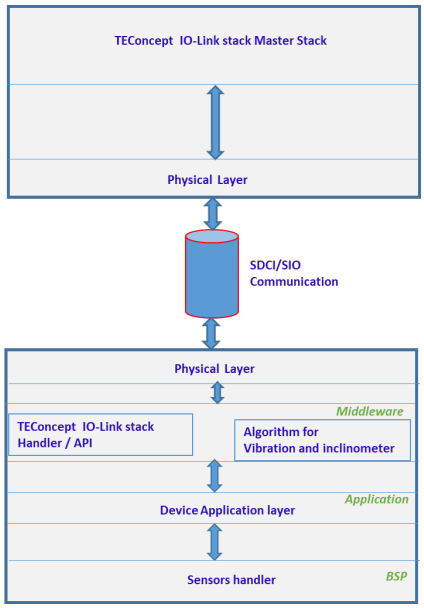
STSW-IDP003IOLDS

Data brief

IO-Link multi port solution



Features

- IO-Link stack v1.1 compatible
- Package developed for STM32 microcontrollers with ARM® Cortex®-M0+ core:
- Portable across other STM32 platforms
- Dedicated API to support following sensors embedded on specific expansion boards available in the STEVAL-IDP003V1 kit:
  - Proximity VL6180X (STEVAL-IDP003V1P)
  - Temperature sensor STTS751 (STEVAL-IDP003V1T)
  - Accelerometer IIS328DQ -(STEVAL-IDP003V1A)
  - Accelerometer for vibration evaluation IIS2DH (STEVAL-IDP003V1V)
- Embedded algorithm for vibration power spectrum using FFT calculation
- Dedicated API for Inclination calculation

Description

This firmware package integrates the IO-Link stack library in the application layer to support the STEVAL-IDP003V1x sensor node.

The firmware is built on STM32Cube architecture and uses the STM32Cube library to implement the application layer. The IO-Link communication layer is instead based on a stack library by TEConcept provided in compiled format.

Product summary	
IO-Link multi port demonstration firmware	STSW-IDP003IOLDS
IO-Link industrial modular sensor board based on L6362A	STEVAL-IDP003V1
IO-Link master multi-port evaluation board based on L6360	STEVAL-IDP004V2
Firmware layers	Board support package: STM32Cube Application layer: STM32Cube Middleware: IO-Link stack (TEConcept)
Applications	Condition Monitoring / Predictive Maintenance

1 Application overview

The application layer uses the different sensors that can be connected to the STEVAL-IDP003V1 in conjunction with the firmware algorithm and dedicated APIs to allow application development involving distance measurements, pitch and roll angle calculations, temperature measurements, and vibration power spectrum calculations.

Data transfer between the STEVAL-IDP004V2 IO-Link master and the STEVAL-IDP003V1 IO-Link sensor node is managed by the IO-Link stack library. Each sensor type is associated with specific IODD files listed below, which must be loaded in the TEConcept control tool before running the application.

- STMicroelectronics-STEVAL-IDP003V1P-4784976-20112019-IODD1.1.xml for STEVAL-IDP003V1P proximity sensor board
- STMicroelectronics-STEVAL-IDP003V1T-4784980-20112019-IODD1.1.xml for STEVAL-IDP003V1T temperature sensor board
- STMicroelectronics-STEVAL-IDP003V1A-4784961-20112019-IODD1.1.xml for STEVAL-IDP003V1A accelerometer board
- STMicroelectronics-STEVAL-IDP003V1V-4933972-20112019-IODD1.1.xml for STEVAL-IDP003V1V vibration sensor board

Data acquisition on the sensor boards is managed by the high-speed I²C protocol. After the processing phase, the data are transmitted via IO-Link bus at 230.4kBaud.

Revision history

Table 1. Document revision history

Date	Version	Changes
02-Mar-2020	1	Initial release.