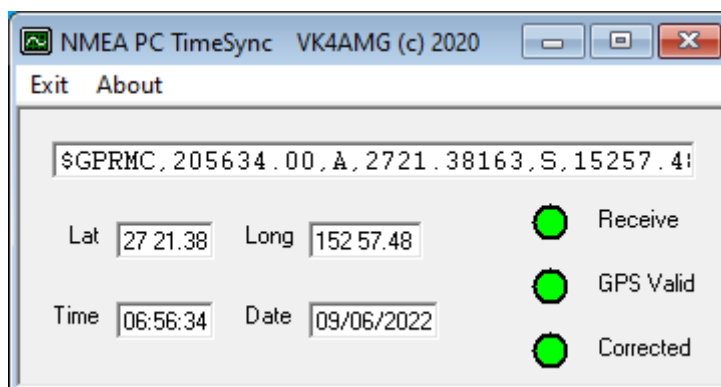


# PC Time Sync – VK4AMG

## Introduction

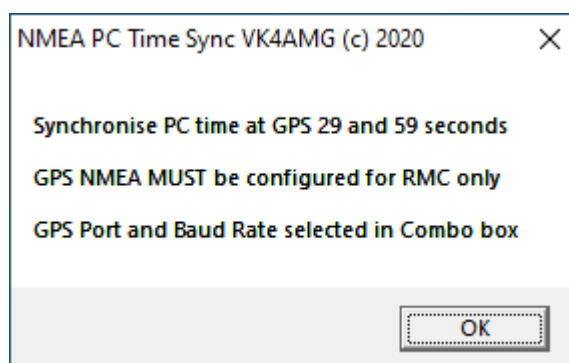
NMEA PC Time Sync VK4AMG 2020 is a Windows application developed in Visual Basic 6V0. The application reads a serial NMEA RMC sentence from a GPS receiver and applies a time sync correction to the PC every thirty seconds at 29sec and 59secs past the minute.



A GPS receiver may provide many common messages (refer [NMEA-0183 messages: Overview \(trimble.com\)](https://www.trimble.com/NMEA-0183-messages-Overview)) The NMEA RMC sentence (refer [NMEA-0183 message: RMC \(trimble.com\)](https://www.trimble.com/NMEA-0183-message-RMC)) is a NMEA-0183 message providing Position, velocity, and time.

NMEA RMC (e.g. \$GPRMC,123519,A,4807.038,N,01131.000,E,022.4,084.4,230394,003.1,W\*6A).

In order to simplify parsing of the time from the NMEA messages and to improve the accuracy of time synchronisation, configuring the GPS receiver for only the NMEA RMC is recommended. The low cost readily available ublox Neo 6 may be configured with the ([u-center](https://www.u-center.com/) | [u-blox](https://www.u-blox.com/)) evaluation software. The Brisbane VHF Group GPSD-1 GPS Disciplined 10MHz Frequency Reference is supplied configured for NMEA RMC message only at 9600 baud from the USB serial port.



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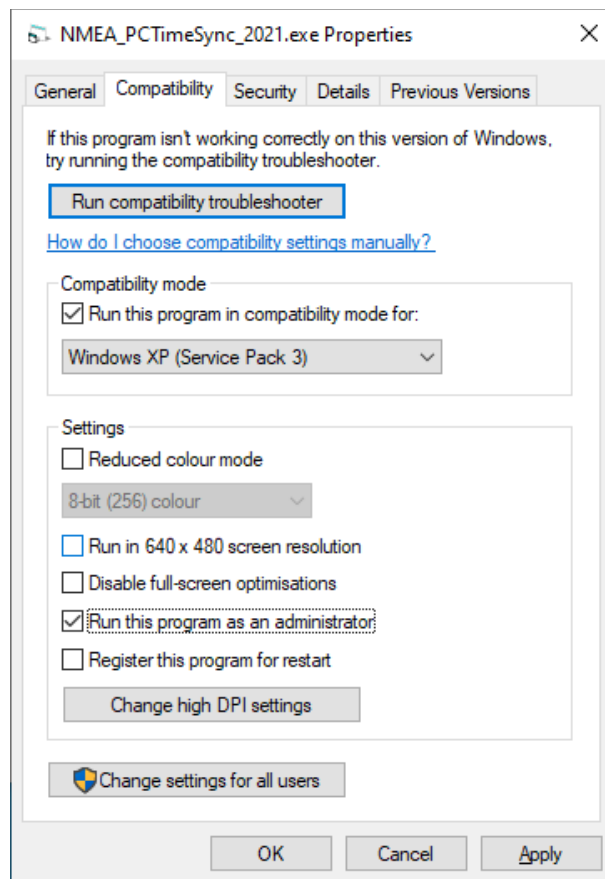
## Installation

For Windows 7 and later, the application is provided without an installer. The Zip file [https://www.dropbox.com/s/kzsqspe9rh9th91c/20220608\\_PC\\_Timesync-VK4AMG.zip?dl=0](https://www.dropbox.com/s/kzsqspe9rh9th91c/20220608_PC_Timesync-VK4AMG.zip?dl=0) contains the executable and two .dll files required for the application to access serial communications under Windows.

> PC_TimeSync_App-VK4AMG > 20220608_PC_Timesync-VK4AMG.zip > PC_Timesync							
Name	Type	Compressed size	Password ...	Size	Ratio	Date modified	
MSCOMCTL.OCX	ActiveX control	469 KB	No	1,046 KB	56%	9/12/2015 7:58 PM	
MSCOMM32.OCX	ActiveX control	50 KB	No	102 KB	52%	19/08/2017 1:53 PM	
NMEA_PCTimeSync_2021.exe	Application	13 KB	No	48 KB	75%	13/05/2021 9:13 AM	

To install the application, the Zip file should be extracted to a new folder in drive C:, e.g. Programs.

The compatibility properties are then set by right clicking on the .exe file and selecting Properties from the pull-down list and selectin the Compatibility tab.

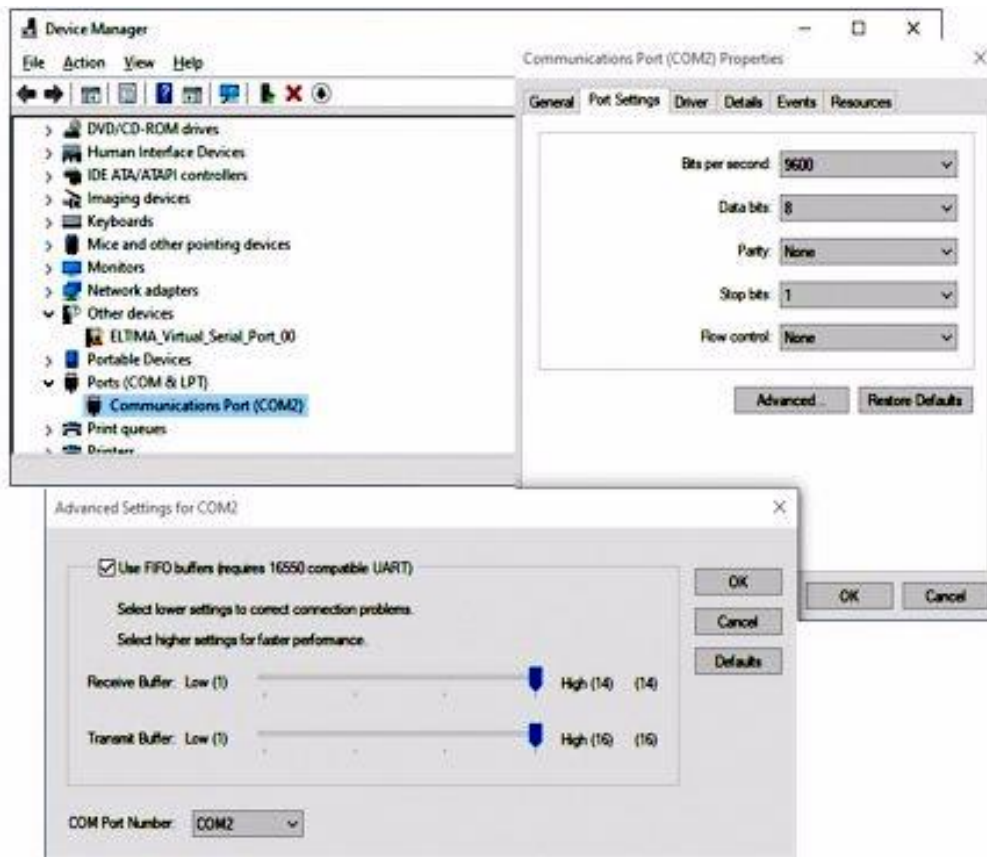


The program is to be set for 'Run this program in compatibility mode for Windows XP SP3' and 'Run this program as administrator'.

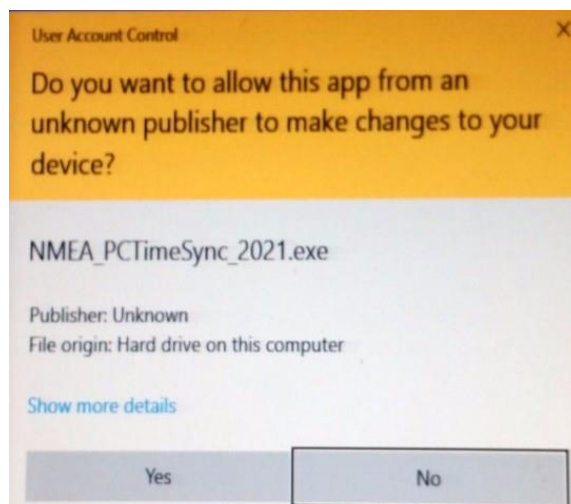
# PC Time Sync – VK4AMG

## Running Program

Connect the PC to the GPS receiver. Open Control Panel and select 'Device Manager'. Expand Ports (COM & LPT) to confirm the GPS serial port is connected. Double click on the Communications Port. Select the 'Port Settings' tab. Click 'Advanced' button. From the Pull-down List 'COM Port Number' select 'COM2'.

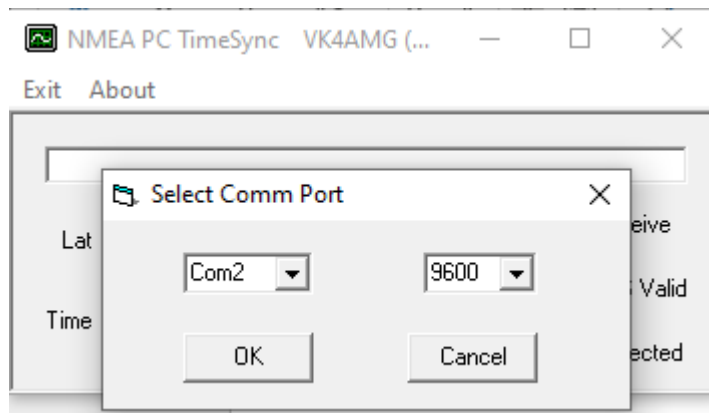


Run 'NMEA\_PCTimeSync\_2020' by double clicking the application. In the 'User Account Control' Pop-up dialog, click 'yes'.



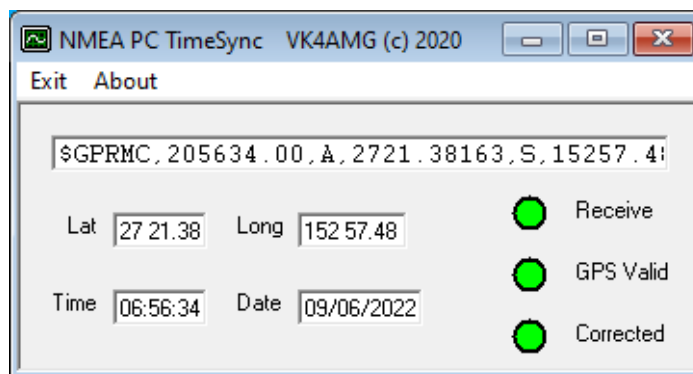
## PC Time Sync – VK4AMG

The Time Sync application GUI will be displayed together with a 'Select Comm Port' dialog. The default comm port 'Com2' and the default baud rate '9600' will be displayed.



If an alternative comm port and / or baud rate is required, select them from the Pull-down lists. Click 'OK'. If no action is taken the 'Select Comm Port' dialog will close after a short delay and the application will run. Com1 through Com9 only allowed.

If the comm port does not exist or is in use, an error 'Com? in use' will display. When 'OK' is clicked the application will close.



If the GPS receiver is sending NMEA RMC messages the 'Receive' LED will flash Red every second. When the GPS receiver reports the GPS is receiving valid position and time fix, the 'GPS Valid' LED will light green. The GPS NMEA RMC message will be displayed together with the date and time and the latitude and longitude. At the 25<sup>th</sup> and 55<sup>th</sup> GPS second, a correction will be applied to synchronise the PC time.

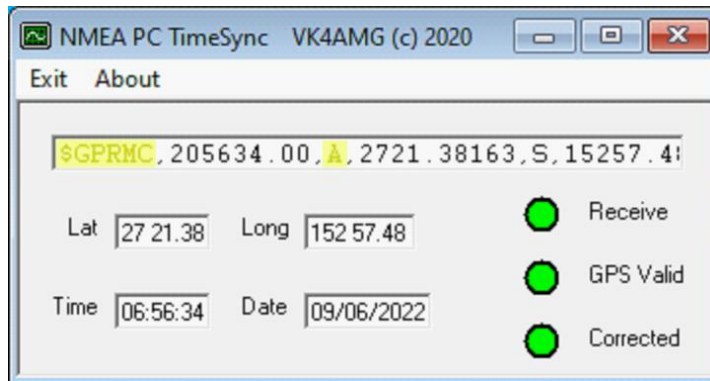
NOTE: if the application is not run as administrator, windows will throw an exception and the application will stop.

# PC Time Sync – VK4AMG

## Diagnostics and Fault Finding

'Com2 in Use' Check comm port setting in Windows. Check USB serial cable connected to PC.

No 'Receive' LED activity. Check GPS is powered. Use a serial terminal program, such as RealTerm, to check serial messages are being sent by GPS receiver.



\$GPRMC message is not displayed in text box. Check GPS receiver baud rate is correctly configured / selected in the application. 4800 baud is default NMEA but 9600 is becoming more common. Brisbane VHF Group GPSD-1 is configured for 9600 baud.

GPS Valid is not lit. Check the message type displayed is headed '\$GPRMC,'. Additional messages may be tolerated but RMC sentences only is recommended. Prefix other than \$GP may be configured on some GPS receiver. If an error is identified, reconfigure GPS Receiver. Correct operation of the GPS receiver (antenna OK, satellites, GPS lock) is indicated by a 'A' in the message, else a 'V' will be sent. Check antenna, cable, and location providing clear view of satellites. IF the GPS receiver has not been used for some time or its backup battery is not fitted or flat, the receiver will be performing a cold start. Several minutes to half an hour may be required to acquire valid GPS lock. Check operation of GPS receiver with an application such as Visual GPS View [VisualGPS, LLC](#) or [u-center | u-blox](#).

Corrections. When GPS Valid is lit, the application will correct the PC time at 25 and 55 seconds past the minute. Correction is indicated by a red flash on the 'Corrected' LED. Application cannot set the PC time if it is not run as administrator. Check the application compatibility setting.

Any feedback on the application please email me at VK4AMG at WIA.org.au.