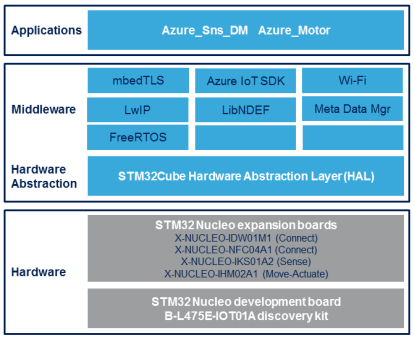
FP-CLD-AZURE1

Data brief

STM32Cube function pack for IoT sensor node with telemetry and device management applications for Microsoft Azure cloud



Product summary	
STM32Cube function pack for IoT sensor node with telemetry and device management applications for Microsoft Azure cloud	FP-CLD-AZURE1
Two axis stepper motor driver expansion board	X-NUCLEO-IHM02A1
Wi-Fi expansion board	X-NUCLEO-IDW01M1
Dynamic NFC/ RFID tag IC expansion board	X-NUCLEO-NFC04A1
Motion MEMS and environmental sensor expansion board	X-NUCLEO-IKS01A2
STM32L4 Discovery kit IoT node	B-L475E-IOT01A

Features

- Complete firmware to safely connect an IoT node with sensors and actuators to Microsoft Azure IoT, using Wi-Fi or Ethernet communication technology
- Middleware libraries featuring the Microsoft Azure IoT software development kit, Wi-Fi and NFC connectivity, transport-level security (mbedTLS), Real-time Operating System (FreeRTOS) and meta-data management
- Ready-to-use binaries to connect the IoT node to a web dashboard running on Microsoft Azure, for sensor data visualization, two axis stepper motor control and device management (FOTA)
- Sample implementations available for STM32L4 Discovery Kit for IoT node (B-L475E-IOT01A) with and without X-NUCLEO-IHM02A1, or for X-NUCLEO-IKS01A2, X-NUCLEO-IDW01M1, X-NUCLEO-IHM02A1 and X-NUCLEO-NFC04A1, when connected in different combinations to a NUCLEO-F401RE, a NUCLEO-L476RG or a NUCLEO-F429ZI development board
- Easy portability across different MCU families, thanks to STM32Cube
- Free, user-friendly license terms
- STM32 Nucleo boards are Microsoft Azure certified for IoT

Description

FP-CLD-AZURE1 is an STM32Cube function pack which lets you safely connect your IoT node to Microsoft Azure IoT, transmit sensor data and receive commands from Azure cloud applications.

It fully supports Azure device management primitives and includes a sample implementation for firmware update over the air (FOTA) and one for motor control. By using a mobile device with NFC, Wi-Fi and Ethernet connectivity links are easily configured.

This software, together with the suggested combination of STM32 and ST devices, can be used, for example, to develop sensor-to-cloud applications for a broad range of use cases, such as smart home or smart industry.

The software runs on the STM32 microcontroller and includes drivers for the Wi-Fi and Ethernet connectivity, dynamic NFC/RFID tag, motion and environmental sensors, as well as two axis stepper motors.

1 Detailed description

What can you do with STM32Cube function packs?

The STM32Cube function packs leverage the modularity and interoperability of STM32 Nucleo and X-NUCLEO boards, and STM32Cube and X-CUBE software, to create function examples, embodying some of the most common use cases, for each application area.

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

Moreover, function packs may include additional libraries and frameworks which do not present the original X-CUBE packages, thus enabling new functionalities and creating a real and usable system for developers.

What is STM32Cube?

STMCube™ is designed by STMicroelectronics to reduce development effort, time and cost across the entire STM32 portfolio.

STM32Cube version 1.x includes:

- STM32CubeMX, a graphical software configuration tool that allows the generation of C initialization code using graphical wizards.
- A comprehensive embedded software platform specific to each series (such as the STM32Cube for the STM32 series), which includes:
  - the STM32Cube HAL embedded abstraction-layer software, ensuring maximized portability across the STM32 portfolio
  - a consistent set of middleware components such as RTOS, USB, TCP/IP and graphics
  - all embedded software utilities with a full set of examples

How does this STM32Cube function pack complement STM32Cube?

This software is based on the STM32CubeHAL hardware abstraction layer for the STM32 microcontroller. The package extends STM32Cube by providing a board support package (BSP) for Wi-Fi and sensor expansion boards.

The package integrates the Azure IoT device SDK middleware with APIs to simplify interaction between STM32 Nucleo or Discovery Kit for IoT node, and the Microsoft Azure IoT services. You can use it to prototype end-to-end sensors-to-cloud IoT applications, by registering your board to Microsoft Azure IoT and begin exchanging real-time sensor data and commands. A web dashboard based on Microsoft Azure is also provided free of charge to facilitate the evaluation of the function pack.

For Azure license terms, visit https://azure.microsoft.com.

For Microsoft Azure IoT certification information, visit: http://azure.com/certifiedforiot.

Revision history

Table 1. Document revision history

Date	Version	Changes
23-Mar-2016	1	Initial release.
29-Apr-2016	2	Minor text edits
13-Dec-2016	3	Updated for v2.0 firmware. Added companion web application information. Added X-NUCLEO-IKS01A2 support information.
22-May-2017	4	Updated all content to reflect v3.0 firmware.
19-Oct-2017	5	Updated all content to reflect v3.2 firmware. Added references to STM32L4 Discovery Kit.
07-May-2018	6	Updated all content to reflect v3.3 firmware version.