

SecureSync

2400 MODEL



Option Card Field Installation Guide

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Introduction

The SecureSync 2400 time and frequency synchronization system offers customizability and expandability via the addition of a range of modular option cards. Depending on your unit's specifications, up to 6 cards can be accommodated to offer not only synchronization to a variety of input references, but also numerous types of output signals, supporting an extensive number of traditional and contemporary timing protocols.

Typically, SecureSync units are shipped with custom-ordered option cards pre-installed at the factory. In the event that an option card is purchased at a later time, field installation will be necessary. This option card installation guide contains information and instructions for installing option module cards in your SecureSync unit.

This procedure should only be attempted by qualified personnel, while following the enclosed safety instructions.



Note: The installation procedure varies, depending on the type of option card and the installation location to be installed. Read instructions completely before beginning.

Outline of the Installation Procedure

The general steps necessary for installing SecureSync option cards are as follows:

- » If adding or removing option cards that provide a reference, optionally backup your SecureSync configuration (refer to "[2]: Saving Reference Priority Configuration" on page 4, if applicable to your scenario or environment.)
- » Safely **power down** the SecureSync unit and remove the top cover of the main chassis (housing).
- » Select one of the unused Slots as installation location for the new card. The chosen Slot will **determine the installation procedure** (see "[3]: Determining the Installation Procedure" on page 6).
- » **Prepare** slot (if required), and plug card into the slot.
- » **Connect** any required cables and secure option card into place.
- » Replace chassis cover, **power on** unit.
- » Log in to the SecureSync web interface; **verify** the installed card is identified.
- » **Restore** SecureSync configuration (if it had been backed up before, see above).

Safety



DANGER! Electrical hazard. Unplug ALL power supplies before opening your SecureSync. Never remove the cover or blank option plates with power applied to this unit.



DANGER! This unit may contain more than one power source. Ensure all power sources are removed from the unit prior to installing option cards by removing the power cords connected to the unit.



Caution: The interior of this equipment does not have any user-serviceable parts. Contact Technical Support if this equipment needs to be serviced.



Caution: Electric equipment is sensitive to Electrostatic Discharge (ESD). Observe all ESD precautions and safeguards when handling the unit.

[1]: Unpacking

On receipt of materials, unpack and inspect the contents and accessories (retain all original packaging for use in return shipments, if necessary).

The following items are included with the **ancillary kit** for the field installation of option card(s). Some of the parts listed below will not be required for the installation (depending upon option card model, and installation location).

Table 1-1: Parts list, Ancillary Kit [1204-0000-0700]

| Item | Quant. | Part Number |
|---|--------|-----------------|
| 50-pin ribbon cable | 1 | CA20R-R200-0R21 |
| Washer, flat, alum., #4, .062 thick | 2 | H032R-0440-0002 |
| Screw, M3-.5, 18-8SS, 4 mm, thread lock | 5 | HM11R-03R5-0004 |

| Item | Quant. | Part Number |
|--|--------|-----------------|
| Standoff, M3 x 18 mm, hex, M-F, 18-8 stainless steel | 2 | HM50R-03R5-0118 |
| Standoff, M3 x 12 mm, hex, M-F, 18-8 stainless steel | 1 | HM50R-03R5-0112 |
| Cable tie | 2 | MP00000 |

In addition to the parts supplied with your option card ancillary kit, you will need a #1 Phillips head screwdriver, and may need a cable tie clipper and 6mm nut driver.

[2]: Saving Reference Priority Configuration



Note: This step is **optional**.

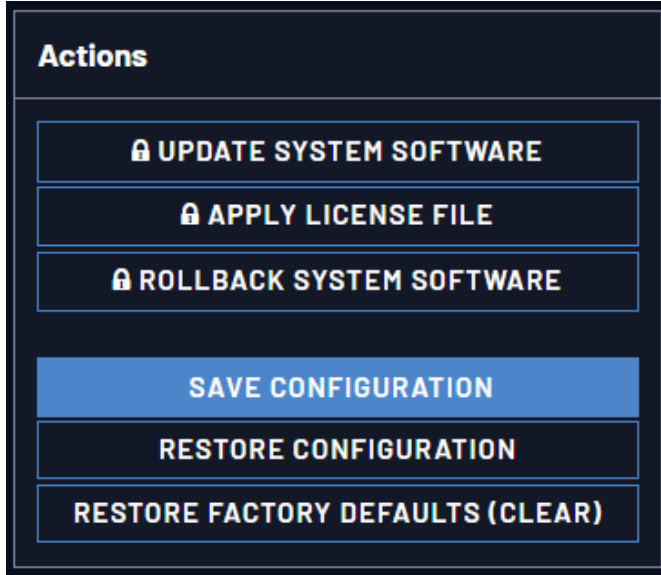
When adding or removing option cards with reference inputs such as IRIG Input, ASCII Timecode Input, etc., any user-defined Reference Priority configuration will be reset back to the factory default. This means that you will need to re-configure the Reference Priority table at the end of the installation procedure.

To avoid this manual re-configuration, you can save your configuration:

Saving the System Configuration Files

To save (back up) the system configuration files:

1. Navigate to **TOOLS > SYSTEM: Upgrade/Backup**.
2. In the **Actions** panel, click the **Save Configuration** button.



3. Click **OK** in the grey confirmation window that displays.
4. Save the configuration file to a directory where it will be safe.



Note: The Reference Priority configuration must be saved BEFORE beginning the hardware installation.

After completion of the hardware installation, the Reference Priority configuration needs to be restored; see STEP [12].

[3]: Determining the Installation Procedure

The installation procedure for option cards varies, depending on:


- i. option card model
- ii. installation slot chosen by you, and
- iii. for upper slots only: if the bottom slot is used or not.

Determining the correct installation procedure

- a. Identify the last two digits of the **part number** of your option card (see label on bag).
- b. Inspect the back of the SecureSync housing, and select an **empty slot** for the new card. If the card is to be installed in one of the upper slots (4, or 6), take note if the corresponding lower slot (3 or 5) is occupied.

Slots 1 and 2 always have an occupied slot below them.

Units must be equipped with an Extension Board to fill option card slots 3, 4, 5, and 6.



Note: To identify if the unit is equipped with an Extension Board, safely power down the SecureSync unit and remove the top cover of the main chassis (housing).

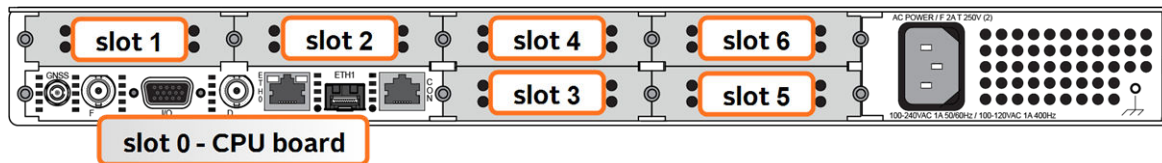


Figure 1: Unit rear view

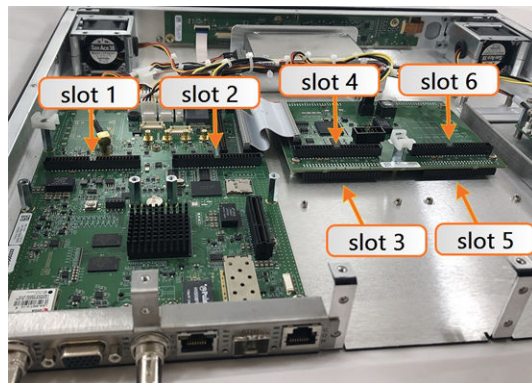


Figure 2: Unit internal view (from rear)

- c. Identify your installation steps via the table below.
 - i. Find your **part number** in the left-hand column. Some cards require special installation steps or specific locations.
 - ii. Choose your **Installation Location** (as determined above).
 - iii. If using slots 4 or 6, select either the **Bottom Slot** row "empty" or "populated"
 - iv. Note or highlight the **PROCEDURE STEPS [x]** for your installation scenario and follow the procedure step by step.

Table 1-2: Installation steps

| Part No. Option Card | Card Function | Installation Location | Bottom Slot | PROCEDURE STEPS [x] |
|-------------------------------|----------------------------------|-----------------------|-------------|------------------------|
| 1204-08 1204-26 1204-1C | Frequency output | Slot 1 or 2 | | 1, 2, 3, 4, 9, 12, 13 |
| | | Slot 3 or 5 | | 1, 2, 3, 5, 9, 12, 13 |
| | | Slot 4 or 6 | empty | 1, 2, 3, 6, 9, 12, 13 |
| | | | populated | 1, 2, 3, 7, 9, 12, 13 |
| 1204-0F | Alarm relay | Slot 1 or 2 | | 1, 2, 3, 4, 10, 12, 13 |
| | | Slot 3 or 5 | | 1, 2, 3, 5, 10, 12, 13 |
| | | Slot 4 or 6 | empty | 1, 2, 3, 6, 10, 12, 13 |
| | | | populated | 1, 2, 3, 7, 10, 12, 13 |
| 1204-1F | NENA-Compliant | Slots 1 & 2 | | 1, 2, 3, 4, 11, 12, 13 |
| 1204-49 1204-4A | Gb Ethernet and NTP Net-working | Slot 1 or 2 | | 1, 2, 3, 4, 12, 13 |
| 1204-58 1204-59 | White Rabbit Option Cards (WROX) | Slots 3 & 4 or 5 & 6 | | 1, 2, 3, 8, 12, 13 |
| All other Part No.'s | (miscellaneous) | Slot 1 or 2 | | 1, 2, 3, 4, 12, 13 |
| | | Slot 3 or 5 | | 1, 2, 3, 5, 12, 13 |
| | | Slot 4 or 6 | empty | 1, 2, 3, 6, 12, 13 |
| | | | populated | 1, 2, 3, 7, 12, 13 |



Note: All installation situations include steps 1 (unpacking), 2 (save reference configuration), 3 (determine installation procedure), 12 (verifying hardware detection and software upgrade) and 13 (restoring configurations)

Steps 4 through 11 of this installation procedure should only be performed if your installation location or card requires it.

[4]: Slot 1 & 2 Installation

Option cards installed in Slot 1 or Slot 2 sit on top of and are screwed into pre-installed standoffs and plug in to the unit through the included ribbon cable.

Instructions for installing an option card into one of the slots above the CPU board (**1 or 2**):

- a. Safely power down the SecureSync unit and remove the top cover of the main chassis (housing). Save the screws.

b.



DANGER! SecureSync does not have an ON/OFF switch. You must unplug the machine to remove power!



Caution: NEVER install an option card from the rear of the unit, ALWAYS from the top, after removing the chassis cover.

- c. Unscrew and remove the blank option card plate from the back of the unit (or the existing option card). Save the screws.
- d. Insert option card into the slot, lining up the screw holes on the card with the standoffs..

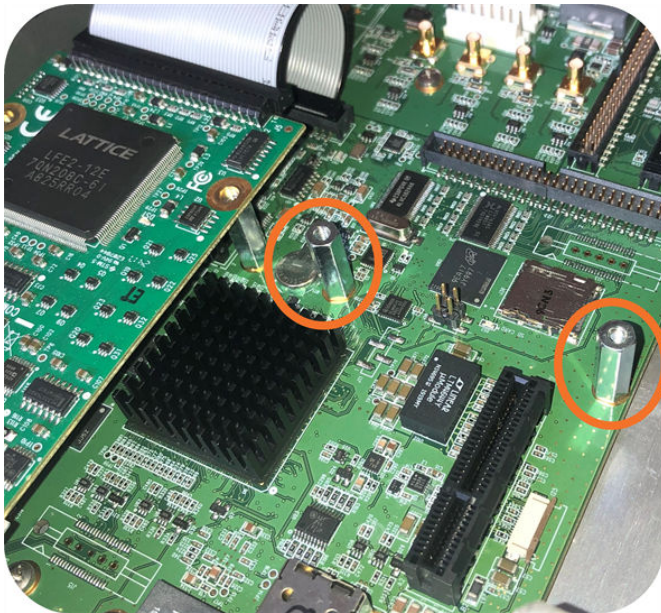
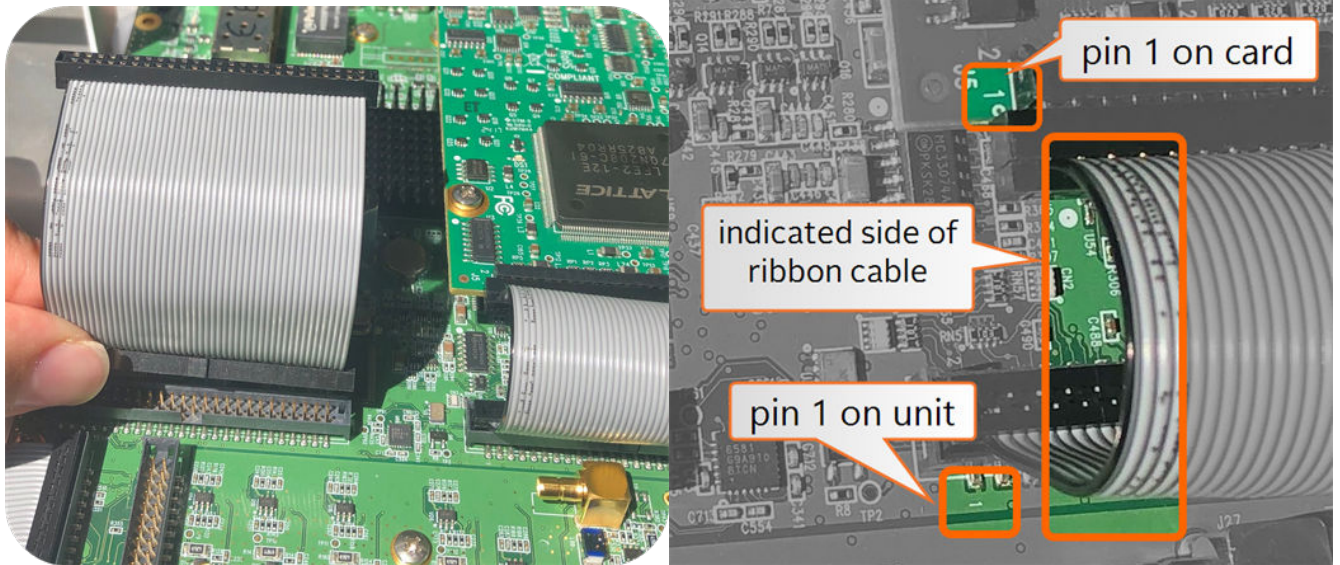


Figure 3: Standoffs location

- e. Using the supplied M3 screws, screw the board, and the option card plate into the chassis, applying a torque of 0.9 Nm/8 in-lbs.
- f. Take the supplied 50-pin ribbon cable and carefully press it into the connector on the mainboard (lining up the indicated end of the cable with PIN 1 on the mainboard), then into the connector on the option card (see Figure below).



Caution: Ensure that the ribbon cable is aligned and fastened properly to all pins on the connector of the card, before powering the unit up, to avoid damage to the equipment.

[5]: Bottom Slot Installation

Instructions for installing an option card into one of the bottom slots (**3**, or **5**):

- a. Safely power down the unit and remove the top cover of the main chassis (housing). Save the screws.



DANGER! SecureSync does not have an ON/OFF switch. It is necessary to unplug the machine to remove power!



Caution: NEVER install an option card from the rear of the unit, ALWAYS from the top, after removing the chassis cover.

- b. Remove the blank option card plate, or the existing option card in the slot. Save the screws.
If a card is populating the slot above the bottom slot your option card is to be installed into, remove it temporarily (also remove and save the screws and standoffs for reuse, washers may be discarded).
- c. Insert the card into the bottom slot by carefully pressing its connector into the extension board connector (see Figure below), and by lining up the screw holes on the card with the screw holes on the chassis.

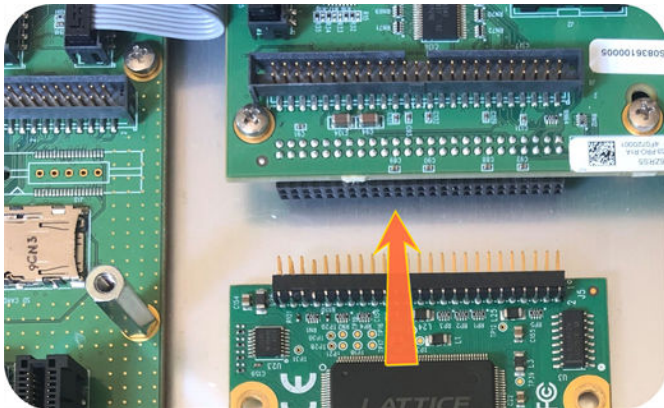


Figure 4: Connector installation

- d. Using the supplied M3 screws, screw the board, and the option card plate into the chassis, applying a torque of 0.9 Nm/8 in-lbs.

If you are reinstalling an option card above this one, you should instead follow the instructions for "[7]: [Top Slot Installation, Bottom Slot Occupied](#)" on [page 14](#) (you will be using standoffs in this situation).



Caution: Align and secure screw holes to chassis to avoid equipment damage.

[6]: Top Slot Installation, Bottom Slot Empty

Instructions for installing an option card into an upper slot (**4**, or **6**) of the SecureSync unit, with no card populating the bottom slot:

- a. Safely power down your SecureSync unit and remove the top cover of the main chassis (housing). Save the screws.



DANGER! SecureSync does not have an ON/OFF switch. It is necessary to unplug the machine to remove power!



Caution: NEVER install an option card from the rear of the unit, ALWAYS from the top, after removing the chassis cover.

- b. Remove blank option card plate, or existing option card. Save the screws.
- c. Place one of the supplied washers over each of the two chassis screw holes (see Figure below), then screw the 18 mm standoffs (the longer standoffs) into the chassis (see Figure below), applying a torque of 0.9 Nm/8 in-lbs.

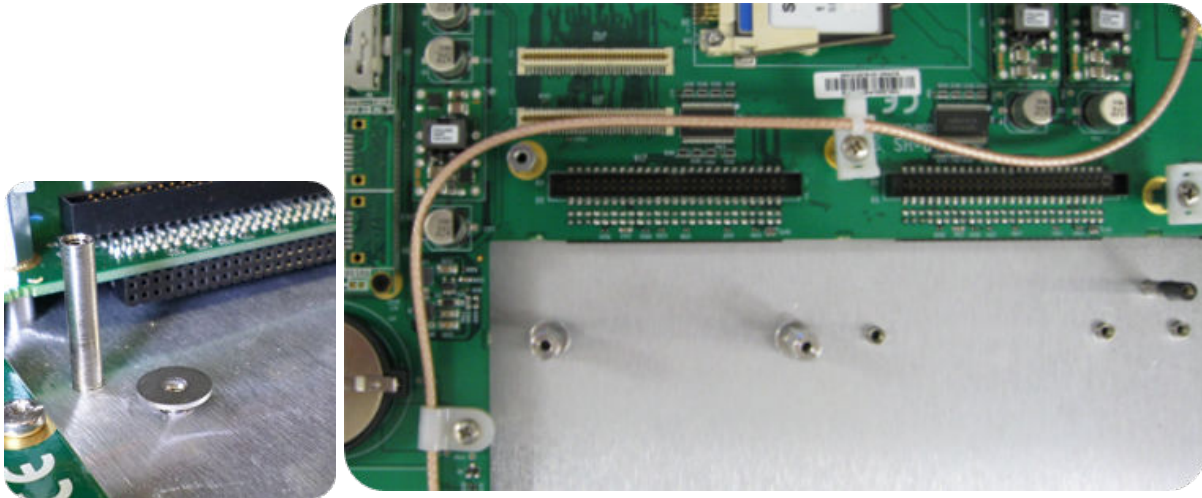


Figure 5: Washers & standoffs secured to chassis screw holes

- d. Insert option card into the slot, lining up the screw holes on the card with the standoffs.
- e. Using the supplied M3 screws, screw the board into the standoffs, and the option card plate into the chassis, applying a torque of 0.9 Nm/8 in-lbs.

- f. Take the supplied 50-pin ribbon cable and carefully press it into the connector on the mainboard (lining up the indicated end of the cable with PIN 1 on the mainboard), then into the connector on the option card (see Figure below).

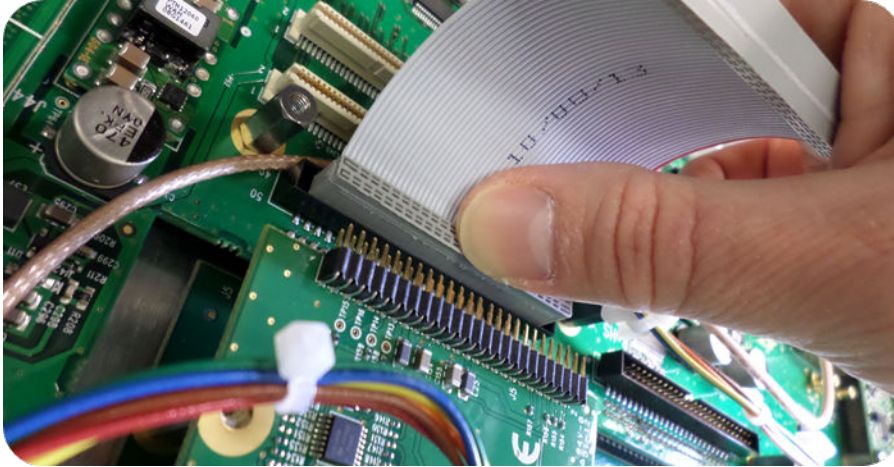


Figure 6: Ribbon cable installation



Caution: Ensure that the ribbon cable is aligned and fastened properly to all pins on the connector of the card. Otherwise, damage to the equipment may occur during power-up.

[7]: Top Slot Installation, Bottom Slot Occupied

Instructions for installing an option card into an upper slot (**4**, or **6**), above a populated bottom slot:

- a. Safely power down the SecureSync unit, and remove the top cover of the main chassis (housing). Save the screws.

b.



DANGER! SecureSync does not have an ON/OFF switch. It is necessary to unplug the machine to remove power!



Caution: NEVER install an option card from the rear of the unit, ALWAYS from the top, after removing the chassis cover.

- c. Remove the blank option card plate, or the existing option card. Save the screws.
- d. Remove screws securing the card already populating the bottom slot. Save the screws.
- e. Screw the 18-mm standoffs into the option card populating the bottom slot (see Figure below) , applying a torque of 0.9 Nm/8 in-lbs.

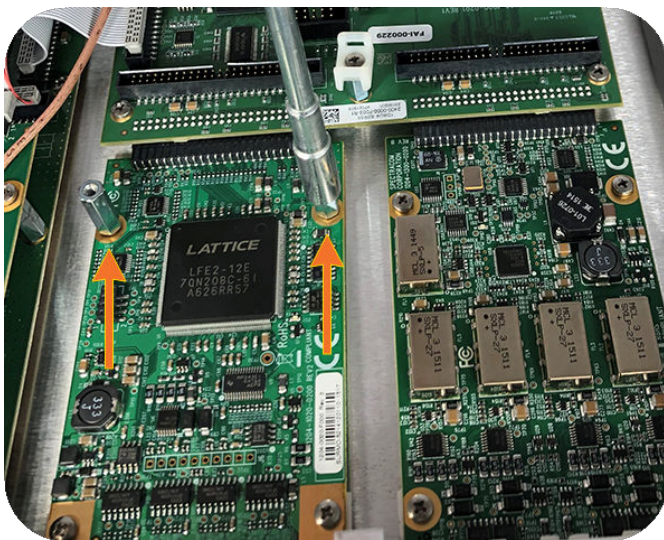


Figure 7: Bottom card with standoffs installed

- f. Insert option card into the slot above the existing card, lining up the screw holes with the standoffs.

- g. Using the supplied M3 screws, screw the board into the standoffs, and the option plate into the chassis, applying a torque of 0.9 Nm/8 in-lbs.
- h. Take the supplied 50-pin ribbon cable and carefully press it into the connector on the extension board (lining up the ribbon cable with PIN 1 on the board with PIN 1 on the card), then into the connector on the option card (see Figure below).

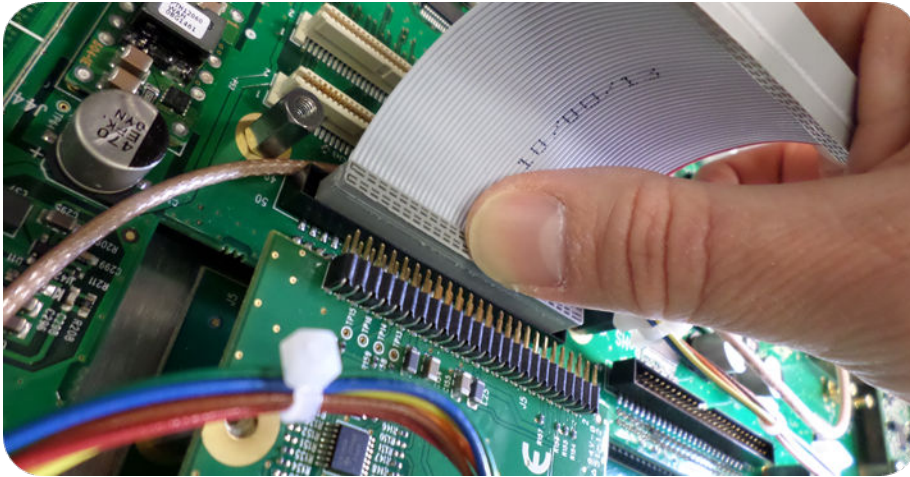


Figure 8: Ribbon cable installation



Caution: Ensure that the ribbon cable is aligned and fastened properly to all pins on the connector of the card. Otherwise, damage to equipment may result during power up.

[8]: WROX Card Installation

This card requires an open bottom slot and an open top slot. Instructions for installing a WROX card (PN 1204-58 and 1204-59) into slots **3 & 4** or **5 & 6**:

- a. Safely power down the unit and remove the top cover of the main chassis. Save the screws.



DANGER! SecureSync does not have an ON/OFF switch. It is necessary to unplug the machine to remove power!



Caution: NEVER install an option card from the rear of the unit, ALWAYS from the top, after removing the chassis cover.

- b. Remove the blank option card plates, or the existing option card(s) in the slots. Save the screws.
- c. Feed the coax cable straight through the slot to avoid interference with card insertion.
- d. Insert the card into the slot by carefully pressing its connector into the extension board connector (see Figure below), and by lining up the screw holes on the card with the screw holes on the chassis. Align and secure screw holes to chassis to avoid equipment damage.



Caution: WROX cards are larger and require caution during installation. Unintended contact with the chassis and standoffs may cause equipment damage.

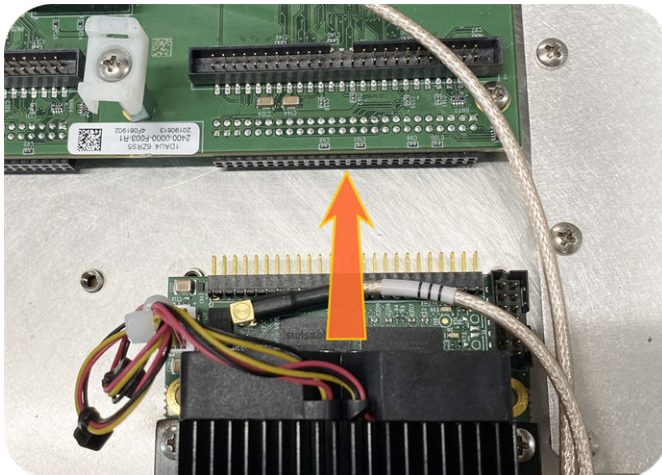


Figure 9: Connector installation

- e. Using the supplied M3 screws, screw the board, and the option card plate into the chassis, applying a torque of 0.9 Nm/8 in-lbs.
- f. Install the coax cable onto the main PCB, connecting it to the first available open connector, from **J4** to **J7**. See Figure below:

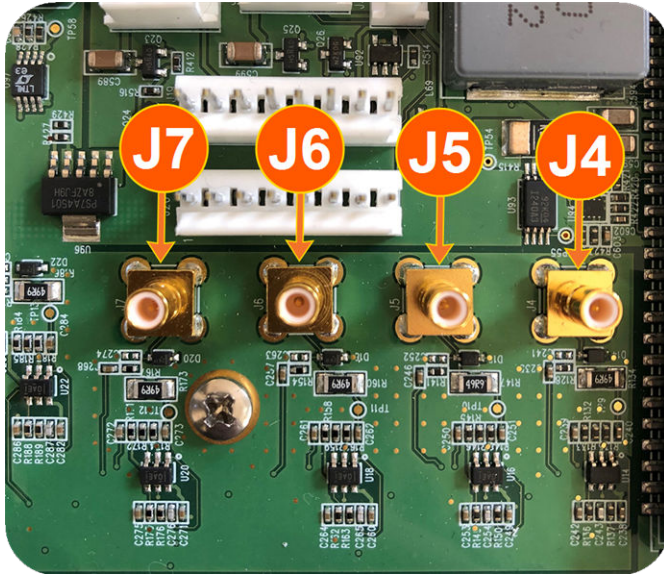


Figure 10: J Connectors (10MHz Outputs)

- g. Using the supplied cable ties, secure the coax cable from the option card to the white nylon cable tie holders fastened to the mainboard.

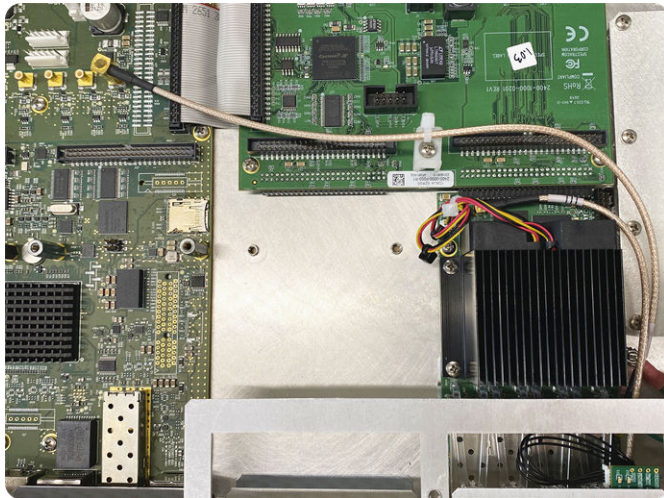


Figure 11: Completed installation

WROX requires a different upgrade procedure than other option cards. More information can be found in the main user manual: https://safran-navigation-timing.com/manuals/2400/Content/NC_and_SS/2400/OCs/WROX/WROC.htm.

[9]: Frequency Output Cards: Wiring

Additional installation instructions for the following option card models:

- » Frequency Output cards:
 - » 1MHz (PN 1204-26)
 - » 5MHz (PN 1204-08)
 - » 10 MHz (PN 1204-1C)

For the cable installation, follow the steps detailed below:

- a. Install the coax cable(s) onto the main PCB, connecting them to the first available open connectors, from J4 to J7. See figure below:

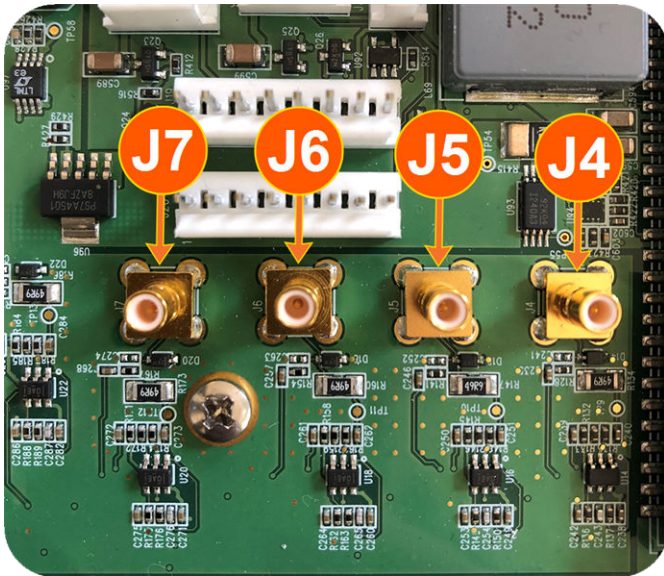


Figure 12: J Connectors (10MHz Outputs)

- b. Using the supplied cable ties, secure the coax cable from the option card to the white nylon cable tie holders fastened to the mainboard.

[10]: Alarm Relay Card, Cable Installation

Additional steps for the installation of the Alarm Relay Output card (PN 1204-OF).

- a. Connect the supplied cable, part number 8195-0000-5000, to the mainboard connector J19. If your connector has 8 pins, use pins 3 - 8 as shown in the figure below.

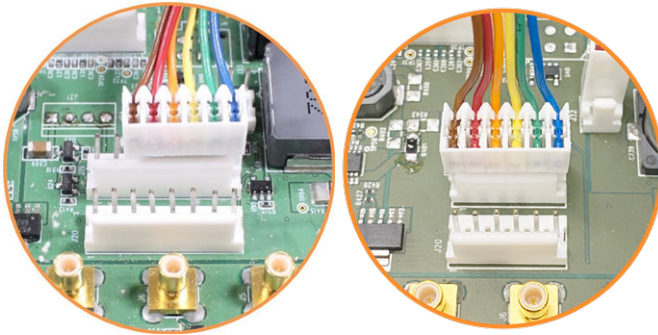


Figure 13: [Left] J19 Connector with 8 pins, [Right] J19 Connector with 6 pins, seen from rear of unit.

- b. Using the supplied cable ties, secure the cable, part number 8195-0000-5000, from the option card to the white nylon cable tie holders fastened to the mainboard (see figure below). Use the fastener closest to your installation location.

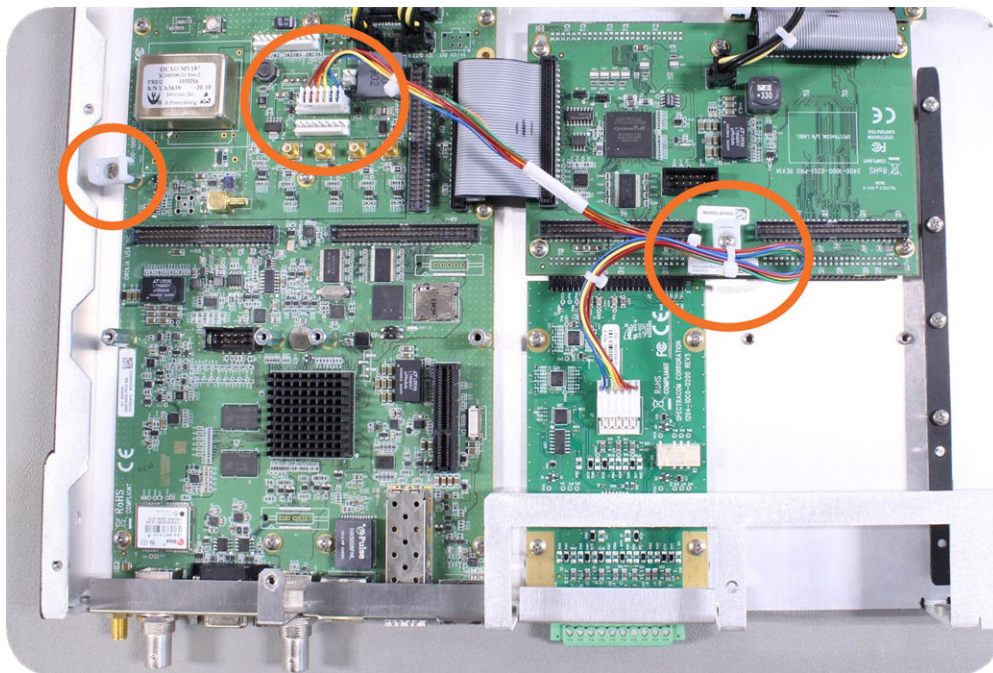


Figure 14: Cable routing

[11]: NENA Card, Cable Installation

Additional steps for the installation of the NENA card (PN 1204-1F).



Note: The double-wide NENA card can only be installed in slots 1 & 2 on the SecureSync 2400.

- a. After installation in slots 1 and 2, connect the supplied cable, part number 8195-0000-5000, to the mainboard connector J19. If your connector has 8 pins, use pins 3 - 8 as shown in the figure below.

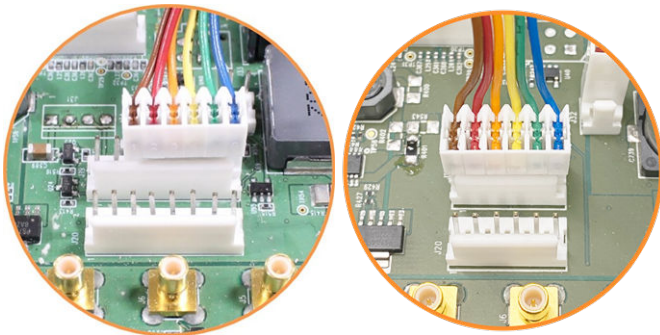


Figure 15: [Left] J19 Connector with 8 pins, [Right] J19 Connector with 6 pins, seen from rear of unit.

- b. Using the supplied cable ties, secure the cable, part number 8195-0000-5000, from the option card to the white nylon cable tie holder fastened to the mainboard (see figure below).

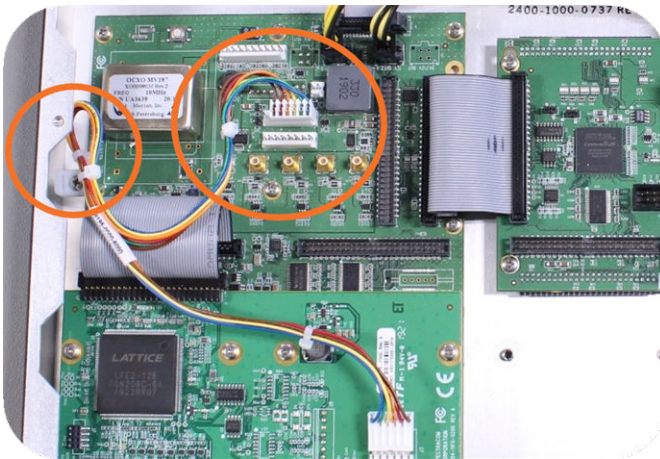


Figure 16: Cable routing

[12]: Verifying HW Detection and SW Update

Complete the Option Card installation procedure by verifying that SecureSync detected the card, and by updating the system software:

- a. Re-install the top cover of the unit chassis (housing), using the saved screws.



Caution: Ensure that screw holes on the card are properly lined up and secured to the chassis before powering the unit up, otherwise damage to the equipment may result.

- b. Power on the unit.
- c. Verify the successful installation by ensuring the card has been detected:

Open a web browser, log in to the SecureSync Web UI, and navigate to **INTERFACES > OPTION CARDS**: The new card will be displayed in the list.

- » If the card **does not** appear to be properly identified, proceed with the Software update as described below, and then navigate to **INTERFACES > OPTION CARDS** again to confirm the card has been detected.
- » If the card has been detected properly, proceed with the Software update as described below to ensure SecureSync and the newly installed card are using the same, latest available version.

Updating the System Software

Even if the newly installed option card has been detected, and even if the latest System Software version is installed on your SecureSync unit, it is recommended to (re-)install the software to ensure both SecureSync, and the option card are using the latest software:

Safran periodically releases new versions of software for SecureSync. These updates are offered for free and made available for download from the Safran website. If you register your product, you will be notified of software updates.

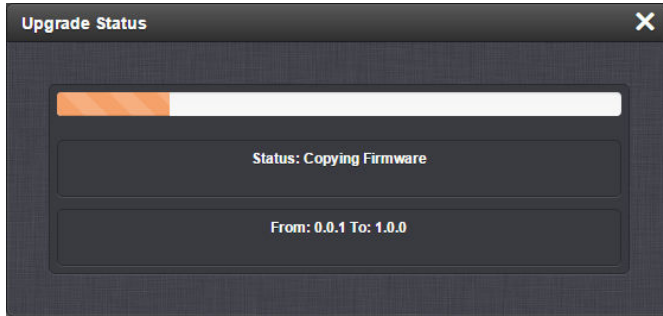
To carry out a software update:

1. In the Web UI, navigate to **Tools > Upgrade/Backup**.
2. Determine your **System** software version in the System Configuration panel: Proceed to the next step if it is lower than the software version you plan on installing.
3. Download the latest upgrade software bundle from the Safran website onto your PC.
4. Perform the actual upgrade by navigating to **TOOLS > Upgrade/Backup > Actions: Update System Software**. Upload the upgrade software bundle previously downloaded onto your PC (`securesync-[VERSION].squashfs`).

Once you have uploaded the software bundle, the following checkbox options will be presented:

- » **Perform update:** Perform the software upgrade.
- » **Perform clean update:** Factory settings will be applied during the upgrade; any custom settings you may have applied previously will be overwritten! This includes the unit's static IP address (if you applied one): DHCP will be enabled and the saved static address set to default. Also note that the browser session will terminate: After reconfiguring the unit's IP address, you will need to login to the Web UI in a new browser session.

5. Click **Submit** to carry out the update. A progress bar will provide real-time status information:



6. Verify that the update was successful: Navigate to **Tools > Upgrade/Backup**, and confirm the new SW version in the **System Configuration** panel.



Note: Should you use DHCP, a new IP address may be assigned to your unit, and you may have to point your web browser to it.

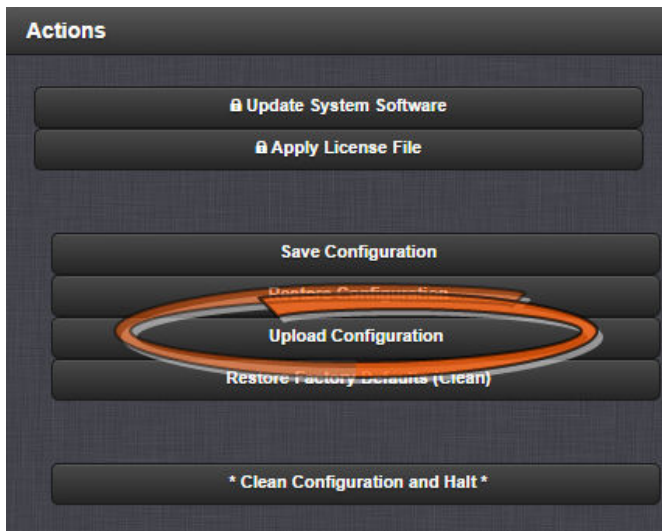
[13]: Restoring Reference Priority Configuration

If you saved your Reference Priority configuration under STEP [2], you can now restore it:

Uploading Configuration Files

To upload configuration files from a PC:

1. Navigate to **TOOLS > SYSTEM: Upgrade/Backup**.
2. In the **Actions** panel, click the **Upload Configuration** button.



3. Click **Choose File** in the window that displays, and navigate to the directory on your PC where the bundled file is stored.
4. Click the **Upload** button. SecureSync saves the uploaded bundled file in the `/home/spectracom/xfer/config/` directory.
5. To use the new configuration file for this SecureSync, click the **Restore Configuration** button.

Restoring the System Configuration

To restore the System Configuration:

1. Navigate to **TOOLS > SYSTEM: Upgrade/Backup**.
2. In the **Actions** panel, click **Restore Configuration**.
3. Click **OK** in the grey confirmation window. The system will restore the configuration using the bundled file stored at `/home/spectracom/xfer/config/SecureSync.conf`, then reboot in order to read the new configuration file. Once powered back up, SecureSync will be configured with the previously stored file.

Technical Support

To request technical support for your SecureSync unit, please go to the "[Timing Support](https://safran-navigation-timing.com/support-hub)" page of the Safran Trusted 4D website (<https://safran-navigation-timing.com/support-hub>), where you can not only submit a support request, but also find additional technical documentation.

You can also email us directly at timingsupport@nav-timing.safrangroup.com.

Phone support is available during regular office hours under the telephone numbers listed below.

To speed up the diagnosis of your SecureSync, please send us:

- » the current **product configuration**, and
- » the **events log**, if applicable.

Thank you for your cooperation.

Regional Contact

Safran Trusted 4D operates globally and has offices in several locations around the world. Our main offices are listed below:

| Country | Location | Phone |
|---------|--------------------|----------------------|
| France | Les Ulis | +33 (0)1 64 53 39 80 |
| Spain | Granada | +34 958 285 024 |
| USA | West Henrietta, NY | +1 585 321 5800 |

Additional regional contact information can be found on the [Contact page](https://safran-navigation-timing.com/contact/) of the Safran website (<https://safran-navigation-timing.com/contact/>).

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