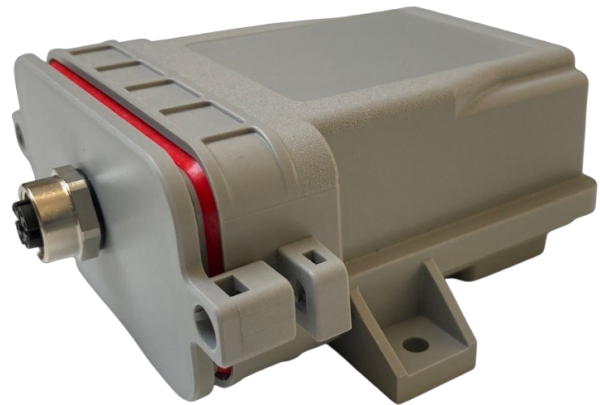


SIO02

High accuracy localization module with WLAN interface for indoor and outdoor positioning for applications in rail & buses

Features

- Seamless positioning from various sensor sources; < 1 m accuracy
- UWB* receiver IEEE 802.15.4-2015;
- GPS/RTK multiband GNSS receiver
- Inertial Measurement Unit (IMU)
- Speed Pulse Signal according to IEC 16844-2
- WLAN IEEE 802.11b/g/n
- Power input 9...36V DC (24V nom.); ignition
- USB service interface
- Remote update capability of firmware
- EN 50155 and E1 qualified



* requires stationary UWB satlet infrastructure

Introduction

The UWB/RTK precise positioning module *SIO02* is a member of the KYT Sensor family by Ci4Rail and can work as a standalone device as well as in combination with ModuCop MEC0x.

For highly precise positioning in public transport and rail car depots, stations, tunnels etc. or even indoor, a single sensor source is not sufficient. To provide precise localization, *SIO02* combines the technologies UWB (ultra wide band), GNSS/RTK (Real-Time-Kinematik) and additional speed pulse input signal.

Whereas UWB works indoors using a cost sensitive satlet infrastructure, the GNSS/RTK technology provides high precision positioning information without additional infrastructure outdoors. The speed pulse input signal supports identification of distance traveled and movement direction. Specific movement models within an IMU (Inertial Measurement Unit) allow smooth seamless real-time positioning.

The positioning information is transferred to the landside using WLAN interface. *SIO02* requires only one cable connection for power input, ignition function and tacho input.

The *SIO02* product describes the vehicle component and does not cover stationary equipment like UWB satlets.

Applications

Applications in Rail & Automotive sector requiring high accuracy positioning information, e.g.

- Vehicle asset management
- Depot fleet management
- Track accurate parking position
- ... and further applications where correlation of user data with high precision positioning information increases the data value.

Software

Integrated microcontroller firmware:

- High precision position incl. accuracy and source information at least 1/sec.
- Integration of specific movement models based on IMU
- WLAN communication as client
- Firmware update via USB and WLAN
- Remote access to firmware logs

SIO02 is designed to be used in closed networks.

Specifications

Interfaces	S103-SIO02-
Communication Interface	WLAN IEEE 802.11b/g/n
Service Interface	USB 2.0 via M12 8p X-Coded*
Positioning Indoor	UWB IEEE 802.15.4-2015
Positioning Outdoor	Multi-band GNSS/RTK GPS/QZSS (L1C/A L2C) GLONASS (L1OF L2OF) Galileo (E1B/C E5b) BeiDou (B1I B2I)
Positioning accuracy	localization values have an accuracy of < 1m for 95% of the reported values
Speed Pulse Signal	acc. to IEC 16844-2 (input high: 4,8V; input low: 2,2V)
Ignition	On State: Input high: 5,2 V (min) or open Standby State (after delay ~3 sec): Input low: 3,6 V (max)
Software Features	
Firmware update	Via USB, WLAN
Electrical	
Power Supply	12V, 24V (nom.) acc. to ISO 7637-2:2011 via M12 8p X-Coded*
Power Consumption	Operation typ. < 3 W; Standby State < 0,1 W
Mechanics	
Dimensions (w/o mounting accessories)	Length: 110 mm Depth: 98 mm Height: 48 mm
Mounting	Flexible Mounting via integrated mounting holes or vehicle specific mounting adapter Horizontal mounting on vehicle roof with connector in backwards or CAB B direction
Ingress Protection	IP66K
Environmental	
Operating Temperature	-40...+70°C (EN 50155:2021 - OT4)
Storage Temperature	-40...+85°C
Humidity	95% (EN 50155:2021)
Altitude	3000 m max. above sea level (EN 50125-1:2014, class AX)
Shock / Vibration	EN 61373:2010; Cat. 1; Class B
EMC Emission (Rail / Automotive)	EN 50121-3-2:2016; EMV 06 Class S1 / ECE R10 Rev.5
EMC Immunity (Rail / Automotive)	EN 50121-3-2:2016 / ECE R10 Rev.5
El. Safety	EN 50155:2017; EN 50153:2014+A1:2017; EN 50124-1:2017; EN 62368-1:2016; EN ISO 13732-1:2008
Useful Life	20 years (EN 50155:2021, class L4)
Certifications (Rail / Automotive)	CE; EN 50155 / E-Mark ECE R10

* Power and service interface shared on one M12 connector

Order Information and Related Article

Article number	Short	Software configuration	Power Supply	Host Interface	Service Interface	FW Update
S103-SIO02-	UWB/RTK-Positioning Module	WLAN / USB	12V, 24V DC (nom.)	WLAN	USB 2.0	✓ Via USB & WLAN

Please [contact](#) us for any specific requests.

Product Appearance

