

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

Microchip Corporation
November 8, 2022

Customer Notification No: 098-50620-104 v2
Field Service Bulletin (FSB) Customer

Advisory Notice (CAN)

Subject: XLi Time & Frequency Instruments with the 87-8028-2 GPS Receiver Module Internal Week Number Rollover AFTER September 18, 2022.

Models Affected:
XLi Time & Frequency Instruments part number 1510-6x2 shipped from approximately 2007 and later WITH GPS receiver 87-8028-2 installed. This configuration shipped from approximately 2007 through 2018.

Contents

1. Summary 2
2. Verification of Installed GPS Receiver: 2
3. Remediation 3
3.1. Motorola Oncore GPS Equipped 87-8028-2 GPS Modules 3
3.2. Furuno GPS Equipped 87-8028-2 GPS Modules 3
4. Microchip Reprogramming of the Furuno GPS Receiver 4
4.1. Reprogramming Service via Repair RMA 4
4.2. GPS Module Removal from the XLi 4
5. Contact Information 5
6. APPENDIX A: Workarounds 6
A.1. Front-end the XLi with a SyncServer S650 6
A.2. POST- September 18, 2022 Emergency Solution 7
A.3. SyncServer S650 timing the XLi AFTER the Internal Week Number Rollover event 8

1. Summary

XLi Time & Frequency Instruments with the 87-8028-2 GPS receiver installed experienced an internal date change on September 18, 2022. If the power has been cycled on the XLi after September 18, 2022, it will not be able to lock to GPS.

If the XLi has been in continuous operation through September 18, 2022, and continues to be so, then this date change may at an unknown time affect NTP, Time Codes (IRIG, HaveQuick, PTTI, etc.), the front panel display, the Programmable Pulse Output, and serial timing outputs that use the date. It will not affect the timing or accuracy of pulses such as the 1PPS, 10 MHz, etc. that are not linked to the date.

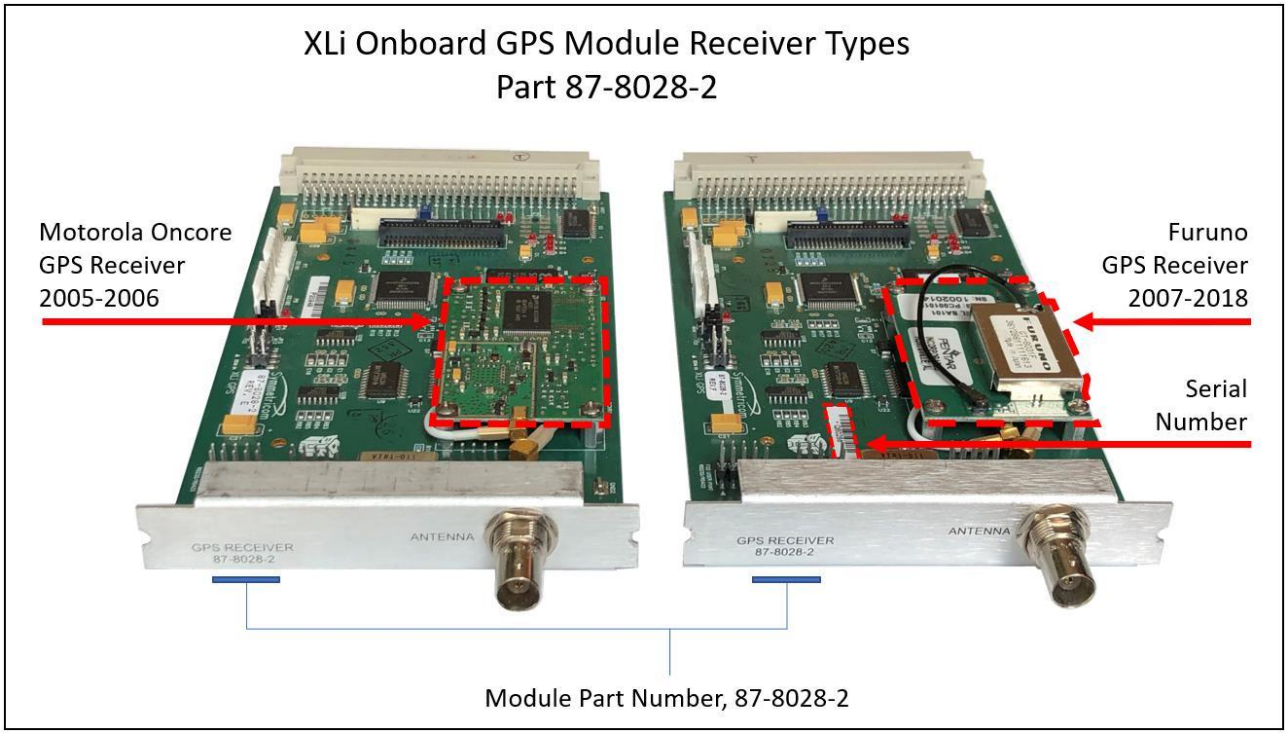
There are several courses of action you can take to minimize the effect of the internal rollover.

- You may have the option to upgrade the software in the GPS receiver to move the rollover event out to July 5, 2037.
- If the unit appears to be operating normally, you may disconnect the GPS antenna and have the unit go into holdover.
- You may connect a SyncServer S650 to provide the time to the XLi and disconnect from GPS
- You may manually set the time in the XLi until you can resolve the situation.
- You can choose to do nothing if the unit is operating, but the date may jump significantly at an unknown time, or if the power cycles it will not lock to GPS.

2. Verification of Installed GPS Receiver:

XLi GPS modules with part number 87-8028-2 that shipped between approximately 2005 and 2006 have a Motorola Oncore GPS receiver onboard. The 87-8028-2 modules that shipped from approximately 2007 through 2018 have a Furuno GPS receiver on board. If the 87-8028-2 GPS module is installed in the XLi, then visual inspection of the module is the only way to identify the installed GPS receiver type.

Verification of the installed GPS receiver type will require removing the power from the XLi and removing the 87-8028-2 module for visual inspection. Step-by-step guidance for module removal can be found in Section 5. Note that if the power is removed from an XLi that has been running continuously since September 18, 2022, when the power is reapplied, the GPS receiver will not lock.



The Furuno GPS receiver is easily identified by the silver metal shield soldered to the GPS mezzanine PCB.

3. Remediation

Once the installed GPS Module has been removed and the GPS receiver type identified, the following are the choices for remediation based on receiver type.

3.1. Motorola Oncore GPS Equipped 87-8028-2 GPS Modules

The Motorola Oncore GPS receiver will rollback 19.6 years on November 30, 2022 (version 2.1 software). There are two choices available to mitigate or work around the internal week number rollover event.

A. Replace the XLi with an equivalently configured SyncServer S650
B. For workarounds, skip to Appendix A

3.2. Furuno GPS Equipped 87-8028-2 GPS Modules

There are three choices available to mitigate or work around the September 18, 2022 internal week number rollover event.

C. Replace the XLi with an equivalently configured SyncServer S650
D. For workarounds, skip to Appendix A
E. Return the 87-8028-2 GPS Module to Microchip for reprogramming, see Section 4.

4. Microchip Reprogramming of the Furuno GPS Receiver

The Furuno GPS receiver model used in the XLi has been discontinued by Furuno. It is possible to reprogram the Furuno GPS receiver, but only if the chip is removed from the PCB, reprogrammed and reattached to the PCB. There is no way this operation can be conducted in the field.

Microchip is offering a service whereby an 87-8028-2 GPS Module equipped with a Furuno GPS receiver can be returned to the factory, reprogrammed and returned to the customer. Reprogramming the Furuno GPS receiver moves the internal week number rollover event to July 5, 2037. The reprogramming service involves an RMA for the 87-8028-2 XLi GPS module with the Furuno module attached. The XLi GPS module is received and the Furuno software is then upgraded, the module retested, and returned. This service is not available for the XLi GPS modules equipped with Motorola Oncore receiver.

4.1. Reprogramming Service via Repair RMA

Reprogramming the Furuno GPS receiver is considered a non-standard repair. There are several steps to follow to start the process, as follows:

1) Verify the receiver type with Microchip Technical Support
   a. Take a photograph of the 87-8028-2 GPS Receiver module, being sure to capture the serial number label on the module. (See Section 4.2 for removal details).
   b. Have the serial number of the XLi (label on left hand card rail of the XLi)
   c. Contact Microchip Technical Support and reference this FSB number. Tell them you want the upgrade and provide the photos to them; Technical Support must confirm that the upgrade is possible before an RMA can be opened.
2) Technical Support will open a case number and refer you to the Repair group who will provide an RMA number, arrange payment terms, and shipping instructions.

4.2. GPS Module Removal from the XLi

1) Turn off the power to the XLi unit (pull the power plug out). Note, if the unit is currently running and it has the Furuno GPS receiver module, once the power is removed the GPS receiver will not relock to GPS if the power is reapplied.
2) Identify the card part number 87-8028-2 on the back of the unit, it says Antenna/BNC, and has a BNC plug in it
3) Remove the two screws holding the card in
4) Remove the card from the XLi unit by sliding it out. It may help to pull the card out by connecting a cord to the BNC/antenna. **Do not pry it out with a screwdriver**.

5. Contact Information

North and South America
Microchip Technology Inc.
FTS Group
3870 North First Street
San Jose, CA 95134-1702
Toll-free in North America: 1-888-367-7966, option 3
Telephone: 408-428-7907
Email: SJO-FTD.Support@microchip.com
Internet: www.microchip.com

Europe, Middle East, and Africa (EMEA)
Microchip FTS EMEA
Altlaufstrasse 42
85635 Hoehenkirchen-Siegertsbrunn Germany
Telephone: +49 700 3288 6435
Email: FTD.EMEASupport@microchip.com

South Asia
Microchip Operations (Malaysia) SDN BHD
Level 15.01, 1 First Avenue,
2A Dataran Bandar Utama,
Damansara 47800 Petaling Jaya,
Selangor, Malaysia
Email: SJO-FTD.Support@microchip.com

6. APPENDIX A: Workarounds

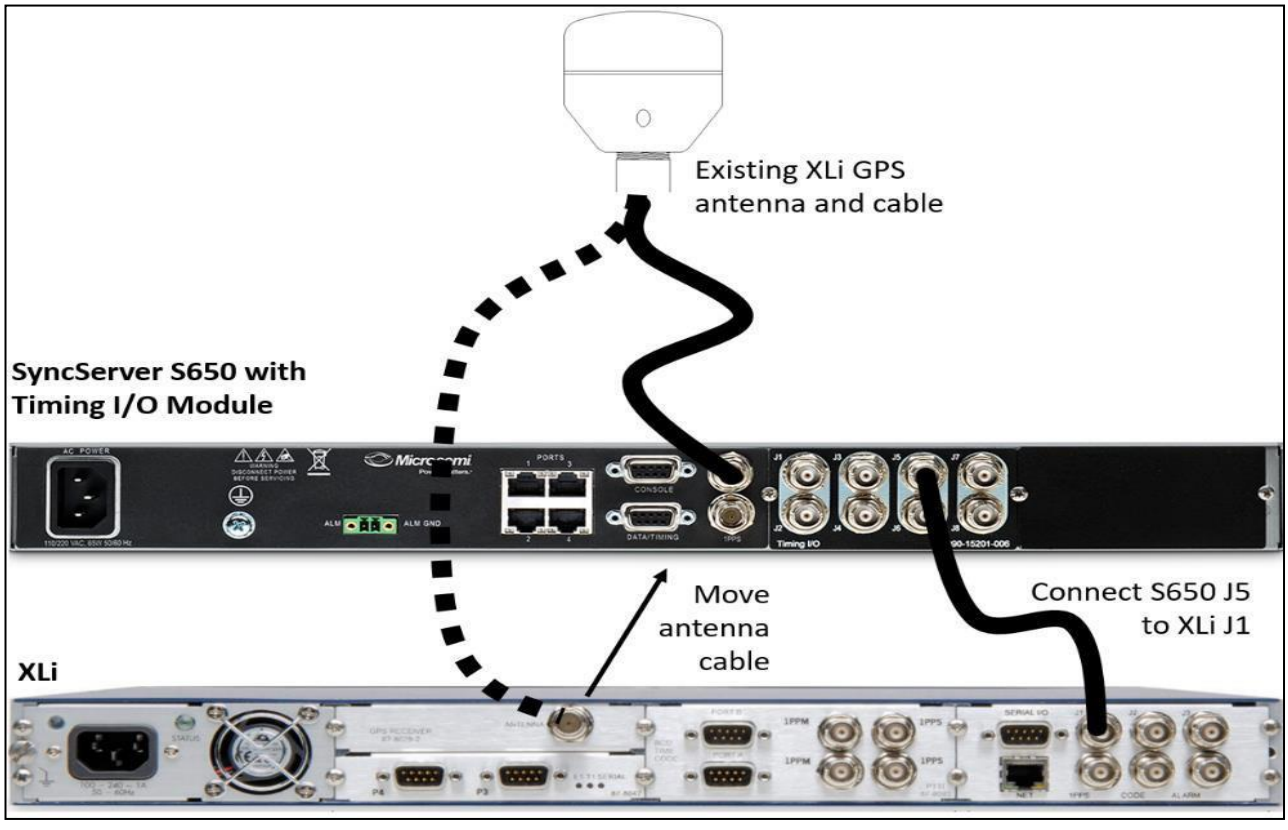
Workarounds after the September 18, 2022 Internal Week Number Rollover

Recall from Section 1, if the power has been cycled on the XLi after September 18, 2022, it will not be able to lock to GPS.

If the XLi has been in continuous operation through September 18, 2022, and continues to be so, then the internal date change may at an unknown time affect NTP, Time Codes (IRIG, HaveQuick, PTTI, etc.), the front panel display, the Programmable Pulse Output, and serial timing outputs that use the date. It will not affect the timing or accuracy of pulses such as the 1PPS, 10 MHz, etc. that are not linked to the date.

A.1. Front-end the XLi with a SyncServer S650

The best choice is to install a SyncServer S650 with a Timing I/O module between the XLi GPS antenna and the XLi as shown below. The S650 will lock to GPS with <15ns RMS accuracy to UTC and provide an extremely accurate IRIG DCLS time code output as a high accuracy input to the XLi. This solution uses the same GPS antenna cable and GPS antenna as the XLi and is the easiest and least disruptive solution. All of the systems and devices connected to and interfaced to the XLi will not be impacted and will continue to operate as normal. See implementation details further below.



Use the SyncServer S650 to lock to GPS and feed high accuracy IRIG DCLS to the XLi as its timing reference. This solution has minimal impact on all systems interfacing to the XLi.

A.2. POST- September 18, 2022 Emergency Solution

In the event the GPS receiver installed in the XLi rolled back in time over 19 years there are two things that must be done immediately:

1) Disconnect the GPS antenna cable from the rear of the XLi.
2) Use the F3 command from the front panel or the Command Line Interface to manually set the time in the XLi. The following is an excerpt from the manual showing how to enter the F3 command to set the time:

```
F3 UTC MM/DD/YYYY HH:MM:SS<CR>
```

Example:

```
F3 UTC 09/23/2022 18:22:30<CR>
```

Once the above command is entered, entering F3 by itself will respond with the current time in the XLi.

The XLi will now be a free running clock and every effort should be made to implement the Recommended GPS Rollover Solution discussed above as soon as possible.

Note: As a free running clock the XLi will output IRIG time codes with no errors reported. However, it will not respond to NTP time requests. As an emergency measure only, and for a short period of time, you can cable the IRIG output as an IRIG input to the XLi. (A BNC T-connector may be required). This creates a timing loop and the clock drift rate of the XLi will accelerate, but at least the unit will be able to operate as an NTP server.

A.3. SyncServer S650 timing the XLi AFTER the Internal Week Number Rollover event

This procedure is straightforward and easy to follow once the SyncServer S650 is powered up in close proximity to the XLi.

Step 1) SyncServer S650

-Attach the antenna cable to the GNSS BNC connector on the rear panel.
-Either from the front panel or the web GUI, wait for the unit to lock to GPS.

Step 2) XLi

-Set F74 to **PRI – SEC – SEC**
-Set F2 for both the Display and the IRIG to 24 hour.
-Set F69 for UTC.
-Set F110 to input IRIG-000-1344 by setting F110 to:
Input Code: IRIG-B000 1344
Clock source: SECONDARY
Impedance= 50
Code Sign: POSITIVE
Propagation Delay: 0uS
IRIG Mode: SYNC GEN
Error bypass: 3 FRAMES

Step 3) SyncServer S650

-Confirm via the web GUI that the Slot A Timing I/O module BNC J5 is set to output IRIG-B 004 DCLS (the default signal out J5)
-Connect a cable between the SyncServer J5 and the XLi J1.

The XLi should now lock to the IRIG B DCLS signal from the SyncServer. Once the XLi has had a chance to lock to the IRIG signal from the S650, it is now UTC synchronized to likely less than 50ns to UTC.

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP