

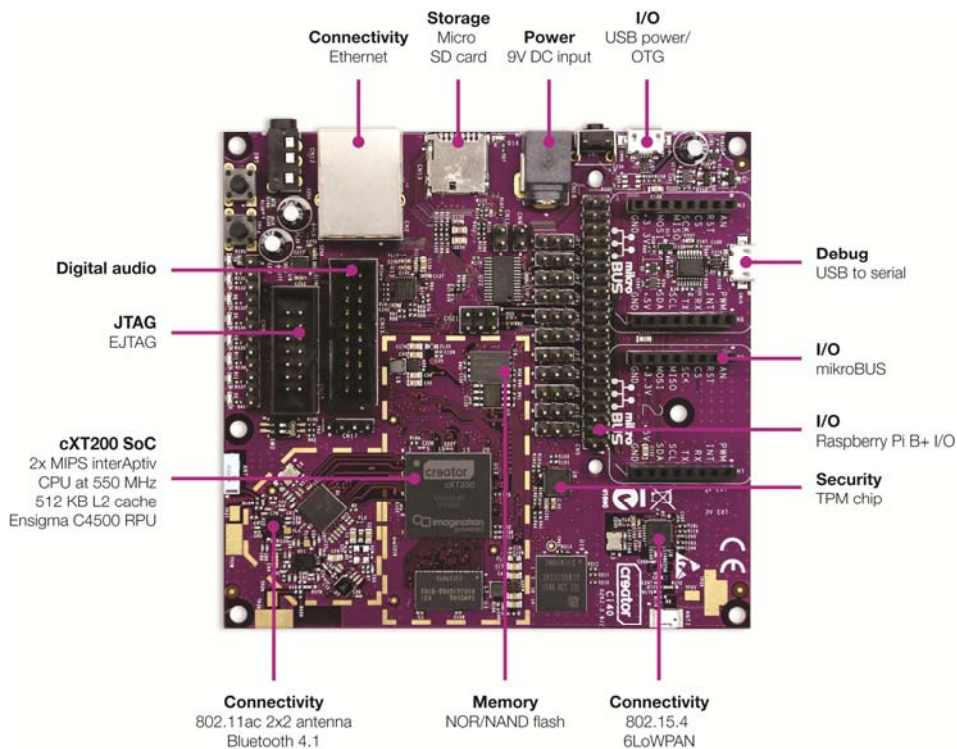


Creator Ci40 product brief

Creator Ci40 is a high-performance, low-power IoT hub that packs Ethernet, Wi-Fi, 802.11b/g/n/ac, Bluetooth Classic and Low Energy and an 802.15.4 radio onto a powerful IoT gateway with expansion ports for even more RF standards or development ideas.

At its heart, the Creator cXT200 SoC includes a dual-core, dual threaded MIPS CPU clocked at 550 MHz and an Enigma connectivity engine that covers super-fast 802.11ac 2x2 MIMO Wi-Fi and low-power Bluetooth and Bluetooth low energy (Classic and Smart).

Overview



Features

- 802.11b/g/n/ac, 2x2, 2.4 and 5 GHz
- 802.15.4 radio
- Bluetooth Classic and Low Energy
- 10/100Mbps Ethernet
- USB
- Audio in and out
- 2x mikroBUS expansion ports

Benefits

- FlowCloud ready
- Unify disparate IoT RF protocols on a single hub
- Securely connect range of sensors
- Open source examples
- User programmable

Applications

- IoT development
- Home automation
- Internet control of Wi-Fi devices
- Internet control of 6LoWPAN devices
- Internet control of Bluetooth devices
- Ethernet connected gateway

Version history

Issue	Date	Comments
1.0	01/03/2016	Initial release

Contents

Getting started	4
Technical specifications	5
Connector types	6
Power	7
Where to find more information (Links)	8
More documentation	8
FlowCloud	8

Getting started

You'll find all the information that you need to get up and running on the Creator Ci40 website:

<https://community.imgtec.com/platforms/creator-ci40>

If you have any questions, please use our forums (see the last page for more information).

Technical specifications

Feature	Description
SoC	cXT200
CPU	Dual-threaded MIPS interAptiv
Caches	32/32 kB L1 I- and D-cache per CPU, 512 kB L2 cache
RAM	2 Gbit DDR3
NAND	4 Gbit
NOR	16 Mbit
Trusted platform module	Infinion SLB9645
SD card (default option)	1x Push-Pull µSDCard slot
eMMC (alternate option)	32 Gbit
USB	1x USB OTG 5V 1A output to USB device
Ethernet	1x 10/100 Mbps using Micrel KSZ8091RNDCA controller over RMII interface
Wi-Fi	Imagination iE1000/D0
Bluetooth	CSR CSR8811-A12
6LoWPAN	Cascoda CA8210. On-board ceramic antenna
SPI	1 port available on mikroBUS and Raspberry Pi expansion headers, with 2 chip selects
I2C	2 ports available on mikroBUS and Raspberry Pi expansion headers
ADC Input	3 inputs on dedicated ADC header, 0-5V 2 inputs available on mikroBUS and Raspberry Pi expansion headers, 0-5V
SoC UART	1 with integrated FTDI UART<->USB controller. Connection via dedicated µUSB socket
Expansion UARTs	2 ports on mikroBUS and Raspberry Pi expansion headers, via NXP SC16IS752 dual UART IC
Analogue audio	Stereo audio out on 3.5mm jack socket, via headphone amplifier Mono microphone input on headphone socket supporting CTIA headset connection with bias voltage Stereo input accessible on PCB solder pads, shared with microphone input
Digital audio	Digital audio header providing: 3 channels I2S output 4 channels I2S input 1x S/PDIF Input (3v3 logic) 1x S/PDIF Output (3v3 logic)
Expansion	2x mikroBUS click ports 1x 40 pin expansion header supporting Raspberry Pi B+ expansion boards (Note: The mikroBUS and RPi expansion port share signals and cannot be used at the same time)
LEDs	1x Power ON LED 1x LED from SoC 7x LEDs from System UART GPIO
Switches	1x System reset 2x User switches to SoC
MFIO	19 available across all headers (without affecting on-board peripheral and mikroBUS functionality) 36 available across all headers (without affecting on-board peripheral functionality) 51 available across all headers (with reduced on-board peripheral functionality)
JTAG	Standard 14-pin MIPS EJTAG header
Power	5V via USB connection. (Ci40 board only - no expansion boards fitted) 9V via 5.5 mm (shield) x 2.1 mm (pin) centre positive connector
Recommended DC input	DC input 9V 400 mA – 3000 mA depending on expansion board loading
Approvals	FCC ID: X280075, IC: 8864A-0075, R&TTE Directive 1999/5/EC



Connector types

Connector	Schematic name	Details
Power	CN16	5.5mm shield x 2.1mm pin 9V centre positive
Ethernet	CN2	Standard RJ45 connector
Digital audio	CN15	20 pin (2x10) 0.1" pitch shrouded header I2S output – 3 channels I2S input – 4 channels S/PDIF input and output
Audio headphone/microphone	CN12	3.5mm 4-pin Stereo output and mono microphone input CTIA headset compatible
Audio input	TP40, TP41, TP42	PC pads Stereo input direct to audio ADC, with microphone bias voltage Shared with microphone input from CN12
Buttons	SW1, SW2	User inputs direct to SoC MFIO
Reset button	SW4	System reset
Configuration switch	SW3	2 pole DIP switch Boot mode – Normal or JTAG Microphone gain – Enable/disable audio ADC +15dB input gain
SD card	CN13	uSDCARD socket
USB	CN40	µUSB OTG
UART	CN10	µUSB SoC UART via FTDI USB<->UART bridge
mikroBUS expansion	CN3,CN6 (port 1) CN4, CN7 (port 2)	8 pin SIL 0.1" sockets 2x mikroBUS ports supporting MikroElektronica click peripheral boards
Raspberry Pi expansion	CN5	40 pin (2x20) 0.1" pitch header Supports Raspberry Pi B+ functionality
JTAG	CN1	14 pin (2x7) 0.1" pitch shrouded header MIPS EJTAG compatible
Analogue input	CN17	4 pin SIL 0.1" header Analogue input to SoC AUX-ADC, 3 channels and ground
5V peripheral power out	CN9	2 pin SIL 0.1" header 5V output to power peripheral boards Max current: TBA
Remote power disable	CN11	2 pin SIL 0.1" header Short pins to disable 5V power supply for connection to remote power switch
Remote user interface	CN8	12 pin SIL 0.1" header Control signals for the buttons (2x) and LEDs (8x) For connection to switches and LEDs on a remote user interface panel
Configuration jumpers	JP1-JP11	3 pin SIL 0.1" headers (11 off) Configuration of mikroBUS and Raspberry Pi signals between their primary functions and MFIO
Wi-Fi/Bluetooth remote antenna	TP27, TP29	PCB pads Direct solder connection for coaxial feed to remote Wi-Fi/Bluetooth antennas (requires component configuration to enable these ports)

Connector	Schematic name	Details
6LoWPAN remote antenna	TP25	PCB pads Direct solder connection for coaxial feed to remote 6LoWPAN antenna (requires component configuration to enable this port)
LEDs	LED 0-6 PWM3 D16	Driven by SPI UART GPIO Driven from SoC PWM output Power LED on 5V system supply

Power

State	Current draw @ 5V via USB OTG	Current draw @ 9V via DC power socket
In reset	TBD	TBD
Boot loader running	TBD	TBD
Linux running	TBD	TBD
Wi-Fi operational	TBD	TBD

Note: Power should be derived from an LPS supply meeting the requirement for SELV (Safety Extra Low Voltage) as defined in EN 60950-1.

Where to find more information (Links)

More documentation

You can find detailed documentation, including user guides, full hardware schematics and more by visiting:
<http://community.imgtec.com/platforms/creator-Ci40>

FlowCloud

FlowCloud is an application agnostic platform designed to accelerate IoT development. For more information on FlowCloud and to find out how to connect your Ci40 to FlowCloud visit:

<http://flow.imgtec.com/developers/help/Ci40/setup>

UK t: +44 1923 260511

enquiries@imgtec.com

USA t: +1 408 530 5000

www.imgtec.com

TM/® Denotes a trademark or registered trademark of Imagination Technologies Limited and/or its affiliated group companies in the United Kingdom and/or other countries. All other logos, products, trademarks and registered trademarks are the property of their respective manufacturers. E&OE. Copyright © 2016 Imagination Technologies Limited, an Imagination Technologies Group plc company. March 2016.

