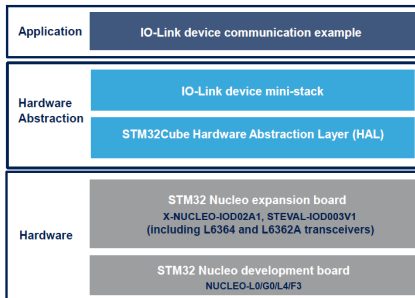


Industrial IO-Link device software expansion for STM32Cube



Features

- Complete software to build applications for the L6364 and L6362A IO-Link transceiver
- GPIOs, SPI, UART and IRQs configuration
- Smart software architecture based on mini-stack libraries combined with source code (communicating through API) and IODD configuration file
- Sample implementation available for X-NUCLEO-IOD02A1 expansion board connected to a NUCLEO-L073RZ or NUCLEO-G071RB or NUCLEO-L452RE or NUCLEO-F303RE development board
- Sample implementation available for STEVAL-IOD003V1 expansion board connected to a NUCLEO-L073RZ or NUCLEO-L452RE development board
- Easy portability across different MCU families, thanks to STM32Cube
- Free, user-friendly license terms

Description

The X-CUBE-IOD02 package is a software expansion for STM32Cube with driver for the L6364 and L6362A transceivers, mini-stack libraries and IODD configuration files.

The package allows you to develop IO-Link sensor applications based on the L6364 mounted on the X-NUCLEO-IOD02A1 expansion board when connected to a NUCLEO-L073RZ or NUCLEO-G071RB or NUCLEO-L452RE or NUCLEO-F303RE development board.

The package can also be used to develop IO-Link sensor applications based on the L6362A mounted on the STEVAL-IOD003V1 expansion board when connected to a NUCLEO-L073RZ or NUCLEO-L452RE development board.

The software architecture is based on mini-stack libraries combined with source code communicating via APIs, and is designed to accommodate custom application development.

The expansion is built on STM32Cube software technology to ease portability across different STM32 microcontrollers.

Product summary	
Industrial IO-Link device software expansion for STM32Cube	X-CUBE-IOD02
Dual channel IO-Link device expansion board based on L6364 for STM32 Nucleo	X-NUCLEO-IOD02A1
IO-Link (PHY) device evaluation board based on L6362A with Arduino connectors for STM32 Nucleo	STEVAL-IOD003V1
Dual channel SIO and IO-Link PHY device	L6364
IO-Link communication transceiver device IC	L6362A
Applications	Factory Automation IO-Link modules

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 software supports dual channel SIO and IO-Link applications.

The package is based on the STM32CubeHAL hardware abstraction layer for STM32 microcontrollers and extends **STM32Cube** with a Board Support Package (BSP) for the **STM32 Nucleo** expansion boards based on the **L6364** and **L6362A**.

The drivers abstract low-level details of the hardware to access the **L6364** or **L6362A** device data in a hardware independent manner.

The software package includes a set of examples that the developer can use to start experimenting with the code.

The **L6364** output stage (CQ and DIO) is controlled via the SPI peripheral (Single-Byte and Multi-Byte transmission modes) or UART peripheral (Transparent transmission mode) and application debugging is supported on the **X-NUCLEO-IOD02A1** through LEDs, GPIO and interrupt signals for activity and diagnostics.

The configuration of the internal registers is managed through the SPI peripheral, regardless of the selected transmission mode.

The **L6362A** output stage is controlled via the UART peripheral and application debugging is supported on the **STEVAl-IOD003V1** through LED, GPIO and interrupt signals for activity and diagnostics. The communication protocol is supported at COM1, COM2 and COM3.

Revision history

Table 1. Document revision history

Date	Version	Changes
01-Sep-2020	1	Initial release.
05-Oct-2020	2	Updated title, cover page image and description.
12-Jul-2023	3	Updated features, description and product summary in cover page. Updated Section 1.2: How does this software complement STM32Cube? .
04-Jun-2024	4	Added NUCLEO-L452RE and NUCLEO-F303RE for L6364.

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