

IP based remote non-retroactive MVB / CAN sniffer for applications in rail systems

## Features

- Modular Smart Input/Output (ModuSio) Module
- Ethernet & WLAN communication
- Power supply via PoE or 12/24V (DC)
- 1x MVB listen only via 2x 9-pol Dsub
- 1x CAN listen only via 1x 9-pol Dsub
- Data logger functionality: receives multiple time stamped data streams
- Galvanic isolation
- EN 50155 compliant



## Introduction

The MVB/CAN sniffer unit *MIO03* extends the functionality of any embedded computer through simplest IP based remote I/O functionality. MIO03 allows non-retroactive data acquisition from TCN networks (MVB & CAN) even when the embedded computer is installed hundreds of meters away. This lowers not only cabling effort and cost but also eases up software integration dramatically.

MIO03 offers two read-only MVB interfaces to connect to both redundant channels allowing least influential connection to existing network infrastructures by its nonretroactive design. For installations with CAN as TCN network, MIO03 offers one read-only CAN interface to acquire CAN TCN messages.

In any case, only one cable is necessary for powering and communication. Used as an Ethernet module, MIO03 is powered simple through Power-over-Ethernet. When used as a WLAN connected device, the module is powered through the same M12 connector with 12/24V DC.

For easiest SW integration, MIO03 supports zeroconf protocols to allow automatic IP assignment and detection of the devices in the network. Additionally MIO03 allows secure firmware update through WLAN or Ethernet.

## Applications

- Condition-based / predictive maintenance
- TCN anomaly detection systems
- Fleet optimization
- Security gateway
- Data logger

## Software

ModuSio products are easily integrated into applications through standardized, platform and programming language independent protocols (Protobuf and TCP).

They are supported by open source client libraries that provide APIs for common programming languages.

API functions include:

- Interface configuration, e.g. setting baud rates
- Defining and receiving one or more streams of time-stamped samples

## Specifications

| Input/Output            | SI03-MIO03-  |
|-------------------------|--|
| MVB                     | MVB Read-only dual channel A/B via 9p DSub (plug)<br>MVB Read-only dual channel A/B via 9p DSub (socket)<br>Connected through according to EN 61375-3-1 standard |
| MVB data rates          | 1,5 Mbit/s   |
| CAN                     | CAN read-only via 9p DSub (plug)   |
| CAN data rates          | Up to 1 Mbit/s   |
| RS485                   | Alt. to CAN interface<br>RS485 read-only via 9p Dsub (plug)  |
| RS485 data rates        | Up to 256 kBuad  |
| Galvanic isolation      | 750V DC / 3 Groups (MVB/CAN/Shield)  |
| Host Interface          |  |
| Ethernet                | 10/100 Mbit/s Ethernet via 8-pin M12 x-coded   |
| WLAN                    | WLAN IEEE 802.11b/g/n  |
| Power Supply            | Power-over-Ethernet (PoE— PD) class 1  |
| Service Interface       | USB 2.0 via USB-C  |
| Mechanics               |  |
| Dimensions              | Height: 151 mm; Width: 42 mm; Depth: 51 mm   |
| Environmental           |  |
| Operating Temperature   | -40...+70°C / 85°C (10min) (EN 50155:2017 - OT4 + ST1)   |
| Storage Temperature     | -40...+85°C (EN 50155:2017)  |
| Humidity                | 95% (EN 50125-1:2014)  |
| Altitude                | 3000 m max. above sea level (EN 50125-1:2014, class AX)  |
| Shock / Vibration       | EN 61373:2010; Cat. 1; Class B   |
| EMC Emission / Immunity | EN 50121-3-2:2016; EMV 06 (2.0) Class S1;<br>EN 301 489-1 (V2.2.3)   |
| Safety                  | EN 50155:2017; EN 50153:2014+A1:2017; EN 50124-1:2017; EN 62368-1:2016; EN ISO 13732-1:2008  |
| Fire&Smoke              | EN 45545-2:2013 + A1:2015; HL3   |
| Useful Life             | 20 years (EN 50155:2017, class L4)   |
| Pollution Degree        | PD2 (EN 50124-1:2017)  |
| Certifications          | CE   |

## Order Information

| Article number | Short               | Configuration* | Power Input      | MVB                  | CAN**                | RS485**                | Host IF                | Service IF | FW update          |
|----------------|---------------------|----------------|------------------|----------------------|----------------------|------------------------|------------------------|------------|--------------------|
| S103-MIO03-    | ModuSio TCN Sniffer | as Ethernet    | PoE (PD) class 1 | 1x MVB (listen only) | 1x CAN (listen only) | 1x RS485 (listen only) | 10/100 Mbit/s Ethernet | USB 2.0    | Via USB / Ethernet |
|                |                     | as WLAN        | 12/24V DC        | via 2x 9-pin DSub    | via 9-pin DSub       | via 9-pin DSub         | WLAN IEEE 802.11b/g/n  |            | Via USB / WLAN     |

\*Configuration by means of software during provisioning process

\*\* RS485 interface is shared with CAN interface (either or)

Please [contact](#) us for your specific requirements.

## Accessories

N/A

## Application Context — *ModuSio*

IP-based Modular Smart Input/Output modules for rail and public transport intelligently close the gap between any data source and the control computer. IP-based connections (LAN, WLAN) guarantee independence, abstraction and easy integration.

