# EVK-NORA-B26

Evaluation kit for NORA-B26 series modules
User guide
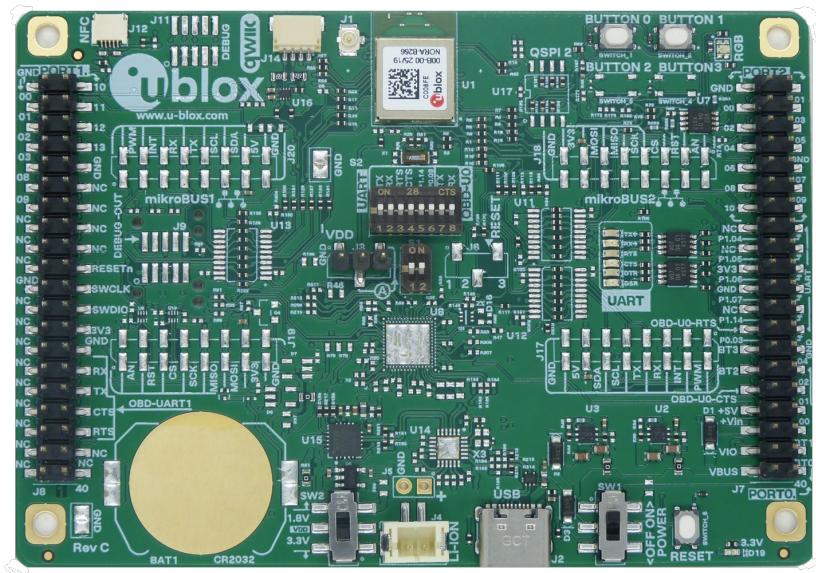
Abstract

The document describes how to set up and use the EVK-NORA-B2 evaluation kits for prototyping NORA-B26 u-connectXpress Bluetooth Low Energy applications.

Document information

Title	**EVK-NORA-B26**	
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Product status	Corresponding content status	
In development / Prototype	Objective specification	Target values. Revised and supplementary data will be published later.
Engineering sample	Advance information	Data based on early testing. Revised and supplementary data will be published later.
Initial production	Early production information	Data from product verification. Revised and supplementary data may be published later.
Mass production/ End of life	Production information	The document contains the final product specification.

This document applies to the following products:

Product name	Document status
EVK-NORA-B261	Early production information
EVK-NORA-B266	Early production information

☞ For information about the hardware, software, and status of the available product types, see the NORA-B26 datasheet [1].

Contents

1 Product Description

1.1 Overview

The EVK-NORA-B2 evaluation kit provides a versatile development platform for quick prototyping of a variety of low-powered Internet of Things (IoT) applications supporting Bluetooth® using the u-connectXpress software [7].

The u-connnectXpress AT commands manual for NORA-B2, as well as the u-connectXpress User Guide, can be found on NORA-B2 product page [6].

Table 1 describes the available evaluation kits for each module variant – each of which supports alternative antenna and software solutions.

Evaluation kit	Description	Suitable for
EVK-NORA-B261	Evaluation board for the u-connectXpress NORA-B261 module with U.FL antenna connector for connecting to external antennas	NORA-B261
EVK-NORA-B266	Evaluation board for the u-connectXpress NORA-B266 module that includes an internal, 2.4 GHz, PCB trace antenna	NORA-B266

Table 1: Available NORA-B2 evaluation kits

Figure 1 shows the top view of the evaluation board.
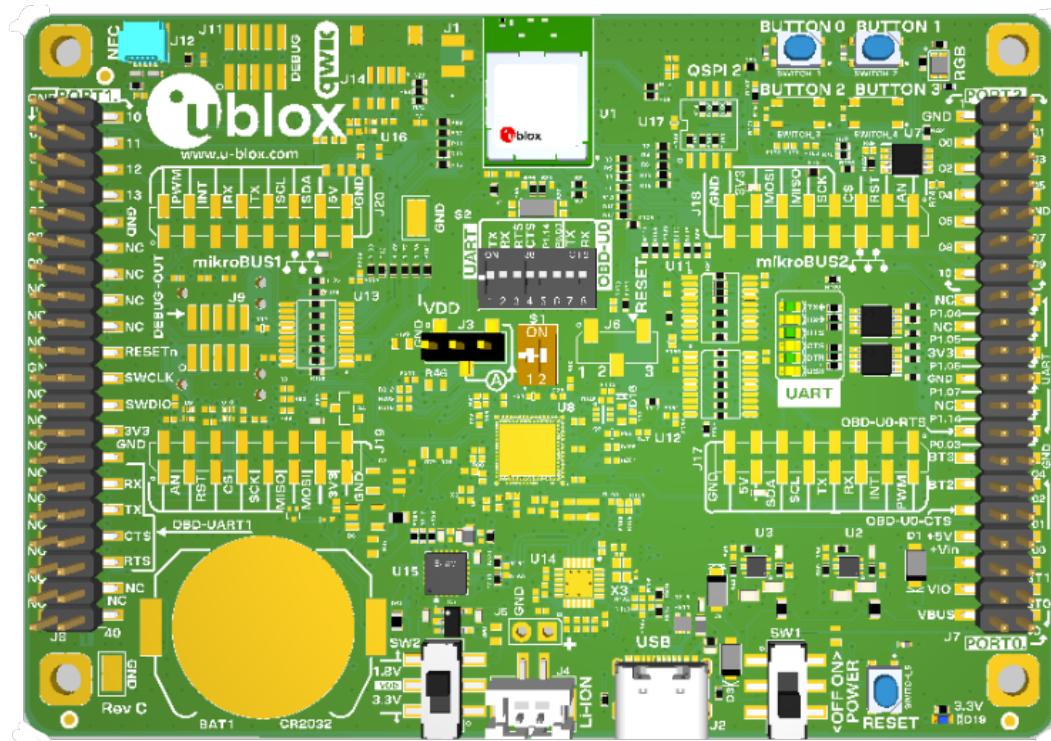
Figure 1: EVK-NORA-B2 evaluation board (top view)

1.2   Kit includes

1.2.1   EVK-NORA-B261

- Evaluation board with NORA-B2x1 module
- USB-C to USB-A cable
- NFC antenna
- 2.4 GHz dipole antenna with U.FL connector

1.2.2   EVK-NORA-B266

- Evaluation board with NORA-B2x6 module
- USB-C to USB-A cable
- NFC antenna

1.3   Key features

EVK-NORA-B2 boards provide:

- u-connectXpress AT command set eliminates need for expertise in Bluetooth protocol stacks
- Support NORA-B2 supply voltage of 3.3 V or 1.8 V
- COM port over USB
- Bluetooth LE central, peripheral, and GATT client/server roles
- Buttons and status LEDs for user interaction
- Power input through USB-C, pin sockets, Li-ion, or coin cell battery
- Current measurement access points from pin headers and jumpers

1.4   Block diagram

Figure 2 shows the major interfaces and internal connections supported on the EVK-NORA-B26.
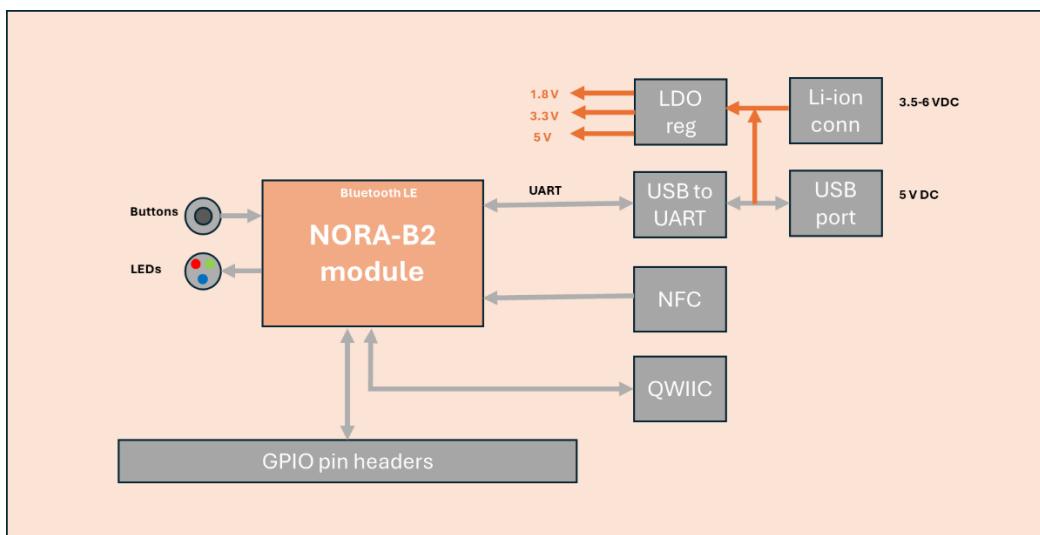
Figure 2: EVK-NORA-B2 block diagram

Design files or the EVK-NORA-B26 are available are available in the u-blox short range EVK design GitHub repository [4].

2 Setting up the evaluation board

Follow the instructions in this section to power up the EVK and prepare it for PC communication and SW development.

2.1 Connect external antenna (EVK-NORA-B261 only)

The NORA-B261 module soldered to the EVK-NORA-B261 requires use of the external antenna provided with the kit, or one of the antennas listed in the NORA-B26 system integration manual [2]. Carefully connect the U.FL connector on the antenna or coaxial jumper to U.FL connector (**J1**) near the NORA-B261 module.
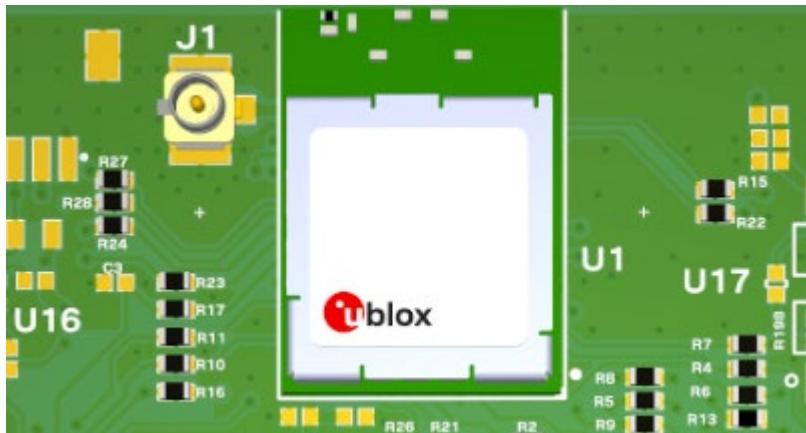
Figure 3: U.FL connector near module

⚠️ U.FL connectors are intended for limited connection cycles.

2.2 Powering up

⚠️ Before powering up the EVK-NORA-B261, be sure to connect the 2.4 GHz antenna to the U.FL antenna connector **J1**. Failing to do so can cause module malfunction.

1. Insert the USB cable into a PC and connect it to the type-c connector, **J2**, on EVK-NORA-B2.
2. Set the power switch, **SW1**, to ON.

The green status LED (**D19)** is lit when the EVK-NORA-B2 has powered up correctly.

☞ Further powering options for current measurement and use of other power sources are described in Powering options.

2.3 UART interface

The module communicates using AT commands and events over a UART interface provided via the USB port on the EVK.

2.3.1 Serial port device drivers

The host operating system installs the correct COM port drivers automatically. The drivers need to be installed only when you connect the unit to a new computer for the first time. For more information about the COM ports and their configuration, see the FTDI FT231XQ-R Datasheet [3].

Windows OS automatically assigns one COM port to the unit:

- "USB Serial Port" - the module's main UART used for serial communication by default.

2.3.2 Terminal SW

Any terminal application, for example TeraTerm, can be used to verify that the EVK is working as expected. Open the serial port using the default settings

- 115200 bps
- 8 data bits
- No Parity
- 1 stop bit
- Hardware flow control (RTS/CTS) enabled

When the module starts up a +STARTUP event is expected.
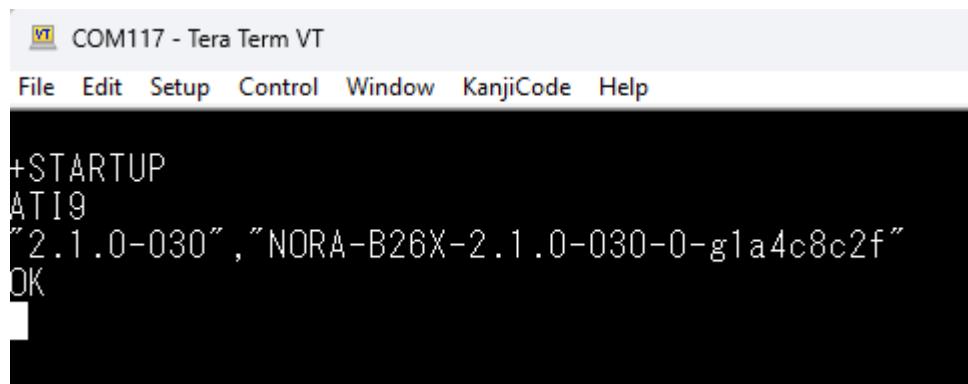
Figure 4: +STARTUP event received and AT Command sent

2.3.3 s-center 2 evaluation software

s-center 2 is an easy-to-use tool for evaluating, configuring, and testing u-blox short range modules. Running on Windows 10 or newer operating systems, the software allows end users to assess and configure u-blox short range modules using the EVK.

Download and install the s-center 2 software from the u-blox s-center product page [5].

3 Board configuration

Figure 5 shows available connectors on the EVK-NORA-B2.
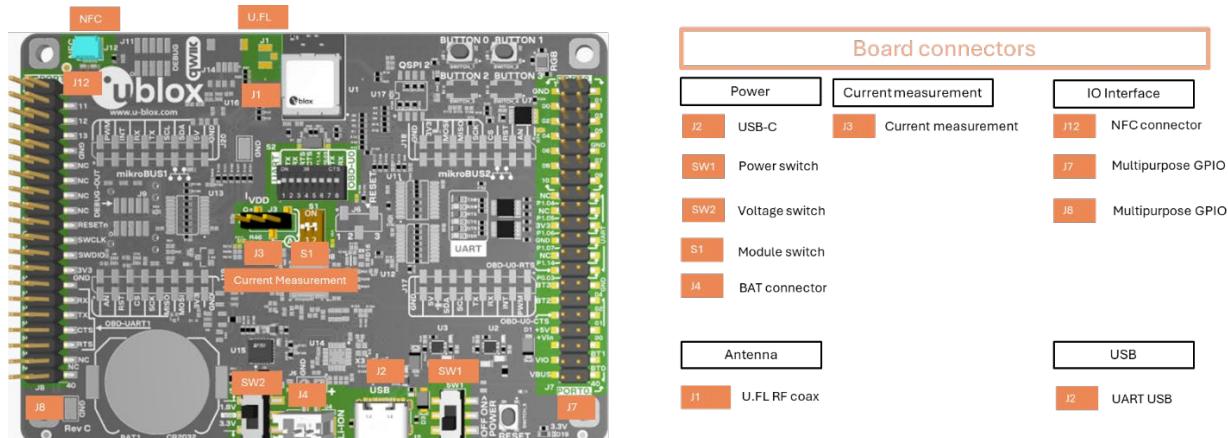
Figure 5: Available connectors

3.1 Power

EVK-NORA-B2 is equipped with several connectors for power supply and current measurements.

3.1.1 Power connectors

Table 2 describes the connectors supported by the EVK-NORA-B2, as shown in Figure 5.

Connector	Function	Description
J2	Power supply and COM port	Main USB connector for programming and communication with the module. This is the primary connector for powering the entire board.
J3	Current consumption header	Pin header for measuring the current consumption across the input voltage (VCC) of the module
J4	Li-Ion battery connector	2-pin JST Li-Ion battery power from the Li-Ion rechargeable battery
J5	Generic 2-pin header	2.54 mm, 2-pin header for connecting a battery without a standard JST connector. Not mounted by default.
S1	Dual switch	DIP switch/SIP switch for disconnecting the module VDD
SW1	Power ON switch	Main power switch
SW2	Voltage mode for NORA-B2	1.8 V or 3.3 V select

Table 2: EVK-NORA-B2 connector description

3.1.2 Powering options

Power to the evaluation board can be supplied in several ways as shown in Table 3.

Source	Component / pin	Input range	Remarks
USB-C	J2	5.0 VDC nominal	Power provided by upstream USB port
Power source to pin header	J7 pin 35	3.5 – 6 VDC	
Li-ion battery	J4 or J5	3.5 – 6 VDC	
External supply, V	J3 pin 1 (GND) and J3 pin 2 (VDD)	1.7 – 3.5 VDC	

Table 3 EVK powering options

☞ All supplies are protected by reverse voltage diodes and can be connected simultaneously.

3.1.3   Power supply voltage selection

The evaluation board supports both 1.8 V and 3.3 V supply voltage to NORA-B2.

To select either 1.8 V or 3.3 V for the NORA-B2 module and other peripherals, set switch **SW2** as shown in Figure 6.
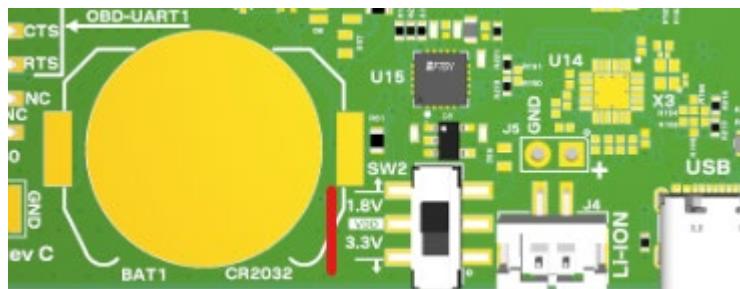
Figure 6: Voltage switch SW2

3.2   Measuring current consumption

☞   Before making current consumption measurements, review the available Powering options to find out which NORA-B2 signals must be isolated for your chosen power configuration.

☞   If accurate small sleep current supply measurements are performed, make sure only used signals are connected to the module (e.g. disconnect RTS and CTS if they are not used). All connected signals will consume small currents via pull-ups/downs or via pull-ups in combination with small voltage level differences on the input and output side.

3.2.1   Current-sensing header

The evaluation board provides a 3-pin header with a 2.54 mm pitch, **J3,** for power consumption measurement of the module's **VCC** supply. The current can be measured either with ammeter or voltage meter as described in Using an ammeter and Using a voltmeter.

R46, which is intended to be mounted when measuring the current with a voltage meter, is connected between J3 pin 2 and 3.

Figure 7 shows the EVK-NORA-B2 current-sensing header circuits.
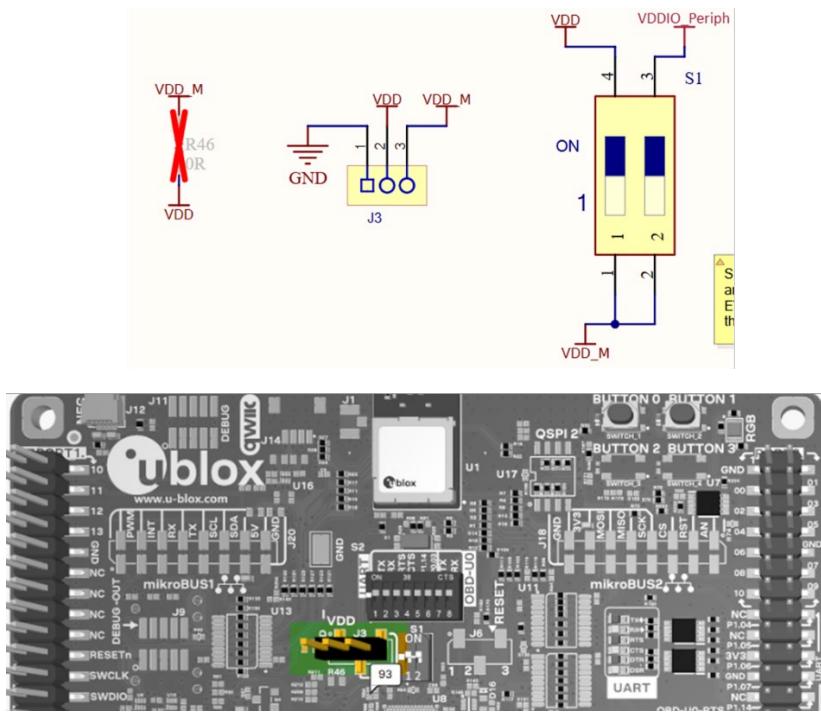
Figure 7: Current-sensing header circuits

3.2.2   Using an ammeter

To measure the current, connect the ammeter in series with the power source between **pin 2** and **3** of **J3**. In this way, the current is measured when the NORA module is supplied from either the onboard regulator or an external supply, as shown in Figure 8. Ensure that switch **S1** is in the off position for both channels.

3.2.3   Using a voltmeter

The EVK-NORA-B2 board must be modified before the module current can be measured with a voltmeter.

To modify the board, solder low-resistance, high-tolerance, 0603-sized resistors to the footprint labeled **R46**, as shown in Figure 8. This resistor replaces the jumpers and any current running through it produces a voltage across its terminals. Measure this voltage with the voltmeter and calculate the current using Ohm's law. Ensure that switch **S1** is in the off position for both channels.

3.2.4   Using an external power supply or power analyzer

Connect the terminals of the instrument to the EVK pins, as shown in Figure 8. An ammeter can also be added in series. Ensure that switch **S1** is in the off position for both channels.

When using a power analyzer that both provides supply voltage and measures current, ensure that other evaluation board peripherals and components are disconnected from this supply. Failure to do so will introduce measurement errors – even if the other components are supplied with the same voltage level from another LDO or source.

To reduce leakage current, use a second external power channel to supply EVK peripherals. This second channel must be on to enable PC communication via the USB port **J2**. If the built- in USB/UART controller will not be used can the UART signals be connected to the host directly via the UART pins of **J7**, see section Serial communication.
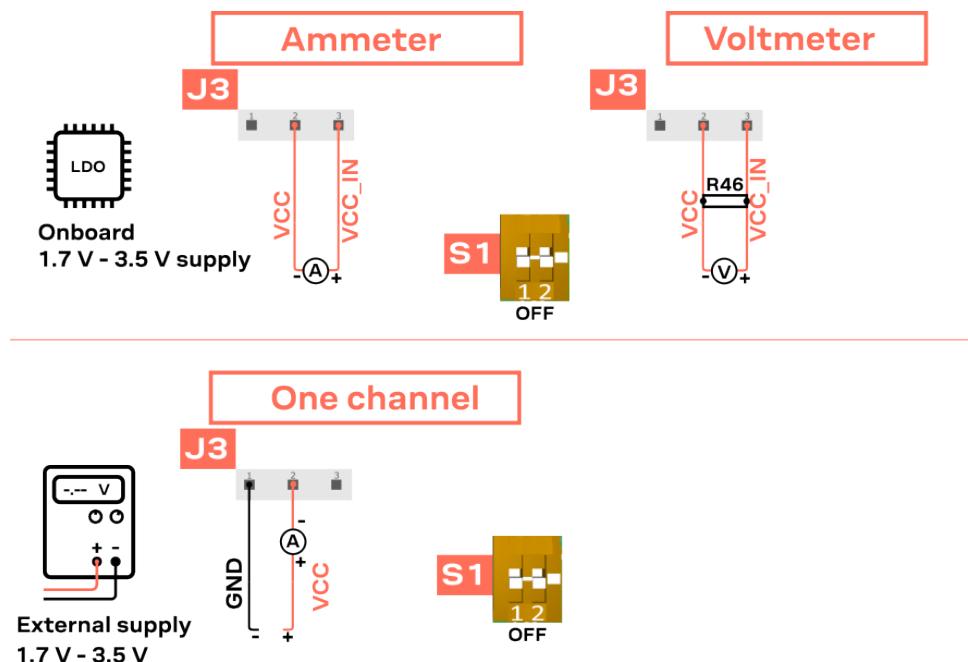
**Figure 8: Options for measuring module current consumption**

Contents

4 Interfaces and peripherals

This section explains how to measure current on the NORA module and introduces the board's interfaces and buttons.

4.1 Buttons

The board provides a **RESET** button and 2 user buttons (**Button 0,** and **Button 1**) that are active-low and connect to GND when pressed.
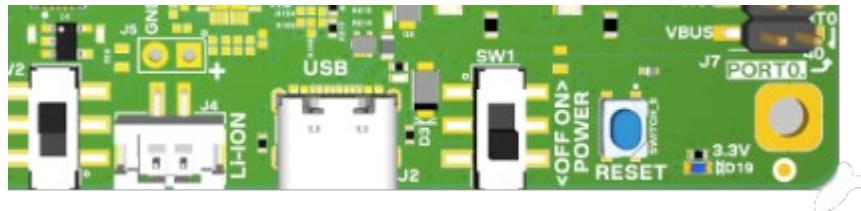

Figure 9 Reset button location
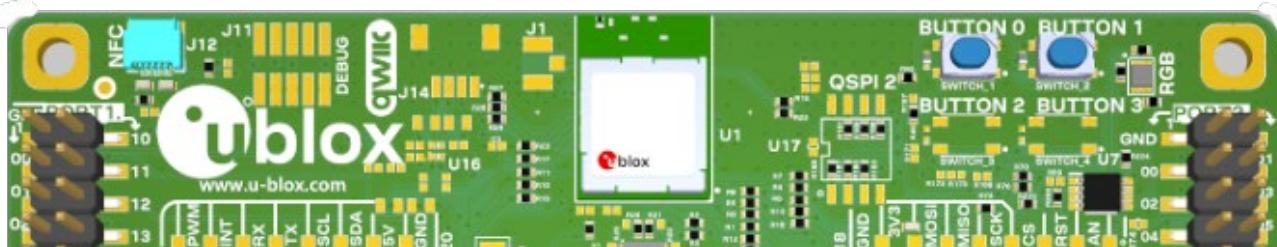
Figure 10 User button locations

Name	Function	Pin	Pin header	Description
RESET	RESET	nRESET	J8-pin 20	Reset the module. Active low.
Button 0	SWITCH_1	P1.13	J7-pin 40	Active low. See Table 5.
Button 1	SWITCH_2	P1.09	J7-pin 38	Active low. See Table 5.

Table 4: User buttons

Two buttons **Button0** and **Button1** are used to enter bootloader, as shown in Table 5.

Function	State during boot	Behavior
SWITCH_1, SWITCH_2	Pressed (0), pressed (0)	Enter bootloader. If this state is kept for more than 10 seconds without sending commands to bootloader over UART, the u-connectXpress application boots. The module settings are then restored to factory default values.
	All other	Boots the u-connectXpress application. Default state

Table 5: EVK-NORA-B2 boot mode function

For more details about the update software and the bootloader, see the NORA-B2 system integration manual [2].

4.2 LEDs
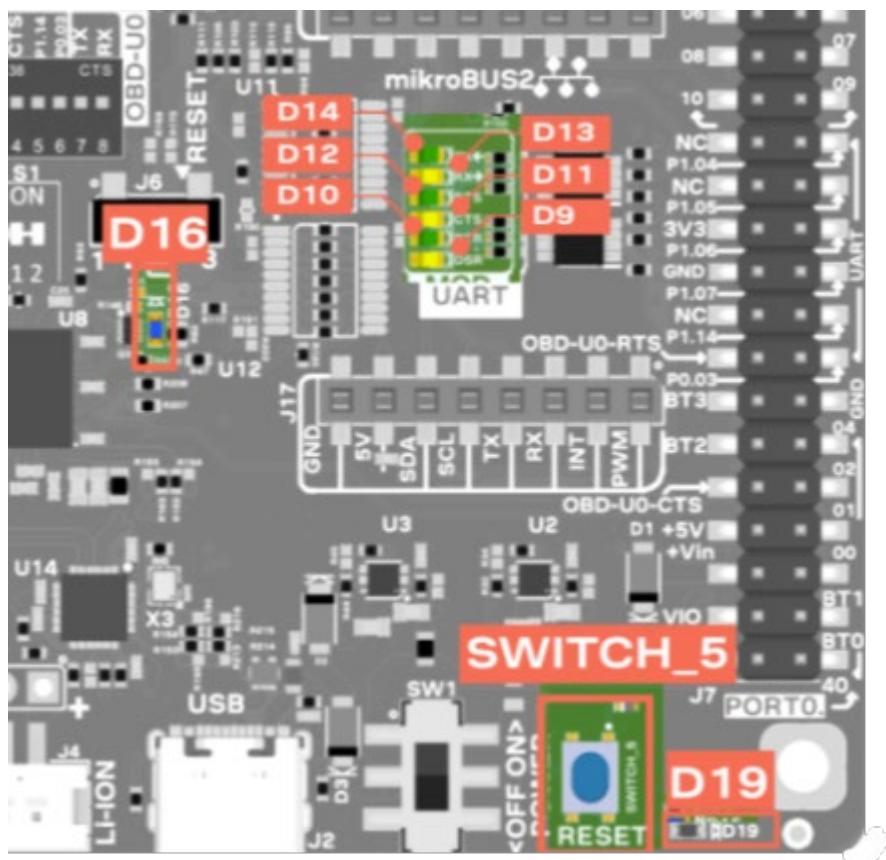
Figur 1 LED locations

EVK-NORA-B2 includes eight status LEDs and one RGB status LED:

- **Power status** (**D19**): Indicates the **+3.3V** power on the board when lit (green)
- **UART1 status** (**D9-D14**): Indicates UART1 signal status under GPIO control, as shown in Table 6.
- **System status** (**RGB1**).

Table 6 shows the module status by LED color.

RGB LED color	Status
Green	N/A
Orange	Idle
Purple	Connecting (blinking indicates activity)
Blue	Connected (blinking indicates activity)

Table 6: Status RGB LED indications

4.3 Serial communication

One COM port is available for connecting the UART to PC via the USB connector.

Switch **S2** connects the FTDI chip to NORA-B2 UART and pin header if set ON. If switched OFF the corresponding UART signal is only connected between pin header and NORA-B2.

- **S2** – OFF. Pin header and NORA-B2
- **S2** – ON. FTDI, pin header, and NORA-B2

NORA-B2 pin name	Pin	Pin socket
UART1-TxD	P1.04	J7-16
UART1-RxD	P1.05	J7-18
UART1-CTS	P1.07	J7-22
UART1-RTS	P1.06	J7-20
WAKE-HOST	P1.14	J7-24
WAKE_UP	P0.03	J7-26

Table 7 UART pins and socket header connections

Appendix

A Glossary

Abbreviation	Definition
CPU	Central Processing Unit
CTS	Clear To Send
DC	Direct Current
DC-DC	DC to DC converter
EVK	Evaluation Kit
GPIO	General Purpose Input / Output
LDO	Low Drop-Out voltage regulator
LE	Low Energy
LED	Light Emitting Diode
LF	Low Frequency
LiPo	Lithium-Polymer battery
NFC	Near-Field Communications
RTS	Request To Send
RXD	Receive data signal
SIG	Special Interest Group
TXD	Transmit data signal
USB	Universal Serial Bus

Table 8: Explanation of the abbreviations and terms used

Related documentation

[1]   NORA-B26 data sheet, UBXDOC-465451970-4608
[2]   NORA-B26 system integration manual, UBXDOC-465451970-3906
[3]   FTDI FT231XQ-R Datasheet, FT231X (ftdichip.com)
[4]   u-blox HW design GitHub repository, https://github.com/u-blox/evk_designs_sho_altium
[5]   s-center product page, https://www.u-blox.com/en/product/s-center
[6]   NORA-B2 product page , https://www.u-blox.com/en/product/nora-b2-series
[7]   u-connectXpress product page, https://www.u-blox.com/en/product/u-connectxpress

☞   For product change notifications and regular updates of u-blox documentation, register on our website, www.u-blox.com.

Revision history

Revision	Date	Name	Comments
R01	22-Aug-2025	mape	Initial release

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