

GPS-Based Timing Signal Generator for Maritime and Fluvial Traffic Lights

-40°C to +85°C

The z1250 synchronization module can generate temporal signals synchronized to UTC time thanks to the onboard GPS receiver.

Two outputs are available, and each output can be set to one of the four available functions:

- **TOP synchronization** with frequency adjustment
- **Time scheduler**
- **Twilight switch**
- **Out of Position** (displaced buoys by example)

The **TOP synchronization** function is well suited for multiple maritime signaling equipment with same lightning frequency such as alignment lighthouses, fairway buoys or port entry doors (port and starboard lights). The z1250 module can thus synchronize time of light and darkness of these maritime lights which ensures better readability and increases safety. The user can set different adjustment parameters: pulse duration, periodicity and timing offset.



The **time scheduler** function enables daily schedule for a logical output based on user-defined time slots. To reflect the night length variation over the days better, the module automatically computes sunrise and sunset switches, depending on settings for the days of solstices (winter and summer) and equinoxes.



For the **twilight switch** function, the z1250 module automatically calculates aurora and daybreak hours from the location determined by GPS. The logical output assigned to this function is therefore daily activated according to the calculated hours for sunrise and sunset (a positive or negative user-defined offset can be added).



The **out of position** function is mostly used for maritime signaling floating equipment such as buoys. The objective is to alert the user or to perform an action when the buoy leaves its correct position area.

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KEY FEATURES

Synchronization by GPS

High timing accuracy

Precise geolocation

Programmable functions:

- TOP Synchronization
- Time scheduler
- Twilight switch
- Out of position

Malfunction information

(if defective operation or GPS antenna problem)

RS232 interface

(programming & NMEA messages)

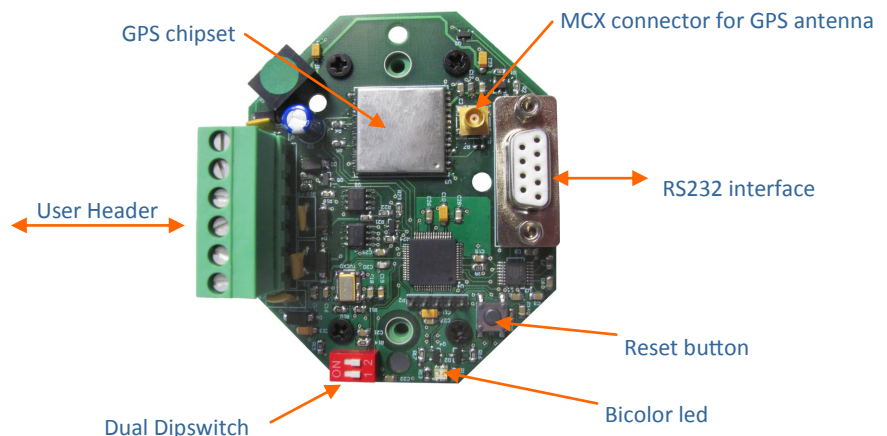
Reduced size 81.3x66.0x34.0 mm

Power supply 9 to 40 VDC & very low consumption

Other applications:

- Public lightning
- Maritime safety
- Synchronization automation
- And more...

Product used and recommended by Institute for Maritime and Inland Waterways from the French Agency for Ecology, Sustainable Development and Energy.



INTERFACES

- 1x User header : PHOENIX CONTACT 6 pts – pitch 5.08 mm
- 1x SUBD 9 pts (programming and NMEA modes)
- 1x MCX GPS Antenna connector
- 1x Bicolor LED
- 1x Push button (microcontroller reset)
- 1x Dual Dipswitch (Select mode and logic of the Low Power input)

Reference clock PPS GPS + internal TVCXO


Serial Interface RS 232 (9600 bauds, 8 bits, no parity, 1 stop)

Protocols

- National Marine Electronics Association (NMEA) 0183 in GPS mode
- ASCII in programming mode

User header

1. Power IN
2. GND
3. Input #2: Power-Managed mode
4. Input #1: External power supply for Output #1
5. Output #1
6. Output #2

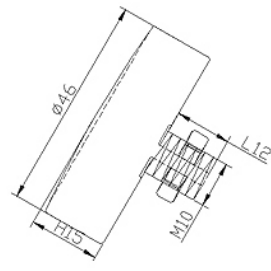


GPS RECEIVER SPECIFICATIONS

GPS L1 Frequency (1575.42 MHz), C/A code, 22-channel	
Update rate	NMEA 1Hz
Accuracy (24 hour static)	Horizontal (without SBAS) <2.5 m 50%, <5 m 90%
	Horizontal (with SBAS) <2.0 m 50%, <4 m 90%
	Altitude (without SBAS) <5.0 m 50%, <8 m 90%
	Altitude (with SBAS) <3.0 m 50%, <5 m 90%
Velocity	0.06 m/sec
PPS (static)	±25 ns 1 sigma
Acquisition (autonomous operation)	
Reacquisition	2 sec 50%
Hot start	2 sec 50%
Warm start	35 sec 50%
Cold start	38 sec 50%
Sensitivity	Tracking -160 dBm
	Acquisition sensitivity -146 dBm
Operational	Speed limit 515 m/s

GPS ANTENNA SPECIFICATIONS

Active antenna	3 VDC
LNA Gain	28 dB ± 3 dB
Filter Out Band Attenuation	14 dB min f0 ± 50 MHz
	30 dB min f0 ± 100 MHz
Connector	MCX
Cable	RG174 (3 m or 10 m)
Mounting	Screw
Environmental	IP67



ELECTRICAL CHARACTERISTICS

Power 9 VDC to 40 VDC

Active current in operation 26 mA @ 12 VDC 13 mA @ 24 VDC (including GPS active antenna)

Active current in Low Power mode 6 mA @ 12 VDC 5 mA @ 24 VDC

Output features

- Output #1: MOSFET P channel Source 0.5 A (3 VDC to 40 VDC)
- Output #2: MOSFET N channel (open Drain) Sink 0.5 A (3 VDC to 40 VDC)

Input features

- Input #1: External power supply for Output #1 3 VDC to 40 VDC
- Input #2: Power-Managed mode 0 VDC | 5 VDC to 40 VDC

PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

Size (special shape to fit anywhere) 81.3 x 66.0 x 34.0 mm

Weight 48 g

Temperature

- Operating -40 °C to +85 °C
- Storage -55 °C to +85 °C

Operating Humidity 5% to 95% R.H. non-condensing, at +60 °C

ORDERING INFORMATION

z1250-000	Electronic board
z1250-001	GPS antenna with 3m cable
z1250-002	GPS antenna with 10m cable
z1250-003	DIN rail mounting kit
z1250-004	Serial programming cable
z1250 Starter Kit.	Includes z1250-000 and motherboard, GPS antenna with 3m cable, serial programming cable and power supply

Example of use case for ZTI 1250 with industrial automation

- Control and monitoring unit for maritime signaling lights and motors
- Led Flasher Sabik deployed on both fixed and floating structures
- Programming board for lights

Custom design on request

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