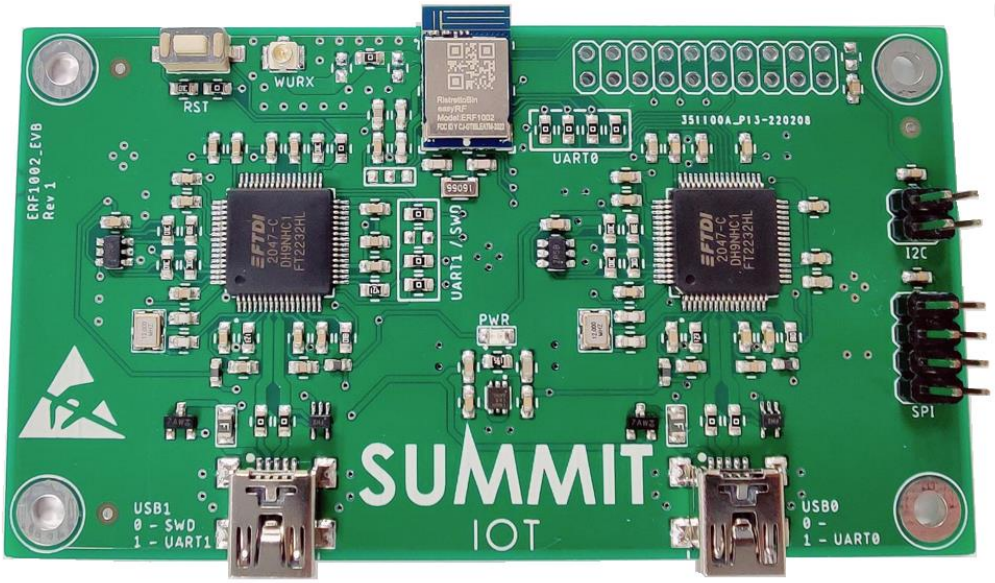
ERF1002_EVB, Extreme Low Power Bluetooth 5.0 SoC Module



ERF1002_EVB, Extreme Low Power Bluetooth 5.0 SoC Module

Document Information	
Title	**ERF1002**
Subtitle	**Extreme Low Power Bluetooth 5.0 SoC Module**
Document type	**Quick Start Guide**
Document number	**1**
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Product status

(MP) Mass Production

This document applies to the following products:

Name	Type number	version	Product status
ERF1002_EVB	**ERF1002_EVB**	**1.0**	MP (Mass Production)

ERF1002_EVB, Extreme Low Power Bluetooth 5.0 SoC Module

Contents

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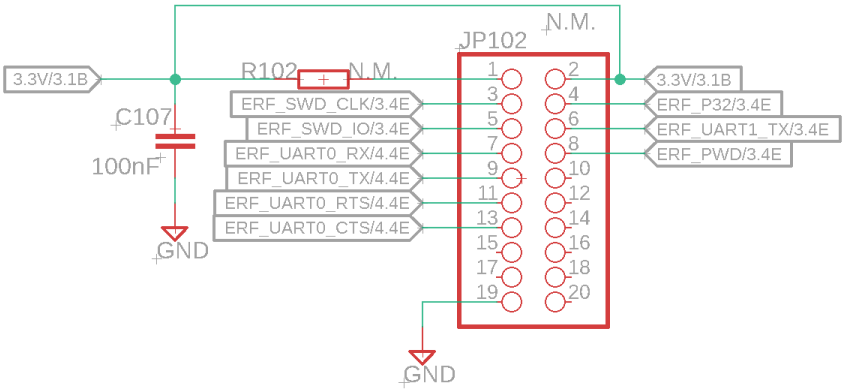
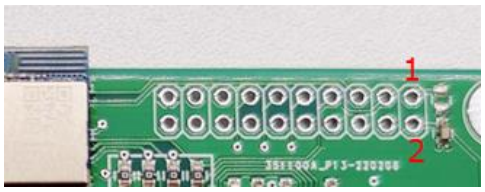
1 Functional description

1.1 Product Overview

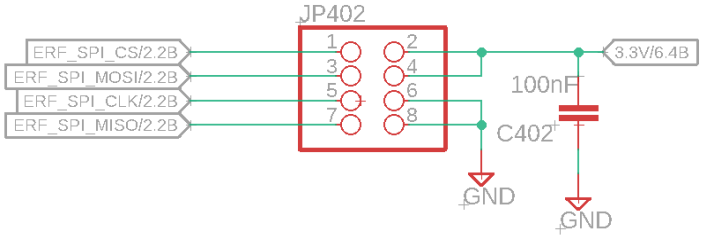
All the ERF1002 modules pins can be found on the following headers to simplify prototype development.

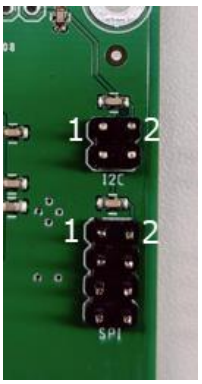
Interface header



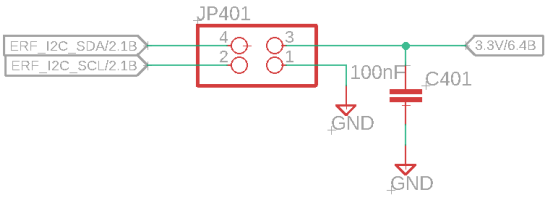


SPI header





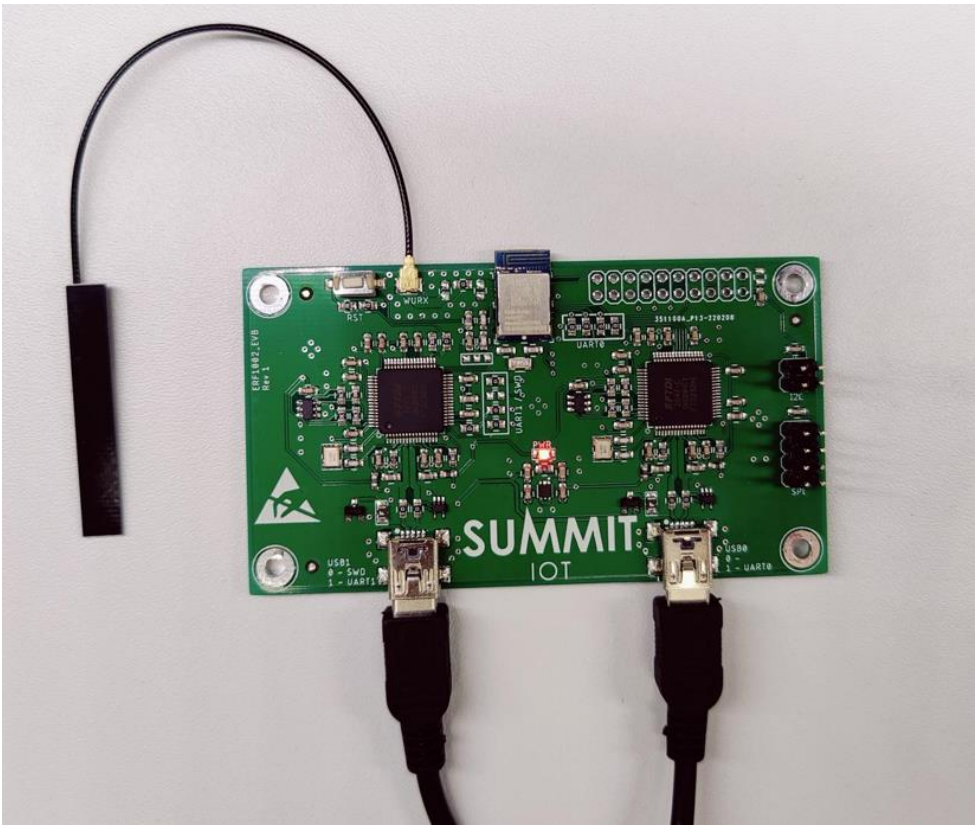
I2C header



Besides the headers, the board has 2 USB connectors for easy access to the UART interfaces and SWD interface. UART1 and the SWD interface are connected to USB1 and UART0 is connected to USB0.

1.2 Connecting Hardware

With the EVB comes 2 USB cables and a 2.4Ghz antenna.
The USB cables are used to power the EVB (1 USB is enough to power the board), and for data communication.
The Antenna is only used for the Wake up Radio and can be connected if the Wake up radio is used.
USB 1 is used for debug information and flashing software.
USB 0 is used for AT-communication with the BLE_atcmd example.



1.3 Software Flashing

The Atmosic SDK can be downloaded from the Atmosic portal.
In order to access this, please request access by contacting info@summit-electronics.com
After installing the SDK, Connect the USB1 interface to the PC, leave USB0 unconnected for software flashing.
Next navigate to the SDK folder and run the InstRDI executable, this will install the necessary drivers on your PC.

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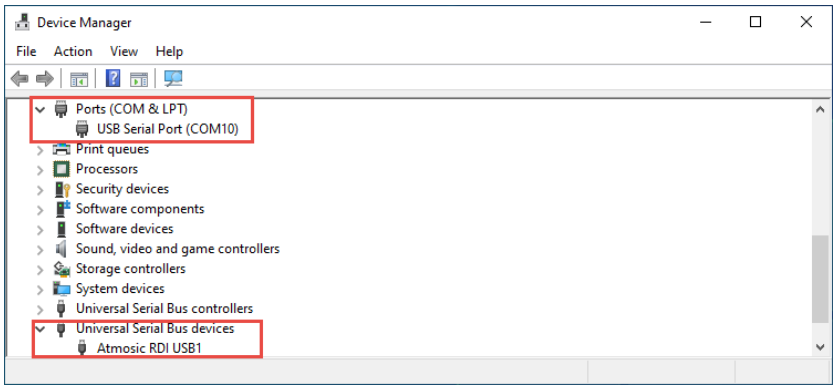
AtmosicSDK › 4.3.0

Name	Date modified	Type	Size
contrib	13-1-2022 09:37	File folder	
doc	13-1-2022 09:37	File folder	
licenses	13-1-2022 09:37	File folder	
platform	13-1-2022 09:37	File folder	
tools	13-1-2022 09:38	File folder	
CHANGES	22-12-2021 09:41	File	27 KB
InstAtmx	22-12-2021 10:23	Application	45 KB
InstRDI	22-12-2021 10:23	Application	45 KB
README	22-12-2021 09:41	File	3 KB
RmvRDI	22-12-2021 10:23	Application	45 KB
setup	22-12-2021 10:23	Configuration settings	1 KB
symlink	22-12-2021 09:42	Windows Batch File	1 KB
unInst_4.3.0	13-1-2022 09:38	Application	38 KB
version	22-12-2021 09:42	H File	1 KB
version	22-12-2021 09:43	Text Document	1 KB

After installing, check the device manager.
If the drivers are installed correctly you should have 1 COM port, and 1 new device under USB-devices.
If you have 2 COM ports, please check USB1 is connected and try InstRDI.exe again.



Before BLE_atcmd can be loaded, it is necesarry to define on which pins UART0 is located.
(UART0 is used for AT-communication in the BLE_atcmd example)
Navigate to the BLE_atcmd example and open the makefile using a text editor.
Scroll down until you see:

```
############################## Example(application) Sources ########################
SRC_TOP = src
SRC_NONBT = src/non_bt
SRC_BT = src/bt
```

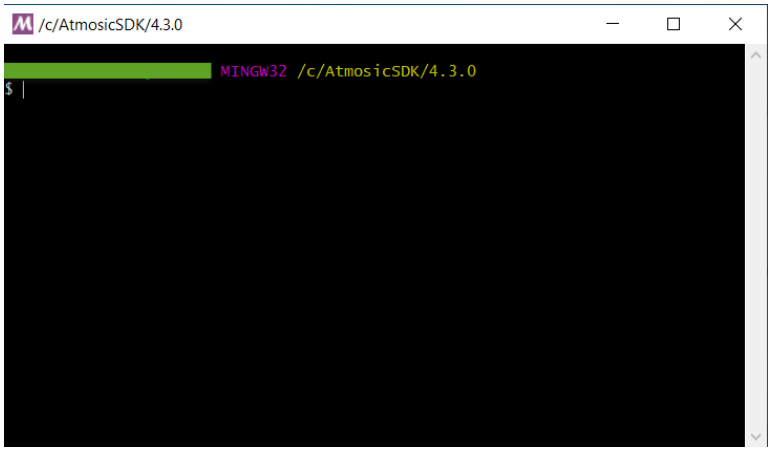
Below these lines the following code needs to be added:

```
# configure uart0 baud rate and pinmux setting
CFLAGS += \
    -DUART0_RAW_TXPIN=23 \
    -DUART0_RAW_RXPIN=25 \
    -DUART0_RAW_CTSPIN=11 \
    -DUART0_RAW_RTSPIN=24 \
    -DUART0_RAW_BAUD=460800
```

After make sure to save the file.

To load the example on the EVB, open the SDK_X.X.X executable.

This will open the following window:



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Navigate to example folder using: cd platform/atm2/ATM22xx-x0x/examples

```
MINGW32 /c/AtmosicSDK/4.3.0
$ cd platform/atm2/ATM22xx-x0x/examples

MINGW32 /c/AtmosicSDK/4.3.0/platform/atm2/ATM22xx-x0x/examples
$
```

From here you can view all examples:

```
MINGW32 /c/AtmosicSDK/4.3.0/platform/atm2/ATM22xx-x0x/examples
$ ls
ATM_ancsc            BLE_att_client  ESL_client    HRP_sensor      mech_switch_harv  tmp1075_sensor_adv
ATM_cap              BLE_att_server  ESL_server    HT_thermometer  OTP_beacon        TPUTP_client
ATM_framework_test   BLE_bridge      extra_flash   ICM_sensor      per_sync          TPUTP_server
ATM_pwm              BLE_harv_adv    GPIO          LECB_client     pm_demo           UART_bootloader
ATM_shub             BLE_scan        HCI           LECB_server     PV_beacon         uart0_raw_demo
ATM_timer            BLE_scan_adv    HCI_vendor    led_demo        RAM_hibernate     vkey_test
BLE_adv              button_demo     HIB_restore   lis2dh12_demo   README            WURX_adv
BLE_adv_scan         CT_tracing      HID_keyboard  makefile        RFsource_adv      WURX_scan_adv
BLE_atcmd            DTM             HID_remote    mbedtls_bist    RFsource_scan
```

For now we will load BLE_atcmd as this is the default software for the ERF1002 module.
The BLE_atcmd will allow for communication via UART0 using AT-commands.
For more details on the AT-commands please see the ERF1002_AT_Manual.pdf

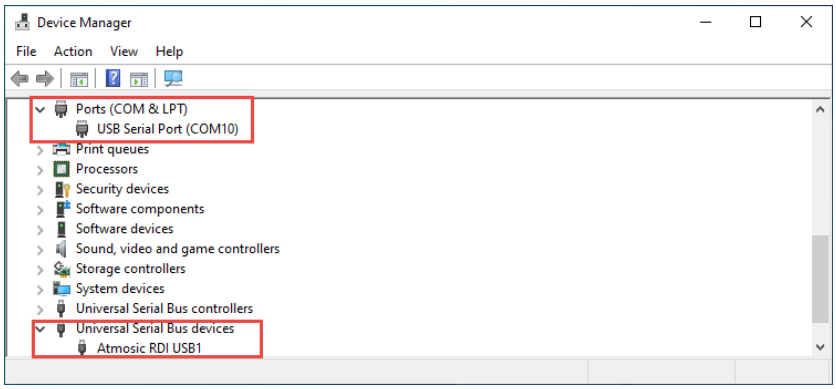
```
MINGW32 /c/AtmosicSDK/4.3.0/platform/atm2/ATM22xx-x0x/examples
$ cd BLE_atcmd

MINGW32 /c/AtmosicSDK/4.3.0/platform/atm2/ATM22xx-x0x/examples/BLE_atcmd
$ make run
```

After using “Make run” the program will build and load to the ERF1002 module.
If you get an error, please check the path is correct, and also verify if the drivers are installed correctly:

Path:

```
MINGW32 /c/AtmosicSDK/4.3.0/platform/atm2/ATM22xx-x0x/examples
```

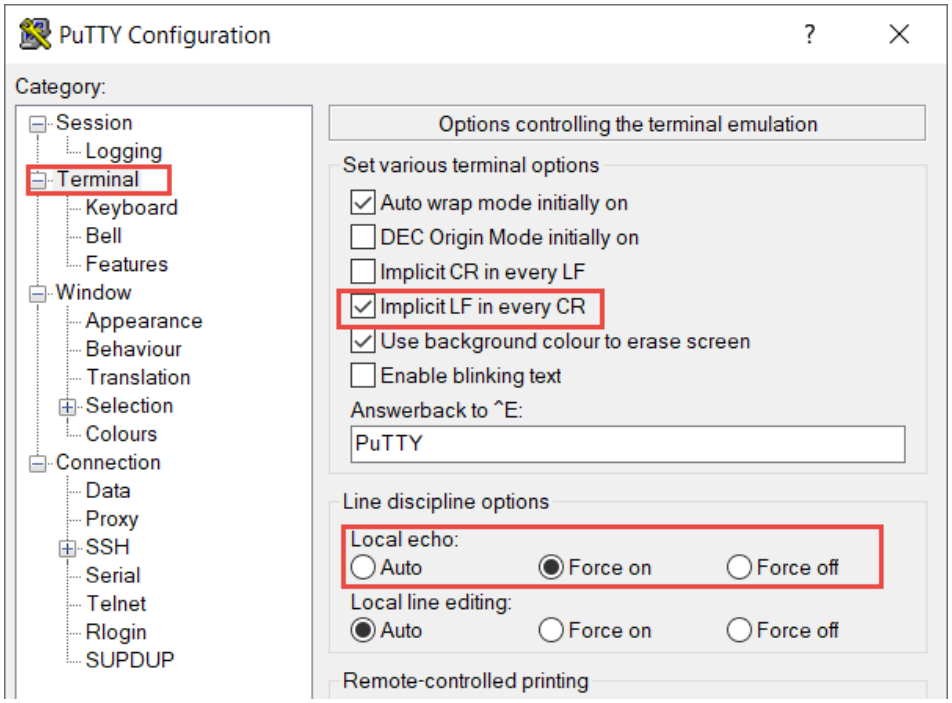
Driver:



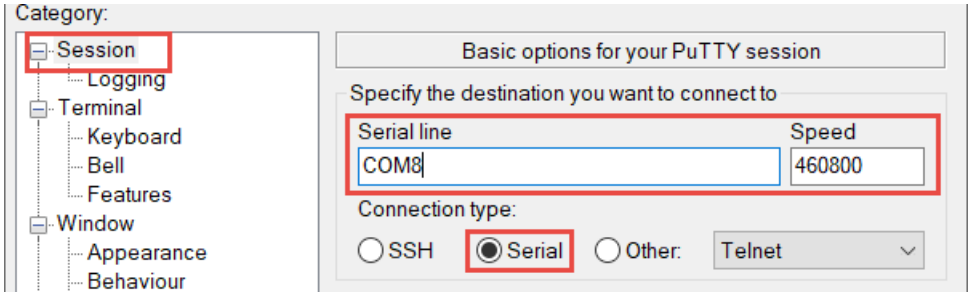
1.4 Serial Communication

To send AT-commands, make sure the BLE_atcmd example is loaded on the ERF1002 module.

Next, Open PuTTY (or alternative serial communications program).
Click terminal and set “Implicit LF in every CR” to On, and Local Echo to on.



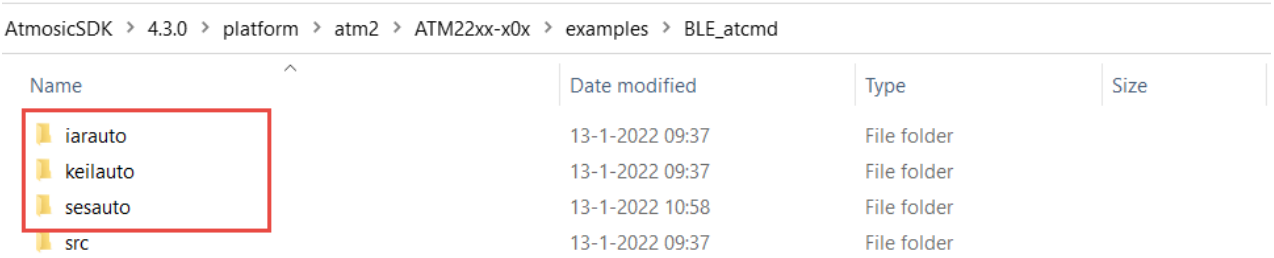
Next, select Session, Serial, and select the COM port and set the Baud to 460800.



Now the COM port can be opened and AT-commands can be send.

1.5 Project Customization

The project files of each example are included in the SDK folders.
Select the folder of your preferred code editing software and open the project file.



In each studio you can edit the example to your liking.
If you would like to see examples for I2C and SPI interfaces navigate to the following files for more information on how to set them up:

- SPI see RFSource_scan -> driver/si446x.c for declaration of the SPI pins and SPI.c for the functions
- I2C see lis2dh12_demo -> driver/i2c.c for declaration and functions

After you have finished customizing simply save and build the code and load the program using the SDK.exe tool.

Ordering information

Ordering can be done via www.summit-electronics.com or via info@summit-electronics.com. Please contact us for more information. Customisation of the product is available on request.

Technical support

For all product questions please contact us via info@summit-electronics.com.