


TSS-P for z052: Time Service Software

to update the PC clock with a guaranteed accuracy of 1 millisecond
using the z052 USB GNSS dongle with PPS on a COM port.

 TSS-P for z052
✕

Configuration

This application updates local PC date and time by using UTC date and time provided by your GNSS unit. To use it, you should specify first the communication port where the GNSS unit is plugged in.

Port for the GNSS Unit: COM15 (USB)
Refresh COM Port List

Current Time Zone: UTC + 01:00 - Automatically adjust clock for daylight


View the log file by using Notepad





Internet Time Server: No synchronization with an Internet time server.

Last Windows Clock Update: 2019/03/30 14:29:51 (UTC)

Status Legend

Current Status



-  The GNSS unit synchronizes the local PC date and time with a guaranteed accuracy of 1 millisecond
-  Waiting for GNSS synchronization or the accuracy of 1 millisecond can't be guaranteed.
-  No GNSS unit available
-  The PC is automatically synchronized with an Internet time server. TSS-P for z052 can't update the date and time of the local PC.

Information provided by the GNSS Unit

Satellite Information

| Satellite | Level C/No (dB:1Hz) |
|-----------|---------------------|
| E13 | 18.00 |
| E15 | 22.00 |
| E19 | 30.00 |
| E21 | 47.00 |
| E27 | 39.00 |
| E30 | 18.00 |
| E4 | 37.00 |
| G12 | 45.00 |
| G14 | 32.00 |
| G2 | 45.00 |
| G25 | 50.00 |

GNSS Information

| Latitude | Longitude | Altitude | Speed |
|--------------------|----------------|----------|--------|
| 46° 31.09404' N | 1° 46.50419' W | 11.00 | 0 |
| (Sexagesimal unit) | | (meters) | (Km/h) |

Date and Time

UTC (Universal Time Coordinated):

2019/03/30 14:29:51

PC Clock with the Time Zone:

2019/03/30 15:29:51

GNSS Unit Feature

☒ Baud Rate: 57600 - Receiving NMEA messages

Close

Read Me First

Revision 1.4

ZTI Communications / 4 rue Ampère / BP 30255 / 22302 Lannion Cedex / France
Phone: +33 2 5104 8984 / contact@zti-communications.com / www.zti-communications.com

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Part 1 : Install and Uninstall “TSS-P for z052”

To install this software, you need a PC with [at least a 1024 x 768 display screen resolution](#) and [Windows Seven, 8, 10, 11](#).



** To run "TSS-P for z052" your computer's screen resolution must be configured on 1024 X 768 (at least). Please note that you should mask the task bar in a 1024x768 screen resolution, so you could have an optimal view of the software interface.*

** You must be logged on with administrator privileges.*



It is advisable to first close anti-virus application before installing this software.

The “TSS-P for z052” software requires a license code to run. See part 2 below for more information about the license program.

The installation procedure is a standard installation program for Windows.

There are 2 packages available:

- **Package #1 - 15-day trial package:** This package is a full functional package available during 15 days after the first start.
- **Package #2 - Software Protection Code package:** This package is a full functional package with no time limitation.

1.1. Install “TSS-P for z052” from a downloaded trial version



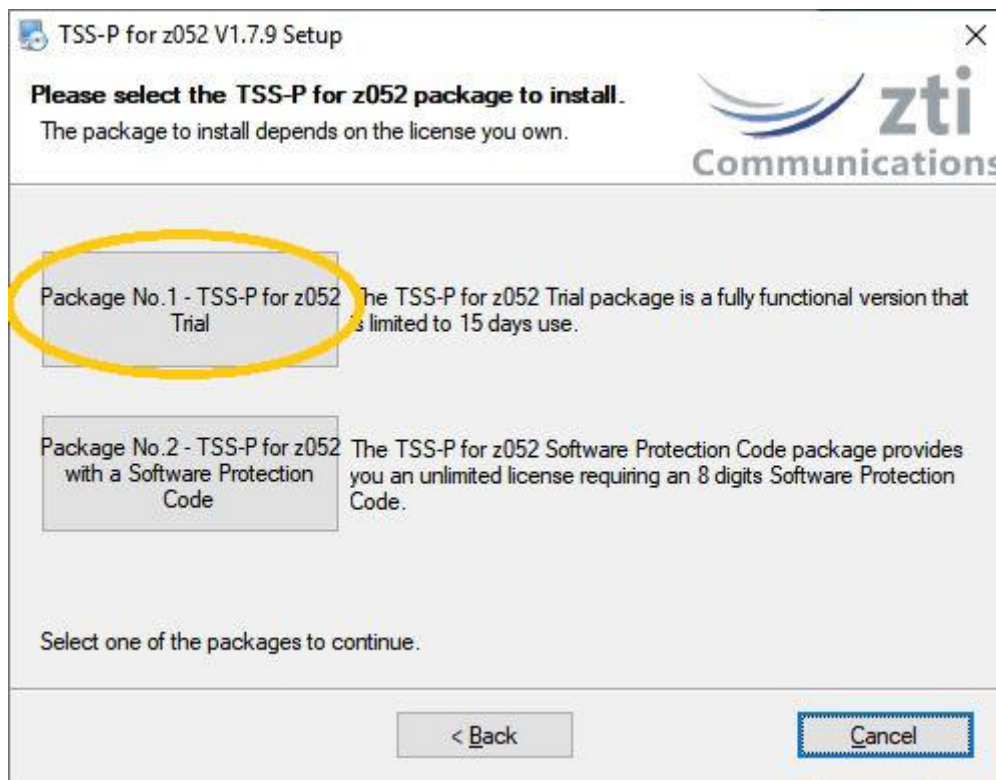
The installation procedure under Windows requires to be logged on with administrator privileges.

[The installation procedure is a standard installation program.](#)

- If you have downloaded the “TSS-P for z052” software from a website, you have downloaded the file “Setup_TSS-P.zip” that includes this documentation and the file “Setup_TSS-P.exe”.
- Run “Setup_TSS-P.exe” and follow the “TSS-P” setup instructions to proceed with the installation.

By default, the “TSS-P” software will be installed in the directory C:\Program Files (x86)\TSS-P (C: is used as example):

To install the **15-day trial package**, select the Package #1.



Start Menu shortcuts created:

Start > Programs > **TSS-P**

- ⇒ **TSS-P** (click to run the "TSS-P for z052" software)
- ⇒ **Read Me First** (this guide)
- ⇒ **Uninstall TSS-P**

1.2. Install "TSS-P for z052" from the CD-ROM



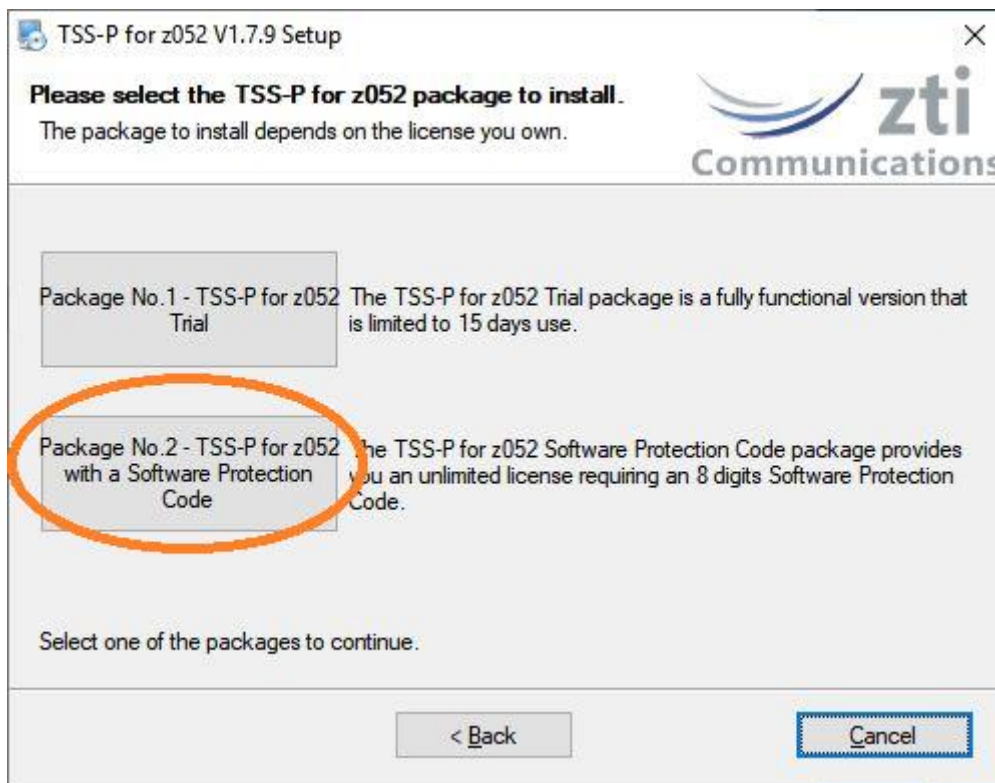
The installation procedure under Windows requires to be logged on with administrator privileges.

The installation procedure is a standard installation program.

- First, insert the «TSS-P for z052» CD-ROM on disk drive.
- Click on "Start", "Execute" and type "<CD-ROM unit>:\Setup_TSS-P.exe" and follow the "TSS-P for z052" setup instructions to proceed with the installation.

By default, the "TSS-P" software will be installed in the directory C:\Program Files (x86)\TSS-P (C: is used as example).

To install the **Software Protection Code unlimited license package**, select the Package #2.



Start Menu shortcuts created:

Start > Programs > **TSS-P**

- ⇒ **TSS-P** (click to run the “TSS-P for z052” software)
- ⇒ **Read Me First** (this guide)
- ⇒ **Uninstall TSS-P**

1.3. Uninstall “TSS-P for z052”

The uninstall procedure is a standard uninstall program.

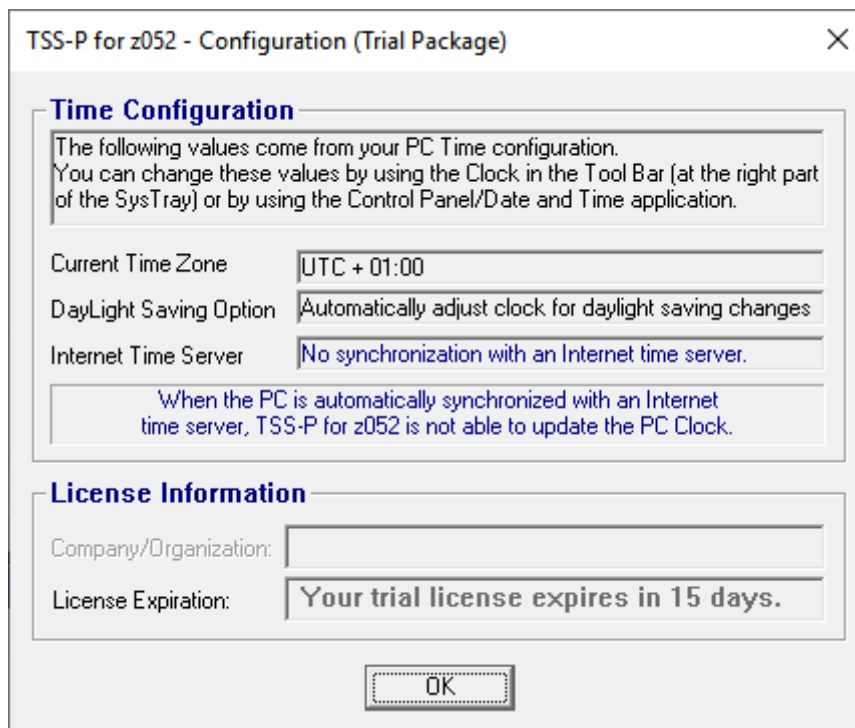
In the “Start > Programs > TSS-P” menu, select “**Uninstall TSS-P**”.

Part 2 : License Configuration

The TSS-P software is available as a Trial package that can be used for 15 days or with a permanent license. When you get the permanent license, you should install the Software Protect Code package and enter the license code in the TSS-P Configuration dialog.

2.1. 15-day Trial license

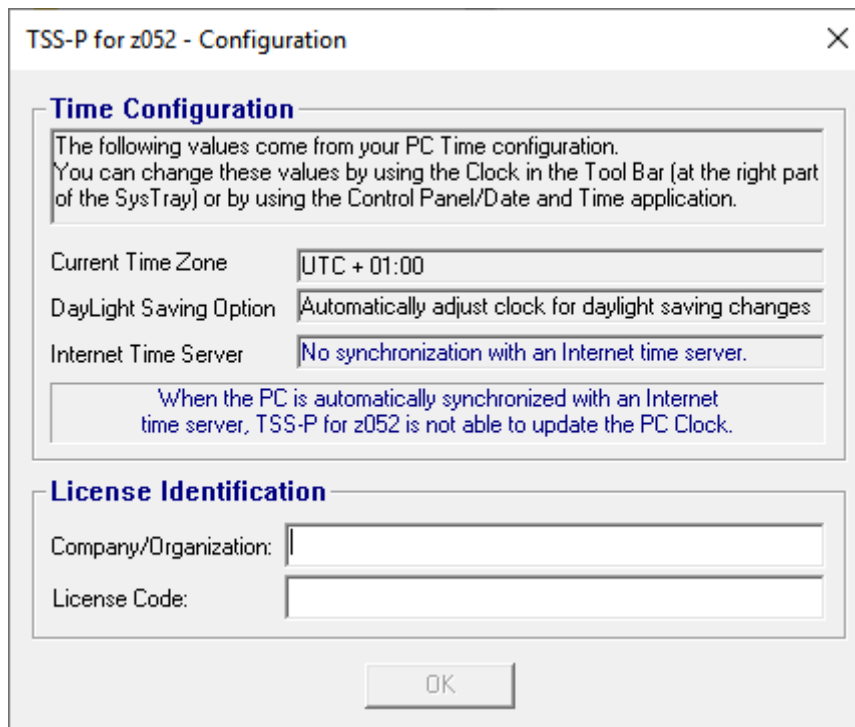
There is a code license to enter when using the 15-day trial package.



The Configuration dialog indicates the remaining number of days of the trial period.

2.2. To configure a license

***Note:** This software is licensed on a per workstation basis. You will need to have a separate license for each machine that you install it on. Each licensed copy of the software installed on a system has a unique License Code.*



TSS-P for z052 - Configuration

Time Configuration

The following values come from your PC Time configuration. You can change these values by using the Clock in the Tool Bar (at the right part of the SysTray) or by using the Control Panel/Date and Time application.

Current Time Zone: UTC + 01:00

DayLight Saving Option: Automatically adjust clock for daylight saving changes

Internet Time Server: No synchronization with an Internet time server.

When the PC is automatically synchronized with an Internet time server, TSS-P for z052 is not able to update the PC Clock.

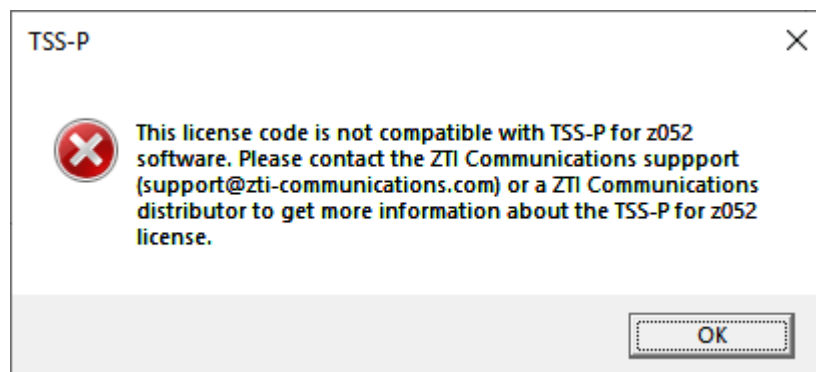
License Identification

Company/Organization:


License Code:

OK

In case there is a mismatched License Code entered, the information window below is displayed.



TSS-P

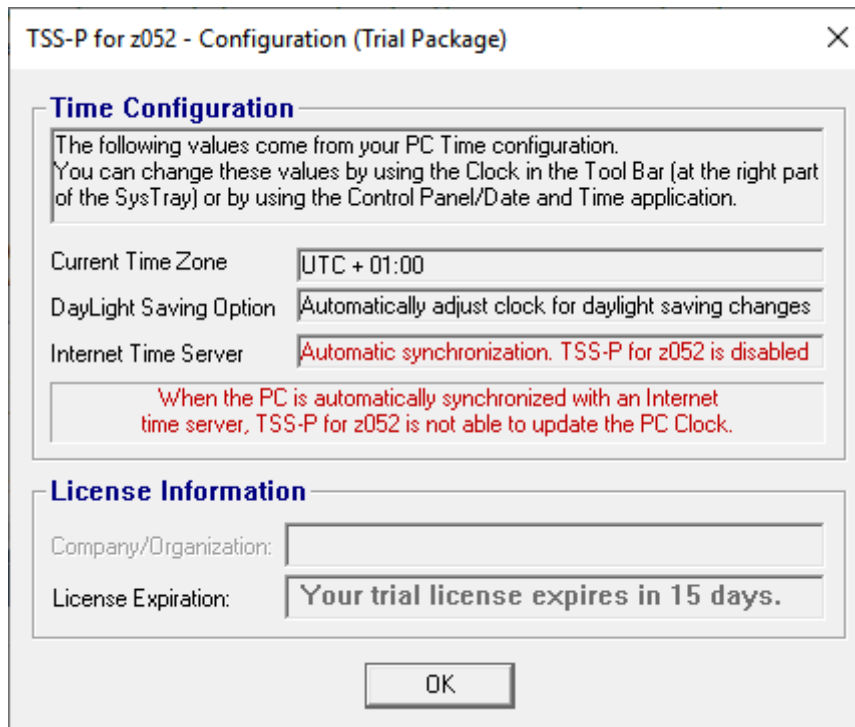
 This license code is not compatible with TSS-P for z052 software. Please contact the ZTI Communications support (support@zti-communications.com) or a ZTI Communications distributor to get more information about the TSS-P for z052 license.

OK

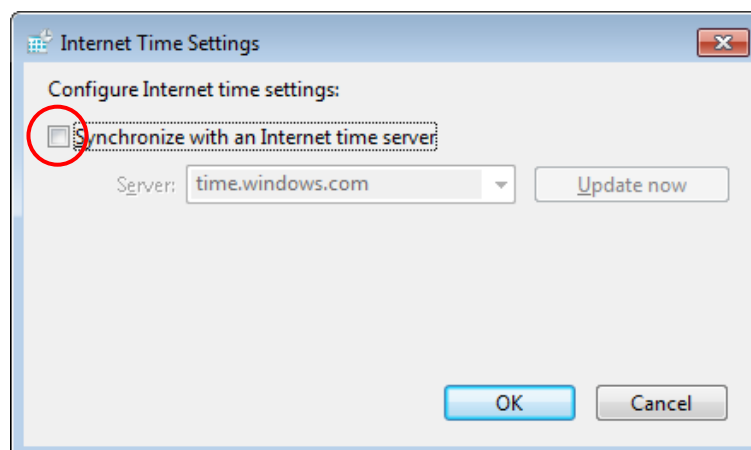
Part 3 : Launch “TSS-P for z052”

3.1. Internet Time Server synchronization

When you start “TSS-P for z052” with Internet Time Server synchronization selected, the software will not update your PC clock and a warning message is displayed as shown below:

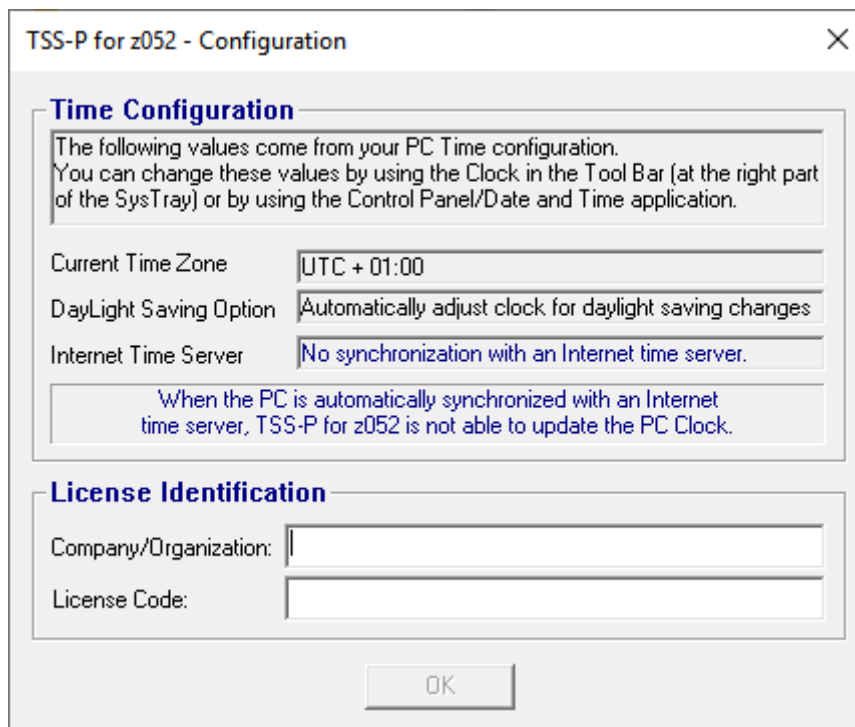


To change this state, you need to disable this automatic synchronization: just uncheck the option **'Automatically synchronize with an Internet time server'** of the Internet Time tab displayed by the Date and Time Properties window of your PC.



3.2. First start

When you start “TSS-P for z052” for the first time, you must enter a Company name and the license code.



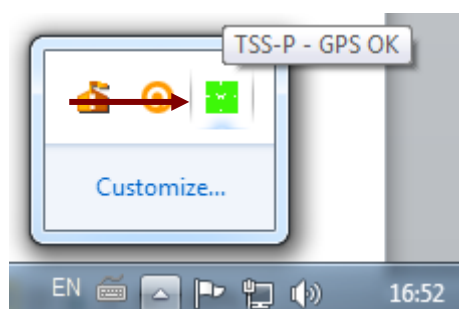
The next times, the configuration window will be presented with these initial values that you are able to change if needed.

After pressing OK, the “TSS-P” application is installed in the Windows ‘Systray’. It will be restarted automatically when you reboot the PC until you use the Quit menu option (see 3.4.2).

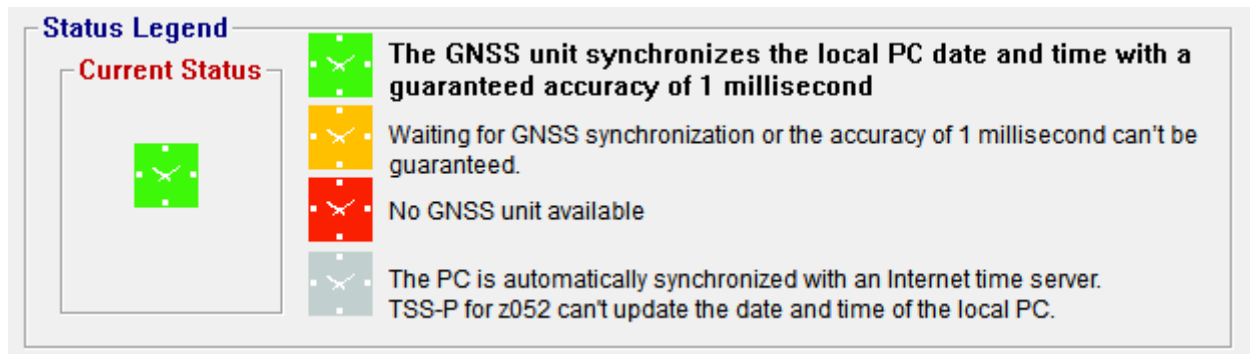
3.3. How to configure “TSS-P for z052”

Once the “TSS-P for z052” software is started, it has been installed automatically.

A colored icon is then displayed in the ‘Systray’, on the right part of the Task bar.

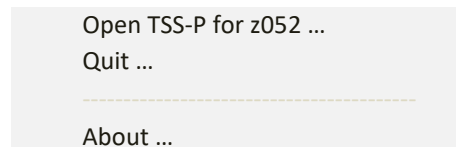


This colored icon is used to show the status of the “TSS-P for z052” software as shown below:



3.4. TSS-P menu

To open the “TSS-P” menu, click right button with the mouse on the “TSS-P for z052” icon. The TSS-P menu is opened as shown below:




There are three items in the TSS-P menu.

3.4.1 The “Open TSS-P for z052...” item

This item opens the main configuration and detailed status window, as shown in the next picture. The main window allows:

- To set the serial port used to dialog with the z052 unit.
- To access the log trace file located in the directory C:\Program Files (x86)\TSS-P.


TSS-P for z052
✕

Configuration

This application updates local PC date and time by using UTC date and time provided by your GNSS unit. To use it, you should specify first the communication port where the GNSS unit is plugged in.

Port for the GNSS Unit: COM15 (USB) Refresh COM Port List


Current Time Zone: UTC + 01:00 - Automatically adjust clock for daylight View the log file by using Notepad





Internet Time Server: No synchronization with an Internet time server.

Last Windows Clock Update: 2019/03/30 14:29:51 (UTC)

Status Legend

Current Status



 The GNSS unit synchronizes the local PC date and time with a guaranteed accuracy of 1 millisecond
  Waiting for GNSS synchronization or the accuracy of 1 millisecond can't be guaranteed.
  No GNSS unit available
  The PC is automatically synchronized with an Internet time server. TSS-P for z052 can't update the date and time of the local PC.

Information provided by the GNSS Unit

Satellite Information

| Satellite | Level C/No (dB:1Hz) |
|-----------|---------------------|
| E13 | 18.00 |
| E15 | 22.00 |
| E19 | 30.00 |
| E21 | 47.00 |
| E27 | 39.00 |
| E30 | 18.00 |
| E4 | 37.00 |
| G12 | 45.00 |
| G14 | 32.00 |
| G2 | 45.00 |
| G25 | 50.00 |

GNSS Information

| Latitude | Longitude | Altitude | Speed |
|--------------------|----------------|----------|--------|
| 46° 31.09404' N | 1° 46.50419' W | 11.00 | 0 |
| (Sexagesimal unit) | | (meters) | (Km/h) |

Date and Time

UTC (Universal Time Coordinated): 2019/03/30 14:29:51

PC Clock with the Time Zone: 2019/03/30 15:29:51

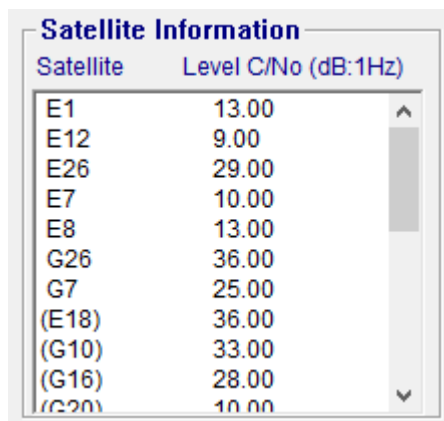
GNSS Unit Feature

☒ Baud Rate: 57600 - Receiving NMEA messages

Close

In the example above, the green status indicates that the date and time of the local PC are synchronized with 1ms accuracy.

Satellite Information



| Satellite | Level C/No (dB:1Hz) |
|-----------|---------------------|
| E1 | 13.00 |
| E12 | 9.00 |
| E26 | 29.00 |
| E7 | 10.00 |
| E8 | 13.00 |
| G26 | 36.00 |
| G7 | 25.00 |
| (E18) | 36.00 |
| (G10) | 33.00 |
| (G16) | 28.00 |
| (G20) | 10.00 |

The list box displays the satellites in view with the signal level detected by the GNSS receiver with the following satellite numbering:

| <i>GNSS type</i> | <i>SV range</i> | <i>NMEA 4.1</i> |
|------------------|-----------------|-----------------|
| GPS | G1-G32 | 1-32 |
| SBAS | S120-S158 | 33-64, 152-158 |
| Galileo | E1-E36 | 1-36 |
| BeiDou | B1-B37 | 1-37 |
| IMES | I1-I10 | 173-182 |
| QZSS | Q1-Q5 | 193-197 |
| GLONASS | R1-R32 | 65-96 |

⇒ By default, the z052 USB GNSS dongle is configured with multi-GNSS: GPS, Galileo and GLONASS.

⇒ The parentheses associated with a satellite indicate that this satellite doesn't participate in the calculation of geolocation and time.

Configuration

This application updates local PC date and time by using UTC date and time provided by your GNSS unit. To use it, you should specify first the communication port where the GNSS unit is plugged in.

Port for the GNSS Unit:

Current Time Zone:

Internet Time Server:

Last Windows Clock Update:

Status Legend

Current Status

The GNSS unit synchronizes the local PC date and time with a guaranteed accuracy of 1 millisecond
 Waiting for GNSS synchronization or the accuracy of 1 millisecond can't be guaranteed.
 No GNSS unit available
 The PC is automatically synchronized with an Internet time server. TSS-P for z052 can't update the date and time of the local PC.

Information provided by the GNSS Unit

Satellite Information

| Satellite | Level C/No (dB:1Hz) |
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| E13 | 18.00 |
| E15 | 22.00 |
| E19 | 30.00 |
| E21 | 47.00 |
| E27 | 39.00 |
| E30 | 18.00 |
| E4 | 37.00 |
| G12 | 45.00 |
| G14 | 32.00 |
| G2 | 45.00 |
| G25 | 50.00 |

GNSS Information

| Latitude | Longitude | Altitude | Speed |
|--------------------|----------------|----------|--------|
| 46° 31.09404' N | 1° 46.50419' W | 11.00 | 0 |
| (Sexagesimal unit) | | (meters) | (Km/h) |

Date and Time

UTC (Universal Time Coordinated):

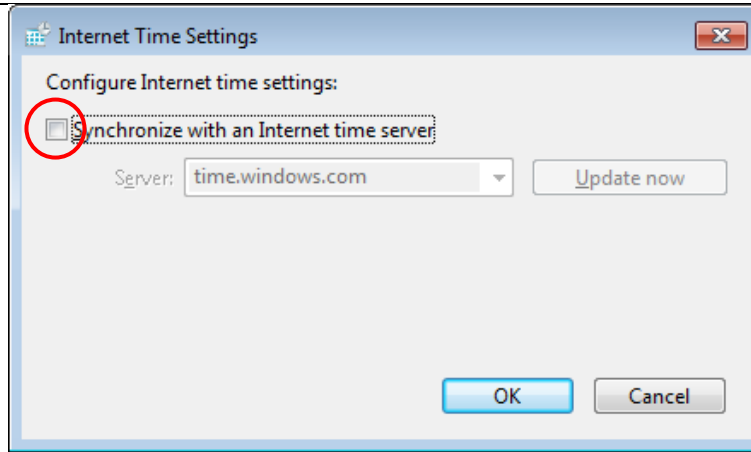
PC Clock with the Time Zone:

GNSS Unit Feature

☒ Baud Rate: 57600 - Receiving NMEA messages

In the above example, the gray status indicates that the date and time of the local PC are not synchronized by the GNSS unit because the PC is already synchronized automatically with an Internet time server.

To change this state, you need to disable this automatic synchronization: just uncheck the option **'Automatically synchronize with an Internet time server'** of the Internet Time tab displayed by the Date and Time Properties window of your PC.



3.4.2 The “Quit ...” item

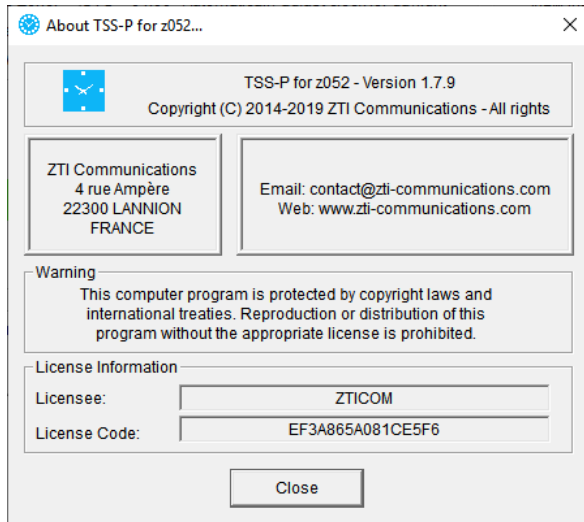
The Quit Item removes the “TSS-P for z052” from the Windows Service list and stops the “TSS-P for z052” program.

It doesn’t remove the License information from the PC.

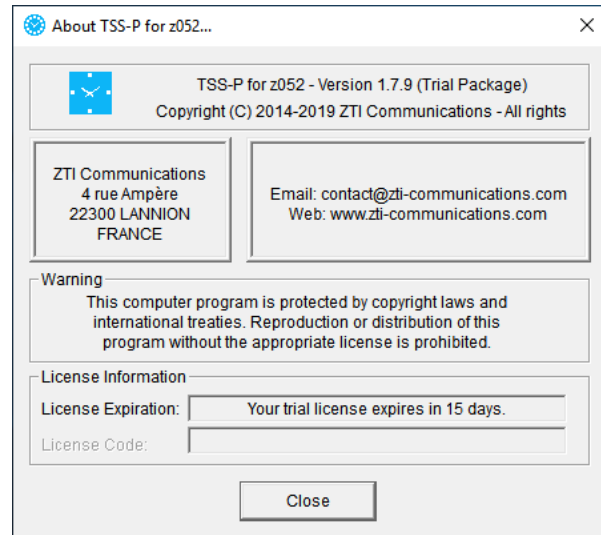
To restart the “TSS-P for z052” software, you launch the software via the ‘Start/All Programs/TSS-P’ menu as described in paragraph 3.2.

3.4.3 The “About ...” item

The About item displays the current version of “TSS-P for z052” and gives you all information to contact ZTI Communications by email. Depending on the installed package, it displays your current license code or the number of days remaining to use the trial package.



**TSS-P for z052
with a Software Protection Key**



**TSS-P for z052
with a trial license**

Part 4 : Registry Content

4.1. Parameters

The “TSS-P for z052” software uses some parameters located in the Windows registry. Some of these parameters are saved to be reuse for the next session such as the COM port, the User and License code.

The specific “TSS-P” registry entry is located at: HKEY_LOCAL_MACHINE\Software\ZTI\TSS-P. The parameters are detailed in Table 1.

Note: Change in one of these parameters needs to restart “TSS-P” software.

| Key | Type | Comment |
|----------------|-----------|---|
| COMPort | REG_DWORD | Latest COM port number used. There is no default. |
| User | REG_SZ | User identification. There is no default. |
| LicenseCode | REG_SZ | License code identification. There is no default. |
| JournalMaxSize | REG_DWORD | Maximal size of the log file. Unit is Kbytes. Default is 1024. |
| PPSaccuracy | REG_DWORD | Extreme value where a PPS is considered enough accurate [-PPSaccuracy..+PPSaccuracy]. Unit is microsecond. Default is 500. |
| PPSrebound | REG_DWORD | Number of microseconds to assume a second PPS is the CTS level change. Unit is microsecond. Default is 11000 |
| TraceLevel | REG_DWORD | Level of message provided by the software. This is an integer value. More the value is high, more verbose messages are provided. Messages are sent using OutputDebugString() Win32 API. They may be consulted using DbgView for www.sysinternals.com . Default value is 2. Valid range is from 0 to 6 (where 0 means no message, and 6 includes internal debug: 6 should be used only when required by the ZTI support because it may avoid updating the PC clock accurately). |

Table 1 – TSS-P Registry entries

4.2. Auto-Run

When the “TSS-P” software is configured to start with Windows (Auto-Run), the Windows registry is updated. The Windows registry key concerned depends on the User selection i.e. **All Users** or the **Current User**. The registry keys are listed in Table 2.

| Concerned | Registry Entry |
|--------------|--|
| All Users | HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Run |
| Current User | HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run |

Table 2 – TSS-P Windows Auto-Run Registry entries

When the Auto-Run is active, there is an entry “TSS-P” in the relevant Windows registry key as presented in Figure 1.

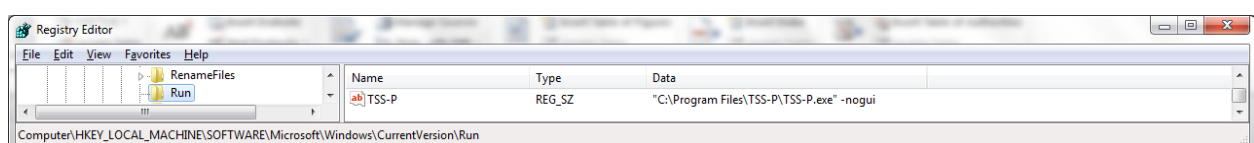


Figure 1- TSS-P Auto-Run Registry Key

Part 5 : NMEA 0183 Messages

The “TSS-P for z052” software assumes the z052 USB GNSS dongle will provide at least the NMEA 0183 messages V4.1 shown in Table 3.

| Message | Description |
|---------|-------------------------------------|
| GGA | Global positioning system fix data |
| GSV | GNSS satellites in view |
| GSA | GNSS DOP and Active Satellites |
| VTG | Course over ground and Ground speed |
| RMC | Recommended minimum data |
| ZDA | Time and Date |

Table 3 – NMEA 0183 V4.1 minimum messages list