WÜRTH ELEKTRONIK

Bluetooth® Low Energy Radio Solutions

The future is wireless

Get your smart connection with our Bluetooth® LE solutions:

Proteus-I 4.2
Proteus-II 5.0
Proteus-III 5.1
Proteus-III-SPI 5.1

Bluetooth®

WÜRTH ELEKTRONIK

Features of the Proteus-Series

- ✔ PCB antenna or external antenna connection
- ✔ Industrial grade -40°C to 85°C
- ✔ Power efficient operation:
  - Fast and low power radio
  - Ultra low power sleep mode
  - Additional power saving configurations
- ✔ Configurable radio power, transmission speed and timings
- ✔ Configurable pairing modes (open, just works, static passkey)
- ✔ Configurable UART settings
- ✔ Bi-directional data transmission with up to 243 bytes payload per Bluetooth® packet
- ✔ Central and peripheral functions (Connection initiator and acceptor)
- ✔ Broadcaster and observer functions (Beacon transmission and reception)
- ✔ Easy to use Command and Transparent UART interface
- ✔ Easy customization capabilities via Bluetooth® device name, Device Information Service (DIS), appearance and UUIDs
- ✔ Driver support for host controllers
- ✔ FOTA (firmware update over the air)
- ✔ Certification test modes already included

Our added Value:

“A hardware platform - ready for more“:

Generic GAP and GATT access, NFC wake-up and pairing, BT Mesh, ANT, Thread, ZigBee, 802.15.4, sensor connection via SPI / I²C, RTC applications, PWM and analog pins

WE-PRO WARE

Learn more about our Firmware, which is implemented on all our modules.

Overview

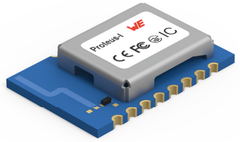


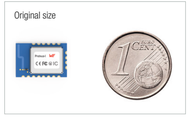

Feature	Proteus-I	Proteus-II	Proteus-III	Proteus-III-SPI
Bluetooth® Standard	4.2	5.0	5.1	5.1
Command interface	UART	UART	UART	SPI
Output power [dBm]	4	4	8	8
1 Mbit/s	✔	✔	✔	✔
2 Mbit/s		✔	✔	✔
(UART/SPI) Max data rate	921.6 kBaud	921.6 kBaud	1000 kBaud	8 Mbit/s
Max throughput [kByte/s]	10.4	32.17	42.9	64.3
Long range mode and long range connect			✔	✔
Highly configurable with WE-ProWare	✔	✔	✔	✔
Integrated PCB antenna	✔	✔	✔	✔
External antenna connection	✔	✔	✔	✔
Smart antenna selection			✔	✔
Maximum payload [Byte]	243	964	964	964
UART Transparent interface	✔	✔	✔	
Improved throughput with transparent UART interface	(✔)	(✔)	✔	
USB radio stick available		✔	✔	
Initiate a Bluetooth® LE connection	✔	✔	✔	✔
Accept a Bluetooth® LE connection	✔	✔	✔	✔
Send and receive beacons	✔	✔	✔	✔
FOTA (firmware update over the air)	✔	✔	✔	✔
Certification test modes	✔	✔	✔	✔
Bluetooth® MESH / NFC		(✔)	(✔)	(✔)
Remote and local GPIO control			✔	✔
Certification	CE FC IC	CE FC IC	CE FC IC	CE FC IC

(✔) on customer request

Our Bluetooth® Solutions

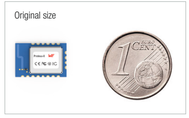
Proteus-I Bluetooth® Low Energy 4.2





- Nano SIM size - 8 x 11 x 2 mm
- ARM® Cortex®-M4 32-bit processor with FPU, 64 MHz
- 512 kB flash memory, 64 kB RAM
- Nordic Semiconductor SoC nRF52832
- Bluetooth® 4.2 qualified end product
- CE, FCC, IC, ARIB certification
- Includes all generic features plus:
  - Up to 4 dBm output power
  - 1 Mbit radio and data paket of 243 bytes

Proteus-II Bluetooth® Low Energy 5.0



- Nano SIM size - 8 x 11 x 2 mm
- ARM® Cortex®-M4 32-bit processor with FPU, 64 MHz
- 512 kB flash memory, 64 kB RAM
- Nordic Semiconductor SoC nRF52832
- Bluetooth® 5.0 qualified end product
- CE, FCC, IC, ARIB certification
- Includes all generic features plus:
  - Up to 4 dBm output power
  - 3 times higher throughput with payload size of up to 964 bytes
  - 1 Mbit and 2 Mbit radio

Proteus-III & Proteus-III-SPI Bluetooth® LE 5.1

- UART Interface (Proteus-III) or SPI Interface (Proteus-III-SPI) available
- Nano SIM size - 8 x 12 x 2 mm
- ARM® Cortex®-M4 32-bit processor with FPU, 64 MHz
- 1 MB flash memory, 256 kB RAM
- Nordic Semiconductor SoC nRF52840
- Bluetooth® 5.1 qualified end product
- CE, FCC, IC, ARIB certification
- Also available as proprietary radio module (Thyone-I)
- Includes all generic features plus:
  - Up to 8 dBm output power for higher range
  - 4 times higher throughput with payload size of up to 964 bytes
  - 1 Mbit and 2 Mbit radio and long range modes
  - Improved throughput with transparent UART interface
  - Scanning and connection setup in long range mode
  - Additional pairing modes: LE Secure Connections (LESC) pass key and numeric comparison
  - Control the GPIOs via remote and local access
  - "A hardware platform - ready for more":
    - ARM Cryptocell cryptographic unit
    - NFC: out of band pairing or wakeup
    - Custom profiles and charactersitics
    - Multi connect (1:n / n:1) as central or peripheral

Security & Encryption

4x

High throughput

Long range

Secure boot, secure erase

Smart antenna selection

General services

- **Direct design in support from our field sales engineers**
  Talk from engineer to engineer
- **Support hotline**
  To obtain direct technical support and answers from our engineers
- **Development equipment**
  - **User fiendly manuals and app-notes**
    Understandable documentation
  - **Software development kit (SDK)**
    Including example codes in C to make software integration in host controller easier
  - **EDA libraries**
    Making hardware integration easy
  - **EV-Boards and USB radio sticks**
    For easy and quick prototyping
  - **Software-Tools**
    Useful software tools supporting the design in and evaluation process
- **Precertification CE, FCC, IC & ARIB**
  This will save you time in the EMC-Lab and shorten your time to market
- **Long term availability & small packing units**
  We know the requirements of our and your industrial customers
- **Configurable settings**
  Tailor the radio module to the specification of your application

For requests please contact: **wireless-sales@we-online.com**

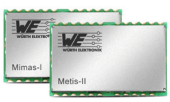
www.we-online.com/proteus

WÜRTH ELEKTRONIK

more than you expect

Wireless Connectivity & Sensors

Bluetooth® & Wi-Fi



Metering

Proprietary

Sensors

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