FP-IND-IODSNS1

STM32Cube function pack for P-NUCLEO-IOD02A1, with IO-Link stack v1.1, IODD and control software for industrial sensors

Application	FP-IND-IODSNS1
Middleware	IO-Link Stack / MEMs and Digital Microphone Manager
Hardware Abstraction	STM32Cube Hardware Abstraction Layer
Hardware	STM32 Nucleo expansion boards X-NUCLEO-IOD02A1 X-NUCLEO-IKS02A1 / STM32 Nucleo development board

STM32 Open Development Environment

STM32 Cube

Product summary

STM32Cube function pack for P-NUCLEO-IOD02A1, with IO-Link stack, IODD and control software for industrial sensors	FP-IND-IODSNS1
STM32 Nucleo pack for IO-Link device applications based on L6364Q transceiver, industrial sensors and STM32L452RE MCU	P-NUCLEO-IOD02A1
Industrial IO-Link device software expansion for STM32Cube	X-CUBE-IOD02
Sensor and motion algorithm software expansion for STM32Cube	X-CUBE-MEMS1
Applications	Industrial Sensors and Actuators Condition Monitoring/ Predictive Maintenance

Features

- Complete firmware to build IO-Link device applications for STM32L452RE-based boards
- Middleware libraries featuring IO-Link device mini-stack for L6364Q and MEMS plus digital microphone management
- Ready-to-use binary for IO-Link device sensor data transmission
- Easy portability across different MCU families, thanks to STM32Cube
- Free, user-friendly license terms

Description

FP-IND-IODSNS1 is an STM32Cube function pack which lets you enable IO-Link communication between P-NUCLEO-IOD02A1 kit and an IO-Link master through the L6364Q transceiver mounted on the X-NUCLEO-IOD02A1.

The function pack integrates an IO-Link demo-stack and the management of the industrial sensors mounted on the X-NUCLEO-IKS02A1.

FP-IND-IODSNS1 also includes the IODD file to be uploaded to your IO-Link master.

The software included in the package can be used in three integrated development environments (IDEs): IAR, KEIL and STM32CubeIDE.

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For further information contact your local STMicroelectronics sales office.

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1 Detailed description

1.1 What can you do with STM32Cube function packs?

STM32Cube function packs leverage the modularity and interoperability of STM32 Nucleo and X-NUCLEO boards together with STM32Cube and X-CUBE software to create function examples for some of the most common use cases of different application technologies.

These software function packs are designed to exploit the underlying STM32 ODE hardware and software components as much as possible to best satisfy the requirements of final user applications.

Moreover, function packs may include additional libraries and frameworks that are not present in the original X-CUBE packages, thus enabling new functionalities allowing real and usable system for developers.

1.2 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

1.3 How does this function pack complement STM32Cube?

This software is based on the STM32CubeHAL. It extends STM32Cube by providing a board support package (BSP) for IO-Link communication through the X-NUCLEO-IOD02A1 and the data management of the industrial sensors mounted on the X-NUCLEO-IKS02A1.

The drivers abstract low-level details of the hardware and allow the middleware components and applications to access data in a hardware-independent manner.

The package includes some middleware libraries to enable an IO-Link demo stack. Developers can prototype an IO-Link device (sensor node) running on an STM32 microcontroller to acquire sensor data from an IO-Link master where the IODD in the function pack has been uploaded.

Revision history

Table 1. Document revision history

Date	Version	Changes
04-Dec-2020	1	Initial release.

IMPORTANT NOTICE – PLEASE READ CAREFULLY