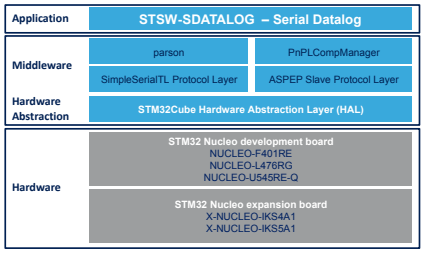
STSW-SDATALOG

Data brief

Simple bare-metal serial data logging software solution



Product summary	
Simple bare-metal serial data logging software solution	STSW-SDATALOG
Motion MEMS and environmental sensor expansion board for STM32 Nucleo	X-NUCLEO-IKS4A1
STM32 Nucleo motion and environmental MEMS expansion board for industrial applications	X-NUCLEO-IKS5A1
STM32 Nucleo-64 development board with STM32F401RE MCU, supports Arduino and ST morpho connectivity	NUCLEO-F401RE
STM32 Nucleo-64 development board with STM32L476RG MCU, supports Arduino and ST morpho connectivity	NUCLEO-L476RG
STM32 Nucleo-64 development board with STM32U545RE MCU, SMPS, supports Arduino and morpho connectivity	NUCLEO-U545RE-Q
Applications	Condition monitoring / predictive maintenance/ Sensing

Features

- Dataset generation: produces well-formed datasets compliant with FP-SNS-DATALOG2 format and compatible with STDATALOG-PYSDK
- Portability: easily portable to custom boards
- Example boards: includes support for several example boards
- Timestamping: data streams include precise timestamping
- Control communication protocol: compliant with board virtualization protocols PnPL and DTDL format adopted by FP-SNS-DATALOG2, and compatible with STDATALOG-PYSDK
- Data streaming: streams datasets via serial communication port through STLink-V2/V3
- MCU configuration: configured using CubeMX; .ioc files are provided for each example
- Sensor support: supports a single sensor, with examples provided for different sensor typologies such as accelerometer, combo (accelerometer + gyroscope), magnetometer, and barometer
- Development environment: developed in STM32CubeIDE, using bare-metal firmware without RTOS
- Protocol support: based on ASPEP and SSTL protocols
- Code reusability: most of the code is reusable and shared among different examples

Description

The STSW-SDATALOG provides simple serial data logging firmware implementations compatible with a graphical user interface (GUI).

It allows you to easily stream sensor data to a host PC via a USB serial VCOM port in real time.

The software is a collection of bare-metal firmware examples designed to generate well-formed datasets compliant with the FP-SNS-DATALOG2 data format.

It is supported by the STDATALOG-PYSDK and dataset factory tools, offering portability across custom boards and compatibility with several example boards.

Developed exclusively in STM32CubeIDE, using bare-metal firmware without an RTOS, it is based on a control communication protocol utilizing board virtualization, PnPL, and DTDL.

Sensor data is streamed via the serial communication port through STLink-V2/V3, supporting precise timestamping also.

The STSW-SDATALOG contains examples for NUCLEO-F401RE, NUCLEO-L476RG, and NUCLEO-U545RE-Q with X-NUCLEO-IKS4A1 and X-NUCLEO-IKS5A1.

Revision history

Table 1. **Document revision history**

Date	Revision	Changes
05-Nov-2025	1	Initial release.

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