ModuSio MIO07
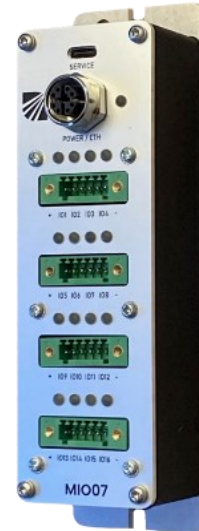
IP based remote binary input/output module for edge applications in railway and automotive systems

Features

- Modular Smart Input/Output (ModuSio) Module
- Ethernet & WLAN communication
- Power supply via PoE or 12/24V (DC)
- 16 digital inputs / outputs (selectable) via 4x 6-pin spring terminal; 24V DC (nom)
- Integrated diagnosis: Output watchdog, protection for over-current & reverse polarity, short circuit proof
- Configurable modes for usage as direct I/O or data logger with multiple data streams.
- Galvanic isolation in groups of 4 I/Os
- Status LED for each I/O

Introduction

The binary I/O module *MIO07* extends the functionality of any embedded computer through simplest IP based remote I/O functionality. MIO07 provides 16 cost sensitive binary inputs / outputs and is designed to control actors locally or acquire data exactly where it is generated 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.

In any case, only one cable is necessary for powering and communication. Used as an Ethernet module, MIO07 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, MIO07 supports zeroconf protocols to allow automatic IP assignment and detection of the devices in the network.

Rounded up by secure firmware update, hardware/ firmware identification and device restart via network, MIO07 is well suited to extend easily any embedded system.

Applications

- Condition-based monitoring
- Predictive maintenance
- Data logger
- Fleet optimization
- Process & Control

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 the sampling frequency.
- Direct interaction with the interface, e.g., retrieving/setting current values of a binary I/O
- Defining and receiving one or more streams of time-stamped samples

ModuSio MIO07

Specifications

Input/Output	S103-MIO07-
Binary Input/Output	16 IN/OUT via 4x 6p spring terminal
Binary output characteristics	24 DC (nom) - high side or low side switching Current limit per pin 200mA (typ) (high side switch) Current limit per pin is 150mA (typ) (low side switch) Max. output frequency: 20 Hz max. capacitive load: 25 µF @ 20 Hz switching frequency per pin; max. inductive load: 320 mH @ 20 Hz switching frequency per pin
Binary input characteristics	24 DC (nom) IEC61131-2 type 1 and 3 input Threshold 6.7/8V Max. input frequency: 500 Hz
Binary I/O diagnosis	Watchdog; pin current limit; pin or group overload group supply voltage absent; group supply undervoltage;
Binary I/O configuration	Operation mode configurable by software per pin
Galvanic isolation	750V DC / 5 Groups
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 Alternative: 12/24V (DC)
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	Rail Applications EN 50121-3-2:2016;
Safety	EN 50155:2017; EN 50153:2014+A1:2017; EN 50124-1:2017; 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

ModuSio MIO07

Order Information

Article number	Short	Configuration*	Power Input	Bin I/O	Host IF	Service IF	FW update
S103-MIO07-	ModuSio Bin I/O	as Ethernet	PoE (PD) class 1	16 Binary In / Out	10/100 Mbit/s Ethernet	USB 2.0	Via USB / Ethernet
		as WLAN	12/24V DC		WLAN IEEE 802.11b/g/n		Via USB / WLAN

* Configuration by means of software during provisioning process

Please contact us for your specific requirements.

Accessories

N/A

ModuSio MIO07

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.

PoE Switch

Ethernet Network

Ethernet PoE

Ethernet PoE