Replacing the GPS receiver module on EuropaT, Janus, and Libra I Cygnus

This instruction applies to older models of EuropaT, Janus and Libra I Cygnus that may be affected by the GPS week rollover issue. If your EuropaT, Janus or Libra I Cygnus is affected, follow the instructions in this document to replace the existing GPS receiver module.

Warnings

- **Perform this work in a clean lab environment.**
- **Handle all PCBs with care. Always ground yourself and wear a wrist strap to prevent damage due to electrostatic discharge (ESD).**
- **Handle these instruments with care to avoid damaging the enclosure.**

Required Tools

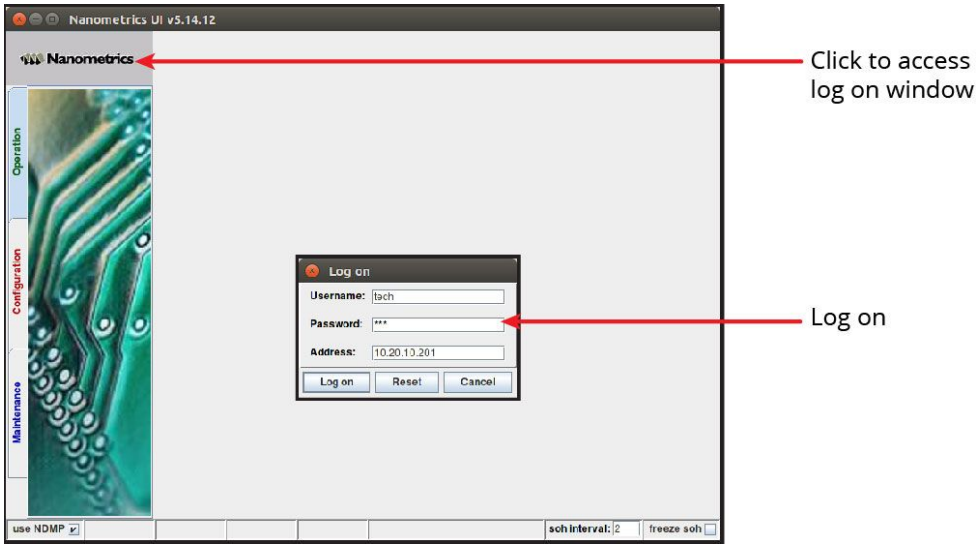
You will need the following to replace the GPS receiver module:

- Torque screwdrivers (0-22 lb-in and 0-80 oz-in)
- Hex bits (2.5 mm and 3.0 mm)
- #2 Phillips screwdriver
- Computer with Nanometrics ConfigUI program and Java 1.6.0 update 11 or earlier installed
- i-Lotus M12M Oncore GPS receiver (Manufacturer's part number IL-GPS-0040-B; Nanometrics part number 19060)

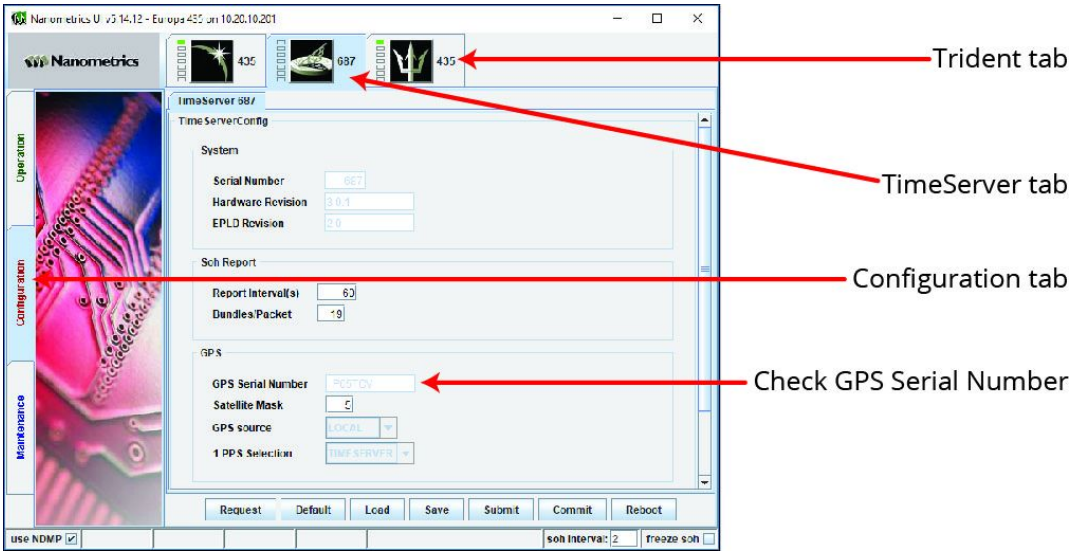
	NOTE: Nanometrics ConfigUI program is available for download from Nanometrics support site (http://support.nanometrics.ca) (Search for ConfigUI).
	NOTE: The date code on the i-Lotus M12M GPS receiver module should be 2016-10-01 or newer.
	CAUTION: Before beginning any disassembly, ensure that all external cables have been disconnected from the front panel.

Determine if you need to replace the GPS receiver module

1. Open ConfigUI.bat
2. On the ConfigUI, click on the Nanometrics logo in the top left of the window to access the Log on window.
3. To log on, enter the username, password and IP address. (default Username: tech, Password: nmx)

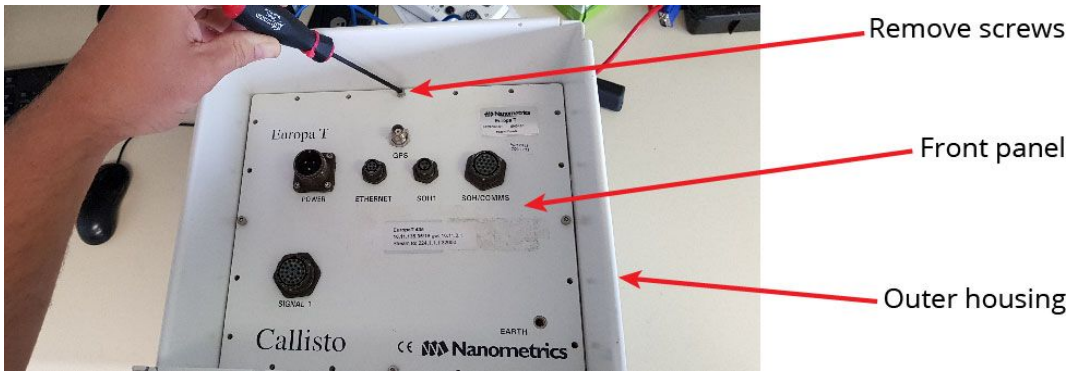


4. Navigate to the **TimeServer Configuration** page.
5. Check the **GPS Serial Number**. If the GPS Serial Number DOES NOT begin with an "R"; for example, if the number is *P05TCV*, then the existing GPS receiver module will need to be swapped out.

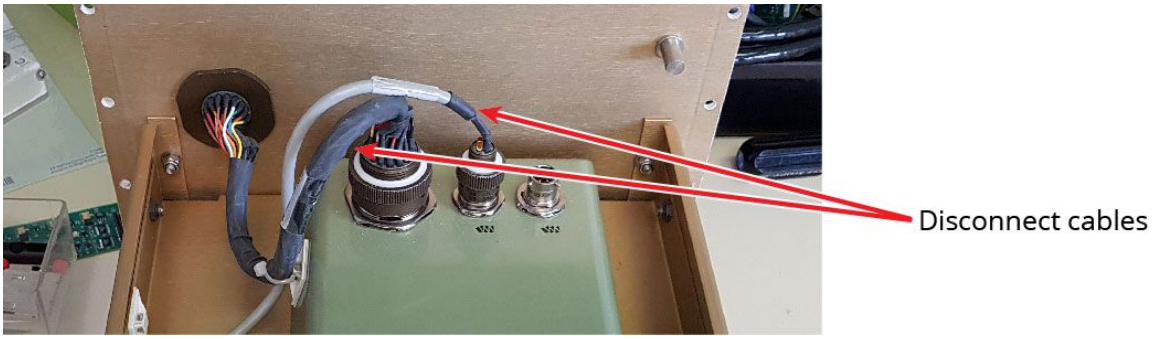


Disassemble the instrument

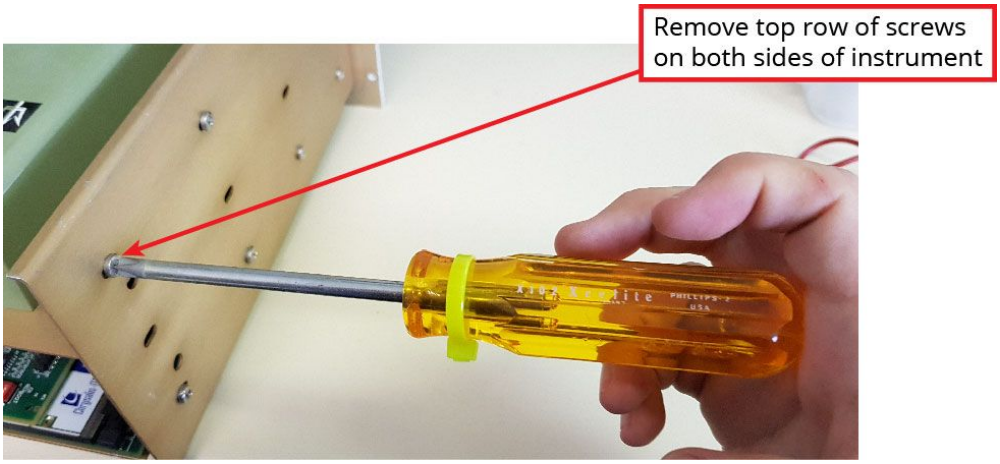
1. Power down the instrument and disconnect all cables from the front panel.
2. Remove the M4x10 mm screws from the front panel using the 3.0 mm hex bit and a torque screwdriver.



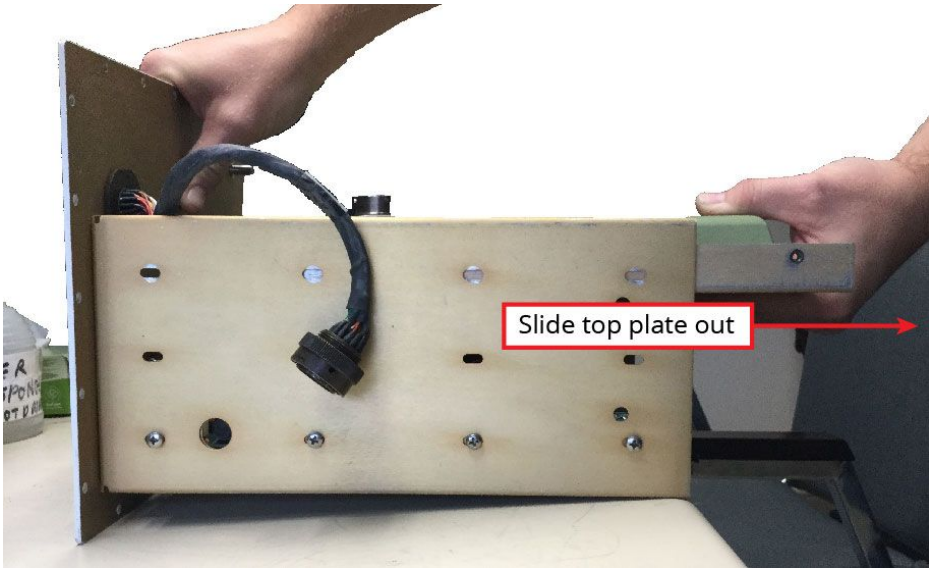
3. Place the instrument on a workbench so that the logos are facing upside down, slide the outer housing from the instrument and set it aside.
4. For the EuropaT digitizer:
    a. Disconnect the cables from the internal digitizer.



b. To release the top plate from the instrument housing, remove the top row of four M4x7.5 mm screws from each side of the instrument using the #2 Phillips screwdriver.

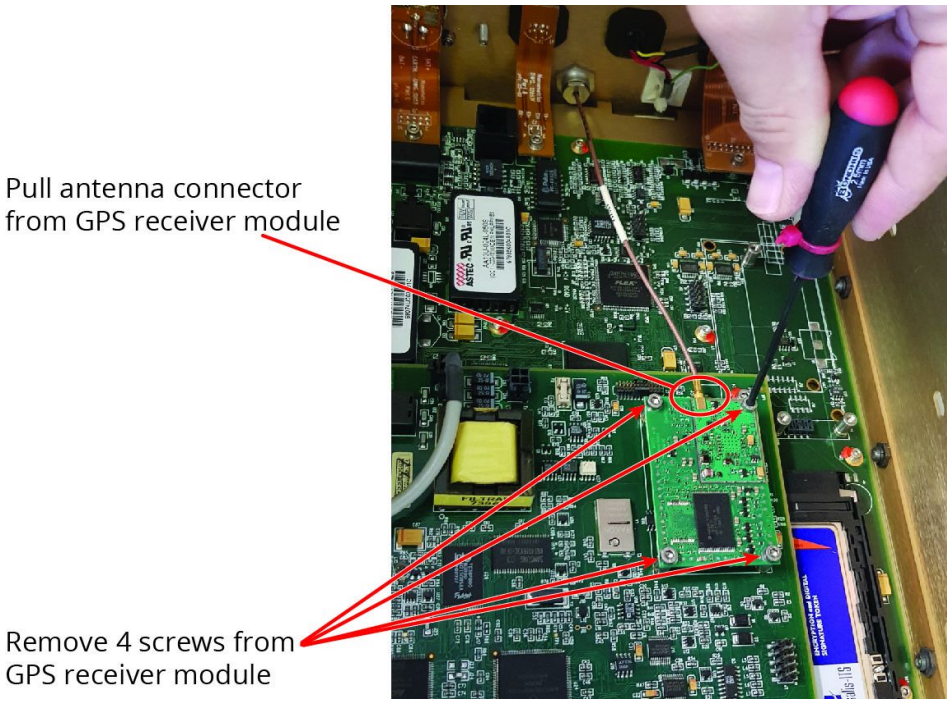


c. Slide the top plate out from the instrument housing and set it aside. This will reveal the circuit cards including the GPS receiver module.

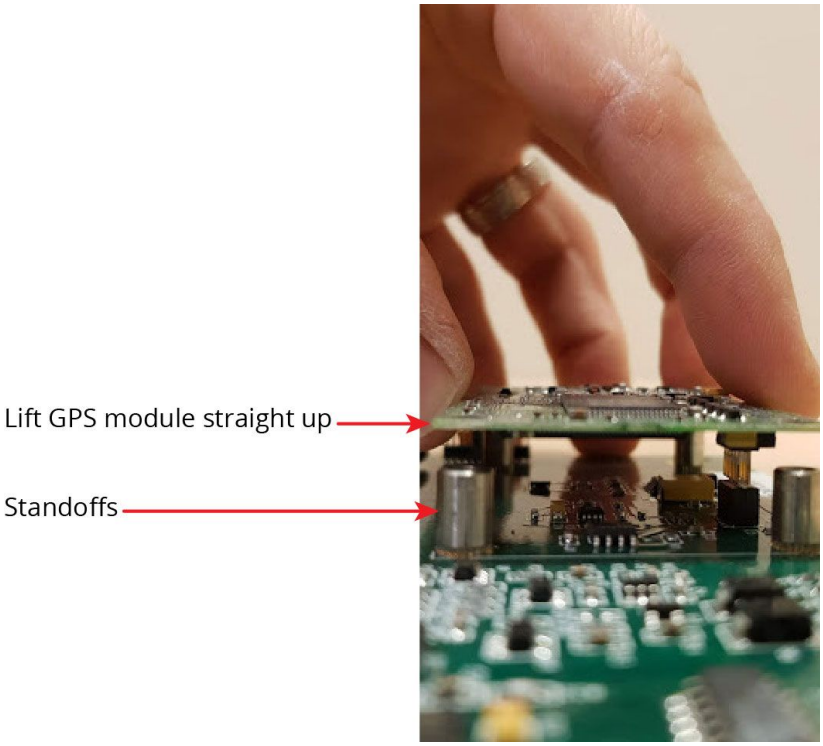


Remove existing GPS module

1. Carefully pull the gold-colored antenna connector from the existing GPS receiver module.
2. Remove the four M3x5 mm screws that are securing the GPS receiver module to the Timeserver circuit board using the 2.5 mm hex bit and torque screwdriver.

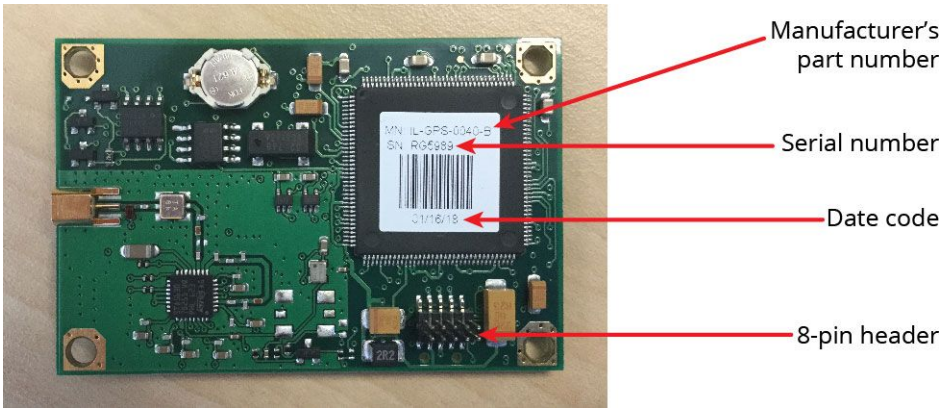


3. Carefully lift the GPS receiver module straight up and off of the standoffs.



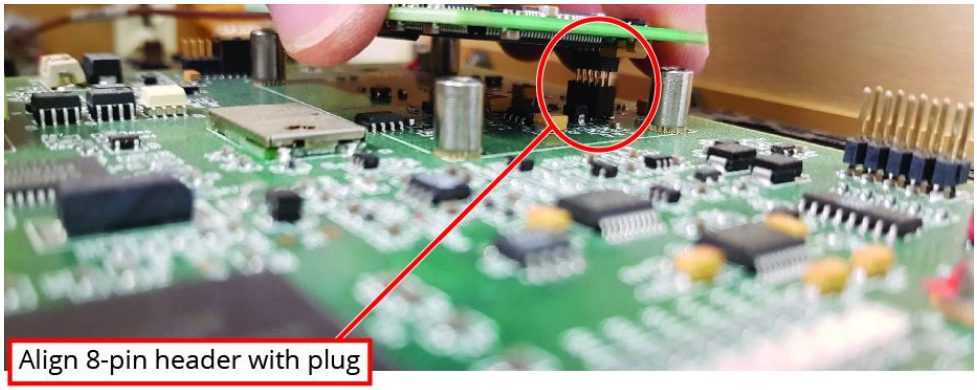
Install the i-Lotus M12M Oncore GPS receiver module

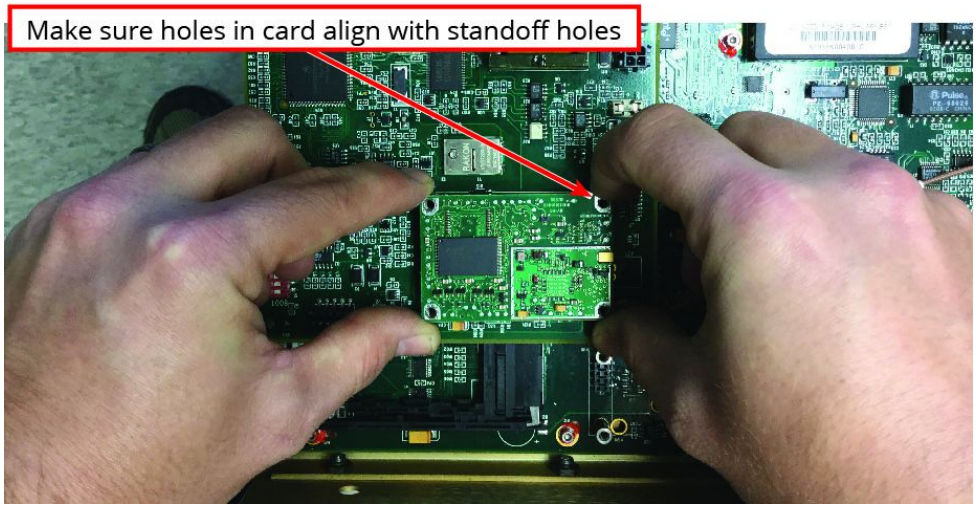
1. Remove the new M12M GPS receiver module from its protective packaging.
2. Verify that the date code is 2016-10-01 or newer, and record the serial number to use for verification later in this instruction.



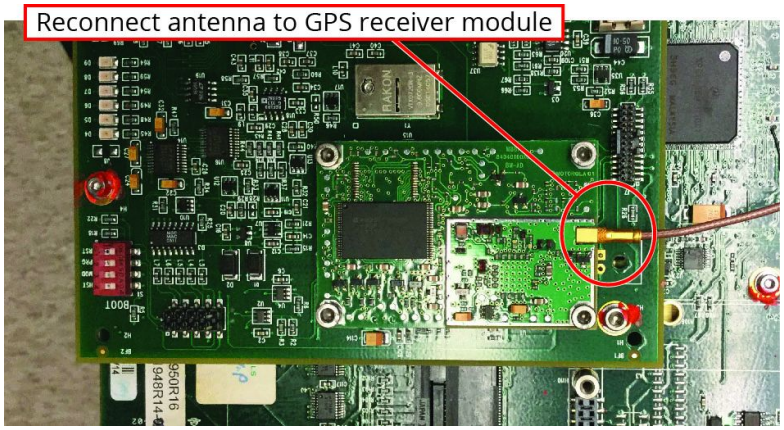
3. Place the M12M GPS receiver module on the standoffs located on the Timeserver circuit card making sure to line up the holes on the M12M GPS receiver module with the standoff holes to avoid damaging the pins on the 8-pin header.

	Note that lining up the standoff holes with the holes on the GPS receiver module will ensure that the pins on the 8-pin header align with the plug on the Timeserver circuit card.



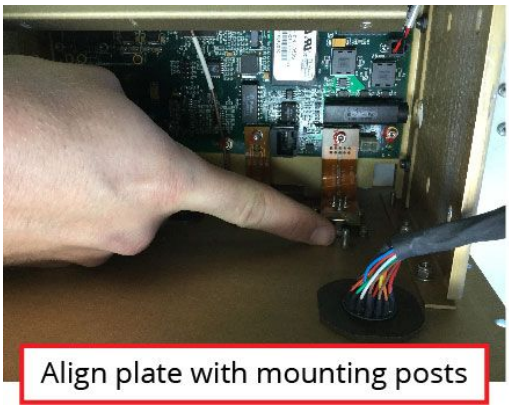


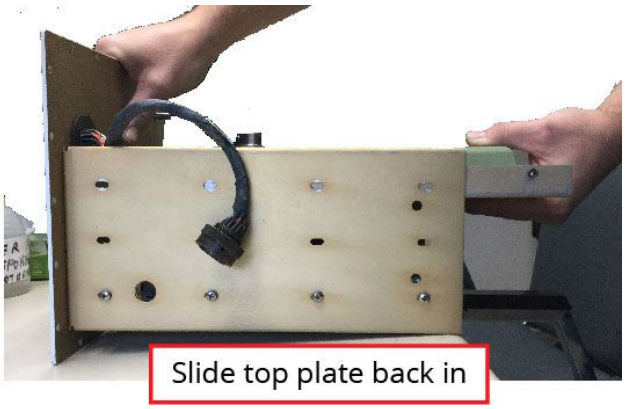
4. Insert one M3x5 mm screw in each of the 4 holes on the M12M GPS receiver module and using the 2.5 mm hex bit and torque screwdriver, torque to 80 oz-in.
5. Reconnect the gold-colored antenna connector to the M12M GPS receiver module.



Reassemble the instrument

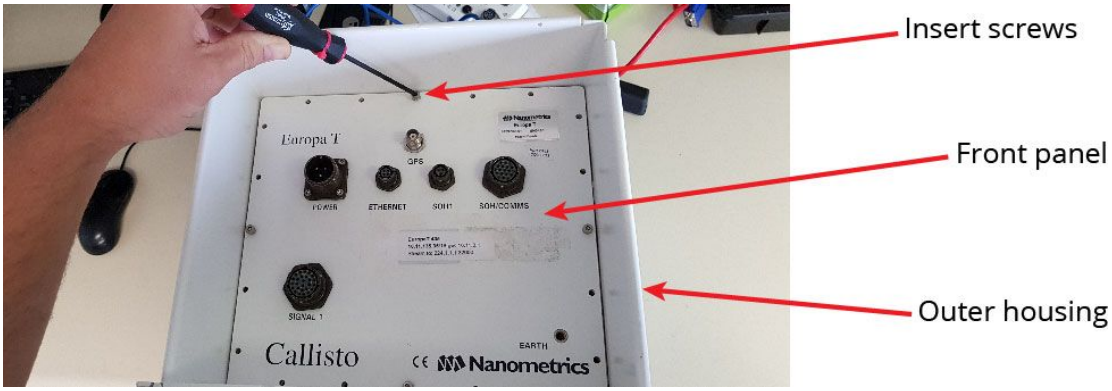
1. For EuropaT digitizers:
    a. Slide the top plate back into instrument housing, aligning the plate with the mounting posts located on the back side of the front panel.
    b. Secure the plate to the instrument housing using four M4x7.5 mm screws on each each of the instrument. Using the #2 Phillips screwdriver torque the screws to 22 lb-in.





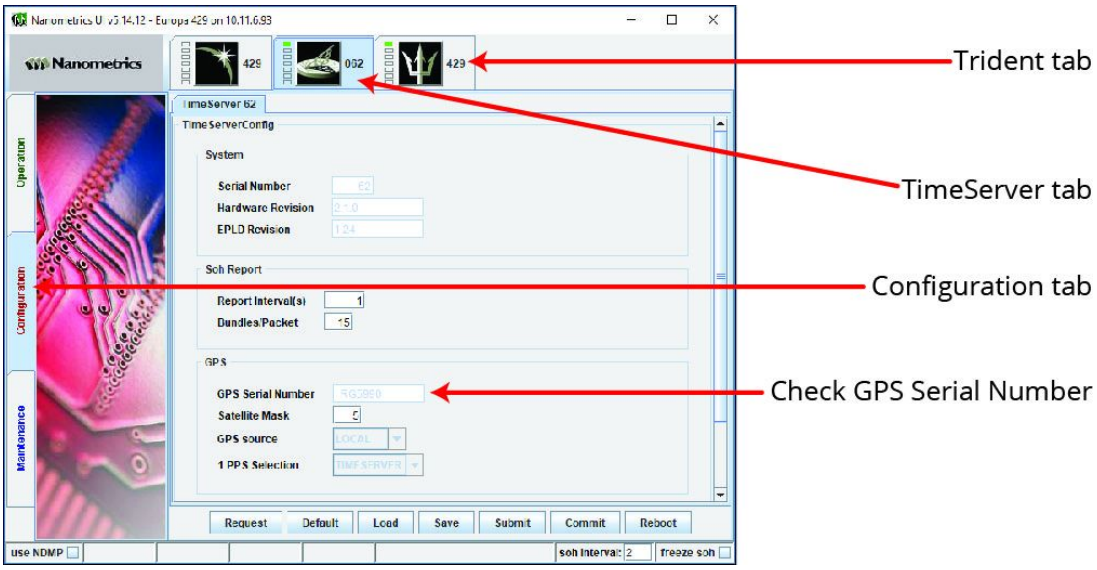
    c. Reconnect the cables to the internal digitizer.

2. For all instruments, push the assembly back into the main housing.
3. Insert a M4x10 mm screw in each hole on the front panel, and using the 3 mm hex bit and a torque screwdriver, torque to 22 lb-in. (Note that there are 20 screws for the EuropaT and 16 screws for the Janus and Libra I Cygnus.)

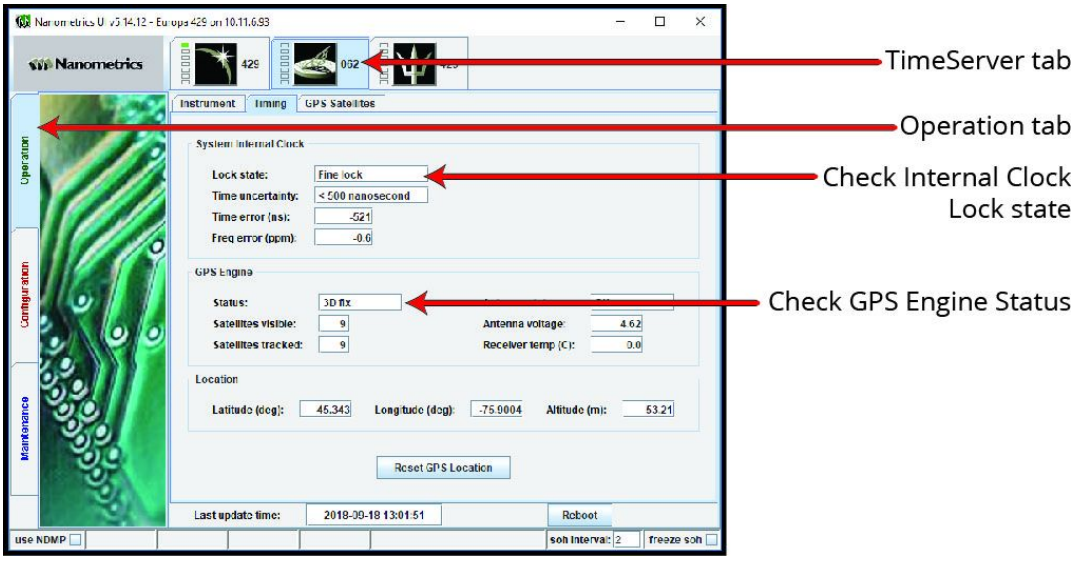


Verify installation of i-Lotus M12M Oncore GPS receiver module

1. Shut down any acquisition programs, such as NAQSServer.
2. Reconnect all cables to the front panel, including the power cable. The instrument should power up automatically.
3. Once the power up sequence is complete, log on to the instrument using ConfigUI. The following should be visible once you log on:
    - TimeServer tab
    - Trident tab
        - For EuropaT
        - For Janus and Libra I Cygnus, if a Trident is connected through the NMXBus
4. If these tabs are not visible, power off the unit and reinstall the GPS receiver module.



5. On the ConfiguUI, navigate to the **TimeServer Configuration** page.
6. Check the **GPS Serial Number**. If the M12M GPS receiver module has been installed successfully, the displayed GPS Serial Number should match the serial number from the newly installed module label that was recorded earlier in this instruction sheet.
7. To verify that the timing is configured as expected, navigate to the **TimeServer Operation Timing** page and verify that the System Internal Clock, **Lock state** is Fine lock and the **GPS Engine Status** is 3D fix. The GPS receiver module may take up to 20 minutes before the Lock state is acknowledged. If module locks quickly, an adjustment may follow once the module obtains the GPS-UTC offset.



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