

Datasheet v1.6.1

Delay to UTC (UTCOP): +4 microseconds*.

Port: **USB 2.0** (Type B Jack).

Antenna connector: SMA female.

GPS antenna (recommended): Operating frequency 1575.42 MHz (GPS), 50Ohms Impedance, SMA male connector, R.H.C.P. and 3.3m length.

USB cable (recommended): USB shielded High Speed cable 2.0, Length: 1m (Revision 28AWG/1P+24AWG/2C).

ROHS compliant: Lead Free.

Operative System:

- Windows 7 x32/x64 (.NET Framework 4.0 required): TimeBox Legacy Software.
- Windows 10 x32/x64 (.NET Framework 4.6.1 required): TimeBox XS Software.

Outputs:

- GPS fix: LED (green).
- LED pulse firing: LED (red) and BNC female connector (TTL, 5.0 volts).
- Intervalometer (PRO only): BNC female connector (TTL, 6, 9 or 12 volts on demand).

* TimeBox compared to UTCOP UTC time of SYRTE atomic clock (SYRTE, Observatoire de Paris, France)

1. LED firing

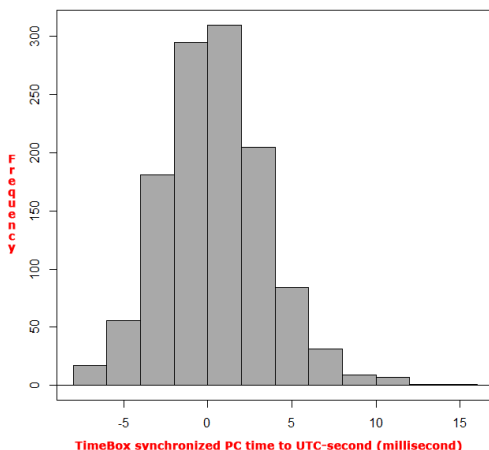
Delay to UTC (UTCOP): 4 microseconds.

Jitter: 10 nanoseconds.

LED/pulse duration: From 1 to 100 milliseconds.

2. PC time synchronization

Precision: ± 2 milliseconds* UTC.



Software: Genika Trigger® AiryLab (<http://www.airylab.com>)
Camera: Basler 640-100gm at 200 fps and 50uSec exposition (Gigabit Ethernet).
Computer: Lenovo ThinkPad Intel i5 Core i5-540M (2.53GHz, 3MB Cache), 4GB DDR3 RAM, USB2.0 port.
Time Synchronization: timeBOX, Computer time (mode) and continuous PC time synchronization.
Properties: Synchronize every 60 seconds, Tolerance 4 STD and Corrected after 30 values above tolerance (4-8 STD). Correct after 30 values above tolerance (>8 STD)

| Mean | STD | 0% | 5% | 50% | 95% | 100% | n |
|-----------|---------|----|----|-----|-----|------|------|
| 0.9131161 | 3.06929 | -8 | -4 | 1 | 6 | 16 | 1197 |



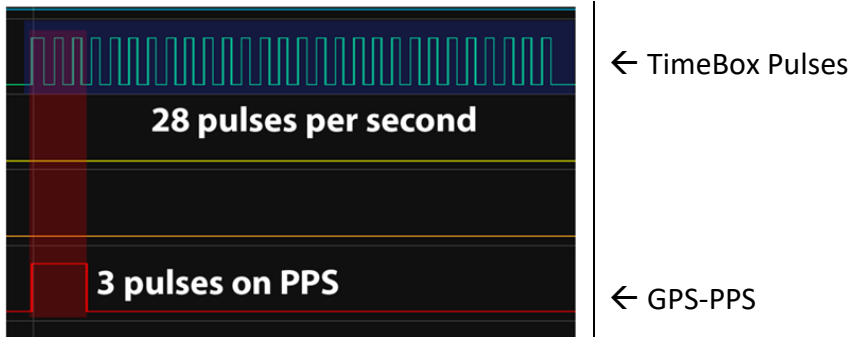
3. Pulse Firing (Trigger/Intervalometer). *Only for TimeBox PRO.*

Pulses voltage: TTL 6, 9 or 12 volts, on demand.

Pulses frequency: *Low* 0.1, 0.2, 0.5, 1, 2, 4, 6, 8, 10, 15, 20 and 24 Hz.

Delay to UTC (UTCOP): 4 microseconds.

Jitter: < 50 microseconds.



Computer Time, GPS Time

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Pulse number: 1, Time from second (miliSeconds): 1.881, Time from second (microSeconds): 1881  
Pulse number: 2, Time from second (miliSeconds): 49.634, Time from second (microSeconds): 49634  
Pulse number: 3, Time from second (miliSeconds): 91.368, Time from second (microSeconds): 91368
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Oscilloscope acquisition showing the TimeBox dated pulses compared to a GPS PPS