



# **zHDO100**

## **Cased GPS Timing & Navigation**



### ***Outdoor Antenna***

*Revision 1.1*

## **PRESENTATION**

ZTI has selected a GPS Time & Navigation receiver produced by Heol Design (France), based on the Trimble Copernicus technology (Trimble OEM).

The sensitive Copernicus GPS receiver can autonomously acquire GPS satellite signals and quickly generate reliable position fixes in extremely challenging environments and under poor signal conditions.

It is recommended to use an outdoor antenna for the best results.

Two versions are available: RS232 (standard delivery) or RS422 (on request).

The zHDO100 GPS Time Receiver needs an outdoor antenna and is dedicated for use in measurement and industrial applications. The RS422 version provides transportation of positional and timing over long distances.



The zHDO100 module is RoHS  
(lead free) compliant.

*Note: the specifications in this document are subject to change without notice.  
ZTI is not responsible for the operation or failure of operation of GPS satellites or the availability of GPS satellite signals.*

## **MAIN FEATURES**

- Complete 12-channel GPS receiver
- Ultra-high sensitivity of **-152dBm (-182dBw)**, enabling high performance in urban canyon environments.
- Time to First Fix is quicker than **45 seconds**.
- The reacquisition time when hot (thanks to the back-up capacitor) is extremely short (~2s 90% of the time).
- Low power consumption (typ.): 60 mA @ 12 V.
- Accurate pps (pulse per second signal), better than **100 ns**.
- Configuration parameters backed-up to an EEPROM.
- **Antenna voltage:** 3V (standard) or 5V (on request).
- **Protection** against open or short circuit on the antenna, and alarms reported through serial port.
- Back-up capacitor with an autonomy of **40 hours** for hot start-up after a power cut.
- **Protected power supply** accepting from 7 to 40 V (compliant with automotive standards 12 and 24 V).
- Communication port outlet in **RS232** or **RS422** level (with transient protection), depending on the version. NMEA and TSIP protocols, with configurable baudrate.
- Compact ruggedized **metal housing**.

**Connections**

- For the power supply, automobile type locking.
- For the communication, two female DB9.
- For the aerial, SMB type.

**References of the configurations****⇒ zHDO100 (232)**

This is the standard RS232 version. The two ports use RS232 input/output for communication (RX/TX) and both supply the PPS (Pulse Per Second) in RS232 level.

**⇒ zHDO100 (422)**

This is the RS422 version. The two ports use RS422 input/output for communication (RX/TX) and both supply the PPS (Pulse Per Second) in RS422 level.

Mixed configurations can also be made: Port 1 in RS232 with PPS in TTL level, and port 2 in RS422 and PPS in RS422 level. Ask us for details.

**Connectors description**

- For the communication and pps signal: two female DB9

Pin DB9	zHDO100 (232)	zHDO100 (422)
1	NC	Tx-
2	Rx	Tx+
3	Tx	Rx-
4	NC	Rx+
5	GND	GND
6	NC	NC
7	NC	NC
8	PPS (RS232 level)	PPS+
9	NC	PPS-
Shield	GND	GND

Remark: In configuration, the polarities indicated can be inverted with respect to the polarity of the equipment of other manufacturers. This is not serious, as inversion of the polarity when connecting will not damage the equipment, if there is no output, try changing over the + and -.

- For the power supply: automobile type locking connector (the power supply connector should be removed by pressing on the top of it to clear the locking lug)
- For the aerial: SMB type.

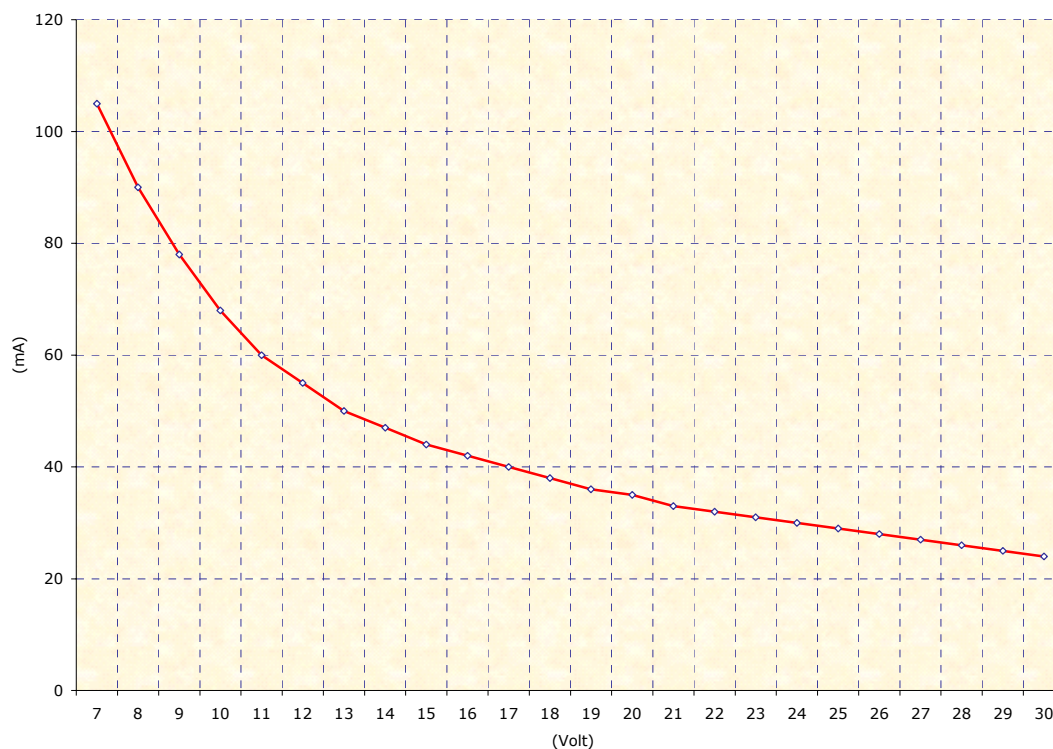
**SUMMARY OF THE CHARACTERISTICS****Performances:**

Receiver	12 channels
Update speed	1Hz
Accuracy	Horizontal <3 meters (50%), <8 meters (90%)
	Altitude <10 meters (50%), <16 meters (90%)
	Speed 0,06 m/sec (nominal)*
	Time (pps) 100 ns
Initial acquisition time	Cold (Time to First Fix) < 45 seconds (90%)*
	Warm start < 36 seconds (90%)*
	Hot start < 9 seconds (90%)*
Reacquisition signal after signal lost	< 2 seconds (typical)*
Altitude	< 18 000 m
Speed	< 515 m/sec maximum
Acceleration	4 g (39,2m/sec <sup>2</sup> )

\* Aerial field cleared

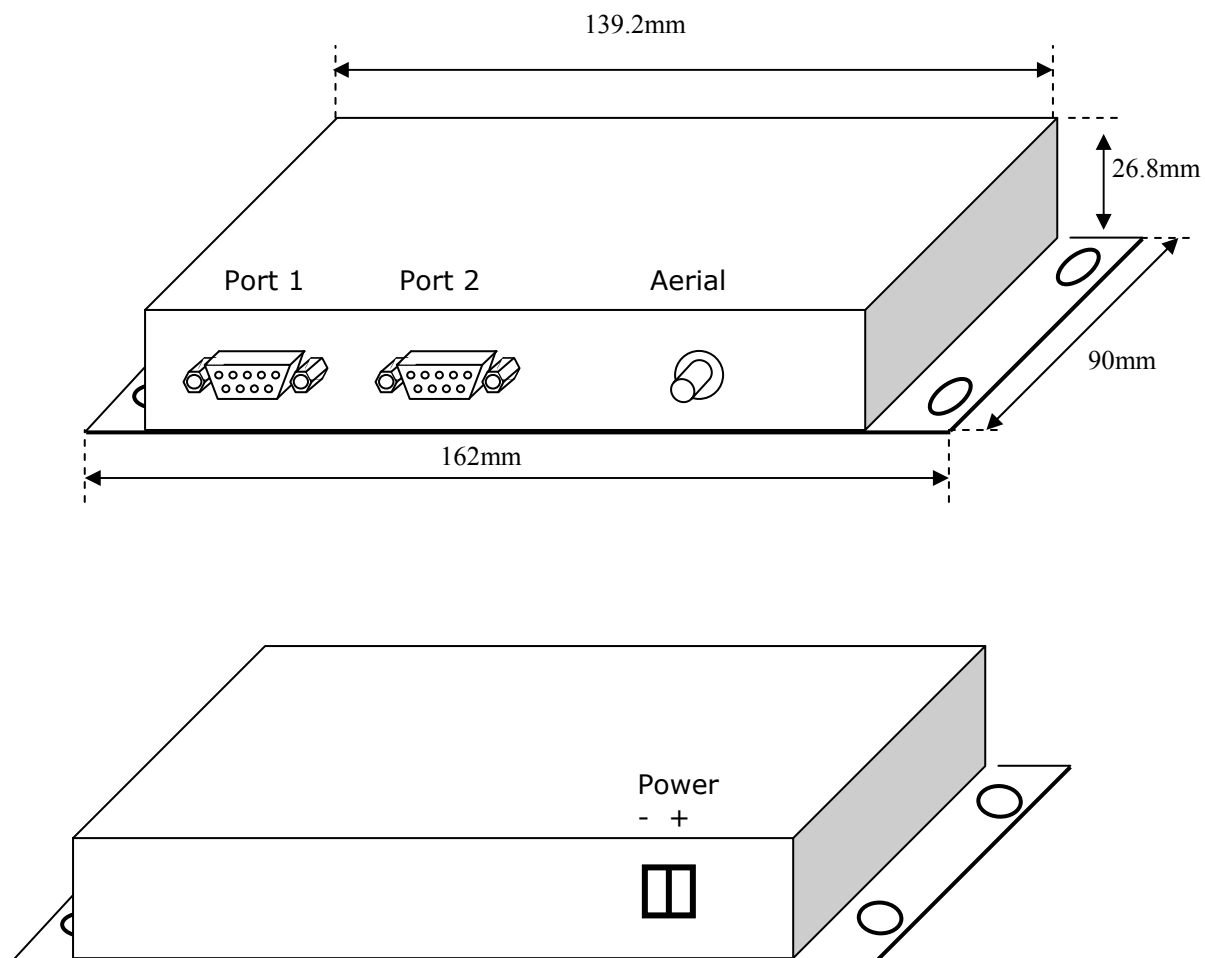
**Environmental characteristics:**

Power supply	7 to 40 Volts
Operating Temperature	-40/+85 °C
Storage Temperature	-55/+105°C
Overall dimensions	162x98x26mm
Weight	450 grams

**Power consumption**

Consumption measured on models in original configuration, connected to a patch type aerial (as the aerials are active, they have an influence on the module consumption).

### ***Mechanical characteristics***



### ***Factory settings of the serial ports***

The communication port is set in standard as follows:

- PORT1: TSIP protocol, 38400 Baud, 8 bits, no parity, 1 stop bit.
- PORT2: NMEA protocol, 4800 Baud, 8 bits, no parity, 1 stop bit.

Baudrate can be modified by the user.

### ***EMC compatibility***

The zHDO100 product has successfully completed compliance testing against the following standards listed below (in accordance with the **CE** directive):

- EN55022 class B (conducted and radiated emissions) dated January 1999, with 10dB margin.
- EN61000-4-3 published in 2002: "Immunity tests on electromagnetic fields radiated at radio-electrical frequencies", with 10V/m electromagnetic field.
- EN61000-4-6 published in February 1997: "Immunity tests on conducted interference, induced by radio-electrical fields".
- EN61000-4-4 (Immunity to rapid transients) dated June 1995, with 2kV transients.
- EN61000-4-2 (Immunity to electrostatic discharges) dated June 1995.

### ***For Information:***

The EN61000-4-3 standard is identical to the CEI 1000-4-3 standard and replaces ENV50140.

The EN61000-4-3 standard (see note A) is mentioned in the EN50082-generic standard for electrical and electronic equipment designed for use in industrial environments.

The NF EN61000-4-6 standard is identical to the CEI 1000-4-6 standard and replaces ENV50141. The EN61000-4-6 standard (see note B) is mentioned in the EN50082-2 generic standard for electrical and electronic equipment designed for use in industrial environments.