

# VTS

# 1000



Xilinx Zynq® UltraScale+™ MPSoC, 2 X-coded M12 GigE LAN, 1 Sync In, 8 Sync Out, RTCM, 1 UART, Dual GNSS GPS, 9-axis IMU, -40°C to 75°C



^ Autonomous Robots



- Powered by Xilinx Zynq® UltraScale+™ MPSoC, rugged & compact design
- Multi-channel PPS Time Sync and Frame Out for cameras, Lidars, Radars, and IMU
- 2 X-coded M12 GigE LAN with 1 Network Sync LAN support PTP/gPTP Protocol
- Integrated with Septentrio high precision Dual-Antenna GPS
- Supports RTK RTCM centimeter level position accuracy
- Integrated with Xsens MTi-670 high precision 9-axis IMU
- Supports External GNSS input and Daisy Chain sync out
- DC 5V to 60V wide range power input, Fanless -40°C to 75°C operation

^ 3D Mapping



^ Unmanned Surface Vehicle



# Specifications

## System

Processor	Xilinx Zynq® UltraScale+™ ZU5EG MPSoC
Memory	DDR4 Memory, up to 8GB
eMMC	64GB eMMC
OS	Embedded : Linux System Framework : ROS 2 Humble

## I/O Interface

Button	Restore to Factory Default Button
LED	Power, Ready, 1 Programmable LED, PTP, Sync In, GNSS, IMU, VCHAIN
Daisy Chain	Provides PPS and UART for sync channel extensions 8-pin A-coded M12 Connector
IMU Out	Provides 1 RS-232 and 1 CAN Bus for 9-axis IMU raw data output 17-pin A-coded M12 Connector (VTS-1200GU Only)
Sync In	Provides 1 PPS and 1 ToD for External GNSS input 8-pin A-coded M12 Connector
Sync Out	Provides up to 8 PPS and 8 ToD for hardware sync and time stamp output. 17-pin A-coded M12 Connector
Frame Out	Provides 8 Trigger for GMSL cameras frame sync 17-pin A-coded M12 Connector
RTCM & UART	Provides 1 RTK RTCM and 1 UART : - RTK RTCM input, NMEA 0183 protocol followed - UART for communication to PC - 8-pin A-coded M12 Connector (VTS-1200/VTS-1200GU Only)
Antenna	2 SMA GNSS Antenna Connector (VTS-1200GU Only)

## Storage

SD	1 External Micro SD Socket
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## Ethernet

LAN 1	10/100/1000 Base-T GigE LAN for hardware PTP/gPTP master, IEEE802.3AS compliant X-coded M12 Connector
LAN 2	10/100/1000 Base-T GigE LAN X-coded M12 Connector

## Power

Power Input	DC 5V to 60V
Power Interface	5-pin L-coded M12 Connector : V+, V

## Sensor Fusion (1200GU only)

GPS	Septentrio AsteRx-m3 Pro Dual GNSS Module Position accuracy (Open sky conditions and RMS level)		
		Horizontal	Vertical
	Standalone	1.2m	1.9m
	SBAS	0.6m	0.8m
IMU	Xsens MTi-670 9-axis IMU Sensor Performance :		
	- Roll, Pitch : 0.2 deg RMS - Yaw/Heading : 0.8 deg RMS - Velocity : 0.05 m/s RMS		

## Mechanical

Dimensions (W x L x H)	VTS-1100 : 150 mm x 150 mm x 55 mm (5.9" x 5.9" x 2.16")
	VTS-1200/1200GU : 150 mm x 150 mm x 70 mm (5.9" x 5.9" x 2.75")
Weight	VTS-1100 : 1.6KG (3.52 lb)
	VTS-1200 : 1.7KG (3.74 lb)
	VTS-1200GU : 1.8KG (3.96 lb)
Mounting	DIN-Rail, Wall-mount

## Environment

Operating Temperature	-40°C to 75°C, Fanless
Storage Temperature	-40°C to 85°C
Humidity	5% to 95% Humidity, Non-condensing
Relative Humidity	95% @75°C
Shock	Operating, MIL-STD-810G, Method 516.7, Procedure I
Vibration	Operating, MIL-STD-810G, Method 514.7, Procedure I, Category 4
EMC	CE, FCC, EN50155, EN50121-3-2

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# Order Information

Model Name	Platform	RAM	LAN	Sync In	Frame Out	Sync Out	RTCM	UART	GPS	IMU
VTS-1100	Xilinx UltraScale+ ZU5EG	8GB	2	1	8	5	-	-	-	-
VTS-1200						8	1	1	-	-
VTS-1200GU						8	1	1	1	1

## Software Tool

Daisy Chain	Synchronization tool between controllers, auto calibration of latency
Sync Tool	Python sync tool for customizable sync signal to support various sensor requirements
Sensor Fusion	Sensor fusion tool for Dual GNSS and IMU yaw, integrated EKF algorithm

## Accessories

PWA-120W1	120W, 24V AC Power Adapter with 3-pin Terminal Block
PWA-160W-WT	160W, 24V, 85VAC to 264VAC Power Adaptor with 3-pin Terminal Block, Wide Temperature -30°C to +70°C
DC-IN Cable	DC-IN Cable, 200cm
Vchain Cable	M12 Vchain Cable, 200cm
RTCM Cable Kit	RTK RTCM input Cable Kit, 200cm
Sync in Cable Kit	External GNSS input Cable Kit, 200cm
Sync out Cable Kit	Sync out Cable Kit, 200cm
Sync out 2 Cable Kit	Sync out Cable Kit, 200cm
Frame Out Cable Kit	Frame out Cable Kit, 200cm
LAN Switch	10/100/1000Base-T(X) Gigabit Ethernet switch with PTP/gPTP support

# Dimensions & Drawing

Unit : mm (inch)

