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
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

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Proteus-I</th>
<th>Proteus-II</th>
<th>Proteus-III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluetooth® Standard</td>
<td>4.2</td>
<td>5.0</td>
<td>5.1</td>
</tr>
<tr>
<td>Output power [dBm]</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>1 Mbit/s</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2 Mbit/s</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Long range mode and long range connect</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highly configurable with WE-ProWare</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Integrated PCB antenna</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>External antenna connection</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Smart antenna selection</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Maximum payload [Byte]</td>
<td>243</td>
<td>964</td>
<td>964</td>
</tr>
<tr>
<td>UART Command interface</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>UART Transparent interface</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Improved throughput with transparent UART interface</td>
<td>✓ (✓)</td>
<td>✓ (✓)</td>
<td>✓</td>
</tr>
<tr>
<td>USB radio stick available</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Initiate a Bluetooth® LE connection</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Accept a Bluetooth® LE connection</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Send and receive beacons</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>FOTA (firmware update over the air)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Certification test modes</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Bluetooth® MESH / NFC</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Remote and local GPIO control</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

(✓) on customer request

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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 packet of 243 bytes

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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 certification
- Includes all generic features plus:
  - Up to 4 dBm output power
  - 4 times higher throughput with payload size of up to 964 bytes
  - 1 Mbit and 2 Mbit radio
Proteus-III Bluetooth® Low Energy 5.1

- 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 wake up
    - Custom profiles and characteristics
    - Multi connect (1:n / n:1) as central or peripheral

Security & Encryption

High throughput

Long range

Secure boot, secure erase

Smart antenna selection

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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 friendly 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
Wireless Connectivity & Sensors

Bluetooth® & WI-FI
Metering
Proprietary
Sensors

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