

PRELIMINARY PRODUCT BRIEF

PROTEUS-IV/OPHELIA-IV – 262101102X000 | v 1.5
04/2025



Michael Lang

Radio Module based on Nordic nRF54L15



Product release planned
Q1/2026
Early samples available
Q3/2025

Introducing Würth Elektronik's latest RF Modules: Ophelia-IV and Proteus-IV

Würth Elektronik is proud to unveil its latest innovations in RF technology, powered by the cutting-edge ultra-low power Nordic Semiconductor IC nRF54L15.

These two modules, Ophelia-IV and Proteus-IV, offer unparalleled performance and flexibility to meet your wireless communication needs.

Ophelia-IV: The Ultimate Blank Canvas

Ophelia-IV is designed for developers who seek complete control over their firmware. With identical hardware to its counterpart, Ophelia-IV provides a robust foundation for custom firmware development, allowing you to tailor your RF solutions to your specific requirements. Experience the freedom to innovate with Ophelia-IV.

Proteus-IV: Ready-to-Use Excellence

Proteus-IV comes preinstalled with firmware, offering a plug-and-play solution for immediate deployment. This module is perfect for those who need a reliable, high-performance RF module without the hassle of firmware development. Proteus-IV ensures seamless integration and rapid time-to-market, making it the ideal choice for efficient and effective wireless communication.

The Proteus-IV is expected to include a SPP-like Bluetooth low energy profile and will support all 4 Bluetooth LE roles (Central, Peripheral, Broadcaster and Observer). The first release of the standard software will only implement a basic function set with more features to be added along product lifetime.

Both Ophelia-IV and Proteus-IV are built on the same advanced hardware platform, ensuring consistent quality and performance. Whether you prefer the flexibility of Ophelia-IV or the convenience of Proteus-IV, Würth Elektronik has the perfect RF module to elevate your projects.

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Basic Information (Referring to Nordic nRF54L15 Datasheet):

- Nordic [Datasheet nRF54L15](#), WLCSP Package
- Output power up to 8 dBm
- Size: 12 x 8 mm
- 1.5 MB Flash
- 256 KB RAM
- Supported data rates:
 - Bluetooth 6.0 – 2 Mbps, 1 Mbps, 500 kbps, and 125 kbps
 - IEEE 802.15.4-2020 – 250 kbps
 - Proprietary 2.4 GHz – 4 Mbps, 2 Mbps, and 1 Mbps
- Arm® Cortex® -M33 with TrustZone® technology, 128 MHz
- Smart Antenna Selection
- Comprehensive set of peripherals, including new Global RTC available in System OFF, 14-bit ADC, and high-speed serial interfaces
- Secure boot, secure firmware update, secure storage
- Cryptographic accelerator with side channel leakage protection, tamper Detectors
- Voltage range 1.7 to 3.6 V
- Operating Temperature Range: -40 to +105 °C

Useable Radio Protocols:

- Bluetooth® LE 6.0
- Matter
- Thread
- Zigbee
- NFC
- IEEE 802.15.4
- 2.4 GHz proprietary

Electrical Properties (Chipset level values)

- Operating supply voltage
 - 1.7V to 3.6V
- Current Consumption (VDD=3V)
 - Bluetooth LE TX 1 Mbps at +8 dBm 10.0 mA
 - Bluetooth LE RX 1 Mbps 3.2 mA
- Sleep Current
 - System OFF with GRTC wakeup 0.8 µA
 - System OFF 0.6 µA

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Comparison Proteus-IV and Ophelia-IV

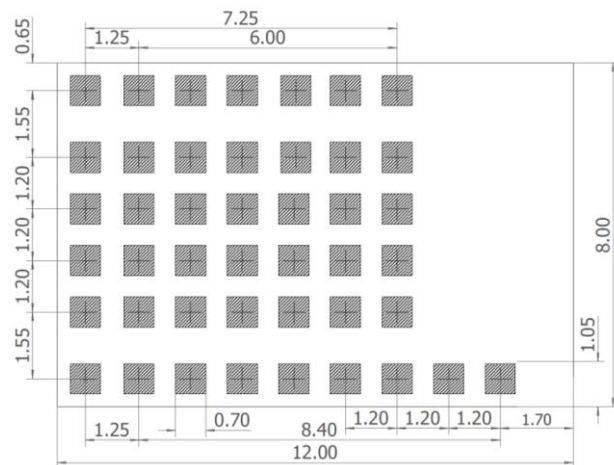
Both Ophelia-IV and Proteus-IV are built on the same advanced hardware platform, ensuring consistent quality and performance. Whether you prefer the flexibility of Ophelia-IV (to bring your own FW onto the chipset) or the convenience of Proteus-IV (with ready to use FW preinstalled), Würth Elektronik has the perfect RF module to elevate your projects.

	Proteus-IV	Ophelia-IV
Part No.	2621011024000	2621011022000
Chipset	nRF54L15, WLCSP	nRF54L15, WLCSP
High Quality HW,	✓	✓
proven RF-Design	✓	✓
Dimensions	12 x 8 x 2 mm	12 x 8 x 2 mm
Smart Antenna Selection	✓	✓
Integrated Standard FW (by Würth Elektronik)	✓	✗
Built Your Own Firmware Option (BYOF), using Nordic nRF Connect SDK with Zephyr RTOS	✗	✓
Integrated SW-Stack	✓ Bluetooth® LE 6.0	✗ (possible to integrate: Bluetooth® LE 6.0, Bluetooth® Mesh, Bluetooth® Channel sounding, Matter, Thread, Zigbee, IEEE 802.15.4, proprietary)
Module Pins	44	44
Free usable GPIOs	Remote GPIOs tbd.	29
ADC	✗	8 Ch., max. 14-bit
Certification	✓ CE, FCC, IC, WPC Bluetooth® Qualification	✗ (by using defined radio stacks, referring to Certification of Proteus- IV is possible)

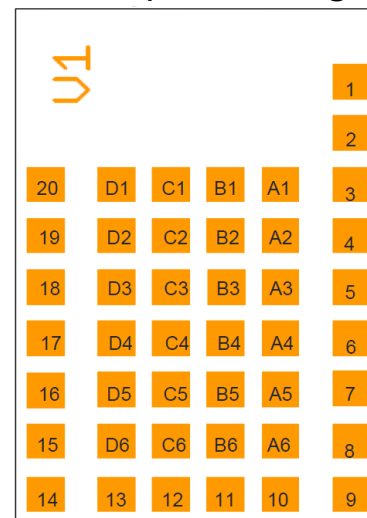
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Dimensions: [mm]



Product Specific Pinning (Bottom View):



Pinning:

Module Pin No	nRF54L15 pin
1	ANT
2	RF
3	GND
4	SWDCLK
5	SWDIO
6	/Reset
7	P2.05
8	VDD
9	GND
10	P2.00
11	P1.05/AIN1
12	P1.00/XL1
13	P1.01/XL2
14	P2.01
15	P1.08
16	P1.07/AIN3
17	P1.06/AIN2
18	P1.02
19	P1.12/AIN5
20	GND

Module Pin No	nRF54L15 pin
A1	P0.00
A2	P2.10
A3	P2.09
A4	P2.06
A5	P2.04
A6	P2.02
B1	P0.01
B2	P2.08
B3	GND
B4	GND
B5	P2.03
B6	P2.07
C1	GND
C2	P1.10
C3	GND
C4	GND
C5	P1.03/NFC2
C6	P1.04/AIN0
D1	GND
D2	P1.09
D3	P1.11/AIN4
D4	P1.13/AIN6
D5	P1.14/AIN7
D6	P1.02/NFC1