

LTR01 - LYVE Vehicle-TRACElet

High accuracy localization module with WLAN interface for indoor and outdoor positioning for applications in 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
- UN ECE R10 qualified (E1 type approval)



* requires stationary UWB satlet infrastructure

Introduction

The UWB/RTK precise positioning module *LTR01* 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, *LTR01* 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. *LTR01* requires only one cable connection for power input, ignition function and tacho input.

The *LTR01* 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

LTR01 is designed to be used in closed networks.

Specifications

Interfaces	S113-LTR01-
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. 1,3 W; Standby State < 0,1 W; Inrush Current: < 0,09 A
Mechanics	
Dimensions (w/o mounting accessories)	Length: 145 mm Depth: 98 mm Height: 67 mm (without bolts and connector)
Mounting	Flexible Mounting options: Direct roof mounting through bolts Mounting on brackets (bus type specific)
Ingress Protection	IP67
Environmental	
Operating Temperature	-40...+85°C
Storage Temperature	-40...+85°C
Altitude	3000 m max. above sea level (EN 50125-1:2014, class AX)
Shock / Vibration	EN 61373:2010; Cat. 1; Class B
EMC Emission (Automotive)	ECE R10 Rev.6
EMC Immunity (Automotive)	ECE R10 Rev.6
El. Safety	IEC 62368-1:2020
Certifications (Automotive)	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
S113-LTR01-	UWB/RTK-Positioning Module	WLAN / USB	12V, 24V DC (nom.)	WLAN	USB 2.0	✓ Via USB & WLAN

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