## Features

- Dual-Core ST STM32H747XI
- Wide power input range (24 ~ 48 $V_{DC}$)
- Wide operating temperature range (-40 ~ 85 °C)
- Ruggedized DIN-rail kit
- Ethernet communication (XIP, Modbus TCP)
- FIPWAY communication (UNI-TE point-to-point messaging)

## Introduction

FIPBOX-H7/M2 hardware is designed for the maintenance and the retrofitting of older industrial installations based on the FIP/WORLDFIP fieldbus. Designed to be robust, this device is suitable for use in harsh environments.
This two-module (M2) format is ideal for establishing an industrial FIP to Ethernet gateway.

FIPWAY-GW embedded software is a gateway service that allows you to connect any control system supporting Modbus TCP/IP or XIP (X-WAY over TCP/IP) to any FIPWAY device with a point-to-point connection using UNI-TE messages exchanges.
This gateway is primarily designed to communicate with Schneider Electric's TSX Series 7 controllers: TSX 17, TSX 37 (Micro) and TSX 57 (Premium). An intuitive web-based user interface allows for easy configuration.

## Specifications

### General

| | |
|---|---|
| Certification | CE, ready for EN 50155 |
| Dimension (W x D x H) | 71 x 125 x 153 mm (2.8 x 5 x 6 in) |
| Form Factor | Small |
| Enclosure | Stainless Steel housing (SUS430) |
| Mounting | DIN-rail (EN 50022 standard) or Rubber Feet |
| Weight (Net) | 1.125 kg (2.48 lb) |
| Power Requirement | 24 ~ 48 $V_{DC}$ |
| Power Consumption | 1.5W (typical), 6W (max.) |
| Current Consumption | 60mA @ 24$V_{DC}$ (1.5W)<br>40mA @ 48$V_{DC}$ (1.9W) |

### System Hardware

| | |
|---|---|
| Microcontroller | STM32H747XI dual Cortex®-M7 + M4 32bit low power Arm® MCU |
| Program Memory | 1 MB (RAM)<br>2 MB (Flash) |
| Storage | 16MB (QSPI NOR Flash) |
| RTC | 1F Supercapacitor |
| Security | ATECC608B Crypto (Microchip) |
| LED Indicators | |
| ◦ H7 module | 1 x Power LED<br>2 x Programmable LED (RUN / ERR)<br>2 x LAN (Active, Status) |
| ◦ FIP module | 1 x Power LED<br>1 x COM LED (Carrier detect)<br>1 x ERR LED (Watchdog, TX error) |

### I/O

| | |
|---|---|
| Isolated FIP Port | 1x D-SUB 9 Male<br>±30kV HBM<br>±16kV IEC 61000-4-2 Contact discharge<br>±4kV IEC 61000-4-4 Electrical fast transient |
| LAN | 1x 10/100 Mbps (RJ45) |
| USB | 1x USB-C (Programming / Flashing) |
| Push Buttons | 1x Reset button<br>1x User button (Boot mode) |
| Power Connector | 1x 4-pin terminal block (5.08 Phoenix plug) |

### Environment

| | |
|---|---|
| Operating Temperature | -40 ~ 85 °C / -40 ~ 185 °F |
| Relative Humidity | 95% RH @ 40 °C / 104 °F, non-condensing |
| Ingress Protection | IP20 |

### Ordering Information

| | |
|---|---|
| Product Range | FIPBOX-H7/M2 |
| Product ID | 700-500 |
| Origin Country | France |

## FIPWAY-GW Characteristics

### Service Description

This service is designed for the modernization and renovation of industrial systems based on FIPWAY industrial network. By converting XIP or Modbus TCP ethernet requests to FIPWAY UNI-TE requests, this gateway enables continued communication with older-generation controllers (TSX 7 series) while adding new-generation equipment.

### FIP Features

- Protocol: FIPWAY
- FIP Mode: Master / Slave
- FIP Baud Rate: 1 Mbps
- Medium Redundancy: None (Mono-medium)
- Messaging Service: UNI-TE requests/responses

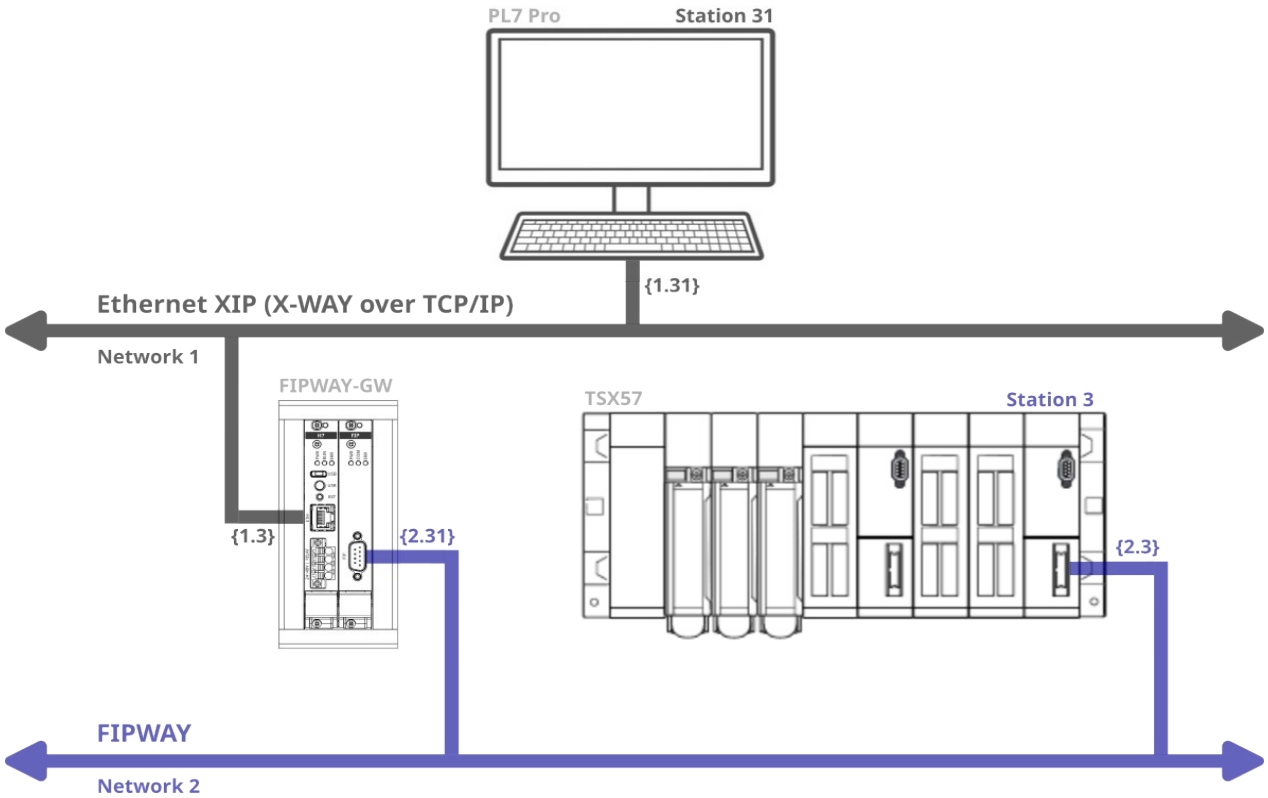
### Ethernet Features

- Protocol: Modbus TCP or XIP
- Max. Connection: 5
- Connection Timeout: Until 30 seconds (0: Disabled)

### Web Server

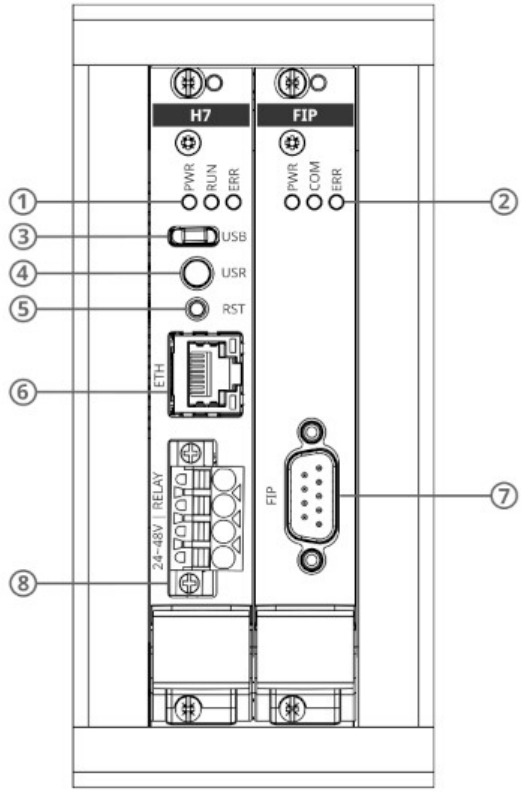
- Authentification: Admin / User accounts
- Dashboard: Gateway transactions statistics, Hardware / Software informations, Uptime, Date & Time, Temperature
- Settings: Ethernet configuration (DHCP / Static IP), Date & Time (Manually or SNTP server), Gateway protocol (XIP or Modbus TCP)
- File Import/Export: Gateway configuration via JSON file
- Event Log: Info / Warning / Events / Errors logs
- FIP Presence Table: Display the presence of FIP Nodes

### Functional Diagram



## Front I/O

| | |
|---|---|
| 1 | H7 LEDs Status |
| 2 | FIP LEDs Status |
| 3 | USB-C Connector (Flashing / Programming) (1) |
| 4 | User Button (Boot modes selection) |
| 5 | Reset Button |
| 6 | RJ45 Ethernet Interface (WebUI access) |
| 7 | D-SUB9 Male FIP Interface |
| 8 | Power Supply Connector, Relay |




(1) : It is not recommanded to use USB-C for power supply. Application stability issues may occur. Use the 24~48V connector instead.

(2) : This mode is used for Device Firmware Upgrade [DFU]. Connect USB-C to host machine to flash a new firmware using STM32CubeProgrammer utility.

### Boot Modes

| Mode | Buttons Seq. | | Description |
|---|---|---|---|
| Normal Boot | 1 | RST=1 | Press and release RST button to restart the device. |
| | 2 | RST=0 | |
| Default Factory Boot | 1 | RST=1 | Press and release RST button. Then press USR button within one second after releasing RST button to start the gateway with the default settings. |
| | 2 | RST=0 | |
| | 3 | USR=1 | |
| | 4 | USR=0 | |
| Firmware Upgrade Boot (2) | 1 | RST=1 | Press the RST and USR buttons simultaneously. Then release the RST button, followed by the USR button. |
| | 2 | USR=1 | |
| | 3 | RST=0 | |
| | 4 | USR=0 | |

### H7 LEDs Status

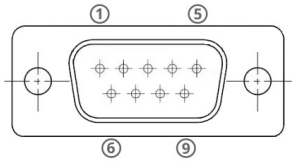
| LED | Color | Indication |
|---|---|---|
| PWR | Green | Power OK |
| | Off | No power |
| RUN | Green | Service is active |
| | Green flashing | Factory boot (Default settings) |
| | Off | Service is inactive, or error |
| ERR | Red | Major unrecoverable fault |
| | Red flashing | Service is inactive |
| | Off | No error |

### FIP LEDs Status

| LED | Color | Indication |
|---|---|---|
| PWR | Green | Power OK |
| | Off | No power |
| COM | Blue | Bus activity. Node is slave. |
| | White | Bus activity. Node is master. |
| | Off | No bus activity |
| ERR | Red | COM error (TX error or Watchdog) |
| | Off | No error |

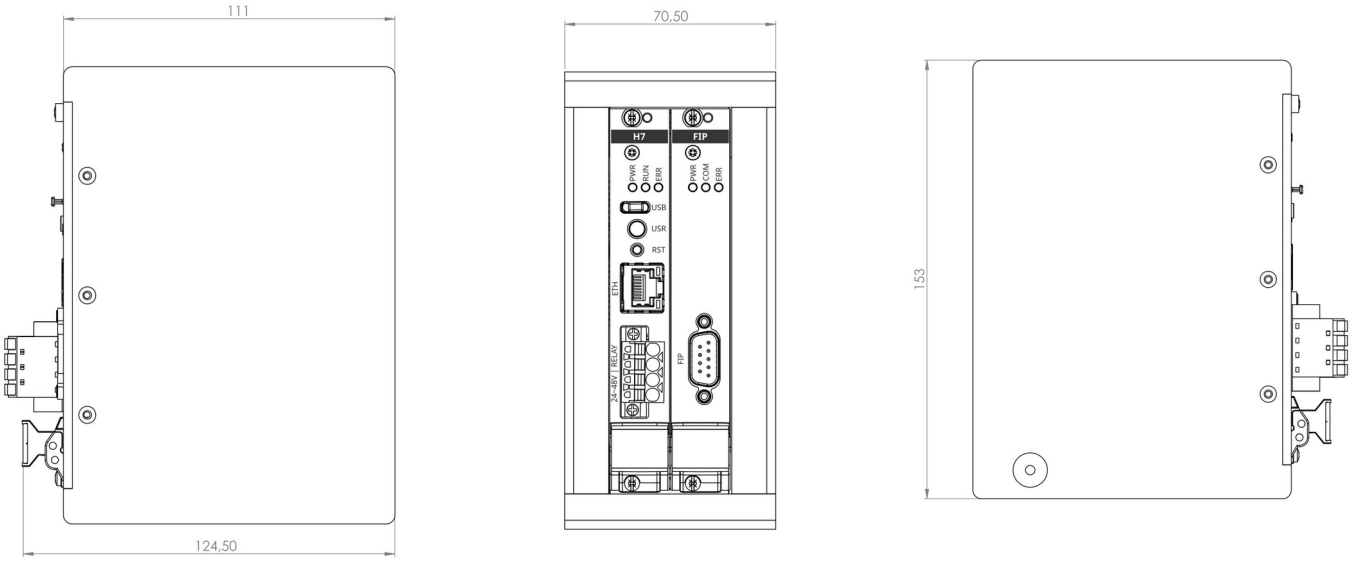
### FIP Connector

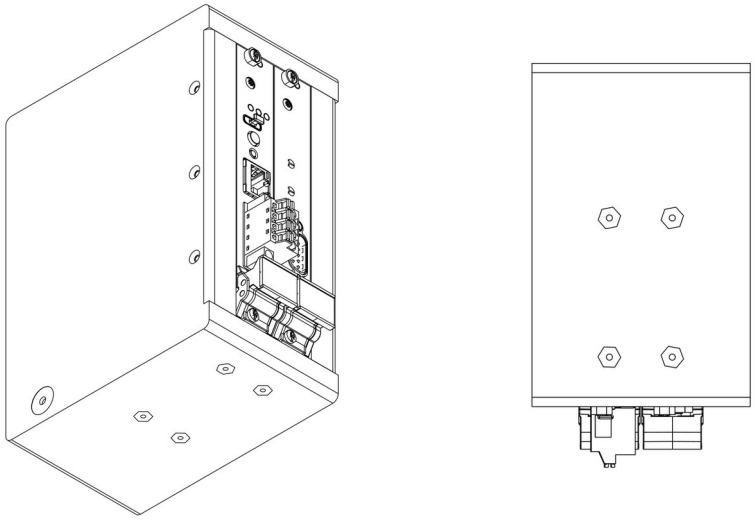
D-SUB9 Male




| Pin | Signal | Pin | Signal |
|---|---|---|---|
| Housing | Shield | Others | Not connected |
| 6 | A (D+) | | |
| 7 | B (D-) | | |

## Dimensions




Unit: mm