

# GNSS/INS Time Synchronized Module Card

## Features

- Based on high-speed processor for time synchronization
- Output 8-channel PPS and ToD signal for sensor
- Integrated U-blox high precision GPS module
- Integrated 9-axis IMU for robot odometry
- Completed the sensor fusion with IMU and GPS
- Support outdoor and indoor time synchronized
- Friendly register setting of GPS protocol and frequency
- Support updates the time data to robot controller
- 0.2 deg roll/pitch & cm-level position accuracy
- Support all robot platform to integrate this module
- Online programming for upgrade profile

## Introduction

GNSS/INS time synchronization module card based on high-speed processor to provide multi-channel output for more sensor synchronization and improve fusion capability, integrated high precision GPS L1/L2 or RTK and 9-axis IMU module for robot odometry. This module helps you easy install to all robot platform and without IMU calibration effect, support outdoor and indoor time capability.

# Specification

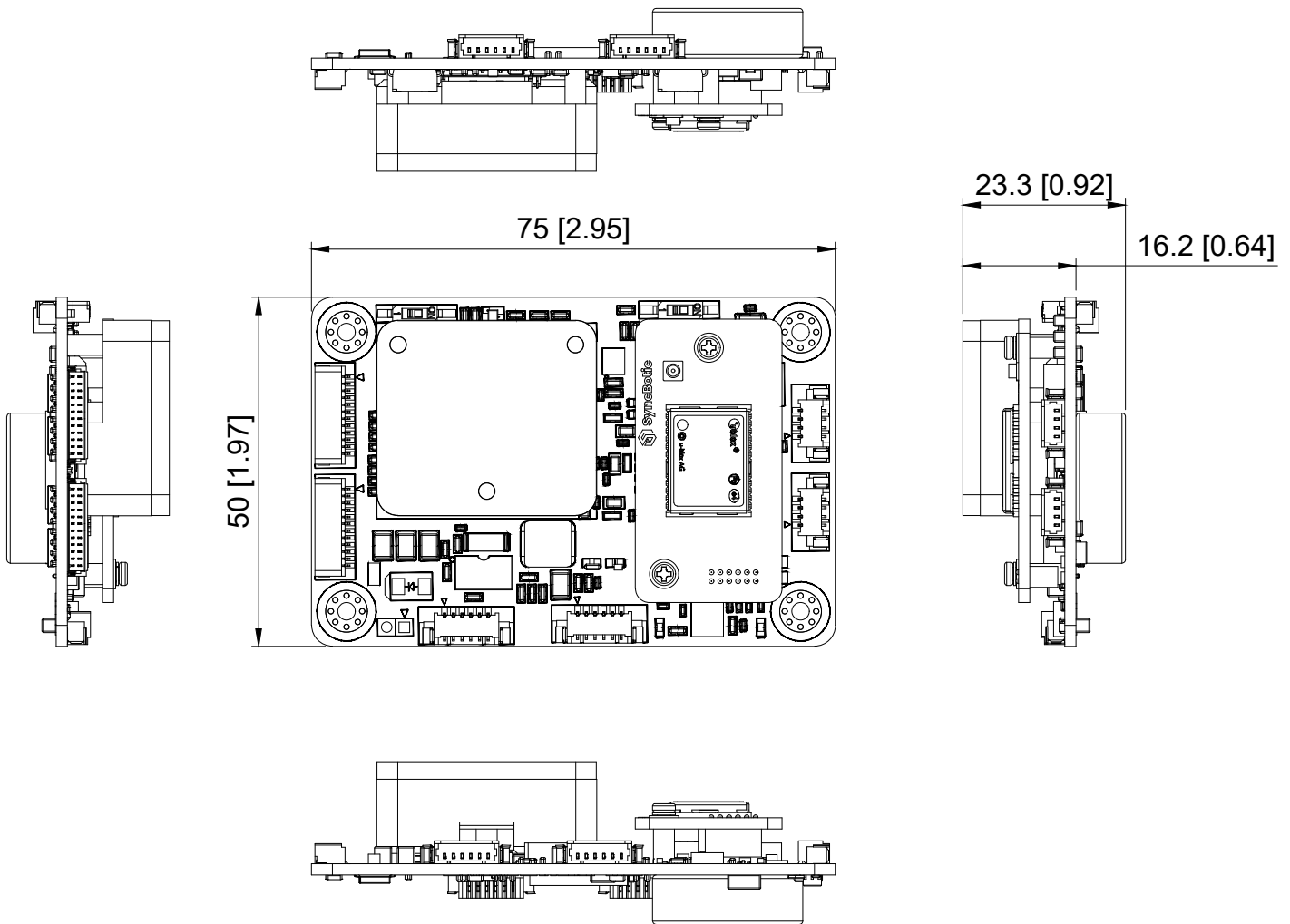
<b>Model Name</b>	TSMC series
<b>Platform</b>	
<b>Processor</b>	High speed processor
<b>GPS module</b>	Built-in L1/L2 or RTK U-blox GPS module
<b>IMU module</b>	Integrated 9-axis Xsens IMU
<b>Board to Board connector</b>	12x multi-channel time sync output 1x RS232 (Only support IMU data output) 1x I2C (connect to controller side) 1x PPS output (connect to controller side)
<b>9-axis IMU Specification</b>	
<b>Support list</b>	Gyroscope, Accelerometer, Magnetometer, Barometer, orthogonality
<b>Roll/Pitch</b>	Static: 0.2° Dynamic: 0.5°
<b>Yaw</b>	Dynamic: 1°
<b>Position</b>	Horizontal: 1.0m Vertical: 2.0m
<b>Velocity</b>	3D: 0.05m/s
<b>GPS Specification</b>	
<b>Module type</b>	L1/L2 or RTK U-blox GPS high precision module
<b>Receiver type</b>	GPS L1C/A, SBAS L1C/A, QZSS L1C/A, QZSS L1 SAIF, GLONASS L10F, BeiDou B1, Galileo E1B/C, GPS/QZSS L2C, GLONASS L20F, Galileo E5b, BeiDou B2I, RTK
<b>Acquisition</b>	Cold start: 26s Hot start: 2s Aided start: 3s
<b>Re-convergence time</b>	RTK ≤ 10S (*only on RTK module card)
<b>Power</b>	
<b>Input power range</b>	9-55V DC ±5%
<b>Physical Characteristics</b>	
<b>Dimension (mm)</b>	75 x 50 x 23.3mm (2.95 x 1.968 x 0.917 inch)
<b>Mounting/Installation</b>	4x M2 screw



Environmental	
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Operating Humidity	Approx. 95% @40 (non-condensing)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Vibration	IEC 60068-2-64: 5Grms, 5-500Hz, 3 axes
Shock	Operating: 3G, half sine, 11ms duration
EMI	CE & FCC class B (EN 61000-6-4/-6-2)
Reliability	
Warranty	2 years

# Dimensions

Unit: mm



## Ordering Information

Model Name	Description
TSMC-200	GNSS/INS Time synchronization with 12x channel, L1 GPS module
TSMC-210	GNSS/INS Time synchronization with 12x channel, RTK GPS module