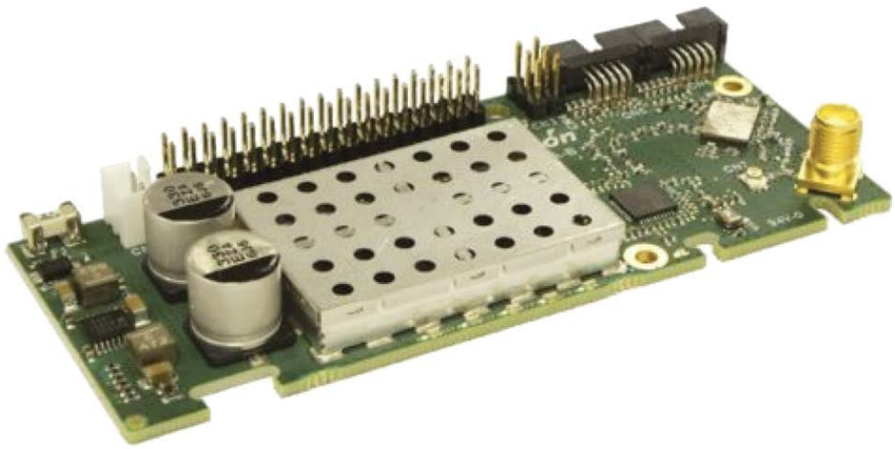


Itron® Riva Dev LE board

Connecting Developers with Water and Energy

Make a difference in the world by developing new applications for water, energy, and smart cities with cutting edge Itron Riva technology. Build robust, reliable IoT applications for battery-powered or low powered devices using the Itron Riva Dev LE (low energy) board. With a 900 Mhz 802.15.4g radio, the Itron Riva Dev LE board provides RF communications, operating at a fixed bandwidth (FSK - 12.5Kbps) which is ideal for low powered or battery powered devices. The LE manages processing, board functions, and voltage requirements to optimize battery life, all while maintaining reliable connectivity. The Itron Riva Dev LE boards are also used for mains-powered devices designed to operate in a low energy environment.

Itron Riva Dev LE board is open-standards based, IP addressable and natively operates in IPv6 networks, offering developers the flexibility to create innovative IoT energy and water applications for utilities and smart cities where there is a demand for low energy usage. With long battery life, the LE is ideal for field devices without access to power such as gas pipeline monitors or devices designed to facilitate water conservation.

The Itron Riva Dev LE has a small memory footprint, but efficiently handles remote command and control capabilities. Communications between the application processor and communication processor occur using secured UART.

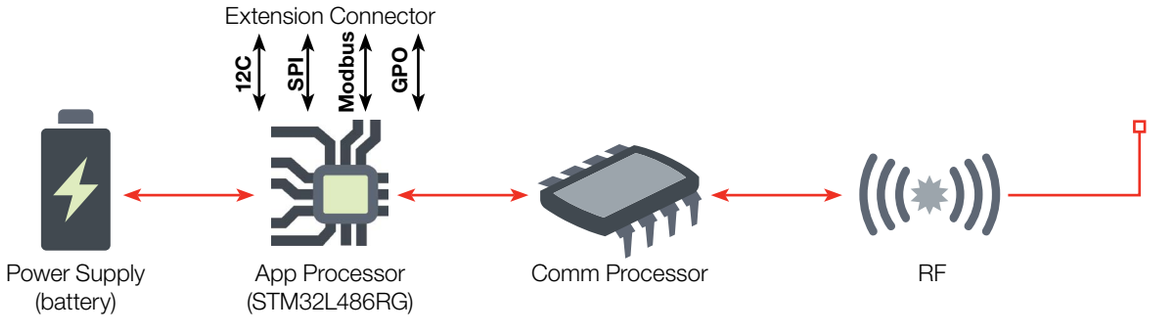
SPECIFICATIONS

HOW IT WORKS:

The Itron Riva Dev LE board consists of a dual processor ARM Cortex Development platform, one processor for applications and one for network communications. The network protocol is compliant to IEEE 802.15.4g,

IPv6 specifications and it is interoperable with the Itron Riva Dev Edge RF board. It can work both in a star configuration, connecting directly to a router, and in a mesh configuration connecting as a leaf node to a mesh node. It supports an authenticated, encrypted interface to the cloud.

Designed to maximize power management and optimize battery output, the battery life of the Itron Riva Dev LE board is dependent on the specific application, radio reporting intervals and battery size.



PROGRAMMING THE ITRON RIVA DEV LE BOARD

Itron Riva Dev LE board is programmed via standard IDE, for example Eclipse and GNU tools. SDK details are provided in documentation Quick Starter Guide.

The Itron Riva Dev LE board SDK software download provides SPLC (Sensor Programmable Logic controller) API to ease integration of sensors and actuators.

SPLC programs high level sensor drivers and business logic application

Itron provides a sample SPLC program to demonstrate use of SPLC API's as well as how to access I/O ports on the board for custom use.

KEY FEATURES

- Battery powered, supply voltage 4.8V to 7.4V
- Two processors, one for application (STM32L486RG), one for RF communication with onboard SWD debug connectors
- Dedicated application connector with UART, I2C, SPI, GPIO, Modbus & controllable power pins
- Onboard LEDs, visible through the chassis window for diagnostics and SW development, controlled from application processor
- RF connection to Itron Riva Dev Edge board, and other compatible hardware, via Itron's Riva network
- 863 to 960 MHz frequency range for international operation
- 1W RF max power. Peak current 0.5A at full-power RF transmission at 6V supply
- PCB form factor 99.0 x 42.5 mm
- Fits into standard Itron's MLD-5003-502 model for IP 65 chassis

ITRON RIVA DEV LE APPLICATION PROCESSOR ARCHITECTURE SUPPORTED FEATURES:

Category	Features	Specification
Application processor (MPU)	Chipset Core Clock Speed	STM32L486RG 32-bit Cortex-M4 CPU 4 to 48 MHz
PCB Size		99.0 x 42.5 mm
Memory	Flash SRAM	1 MB

PROPERTIES OF PINS AND CONNECTORS ON BOARD:

Connector	Name	Description
CN1	Power supply	4.8V to 7.4V
CN2	System Connector	34-pin SPI, I2C, ADC, UART and GPIO interfaces
CN3	'FTDI' debug port	Application processor debug port
CN4	'FTDI' debug port	Communication processor debug port
CN5	JTAG debug connector	Application processor JTAG interface
CN6	JTAG debug connector	Communication processor JTAG interface
CN7	Power amplifier	JTAG debug connector
CN8	Antenna connector	

34-PIN SYSTEM CONNECTOR:

Cn2 Connector Pin Number	Purpose	Functionality	Processor	Description
1	+VBAT	POWER SUPPLY	-	-
2	+3.3V	POWER SUPPLY	-	3.3 v supply
3	GND	POWER SUPPLY	-	Ground
4	USB_DM/USART1_CTS	USB/UART	COMM PROCESSOR	The pin can be configured as USB_ DM or UART1_CTS
5	USB_DP/USART1_RTS	USB/UART	COMM PROCESSOR	The pin can be configured as USB_ DP or UART1_RTS
6	USB_OE#/JTMS1	USB/UART	COMM PROCESSOR	-
7	USB_SOF	USB/UART	COMM PROCESSOR	-
8	USB_ID/USART1_RX	USB/UART	COMM PROCESSOR	The pin can be configured as USB_ID or UART1_RX
9	USB_VBUS/USART1_TX	USB/UART	COMM PROCESSOR	The pin can be configured as USB_ VBUS or UART1_TX
10	GND	POWER SUPPLY	-	Ground
11	USB_DM/USART1_CTS	USB/UART	APP PROCESSOR	The pin can be configured as USB_ DM or UART1_CTS
12	USB_DP/USART1_RTS	USB/UART	APP PROCESSOR	
13	USB_OE#/JTMS1	USB/UART	APP PROCESSOR	-

34-PIN SYSTEM CONNECTOR CONTINUED:

Cn2 Connector Pin Number	Purpose	Functionality	Processor	Description
14	USB_SOF	USB/UART	APP PROCESSOR	-
15	USB_ID/USART1_RX	USB/UART	APP PROCESSOR	The pin can be configured as USB_ID or UART1_RX
16	USB_VBUS/USART1_TX	USB/UART	APP PROCESSOR	The pin can be configured as USB_ VBUS or UART1_TX
17	GND	POWER SUPPLY	-	Ground
18	SPI1-SCK	SPI	APP PROCESSOR	SPI1 Clock
19	SPI1-CS	SPI	APP PROCESSOR	SPI1 Chip Select
20	SPI1-MISO	SPI	APP PROCESSOR	SPI1 Master In Slave Out
21	GND	POWER SUPPLY	-	Ground
22	SPI1-MOSI	SPI	APP PROCESSOR	SPI1 Master Out Slave In
23	IO_WAKE_OUT	NOT USED	APP PROCESSOR	-
24	IO_WAKE_IN	NOT USED	APP PROCESSOR	-
25	GPIO_4	GPIO	APP PROCESSOR	The pin can be configured as GPIO IN/OUT
26	GPIO_5	GPIO	APP PROCESSOR	The pin can be configured as GPIO IN/OUT
27	GPIO_6	GPIO	APP PROCESSOR	The pin can be configured as GPIO IN/OUT
28	GPIO_7	GPIO	APP PROCESSOR	The pin can be configured as GPIO IN/OUT
29	GPIO_0	GPIO/ADC	APP PROCESSOR	The pin can be configured as GPIO IN/OUT or ADC Channel 1
30	GPIO_1	GPIO/ADC	APP PROCESSOR	The pin can be configured as GPIO IN/OUT or ADC Channel 2
31	GPIO_2	GPIO/ADC	APP PROCESSOR	The pin can be configured as GPIO IN/OUT or ADC Channel 3
32	GPIO_3	GPIO/ADC	APP PROCESSOR	The pin can be configured as GPIO IN/OUT or ADC Channel 4
33	I2C1_SCL	I2C	APP PROCESSOR	I2C1 Clock
34	I2C1_SDA	I2C	APP PROCESSOR	I2C1 DATA

» Low power mode: For best results application processor firmware configured in Stop 2 mode and the consumption is 1.4 µA with RTC

» Expected wake cycles per day: The Communication processor wakes every 30 seconds and scans for parent.

Itron

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