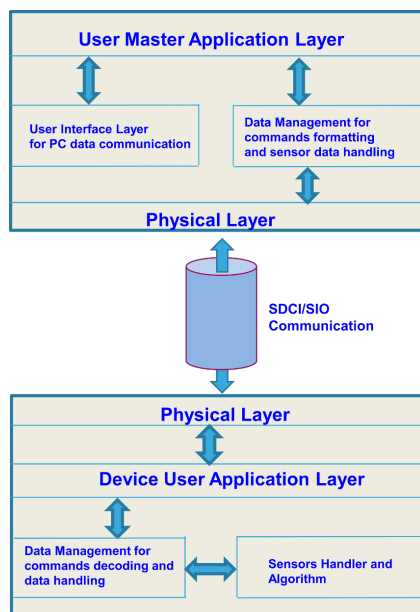


Predictive maintenance evaluation kit firmware



Features

- Firmware package developed for STM32 microcontroller ARM Cortex-M3
- Dedicated protocol designed for data exchange with WireST SDK embedded on MP1 gateway
- Firmware released in binary format manages communication between edge node (STM32MP157C-DK2) to sensor node (STEVAL-BFA001V1B), to enable data transfer to the cloud
- PC interface based on RS-485 communication

Description

The kit consists of the [STEVAL-IDP004V1](#) or [STEVAL-IDP004V2](#) IO-Link master, the [STEVAL-BFA001V1B](#) sensor node kit and an edge node based on the [STM32MP157C-DK2](#) to form a comprehensive solution for predictive maintenance and condition monitoring applications.

Asynchronous serial communication is implemented to manage data exchange between the sensor node and the edge node, using custom communication protocols specifically suited to the application requirements. Standard protocols such as the IO-Link stack have not been included.

A set of commands have been implemented to enable communication between the gateway and the sensor node and allow the transfer of environmental data and vibration data in the time and frequency domains.

This binary for the master node is compatible with the [STEVAL-IDP004V1](#) and [STEVAL-IDP004V2](#) IO-Link masters.

The IO-Link master and the [STEVAL-BFA001V1B](#) sensor boards must be programmed with dedicated binaries that are available for download on www.st.com.

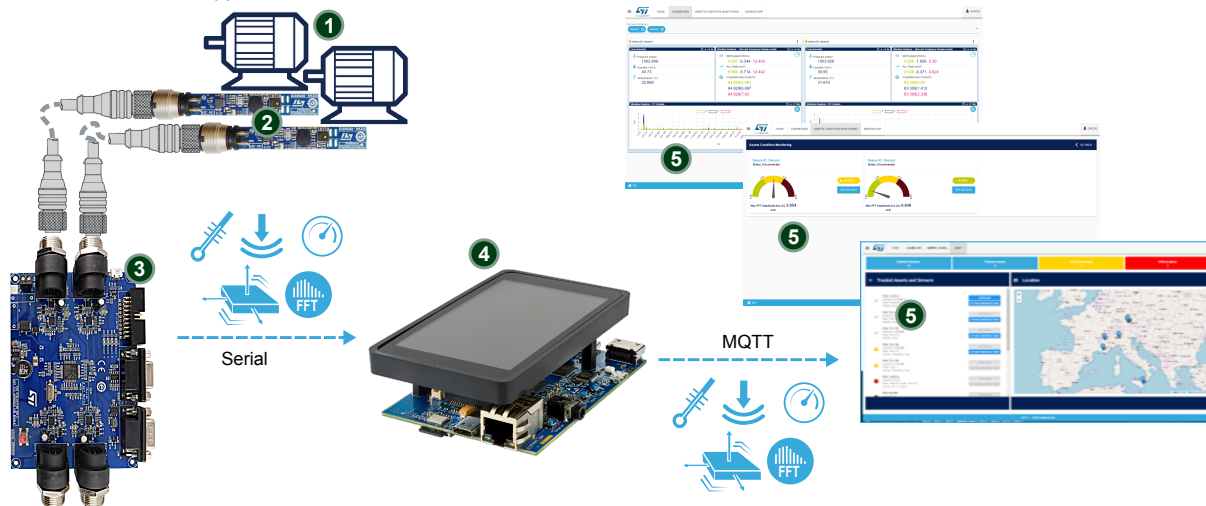
The scenario can be further extended so that the data transmitted from the sensor node via the IO-Link master can be further processed at the edge gateway consisting of an [STM32MP157C-DK2](#) Discovery kit running the [X-LINUX-PREDMNT](#) software, which includes the AWS Greengrass service for gathering all the data on the official ST cloud dashboard service.

Product summary table	
IO-Link master multi-port evaluation board based on L6360	STSW-IDP4PREDMNT
Predictive maintenance kit with sensors and IO-Link capability	STEVAL-BFA001V1B
IO-Link master multi-port evaluation board based on L6360	STEVAL-IDP004V2
STM32 MPU OpenSTLinux expansion pack for Predictive Maintenance applications	X-LINUX-PREDMNT
Discovery kit with STM32MP157C MPU	STM32MP157C-DK2
Application	Predictive Maintenance and Condition Monitoring

1 Detailed description

Figure 1. Condition monitoring and Edge to Cloud: from sensors to gateway to cloud dashboard

1. Industrial equipment
2. IO-Link capable sensor node(s): one or more [STEVAL-BFA001V1B](#)
3. IO-Link master: [STEVAL-IDP004V1](#)
4. Edge gateway: [STM32MP157C-DK2](#) discovery kit
5. Cloud Dashboard application: [DSH-PREDMNT](#)



Revision history

Table 1. Document revision history

Date	Version	Changes
21-Nov-2019	1	Initial release.

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