over a 22-pin connector (J37):

Pin	Signal name	Description
1	3V3_BOARD	
2	MIPI_CSI1_I2C_SDA	I2C bus data line

Pin	Signal name	Description
3	MIPI_CSI1_I2C_SCL	I2C bus clock line
4	GND	
5	NC	Not connected
6	MIPI_CSI1_PWDN#	Camera power-down line
7	GND	
8	MIPI_CSI1_DATA3_P	Data pair 3 (+) line
9	MIPI_CSI1_DATA3_N	Data pair 3 (-) line
10	GND	
11	MIPI_CSI1_DATA2_P	Data pair 2 (+) line
12	MIPI_CSI1_DATA2_N	Data pair 2 (-) line
13	GND	
14	MIPI_CSI1_CLK_P	Clock pair (+) line
15	MIPI_CSI1_CLK_N	Clock pair (-) line
16	GND	
17	MIPI_CSI1_DATA1_P	Data pair 1 (+) line
18	MIPI_CSI1_DATA1_N	Data pair 1 (-) line
19	GND	
20	MIPI_CSI1_DATA0_P	Data pair 0 (+) line
21	MIPI_CSI1_DATA0_N	Data pair 0 (-) line
22	GND	

Additionally, a 15-pin, 2-lane, Raspberry Pi compatible MIPI camera connector (J39) is available (not populated by default):

Pin	Signal name	Description
1	GND	
2	MIPI_CSI1_DATA0_N	Data pair 0 (-) line
3	MIPI_CSI1_DATA0_P	Data pair 0 (+) line
4	GND	
5	MIPI_CSI1_DATA1_N	Data pair 1 (-) line
6	MIPI_CSI1_DATA1_P	Data pair 1 (+) line
7	GND	

Pin	Signal name	Description
8	MIPI_CSI1_CLK_N	Clock pair (-) line
9	MIPI_CSI1_CLK_P	Clock pair (+) line
10	GND	
11	MIPI_CSI1_PWDN#	Camera power-down line
12	NC	Not connected
13	MIPI_CSI1_I2C_SCL	I2C bus clock line
14	MIPI_CSI1_I2C_SDA	I2C bus data line
15	3V3_BOARD	3.3V power supply

Audio

The Maxim MAX98089 audio codec manages the audio interface on the development board. The board provides the following audio functionality:

- 3.5 mm headphone jack
- 3.5 mm microphone jack
- x2 speaker outputs (left and right)
- x1 line-out output
- x2 line-in inputs

The speakers, line-out signals and line-in signals are available over a 10-pin connector (J27):

Pin	Signal name	Description
1	LINE1_IN_R	Single-ended line input A1
2	LINE1_IN_L	Single-ended line input A2
3	LINE2_IN_R	Single-ended line input B1
4	LINE2_IN_L	Single-ended line input B2
5	LINE_OUT_R	Right line output
6	LINE_OUT_L	Left line output
7	SPKL_P	Positive left-channel class D speaker output
8	SPKL_N	Negative left-channel class D speaker output
9	SPKR_P	Positive right-channel class D speaker output
10	SPKR_N	Negative right-channel class D speaker output

Storage

MicroSD

A microSD socket is available on the ConnectCore 95 Development Kit.

Communication

Gigabit Ethernet

The ConnectCore 95 Development Kit supports up to two 10Base-T/100Base-Tx/1000Base-T Ethernet ports through RJ-45 connectors with integrated link/activity LEDs.

10G Ethernet

One 10G Ethernet port is supported in the ConnectCore 95 SMARC DVK through the Marvell AQR113C 10G PHY, and is accessible through a 10G RJ-45 connector with integrated link/activity LEDs.

Note 10G Ethernet circuitry is not populated by default.

RS-485

One RS-485 port is supported on the ConnectCore 95 DVK, available in connector J14:

Pin	Signal name	Description
1	3V3_BOARD	3.3V power supply
2	RS485_B	RS485 B line
3	RS485_A	RS485 A line
4	GND	

A 120Ω terminator resistor can be connected to RS485 bus by closing J13.



On ConnectCore 95 Development Kit version 2, the DE/RE# line of the RS-485 transceiver is routed to a GPIO of the MCA (MCA_IO18) which cannot toggle in interrupt context. RS-485 transceiver cannot work in this scenario and has been disabled on the default device tree.

This will be resolved in a future redesign of the DVK using a native GPIO of the i.MX95 to drive the DE/RE# line of the RS-485 transceiver.

CAN FD

Two CAN FD buses are available on the development board through connectors J10 (i.MX95 CAN2) and J12 (i.MX95 CAN3). The pinout of these connectors is as follows:

Pin	Signal name	Description
1	5V_BOARD	5V power supply
2	CANx_P	CAN high line
3	CANx_N	CAN low line
4	GND	

120Ω terminator resistors can be connected to each port by closing J9 (i.MX95 CAN2) and J11 (i.MX95 CAN3).

USB

This section contains detailed information about the USB connectors on the ConnectCore 95 SMARC DVK.

Note NXP documentation uses inconsistent naming for the i.MX95 USB controllers. In this Digi hardware documentation, USB1 refers to the USB 3.0 / SuperSpeed controller, while USB2 refers to the USB 2.0 controller. Note, however, that schematics, NXP datasheet, and pad names refer to the USB 3.0 controller as USB1 (for example, USB1_xx pads), whereas NXP Hardware Reference Manual and Linux device tree sources typically name it USB3. The USB 2.0 controller is consistently associated with USB2 / USB2_xx.

USB Host

The ConnectCore 95 Development Kit offers support for four USB Host interfaces. Two of them are available over a stackable dual USB A-type connector. The third USB Host is connected to the XBee socket. The fourth is connected to the M2 E-Key slot. All USB Hosts can operate at full, high, and low speed.

Note The fourth USB port can be disconnected from M2 E-Key slot and connected to M2 B-Key connector. The selection is done through 0-ohm resistors (R40, R67, R69 and R70).

USB type-C port controller

One USB type-C port controller is available on the development board, supporting USB 3.0. Power delivery can provide up to 3A.

Multiplexing controlled by FORCE_RECOV#

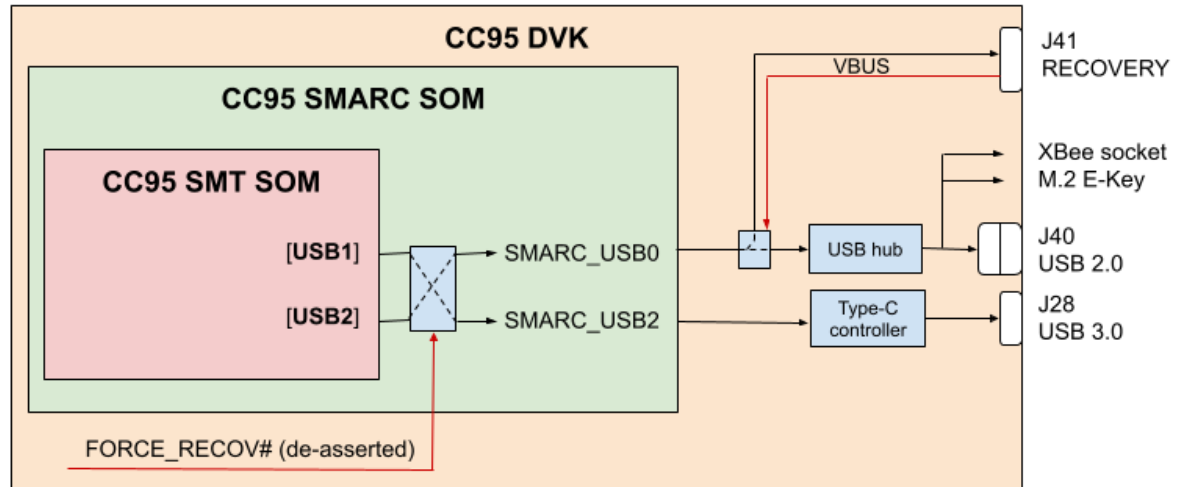
To comply with the SMARC specification requiring specific USB recovery capability, SMARC_USBx ports on the ConnectCore 95 SMARC DVK are routed differently depending on the status of the FORCE_RECOV# line.

The multiplexer on SMARC_USB0 port is managed by an existing voltage in VBUS. When a cable connected to J41 carries a voltage in VBUS, the multiplexer carries the signals to this connector and the USB hub is disconnected.

By default, when FORCE_RECOV# is **de-asserted**:

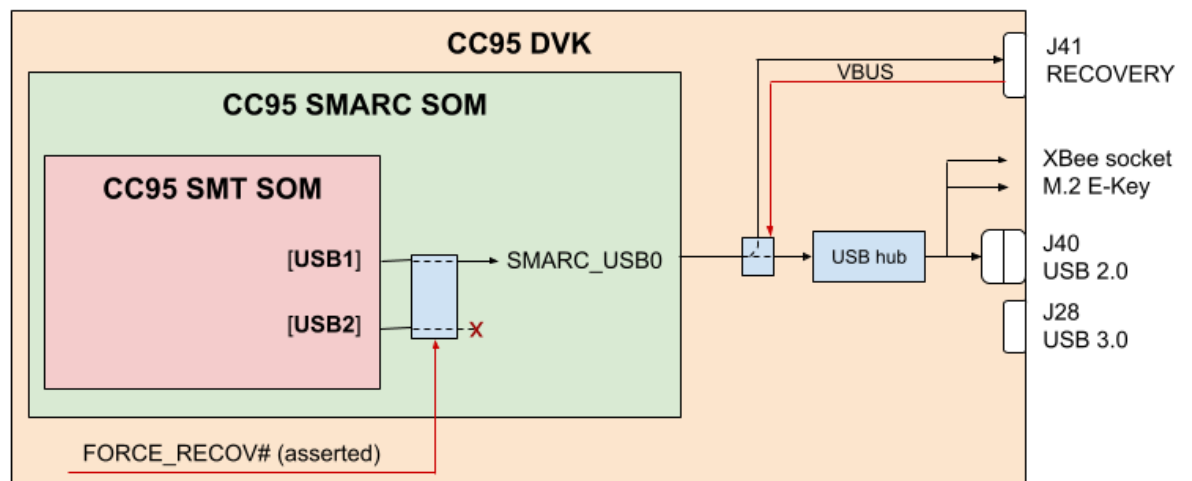
- CPU USB1 (SMARC_USB2) is routed to USB 3.0 port (J28 connector)
- CPU USB2 (SMARC_USB0) is routed through a multiplexer to:

- Type-C connector (J41 RECOVERY connector), and
- a four-port USB hub that makes it available at:
 - a stackable dual USB Type-A connector (J40 connector)
 - the XBee socket
 - the M.2 E-Key connector (and optionally to M.2 B-Key connector through 0-ohm resistors)



When **FORCE_RECOV#** is **asserted**:

- CPU USB1 (becomes **SMARC_USB0**) is routed to Type-C connector (J41 RECOVERY connector)
- CPU USB2 does not reach the SMARC connector lines; the multiplexer does not route USB2 to the SMARC SOM at all in this case.



XBee

One XBee socket is populated on the development board, supporting XBee Cellular modules.

User interfaces

One user LED and one user button are available on the development board.

Wireless

There is a u.FL connector (J6) which is routed directly to a SMA connector (J7). The purpose is to adapt the u.FL form factor to SMA form factor in order to extend the number of antennas that can be used on the development board for either the on-module antenna path or any other RF path that could be used on a M2 or XBee board.

Specifications

Electrical specification

The ConnectCore 95 Development Kit has two supply inputs. One of them powers the whole system (development board plus the ConnectCore 95 SMARC module), and the other one powers the RTC of the module when the main supply is not present. The following table shows the voltage range of the input supplies of the ConnectCore 95 Development Kit:

Signal	Description	Min	Typ	Max	Unit
VIN_12V (DIN connector)	Power jack input	-	12	-	V
VDD_RTC	Supply for RTC	2.0	-	3.6	V

Mechanical specification

The ConnectCore 95 Development Kit dimensions are 210 x 140 mm. Four 3.2mm drills are located on the four corners of the PCB for assembling the board into an enclosure. These drills have a 5.5mm round metalized area for the screws and nuts.

Environmental specification

Specification	Operating temperature
Industrial	-40° C to +85° C

WLAN specification

For a complete WLAN specification, refer to the [ConnectCore 95 System-on-Module Hardware Reference Manual](#).