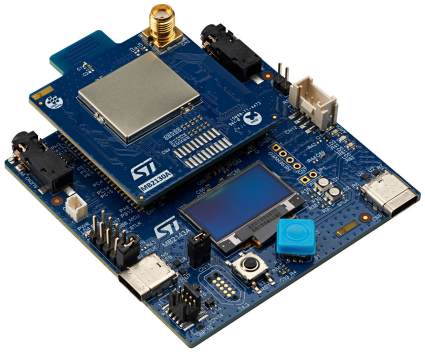
STM32WBA65I-DK1

Data brief

Discovery kit with STM32WBA65RI MCU



STM32WBA65I-DK1 global view. Picture is not contractual.

Product status link
STM32WBA65I-DK1

Features

- Ultra-low-power wireless STM32WBA65RIV7 microcontroller based on the Arm® Cortex®-M33 core, featuring 2 Mbytes of flash memory and 512 Kbytes of SRAM in a VFQFPN68 package
- MCU RF board (MB2130):
  - 2.4 GHz RF transceiver supporting Bluetooth® specification v5.4
  - Bluetooth® Low Energy specification supporting LE Audio
  - Arm® Cortex®-M33 CPU with Arm® TrustZone®, MPU, DSP, and FPU
  - Integrated PCB antenna
- One digital microphone
- OLED display
- Three user LEDs
- User joystick with 4-direction control and selector button
- Reset push-button
- Board connectors:
  - ARDUINO® Uno V3 expansion connector
  - Grove
  - USB Type-C®
  - Battery
  - Two 3.5 mm stereo jack sockets for input and output with microphone
  - MIPI10
  - Tag-Connect™ 10-pin footprint
- Flexible power-supply options: ST-LINK USB V_{BUS} or external sources
- On-board STLINK-V3EC debugger/programmer with USB re-enumeration capability: mass storage, Virtual COM port, and debug port
- Comprehensive free software libraries and examples available with the STM32CubeWBA MCU Package
- Support of a wide choice of Integrated Development Environments (IDEs) including IAR Embedded Workbench®, MDK-ARM, and STM32CubeIDE

1 Description

The STM32WBA65I-DK1 Discovery kit is a complete demonstration and development platform for the STM32WBA65RIV7 microcontroller, featuring an Arm® Cortex®-M33 core with Arm® TrustZone® and mainline security extension, 2 Mbytes of flash memory, and 512 Kbytes of SRAM, as well as smart peripheral resources.

The STM32WBA65I-DK1 Discovery kit embeds a powerful and ultra-low-power radio compliant with the Bluetooth® Low Energy SIG resources. This Discovery kit enables a wide diversity of applications by exploiting low-power communication, the Bluetooth® SIG isochronous channel feature related to audio capability for Bluetooth® Low Energy audio, Matter as border router, and Zigbee®.

The support for ARDUINO® Uno V3 connectivity provides expansion capabilities with a wide choice of specialized add-on boards.

The STM32WBA65I-DK1 Discovery kit integrates an STLINK-V3EC embedded in-circuit debugger and programmer for the STM32 microcontroller with a USB Virtual COM port bridge and comes with the STM32CubeWBA MCU Package, which provides an STM32 comprehensive software HAL library as well as various software examples.

The STM32WBA65I-DK1 Discovery kit leverages the STM32WBA series key assets to enable prototyping for a variety of wireless, low-energy applications in fitness, metering, industrial, or medical, with state-of-the-art energy efficiency, and higher security.

2 Ordering information

To order the STM32WBA65I-DK1 Discovery kit, refer to Table 1. For a detailed description of each board, refer to its user manual on the product web page. Additional information is available from the datasheet and reference manual of the target STM32.

Table 1. Ordering information

Order code	Board reference	User manual	Target STM32
STM32WBA65I-DK1	• MB2130[1] • MB2143[2]	UM3462	STM32WBA65RIV7

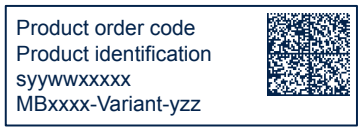
1. *MCU RF board*
2. *Mezzanine board*

2.1 Product marking

The product and each board composing the product are identified with one or several stickers. The stickers, located on the top or bottom side of each PCB, provide product information:

- Main board featuring the target device: product order code, product identification, serial number, and board reference with revision.

  Single-sticker example:

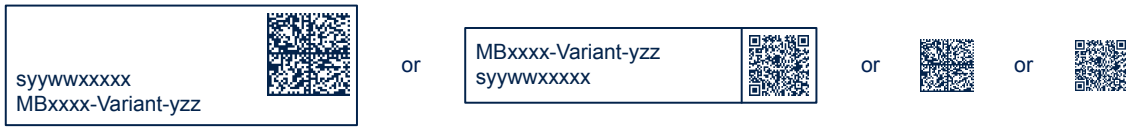
  

  Dual-sticker example:

- Other boards if any: board reference with revision and serial number.

  Examples:

On the main board sticker, the first line provides the product order code, and the second line the product identification.

On all board stickers, the line formatted as *"MBxxxx-Variant-yzz"* shows the board reference *"MBxxxx"*, the mounting variant *"Variant"* when several exist (optional), the PCB revision *"y"*, and the assembly revision *"zz"*, for example B01. The other line shows the board serial number used for traceability.

Products and parts labeled as *"ES"* or *"E"* are not yet qualified or feature devices that are not yet qualified. STMicroelectronics disclaims any responsibility for consequences arising from their use. Under no circumstances will STMicroelectronics be liable for the customer's use of these engineering samples. Before deciding to use these engineering samples for qualification activities, contact STMicroelectronics' quality department.

"ES" or *"E"* marking examples of location:

- On the targeted STM32 that is soldered on the board (for an illustration of STM32 marking, refer to the STM32 datasheet *Package information* paragraph at the *www.st.com* website).
- Next to the ordering part number of the evaluation tool that is stuck, or silk-screen printed on the board.

Some boards feature a specific STM32 device version, which allows the operation of any bundled commercial stack/library available. This STM32 device shows a *"U"* marking option at the end of the standard part number and is not available for sales.

To use the same commercial stack in their applications, the developers might need to purchase a part number specific to this stack/library. The price of those part numbers includes the stack/library royalties.

2.2 Codification

The meaning of the codification is explained in Table 2.

Table 2. Codification explanation

STM32XXXYYZ-DKT	Description	Example: STM32WBA65I-DK1
XXX	MCU series in STM32 32-bit Arm Cortex MCUs	STM32WBA series
YY	MCU product line in the series	STM32WBA64/65 product line
Z	STM32 flash memory size: • I for 2 Mbytes	2 Mbytes
DK	Toolkit type: • Discovery kit	Discovery kit
T	Toolkit configuration: • Sequential number	First Discovery kit version

3 Development environment

The STM32WBA65I-DK1 Discovery kit runs with the STM32WBA65RIV7 32-bit microcontroller based on the Arm® Cortex®-M33 core with Arm® TrustZone®.

Note: Arm and TrustZone are registered trademarks of Arm Limited (or its subsidiaries) in the US and/or elsewhere.

3.1 System requirements

- Multi-OS support: Windows® 10, Linux® 64-bit, or macOS®
- USB Type-A or USB Type-C® to USB Type-C® cable

Note: macOS® is a trademark of Apple Inc., registered in the U.S. and other countries and regions.

Linux® is a registered trademark of Linus Torvalds.

Windows is a trademark of the Microsoft group of companies.

3.2 Development toolchains

- IAR Systems® - IAR Embedded Workbench®(1)
- Keil® - MDK-ARM(1)
- STMicroelectronics - STM32CubeIDE

1. *On Windows® only.*

3.3 Demonstration software

The demonstration software, included in the STM32Cube MCU Package corresponding to the on-board microcontroller, is preloaded in the STM32 flash memory for easy demonstration of the device peripherals in standalone mode. The latest versions of the demonstration source code and associated documentation can be downloaded from *www.st.com*.

Revision history

Table 3. **Document revision history**

Date	Revision	Changes
17-Jan-2025	1	Initial release.

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