

60 GHz V-band contactless connectivity transceiver software expansion for STM32Cube

Application	Examples USB Tunneling / UART Tunneling / PC Tunneling
Hardware Abstraction	Expansion Board BSP and ST60A3H1 Component Driver STM32Cube Hardware Abstraction Layer (HAL)
Hardware	STM32 Nucleo expansion boards X-NUCLEO-60L1A1 / X-NUCLEO-60R1A1 STM32 Nucleo development board



Features

- Complete software to build applications using a pair of [ST60A3H1](#) 60 GHz V-band transceivers for short range contactless connectivity
- Sample applications to transfer eUSB2, UART, GPIO, or I²C data through an RF link
- Sample implementations available for the X-NUCLEO-60L1A1 expansion board plugged onto a [NUCLEO-L476RG](#) development board
- Package compatible with the [STM32CubeMX](#), can be downloaded from, and installed directly into [STM32CubeMX](#)
- Easy portability across different MCU families, thanks to [STM32Cube](#)
- Free, user-friendly license terms

Description

The [X-CUBE-ST60](#) software expansion for [STM32Cube](#) provides a board support package (BSP) for STM32 and the component driver to build applications using a pair of [ST60A3H1](#) transceivers for short range contactless connectivity up to 480 Mbit/s.

The expansion is built on top of [STM32Cube](#) software technology to ease portability across different STM32 microcontrollers.

The software comes with sample implementations of the drivers running on the X-NUCLEO-60L1A1 expansion board plugged on top of a [NUCLEO-L476RG](#) development board. The other X-NUCLEO-60R1A1 expansion board, which is part of the [X-NUCLEO-60K1A1](#) kit, is used in standalone. Any [ST60A3H1](#) configuration is done from the X-NUCLEO-60L1A1 side.

The [ST60A3H1](#) is a full RF transceiver with a dual-linear-polarization integrated antenna, operating in half-duplex mode. It provides an optimized solution for a high-speed, low-power, short-range point to point 60 GHz RF link.

Product summary	
60 GHz V-band contactless connectivity transceiver software expansion for STM32Cube	X-CUBE-ST60
60 GHz V-band contactless connectivity transceiver expansion board kit based on the ST60A3H1 for STM32 Nucleo	X-NUCLEO-60K1A1
60 GHz V-band contactless connectivity transceiver with linear-polarization integrated antenna, and tunneling eUSB2, UART, GPIO or I ² C	ST60A3H1C1CCEPY3

1 Detailed description

1.1 What is STM32Cube?

STM32Cube is a combination of a full set of PC software tools and embedded software blocks running on STM32 microcontrollers and microprocessors:

- **STM32CubeMX** configuration tool for any STM32 device; it generates initialization C code for Cortex-M cores and the Linux device tree source for Cortex-A cores
- **STM32CubeIDE** integrated development environment based on open-source solutions like Eclipse or the GNU C/C++ toolchain, including compilation reporting features and advanced debug features
- **STM32CubeProgrammer** programming tool that provides an easy-to-use and efficient environment for reading, writing and verifying devices and external memories via a wide variety of available communication media (JTAG, SWD, UART, USB DFU, I2C, SPI, CAN, etc.)
- **STM32CubeMonitor** family of tools (**STM32CubeMonRF**, **STM32CubeMonUCPD**, **STM32CubeMonPwr**) to help developers customize their applications in real-time
- **STM32Cube MCU and MPU packages** specific to each STM32 series with drivers (HAL, low-layer, etc.), middleware, and lots of example code used in a wide variety of real-world use cases
- **STM32Cube expansion packages** for application-oriented solutions.

1.2 How does this software complement STM32Cube?

The proposed **X-CUBE-ST60** software is based on the **STM32CubeHAL**, the hardware abstraction layer for the STM32 microcontroller. The package extends **STM32Cube** by providing a Board Support Package (BSP) for the X-NUCLEO-60L1A1 expansion board for **STM32 Nucleo**, and the component driver for **ST60A3H1** applications.

The drivers abstract the hardware low-level details and allow the applications to access the **ST60A3H1** in a hardware-independent manner.

The package also includes sample applications that developers can use to start experimenting with the code. These applications have been developed to demonstrate contactless data transfer through a pair of **ST60A3H1** devices, and compliant with the following protocols:

- eUSB2 data transfer up to 480 Mbit/s
- UART / GPIO data transfer up to 6 Mbit/s
- I²C data transfer up to 1 Mbit/s

Revision history

Table 1. Document revision history

Date	Revision	Changes
08-Nov-2024	1	Initial release.
13-Feb-2025	2	Updated cover image, Section Features , Section Description and Section 1.2: How does this software complement STM32Cube? .

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