

GPS Time Sync – Quick Start Guide (Plug-and-Play VK-172 Support) Version 1.20

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1. What It Does

GPS Time Sync keeps your Windows system clock accurate **even without Internet or network access** by reading UTC time from a **plug-and-play VK-172 USB GPS dongle** (Prolific 2303 chipset) and updating the Windows clock with a conversion to local time. You may optionally leave it as UTC if you wish. It is designed as a lightweight tray utility for precise time keeping on your Windows system.

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2. Requirements

- Windows 10 or Windows 11 (32/64-bit)
- VK-172 (PL2303) USB GPS dongle or equivalent. The signature must be the same.
- COM port driver (usually auto-installed by Windows)
- **Elevation:** The program must run *as administrator* to be able set the system time.

Elevation Setup (Simple Method):
After installation, locate the program's shortcut (Desktop or Start Menu) → **Right-click → Properties → Compatibility tab → Check "Run this program as an administrator" → OK.**
If you create your own shortcut, set this option there, via the properties. Launching from that shortcut will prompt once via UAC and then allow time adjustments.

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3. Installation (Plug & Play)

1. Run the installer.
2. Plug the VK-172 into a USB port. Windows assigns it a **COMx** port.
3. Launch **GPSTimeSync.exe** via the *Run as administrator* shortcut (first run creates gps_settings.ini and GPSTimeChange.log in the same folder).
4. Accept the UAC prompt.

Plug & Play Behavior: Insertion or removal of the VK-172 automatically refreshes available COM ports. If the dongle is present, it is selected and opened; if removed, the app waits until it returns. However, it is not recommended to remove the dongle while the program is running.

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4. Main Controls

Control	Purpose
COM Port	Auto-populated list; select each COM port and save each, if not auto-selected.
Interval (Seconds)	How often drift is checked (default 60 seconds).
Drift ≥ (Seconds)	Minimum difference (seconds) before forcing a sync (default is 2 seconds).
UTC / Local	Apply GPS UTC directly, or convert to local before setting system time. It is recommended to always use local time unless there is another reason to use UTC time.
Enable Logging	Writes status/time events to memo and log file.
Save Settings	Persists selections to gps_settings.ini and reopens the port if changed.
Hide To Tray	Minimizes to tray; click tray icon to restore.
Log Window	Shows GPS parsing and sync events.

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5. How Synchronization Works

1. $GPRMC GPS sentences arrive over the serial port.
2. UTC date/time parsed and stored.
3. Every *Interval* the program compares system UTC vs GPS UTC.
4. If absolute drift ≥ threshold, it sets (adjusts) the system time (requires elevation).
5. Once per minute (if no adjustment) it logs current system time, GPS time, and drift.

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6. Files Created

File	Location	Description
gps_settings.ini	Application folder	Saved settings (COM index, intervals, options).
GPSTimeChange.log	Application folder	Log of operations & adjustments.

Note: You may add comments in the INI by starting a line with ;.

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7. Typical First Run

1. Plug VK-172 → wait for driver enumeration, about 10 seconds.
2. Launch via elevated shortcut (see Elevation Setup). Note: It may start in the tray and you may have to click on it to display the form.
3. Verify COM port (select if not auto-picked).
4. Set: Interval = 60, Drift ≥ = 2, choose **Local**.
5. Click **Save Settings**.
6. Click **Hide To Tray** (continues running; clicking the tray icon restores).

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8. Troubleshooting

Issue	Cause	Fix
“Please select your COM port…”	No INI yet / port open failed	Pick the correct COM port, Save.
“ERROR setting local time…”	Not running elevated	Use the shortcut set to *Run as administrator*.
No ports listed	Driver missing / device not enumerated	Reinsert dongle; check Device Manager under *Ports (COM & LPT)*.
Drift never changes	GPS lacks satellite fix	Place where antenna has sky view; wait for valid $GPRMC.
Frequent UAC prompts	Shortcut not set to always run as admin	Enable “Run this program as an administrator” in shortcut Compatibility tab.

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9. Best Practices

- Keep *Drift ≥* small (1–2 s) for precision without excessive adjustments.
- Run from a stable folder (not temp) so INI/log persist.
- Ensure the elevated shortcut is the one users actually launch.

Plug-and-Play Accuracy. Zero Internet Needed.
Your system clock stays precise—offline—via the VK-172 GPS signal and automatic COM detection.


GPS Time Sync
GPS Time Sync
Current Date
7/19/2025
Current Time
16:24:46
Latitude and Longitude:
Fix quality:
GPS
Satellites in use:
6
Fix mode:
Auto
Satellites in view:
13
Sync Settings
COM Port:
COM3
Interval (Seconds):
60
Drift s:
1
UTC/Local Time:
Set UTC
Set Local
Enable Logging:
Hide To Tray
Save
Close
Logging
$GPGSV,4,2,13,18,47,173,30,23,63,053,32,24,45,058,33,25,05,146,*79
$GPGSV,4,3,13,27,11,274,17,28,12,201,,32,43,267,11,46,28,243,*7C
$GPGSV,4,4,13,48,31,239,*4D
$GPGLL,3233.27831,N,09256.81141,W,202447.00,A,A*76