



## PRODUCT SERVICE BULLETIN

### #162

Firmware Upgrade Procedure for SCU 1354 and GHC  
4.0.9014.14574 and newer revisions.

This Service Bulletin outlines important information to upgrade the firmware of an existing TSC 900 GHC and SCU Controller in a Thomson Power Systems TS 870, TS970 and TS 880 Automatic Transfer Switch.

# PRODUCT SERVICE BULLETIN #162

---

*SUBJECT: GHC and SCU Firmware Upgrade Procedure to a Newer Version*

---

## 1 Overview

This Service Bulletin outlines important information to upgrade the firmware of an existing TSC 900 GHC and SCU Controller in a Thomson Power Systems TS 870, TS970 and TS 880 Automatic Transfer Switch. This new update enhances the functionality of the TSC900 Controller and communication between the SCU and GHC.

A USB flash drive, internet access, an SD card reader, and a Windows PC are required.

Follow the precautions below.

If at any time assistance is required, contact Thomson Power Systems by phone (1-888-888-0110) or email ([thomsonps.support@regalrexnord.com](mailto:thomsonps.support@regalrexnord.com))

Note: if you already have a GHC with 4.09 and are upgrading the SCU from firmware version 1353, please jump to Appendix A: Performing an upgrade from 1353 to 1354.

## 2 Precautions:

All work must be conducted by qualified electrical personnel utilizing safe work practices and appropriate Personal Protective Equipment (PPE). Failure to comply may result in injury or death.

### 2.1 Electrical Precautions



#### **HAZARD OF ELECTRICAL SHOCK, EXPLOSION, OR ARC FLASH**

Do not open the door to the Automatic Transfer Switch until ALL power sources are disconnected and lock-out/tag-out process is completed.



On Automatic Transfer Switches supplied with current transformers, **short the CT terminals before unplugging the controller CT input connectors.**

## 2.2 Static Precautions

### CAUTION!!!

This equipment contains static-sensitive parts. Please always observe the following anti-static precautions when handling this equipment. Failure to observe these precautions may cause equipment failure and/or damage.



#### The following precautions must be observed:

- Discharge body static charge before handling the equipment (maintain exposed body contact with a properly grounded surface while handling the equipment, a grounding wrist strap can/should also be utilized).
- Do not touch any components on the printed circuit board with your hands or any other conductive equipment.
- Do not place the equipment on or near materials such as Styrofoam, plastic and vinyl. Place the equipment on properly grounded surfaces and only use an anti-static bag for transporting the equipment.

## Contents

1	Overview .....	1
2	Precautions: .....	1
2.1	Electrical Precautions .....	1
2.2	Static Precautions .....	2
3	Preparation. ....	5
3.1	Determine the current GHC and SCU Firmware versions. ....	5
3.2	Record current configurations and custom changes.....	6
3.3	Install the RS232 Cable from the SCU to GHC. ....	7
3.4	Installing the GHC Firmware.....	8
3.5	Upgrading the SCU Firmware .....	14
3.6	Import and Verify Configuration. ....	19
3.7	Finishing the upgrade .....	21
4	SD Card reformat Instructions for SanDisk Industrial cards. ....	23
4.1	Overview.....	23
4.2	Precautions:.....	23
5	Instructions .....	25
5.1	Re-format the existing SD card from the SCU. ....	25
5.2	Re-format the existing SD Card from the GHC. ....	27
6	Troubleshooting.....	28
6.1	How to “Refresh Settings” on the GHC .....	29
7	Version History.....	30
7.1	SCU Firmware Version .....	30
7.2	GHC Firmware Version .....	30
7.3	Compatibility .....	30
1	Appendix A: Performing an upgrade from 1353 to 1354 .....	31
1.1	Overview.....	31
1.2	Precautions:.....	31
1.3	Path 1: Full SD Card Replacement (SCU 1354 Preloaded Card) .....	32
1.4	Path 2: Manual Update Using Downloaded Files (Field Update on Existing SD Card) .....	35

---

**NOTE:** *The Screen Shots in this document are for reference only. The version information displayed may be different from your upgrade. **ALWAYS** refer to version information in Section 7 or information provided by the Thomson Power Systems Service department, when verifying your installation versions.*

---

### 3 Preparation.

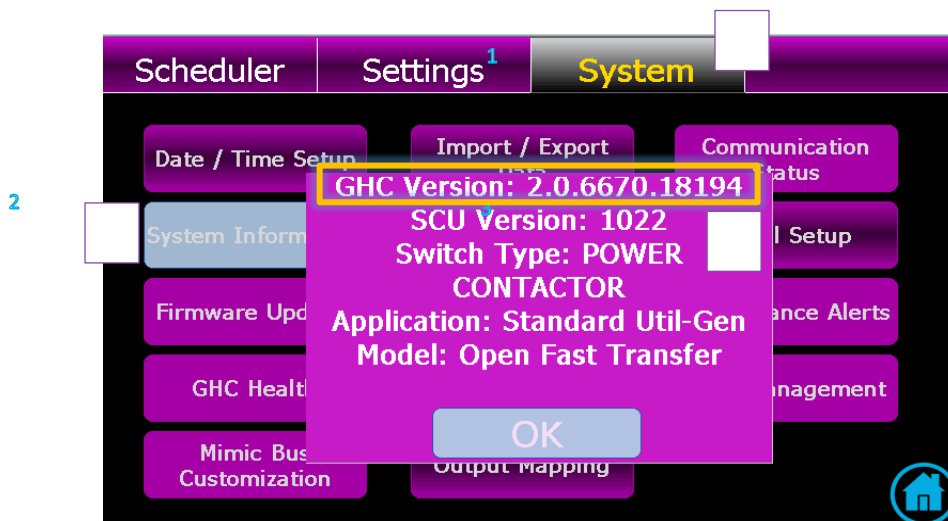
**Prevent the ATS from transferring to the alternate source during the upgrade.**

- Open the ATS door to get access to the TSC900 controller located on the door.
- If the Utility power is available, remove the Engine Start contact on the SCU controller by unplugging the corresponding connector on the TSC900 controller. Alternatively, you can set your generator controls from AUTO to STOP.
- If the ATS is running on a Generator, place the Generator controls from AUTO to RUN
- On Dual Generator applications, remove the Engine Start contact of the alternate source.
- The SCU controller and SD card are static-sensitive. Discharge static (use grounded surface or wrist strap) before handling. Hold the SD card by the edges; avoid touching the connector pins.
- Only qualified electrical personnel with proper PPE. Lock-out/tag-out all ATS and SCU power before opening to prevent shock, arc flash, or damage.

#### 3.1 Determine the current GHC and SCU Firmware versions.

Go to the TSC900 system that is intended for upgrade.

Under typical conditions, navigate to the **System [1]** Page and press the **System Information [2]** button.



Record the parameters shown in the **System Information** pop-up. A digital picture of this screen is recommended.

### 3.2 Record current configurations and custom changes.

Take note of the current configurations that have been set in the **settings menu** for Voltage, phases, and phase rotation. Any changes to timers, input, and output mapping will also need to be recorded, as these will all be reverted to factory settings and will require reconfiguration.

A clear and readable digital photo of these parameters is required.

Settings		System			
Advanced	▼	Setting	Min	Max	Value
All		System Phases	1	3	Three Phase
System	➤	System Voltage	0	25000	3P4W 277Y/480V
Options	➤	System Frequency	50	60	60 Hz
Load Shed	➤	Phase Rotation Reversed	0	0	No
Delay	➤	Rated GEN Power	0	5000	2500 KW
Set Points	➤	CT Ratio	1	1000	1
Refresh Settings		PT Ratio	1	500	2.5
		ATS Name	1	1000	AT5

Sync	Scheduler	Settings	System
IP01: Terminal Test Request	✓	IP09: Not Mapped	✗
IP02: Unfail request (terminal)	✓	IP10: Not Mapped	
IP03: Disconnect Request	✓	IP11: Not Mapped	Edit
IP04: Not Mapped		IP12: Not Mapped	
IP05: Not Mapped		IP13: Timer Remote Clear Request (Terminal)	✓
IP06: Request Manual Mode (terminal)	✓	IP14: Non-auto Off Request (terminal)	✓
IP07: Not Mapped		IP15: Unhalt request (terminal)	✓
IP08: Not Mapped		IP16: Terminal Exercise Request	✓

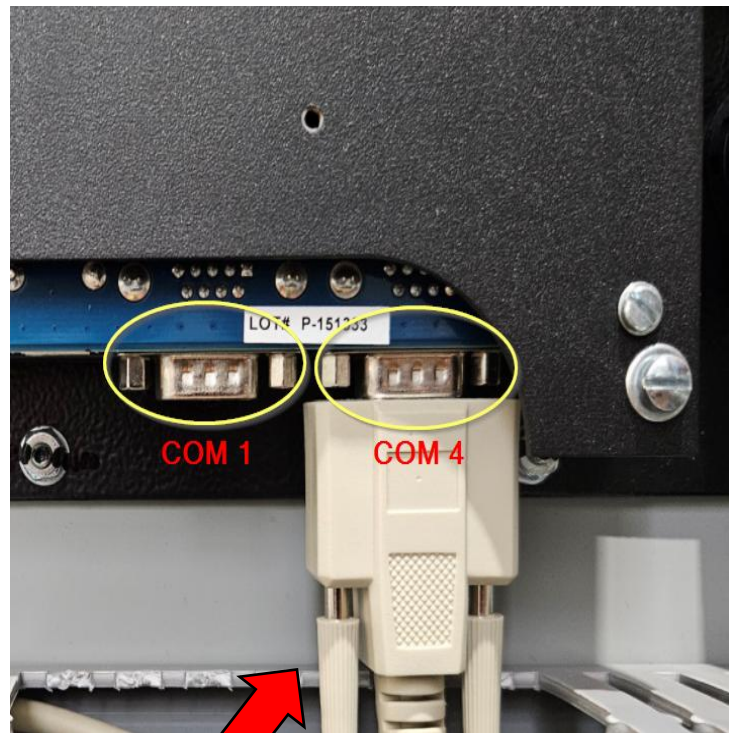
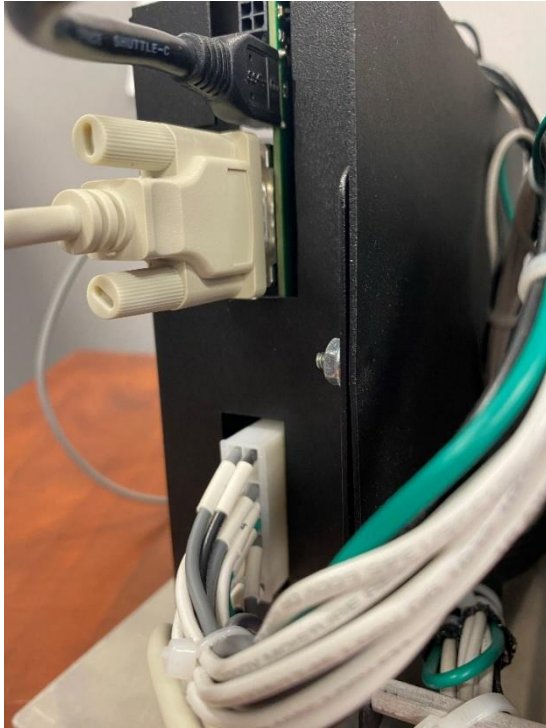
Settings	System		
OP01: User Def Output 1	🔒	●	✗
OP02: User Def Output 3	🔒	●	
OP03: User Def Output 2	🔒	●	Edit
OP04: ATS on SRC 2		●	
OP05: ATS on SRC 2		●	Inv.
OP06: ATS on SRC 1		●	Inv.
OP07: Control Manual		●	Inv.
OP08: Not Mapped			?

### 3.3 Install the RS232 Cable from the SCU to GHC.

The RS232 **Non-Null** Modem **male to female** will need to be connected from the GHC display to the bottom of the controller for communication between the two devices.

**This cable needs to be permanently installed. Removing this cable will cause loss of communication.**

**Note:** The RS232 cable **MUST** be connected to the right (COM4) port in the GHC when viewing from the rear of the GHC. If any devices are connected to COM 4 prior to this, please move them over to the left (COM1) port.

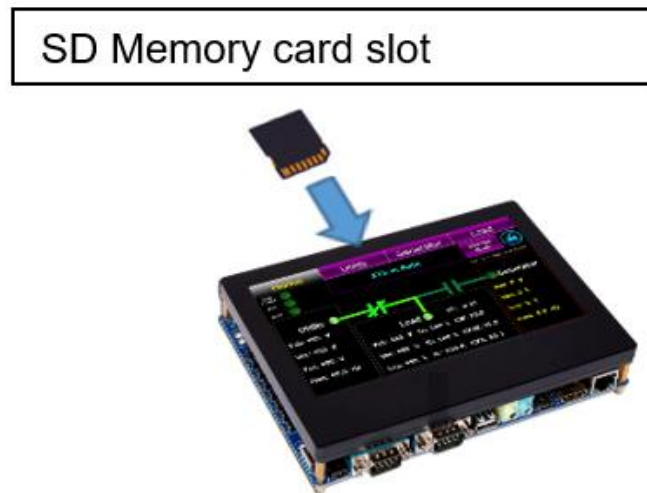


**Note:** Make sure the cable is fastened using the screws on both ends of the plugs. Do not overtighten these screws.



### 3.4 Installing the GHC Firmware

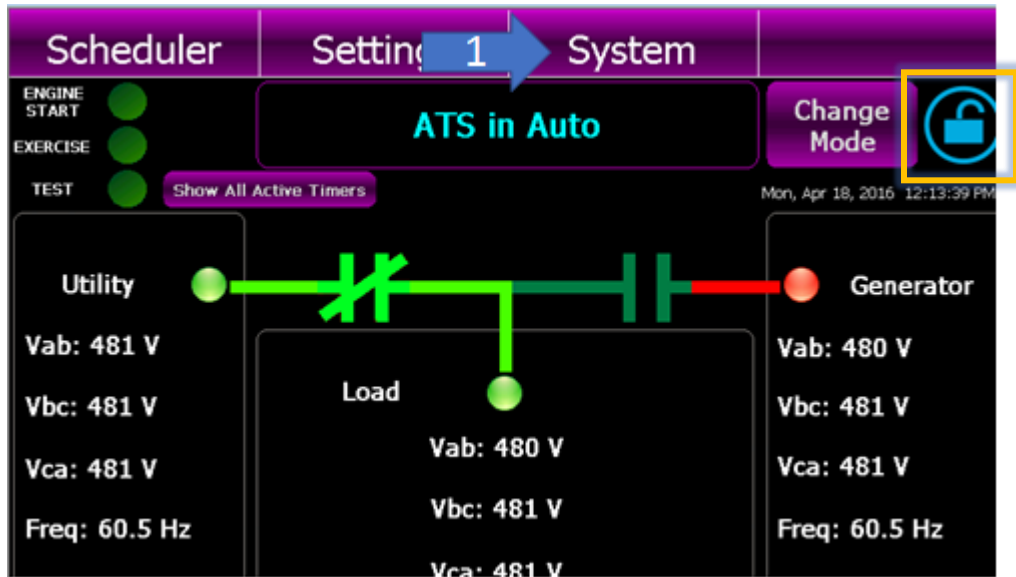
Ensure the new GHC firmware is installed before the new SCU firmware. Remove the old SD Card by pushing the SD card in until you hear a click and then release. Insert the new SanDisk Industrial SD card labeled with Rev 4.0.9047.20660 into the SD card slot located on the top of the GHC display. Ensure the card is clicked in.



- 3.4.1 On the GHC home screen, press the **LOCK** in the upper right corner. Log into the unit as **admin**, default password is “**pass**”.

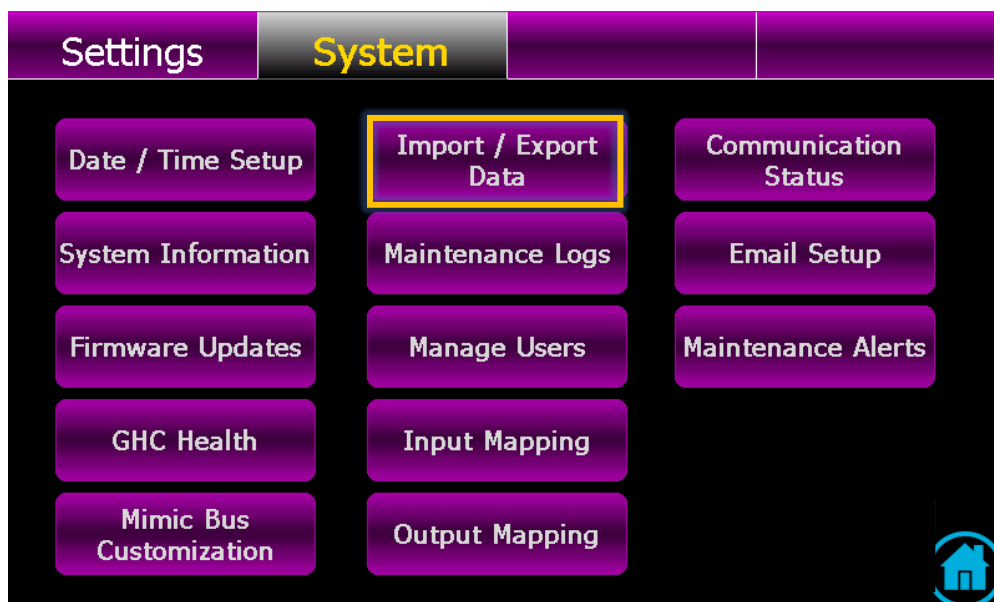


3.4.2 Swipe the top GHC menu to access the System page.



3.4.3 Exporting your Configuration

Press the Import/Export Data button



Insert the USB flash drive to back up the settings, and wait a few seconds for the “Hard disk” option to appear. Confirm that “Hard Disk” is selected on the left-hand side by tapping it.

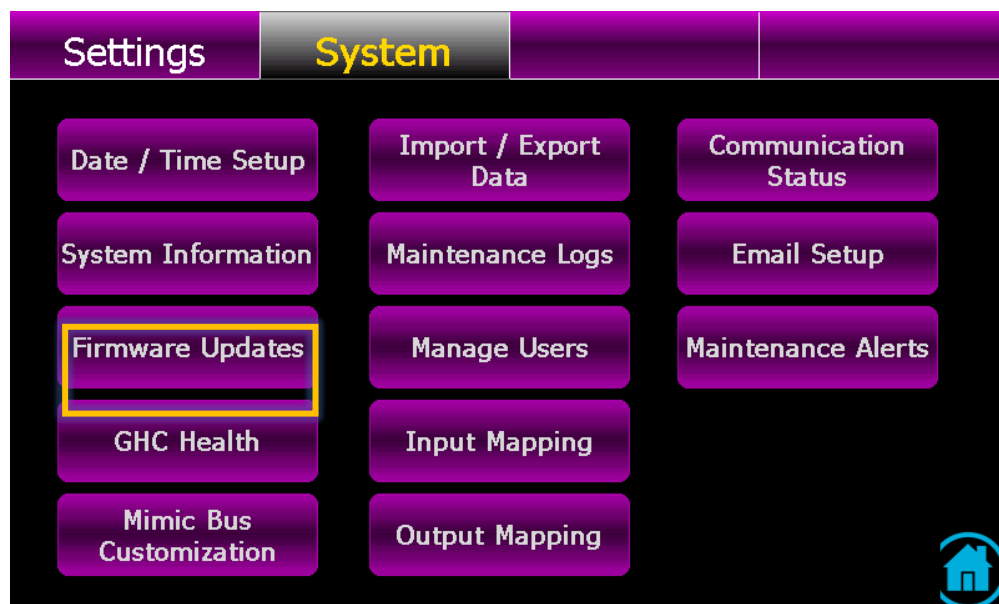
Press the “Backup Database” button. Once completed, press the “Export Configuration” button.

If required, you can also back up the Events, Alarms, and the SCU Logs.

Once the settings are successfully backed up, press the red “X” close button in the upper right corner of the screen to return to the System screen.

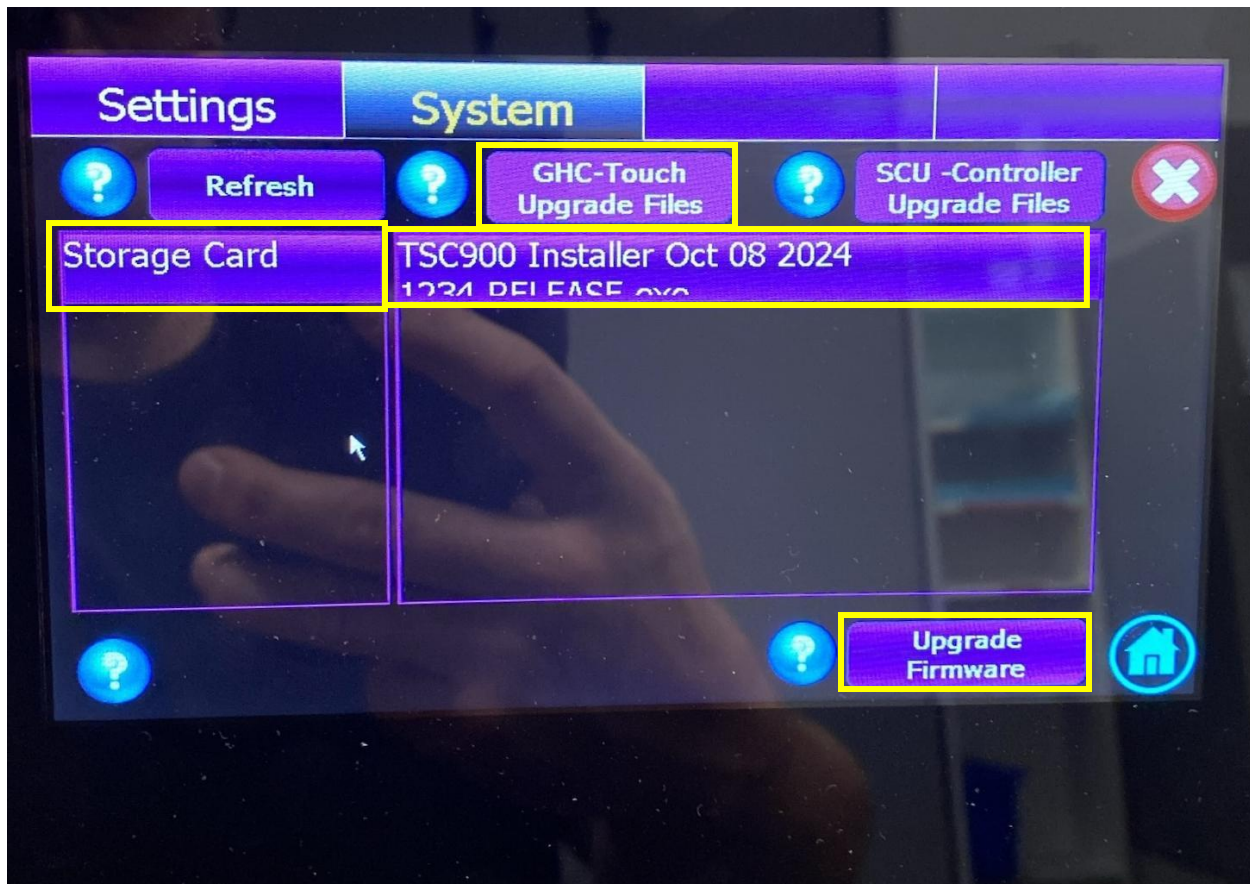


3.4.4 Press the Firmware Updates button to open the Firmware Update page.



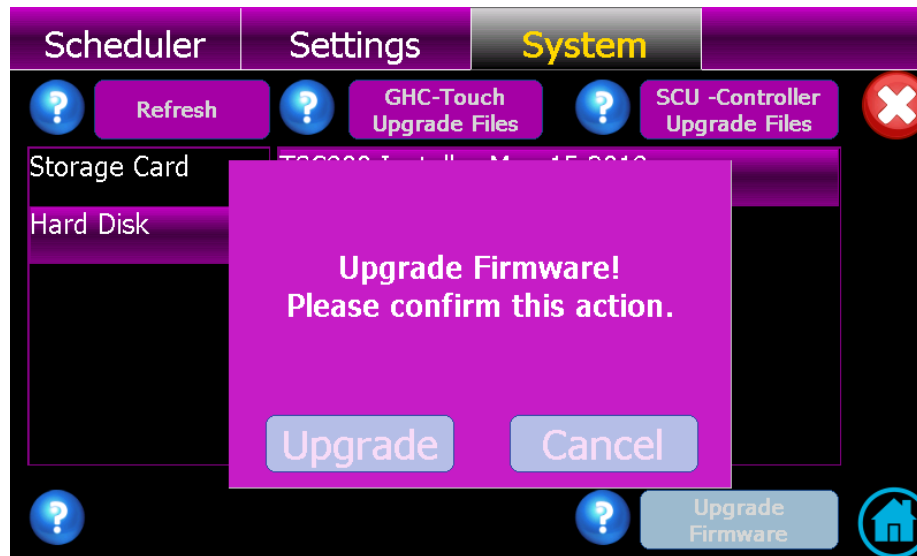
3.4.5 Select “Storage Card” to access the GHC Installer file, then select the “GHC-Touch Upgrade Files” button at the top of the screen.

Under storage card, select the “TSC900 Installer Oct 08 2024 1234 RELEASE” file. Once highlighted, press “Upgrade Firmware” in the bottom right corner and confirm the update. This will start the GHC update procedure.



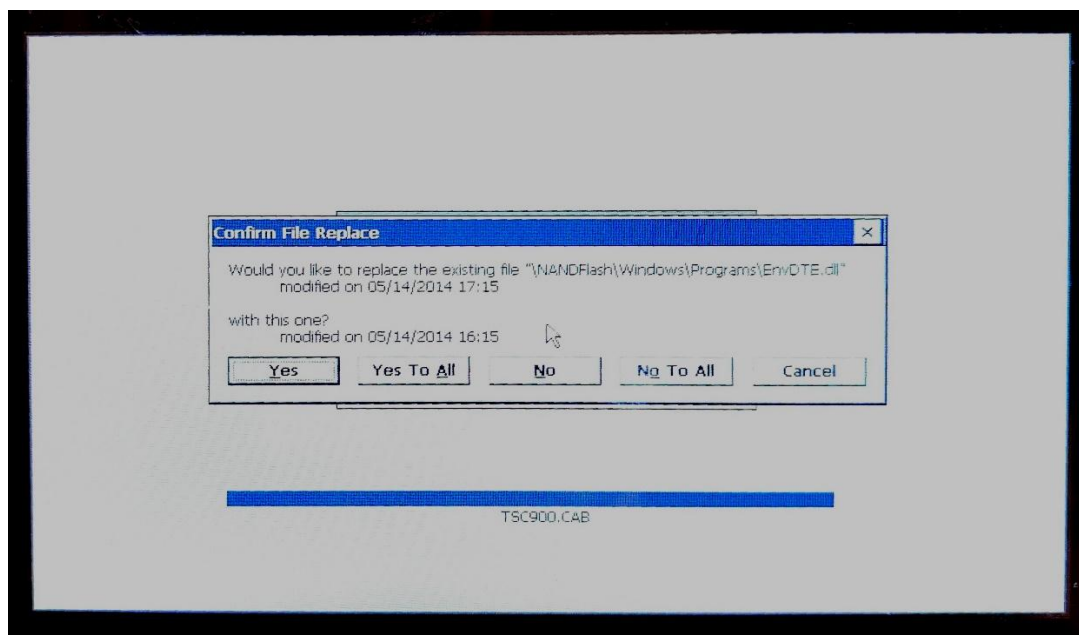
*If the storage card is not visible, allow 5-10 seconds for the GHC to discover the device, and press **Refresh** again. If unsuccessful, check that the SD card has been inserted correctly and clicked in.*

Make sure the “exe” file is highlighted, then select the “Upgrade Firmware”. Press Upgrade to confirm action.



3.4.6 The system will automatically reboot to install the new GHC firmware.

NOTE: A message may appear asking if you would like to replace the existing file. Press **“YES TO ALL”** to ensure the update is carried out successfully.





3.4.7 When the GHC firmware is finished installing, your GHC will show the following screen



At this time, the GHC firmware has been loaded, and the picture will remain on this screen until the SCU firmware has been upgraded.

### 3.5 Upgrading the SCU Firmware

*There are special situations where you will be directed by the factory to begin at this step first.*

#### 3.5.1 Prepare the SCU to be powered down to remove the SD Card.

**Prevent the ATS from transferring to the alternate source during the upgrade.**

**(If not already done)**

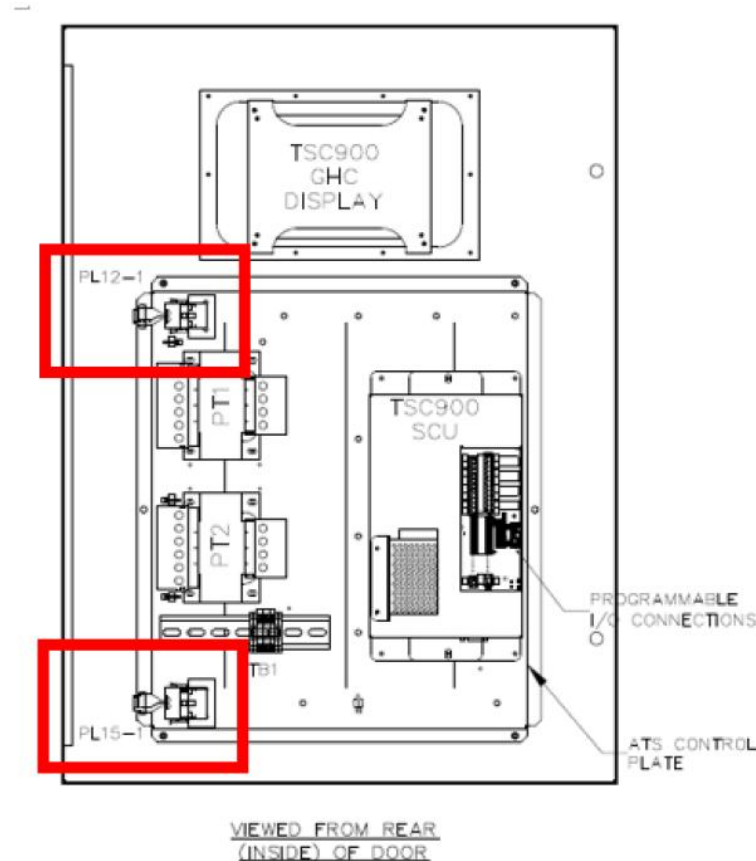
- Open the ATS door to get access to the TSC900 controller located on the door.
- If the Utility power is available, remove the Engine Start contact on the SCU controller by unplugging the corresponding connector (S1 or S2) on the TSC900 controller. Alternatively, you can set your generator controls from AUTO to STOP.
- If the ATS is running on a Generator, place the Generator controls from AUTO to RUN
- On Dual Generator applications, remove the Engine Start contact of the alternate source.



**(2 pin engine start contacts circled in red)**

### 3.5.2 Power down the TSC900 SCU.

Power down the controller by disconnecting the PL12 Voltage sensing plug and the PL15 power chassis isolation plug located on the inside of the ATS door. These plugs will be located on the top and bottom of the door.



Allow the controller a minimum of 5 minutes to power down and completely discharge, as there are capacitors installed in the circuit board. Once the controller is completely powered down, all LEDs will turn OFF.

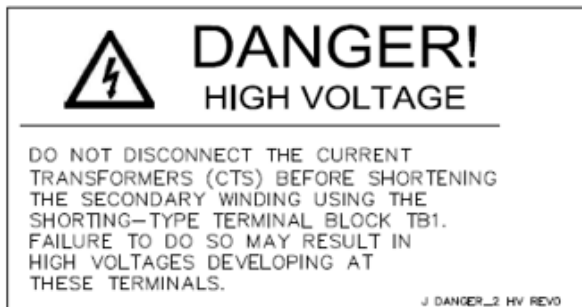
**Note:** Failure to do this may cause the SCU to not reboot successfully when powered back on and may cause harm to the update procedure when returning power to the controller.



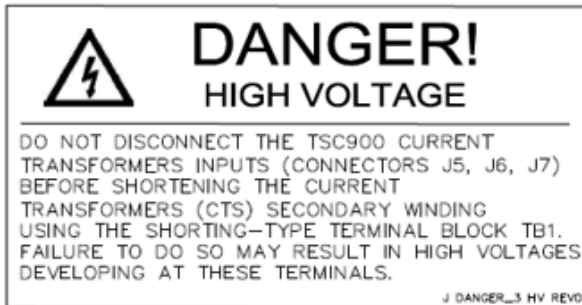
### 3.5.3 Disconnect all plugs on the back of the Controller.

Once the controller has completely powered down after 5 minutes, disconnect all the plugs connecting to the controller.

**Note:** If CTs are installed, they will need to be **shorted** at the **CT shorting terminal blocks** prior to disconnecting the CT plugs on the top right of the controller. Failure to do so may cause serious damage to the ATS and potentially severe or life-threatening injuries.

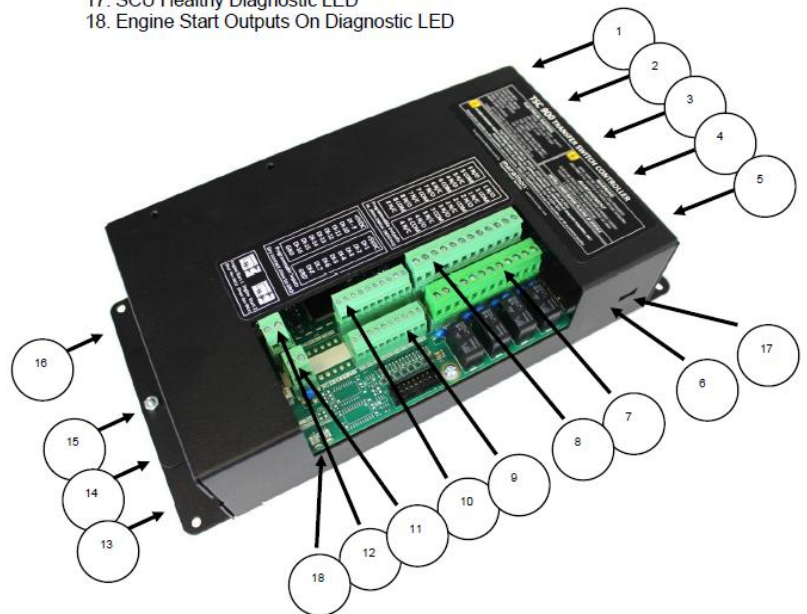


NOTE: LOCATE IN THE PROXIMITY OF THE CT SHORTENING TYPE TERMINAL BLOCKS TB1



NOTE: LOCATE IN THE PROXIMITY OF THE TSC900 CURRENT INPUTS (CONNECTORS J5, J6, J7)

1. J9 – 24VDC Auxiliary Control Power
2. J2 – Utility Voltage Sensing (PH A, B, C, N)
3. J3 – Generator Voltage Sensing (PH A, B, C, N)
4. J4 – Load Voltage Sensing (PH A, B, C, N)
5. J5,6,7,8 – Load Current Sensing (PH A, B, C, N)
6. J21 – SCU SD Memory Card (Card Located inside case-not shown)
7. J11a Programmable Output Contacts #1-4
8. J11b Programmable Output Contacts #5-8
9. J12a Programmable Inputs #1-8
10. J12b Programmable Inputs #9-16
11. J10a Engine Start 2 Contact (Single Gen SRC 2)
12. J10b Engine Start 1 Contact (Dual Gen SRC 1)
13. J13 – GHC Aux 5VDC Power
14. J14 – GHC USB Port
15. J15 – RS232 Programming Port
16. J1 – ATS Control
17. SCU Healthy Diagnostic LED
18. Engine Start Outputs On Diagnostic LED

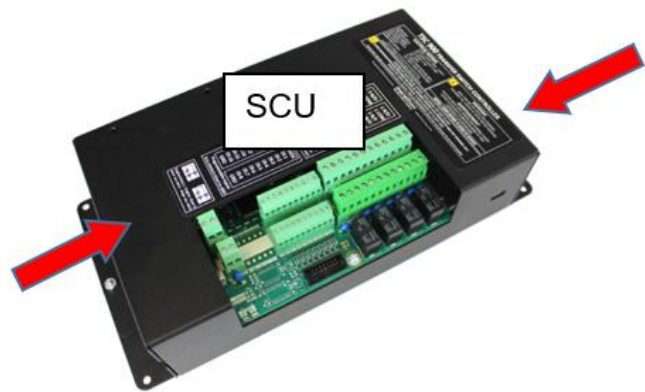
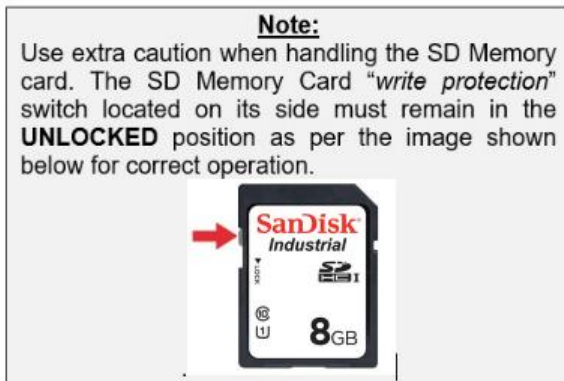


### 3.5.4 Remove the controller cover and replace the SD card.

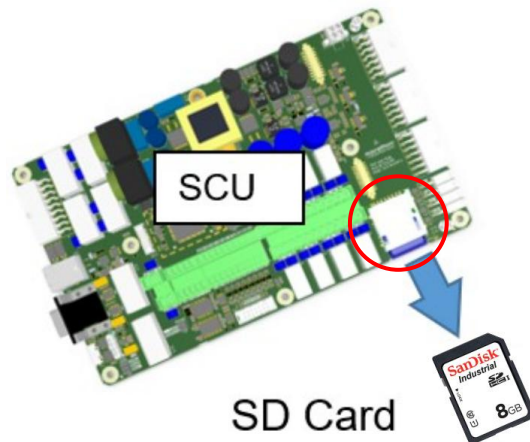
Once all plugs have been disconnected, remove the two bolts that hold the controller's metal cover. There will be one located at the bottom and one at the top.

Once the cover is removed, locate the SD card slot in the top right corner. If a current SD card is installed, extract the SD Card. First, push the SD Card towards the socket until a "click" sound is heard, then release. This will partially pop the card out of its socket, which will allow it to be fully removed from the SCU controller.

Insert the new SD Card by pushing the card into the slot and making sure it clicks in. Once the click is heard, release pressure, and the SD Card will now be held in position.



Remove 2 cover screws to remove SCU cover from the SCU



### 3.5.5 Re-install the SCU cover and connect power.

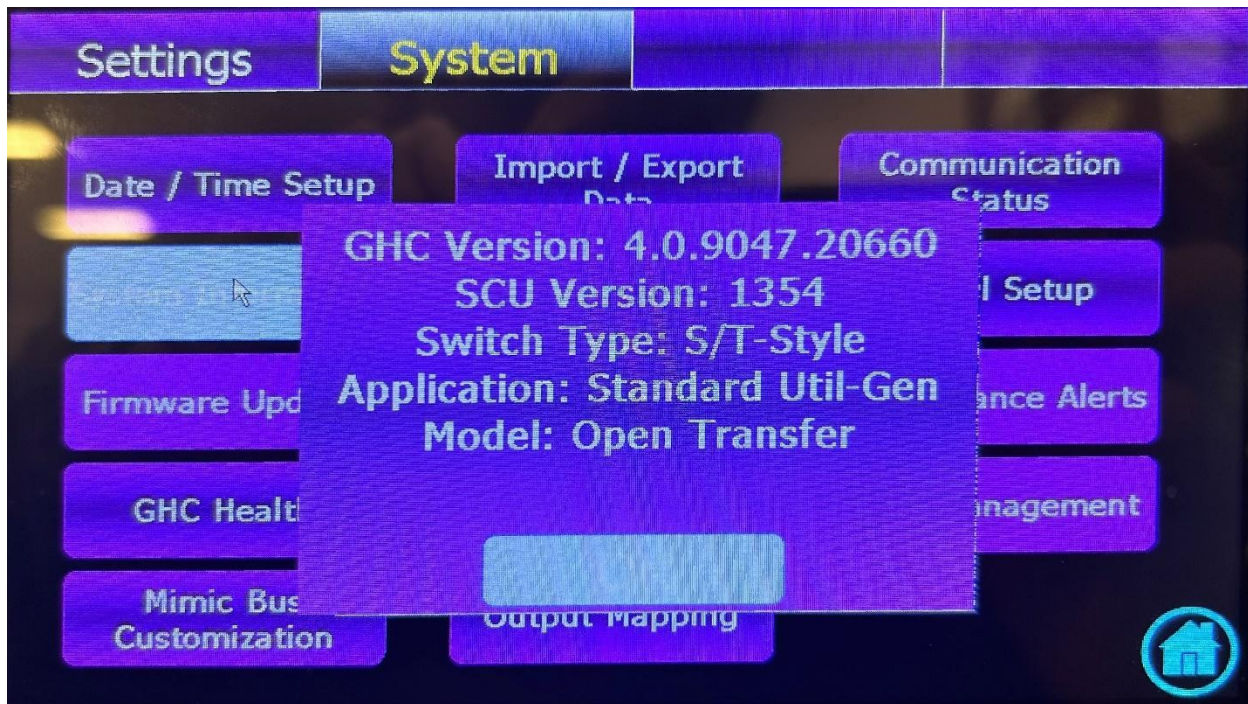
Once the SD card has been swapped out, bolt the controller cover back on. Re-connect all connectors back into the controller, leaving the Engine Start connector disconnected.

**Note:** CT Terminals can be un-shorted at this stage as they are no longer open-ended and have been plugged back into the controller.

Power the SCU back up by plugging in the PL12 voltage sensing isolation plug and the PL15 power chassis isolation plug.

**Note:** During the power-up, the screen may take 10-15 minutes to complete the SCU update and display the home screen.

### 3.5.6 After rebooting, confirm the SCU firmware version matches the version of information supplied by Thomson Power Systems



Refer to section 7 **Error! Reference source not found.** for current version information.

---

*If the installed version does not match the expected version:*

*Consult Thomson Power Systems by phone (1-888-888-0110) or email ([thomsonps.support@regalrexnord.com](mailto:thomsonps.support@regalrexnord.com)) and have the unit serial number ready.*

---



### 3.6 Import and Verify Configuration.

#### 3.6.1 Import Configuration

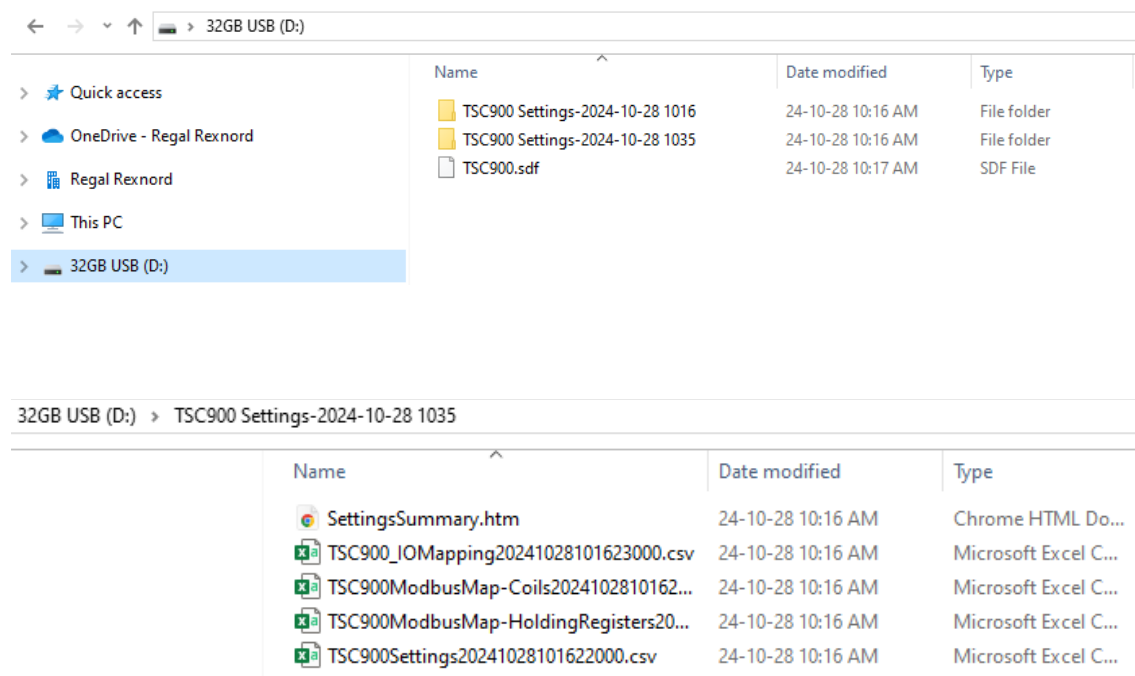
With the USB still connected, navigate to the System page, return to the “Import/Export Data” tab. Ensure “Hard Disk” is selected on the left-hand side (must be the same USB flash drive the settings were backed up on), then press “Import Database”. Once the import is completed, the GHC will automatically reboot to apply the imported settings.



#### 3.6.2 Verify Configuration

Once the GHC has completed the boot up and returned to the home page, navigate back to the System Tab and select Import/Export Settings. Press the Export Configuration button.

On the USB, there will be two folders, each dated and time-stamped. One folder will contain the backed-up configuration files and the other the current files. Compare the corresponding Excel files and ensure the settings are identical.



Also, visually compare the photos taken before the upgrade with the settings displayed on the GHC screen to confirm that all the settings were successfully exported.

If export/import was not successful or the pictures were not taken, the setting configurations will revert to factory 480V 3PH 4W, and any changes will need to be reconfigured to site voltage, phases, and phase rotation. Any custom changes to all other parameters, including communication settings, timers, inputs and outputs, and the Exerciser schedule, will also need to be reconfigured.

Please refer to the TSC900 Manual for more information on the factory configurations.

**Note:** If you had **Load Power Metering** or **MODBUS TCP/IP** remote communication enabled prior to the update, please contact Thomson Power Systems service to ensure these are reactivated.

Settings		System			
Advanced	▼	Setting	Min	Max	Value
All		? System Phases	1	3	Three Phase
System	➤	? System Voltage	0	25000	3P4W 277Y/480V V
Options	➤	? System Frequency	50	60	60 Hz
Load Shed	➤	? Phase Rotation Reversed	0	0	No
Delay	➤	? Rated GEN Power	0	5000	2500 KW
Set Points	➤	? CT Ratio	1	1000	1
Refresh Settings		? PT Ratio	1	500	2.5
		? ATS Name	1	1000	ATS

**NOTE:** The Screen Shots in this document are for reference only. The version information displayed may be different from your upgrade. **ALWAYS** refer to version information in **Section 7** or information provided by the Thomson Power Systems Service department, when verifying your installation versions.

### 3.7 Finishing the upgrade

Once the SCU and the GHC are both up to date and match per the table in section 7.1.3, this procedure is complete.

*Thomson may provide different information in some cases. Refer to the factory direction at that time.*

Verify the settings and configuration, and ensure the firmware matches the hardware application.

If it does not match,

How to “Refresh Settings” button.

Please see Section 6 for instructions on how to carry out “refresh settings” if required.

At this point, the disconnected engine start contacts can be reconnected, and the unit can be tested.

Return the ATS to Automatic Operation and return the gen controller to auto mode (if applicable).

Site permitting, perform Off-Load and On-Load tests as required. Refer to the **TSC900 Manual** for further details.

## 4 SD Card reformat Instructions for SanDisk Industrial cards.

### 4.1 Overview

This Service Bulletin outlines important information to reformat an SD card and add fresh firmware files onto the same card in the event that the regular upgrade procedure failed or is outdated. **This process is only to be carried out when instructed to do so by Thomson Power Systems.**

If at any time assistance is required, contact Thomson Power Systems by phone (1-888-888-0110) or email ([thomsonps.support@regalrexnord.com](mailto:thomsonps.support@regalrexnord.com))

An SD Card reader, Internet access, and a Windows PC are required.

### 4.2 Precautions:

All work must be conducted by qualified electrical personnel utilizing safe work practices and appropriate Personal Protective Equipment (PPE). Failure to comply may result in injury or death.

#### 4.2.1 Electrical Precautions



#### HAZARD OF ELECTRICAL SHOCK, EXPLOSION, OR ARC FLASH

Do not open the door to the Automatic Transfer Switch until ALL power sources are disconnected and lock-out/tag-out process is completed.



#### HAZARD OF ELECTRICAL SHOCK

On Automatic Transfer Switches supplied with current transformers, short the CT terminals before unplugging the controller CT input connectors.



#### 4.2.2 Static Precautions

##### **CAUTION!!!**

This equipment contains static-sensitive parts. Please always observe the following anti-static precautions when handling this equipment. Failure to observe these precautions may cause equipment failure and/or damage.



**The following precautions must be observed:**

- Discharge body static charge before handling the equipment (maintain exposed body contact with a properly grounded surface while handling the equipment, a grounding wrist strap can/should also be utilized).
- Do not touch any components on the printed circuit board with your hands or any other conductive equipment.
- Do not place the equipment on or near materials such as Styrofoam, plastic, and vinyl. Place the equipment on properly grounded surfaces and only use an anti-static bag for transporting the equipment.

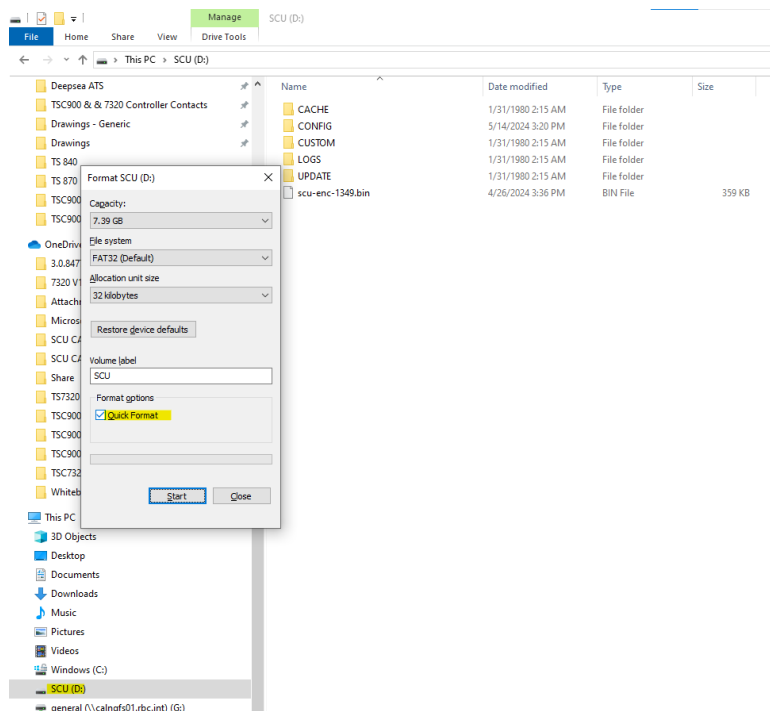
## 5 Instructions

Ensure you have received the files sent to you by a member of Thomson Support.

**Note:** Before removing the SCU SD card, please ensure you have fully powered down your SCU by confirming there are no lights on the board. This usually takes upwards of 5 minutes after removing power to the SCU. **Please refer to section 3.5 and onwards for instructions**, if required.

### 5.1 Re-format the existing SD card from the SCU.

1. Place the existing SanDisk SD card into the SD Card reader and then insert the reader into the laptop (or directly insert the SD card into the laptop if applicable)
2. On the left side of the file explorer, where it shows the SD card drive (It is usually the D: drive), open the D: drive and copy and paste all files onto your desktop (in case there is an issue, and you need to go back to the way it was)
3. After storing existing files, on the left side of the folder window, right-click on the D: drive and select “format.”
4. A screen will pop up, uncheck the box that says, “**quick format**” and then select “**start**”. This process will take a few minutes. Once completed, your card is formatted and ready for new files.

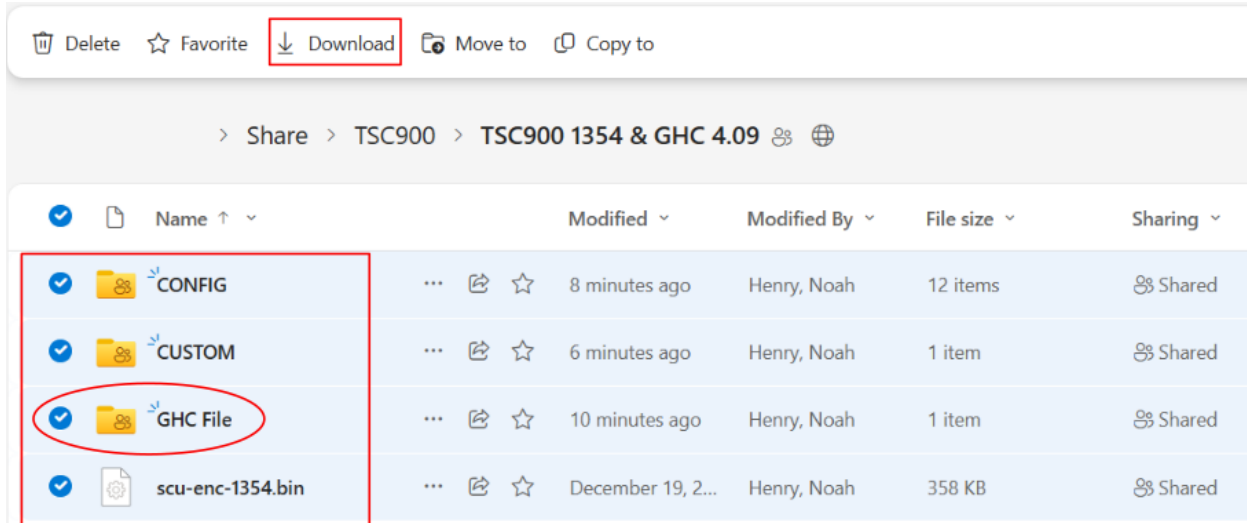


**Note:** Failure to uncheck “quick format” may result in failed formatting of the SD card and possibly cause further issues during the update.

#### 5.1.1 Downloading the new update files

You will receive the SCU files via a OneDrive link in your emails, which will contain folders labeled “CONFIG”, “CUSTOM”, “GHC FILE”, and a file labeled “scu-enc-1354.bin”.

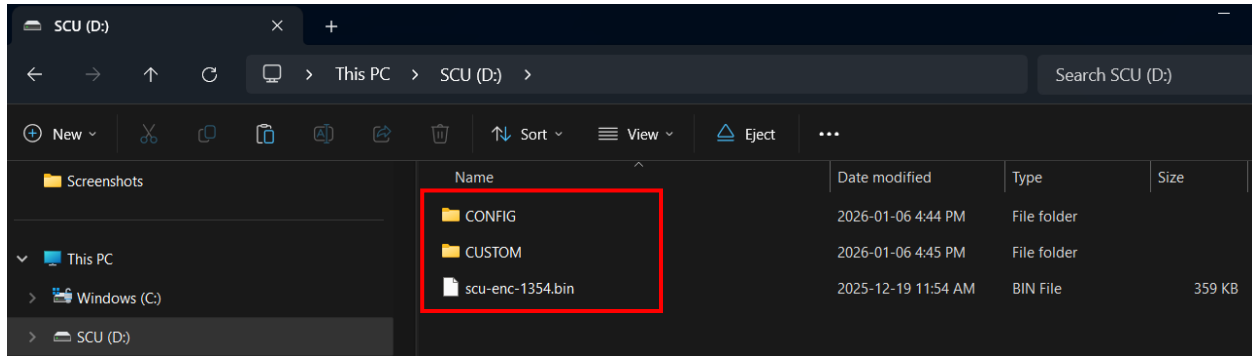
Note: The (bin) file may have a different name depending on the type of firmware we are sending you for your ATS model & application type.



Select all the files, and select the download button to save these files from the OneDrive folder into your “Downloads” folder.

### 5.1.2 Loading new files onto the SD Card:

Copy the config folder, custom folder, and .bin file from your downloads folder and paste them into your SD Card. In this example, it's the D: Drive.



Once the files have been successfully copied over to the SD card, eject the SD card in Windows, and remove the SD card reader from the laptop. It is now ready to be inserted back into the TSC900 controller.

Please now follow the instructions above from Section 3.5 onwards to complete the SCU update.

## 5.2 Re-format the existing SD Card from the GHC.

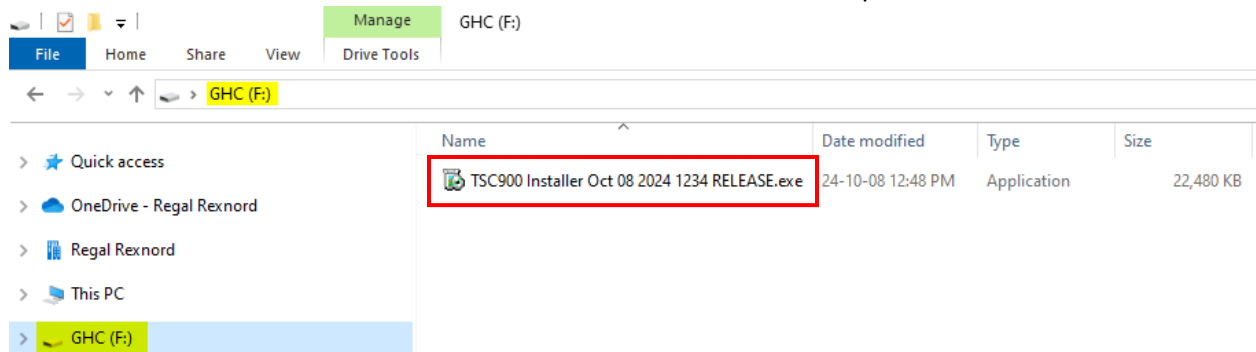
### 5.2.1 Preparing the SD Card

1. Please refer to the above SCU instructions on how to format the SD card, and change the name of the SD card (if necessary) to "GHC".
2. The GHC file will be sent in the same OneDrive link as the SCU files and will be labelled as "TSC900 Installer Oct 08, 2024 1234 RELEASE.exe".

### 5.2.2 Copying the installer file onto the GHC SD Card

1. Follow the procedure in section 5.1.1 above to save the installer from OneDrive to your downloads folder. If it was already downloaded during the SCU procedure, locate it from the downloads folder.
2. Copy the installer file from within the "GHC file" folder and paste it into the GHC SD Card drive.

3. Once the installer has been copied, eject the SD Card, and the card can be safely removed. Reinsert the SD card in the back of the GHC for the rest of the update.



#### 5.2.3 Completing the GHC update

Please refer to section 3.4 for instructions on how to complete the GHC update procedure.

## 6 Troubleshooting

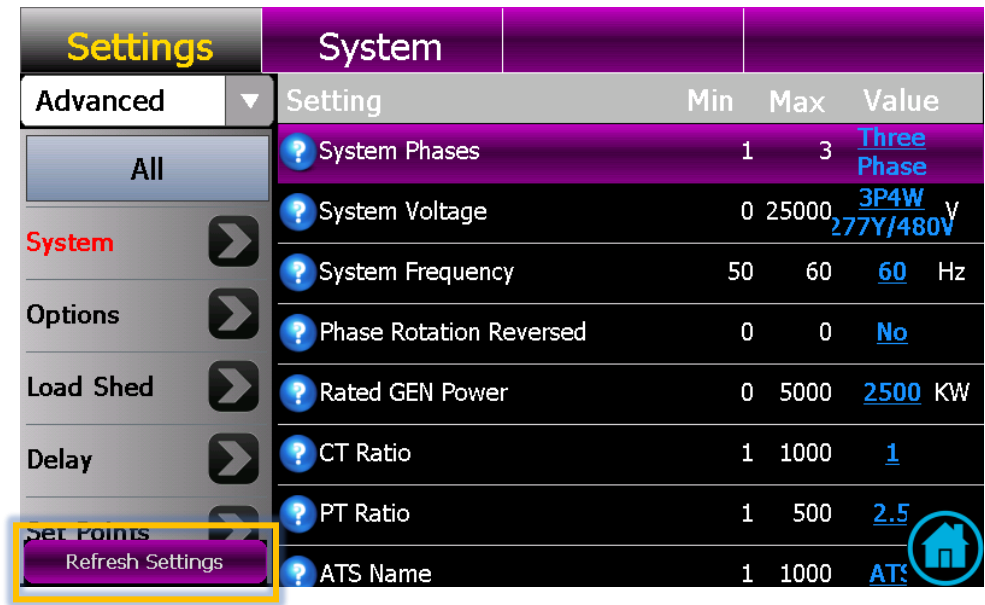
If at any time assistance is required, contact Thomson Power Systems by phone (1-888-888-0110) or email (Thomsonps.support@regalrexnord.com)

*When in doubt, contact the factory. Phone troubleshooting while at the equipment can resolve most issues, or verify the required equipment if parts are required.*

6.1 How to “Refresh Settings” on the GHC

With the GHC online, log in as **admin**, and navigate to the settings tab.

In the bottom left corner, press the **Refresh Settings** button, and the unit will reboot to refresh settings.



*If the Refresh Settings button is not visible, ensure operator has logged in as “admin”.*

## 7 Version History

### 7.1 SCU Firmware Version

<b>621</b> , 15/04/07	Original Release
<b>867</b> , 15/10/03	Add Closed Transition Transfer Capability, misc. feature enhancements & Bug Fixes
<b>888</b> , 15/10/28	Add Dual Source Capability, misc. feature enhancements & bug fixes
<b>902</b> , 15/11/18	Add Remote Load Dump Control (RLDC) feature capability
<b>1022</b> , 18/03/12	Add Power Contactor ATS Features and misc. new features & bug fixes
<b>1025</b> , 18/22/03	Power Contactor bug fixes
<b>1059</b> , 19/07/08	Reliability updates and bug fixes.
<b>1349</b> , 24/05/22	Communication enhancement and reliability updates
<b>1353</b> , 24/10/24	Resume from Non-Auto states and other improvements
<b>1354</b> , 26/01/06	Removed unnecessary SCU debug logging

### 7.2 GHC Firmware Version

<b>1.0.0.0</b> 15/04/07	Original Release
<b>1.1.0.xxxxx</b> 15/10/03	Add Closed Transition Transfer Capability, misc. feature enhancements & bug fixes
<b>1.1.0.16017</b> 15/10/30	Add Dual Source Capability, misc. feature enhancements & bug fixes
<b>1.1.5805.19916</b> 15/11/18	Add Remote Load Dump Control (RLDC) feature capability
<b>1.1.5952.22994</b> 16/04/19	Update Alarm Tags, GHC Firmware, misc. feature enhancements & bug fixes
<b>2.0.6643.24647</b> 18/10/03	Add Power Contactor ATS Features and misc. new features & bug fixes
<b>2.1.x.x</b> 19/505/15	Reliability Patch (Limited Release)
<b>3.0.7117.14882</b> 19/07/08	Reliability updates and bug fixes.
<b>4.0.8890.23621</b> 24/05/22	Communication enhancement and reliability updates
<b>4.0.9047.20660</b> 24/10/24	Modbus serial, TCP/IP and other reliability updates

### 7.3 Compatibility

<u>SCU Version</u>	<u>GHC Version (Official Release)</u>	<u>Upgrade Reference Document</u>
621	1.0.0.0	SVB141
867	1.1.0.xxxxx	SVB141
888	1.1.0.16017	SVB141
902	1.1.5805.19916 // 1.1.5952.22994	SVB141
1022	2.0.6643.24647	SVB 152
1025	2.0.6643.24647 // 2.1.x.x	SVB 152
1059	3.0.7117.14882	SVB 152
1349	4.0.8890.23621	SVB 162
1353	4.0.9047.20660	SVB 162 R3
<b>1354</b>	<b>4.0.9047.20660</b>	<b>SVB 162 R4 (This Document)</b>

*If an unlisted version is encountered on a system, consult the factory before performing upgrades.*

## 1 Appendix A: Performing an upgrade from 1353 to 1354

### 1.1 Overview

Overview: This appendix describes two supported methods to upgrade the TSC900 controller from SCU firmware 1353 to 1354. Both methods ensure the SCU firmware is updated with the SCU debug logging disabled, addressing recent communication performance enhancement recommendations.

- Path 1 (Full SD Card Replacement) involves installing a new SD card provided by Thomson Power Systems preloaded with SCU 1354 and copying over site-specific settings.
- Path 2 (Manual File Update) uses files downloaded from the Thomson support website to update the existing SD card in the field. In all cases, safety precautions and preservation of the site's configuration (Custom settings) are paramount

A USB flash drive, internet access, an SD card reader, and a Windows PC are required.

If at any time assistance is required, contact Thomson Power Systems by phone (1-888-888-0110) or email ([thomsonps.support@regalrexnord.com](mailto:thomsonps.support@regalrexnord.com))

### 1.2 Precautions:

All work must be conducted by qualified electrical personnel utilizing safe work practices and appropriate Personal Protective Equipment (PPE). Failure to comply may result in injury or death.

#### 1.2.1 Electrical Precautions



#### HAZARD OF ELECTRICAL SHOCK, EXPLOSION, OR ARC FLASH

Do not open the door to the Automatic Transfer Switch until ALL power sources are disconnected and lock-out/tag-out process is completed.



#### HAZARD OF ELECTRICAL SHOCK

On Automatic Transfer Switches supplied with current transformers, **short the CT terminals before unplugging the controller CT input connectors.**



### 1.2.2 Static Precautions

#### CAUTION!!!

This equipment contains static-sensitive parts. Please always observe the following anti-static precautions when handling this equipment. Failure to observe these precautions may cause equipment failure and/or damage.



#### The following precautions must be observed:

- Discharge body static charge before handling the equipment (maintain exposed body contact with a properly grounded surface while handling the equipment, a grounding wrist strap can/should also be utilized).
- Do not touch any components on the printed circuit board with your hands or any other conductive equipment.
- Do not place the equipment on or near materials such as Styrofoam, plastic and vinyl. Place the equipment on properly grounded surfaces and only use an anti-static bag for transporting the equipment.

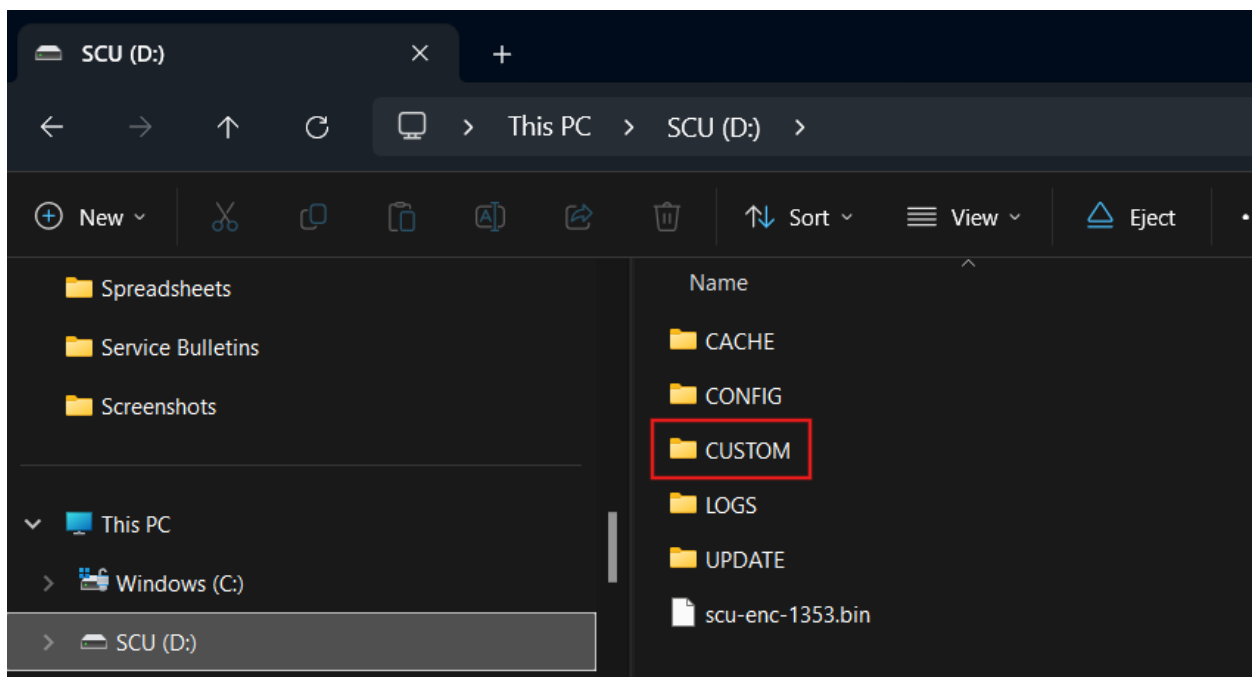
### 1.3 Path 1: Full SD Card Replacement (SCU 1354 Preloaded Card)

Thomson Power Systems supplies a new SD card with SCU 1354 firmware and the correct application files for your specific ATS model. This method minimizes on-site file handling. **Important:** You will need to transfer your site's **CUSTOM** configuration folder from the old card to the new one to preserve settings.

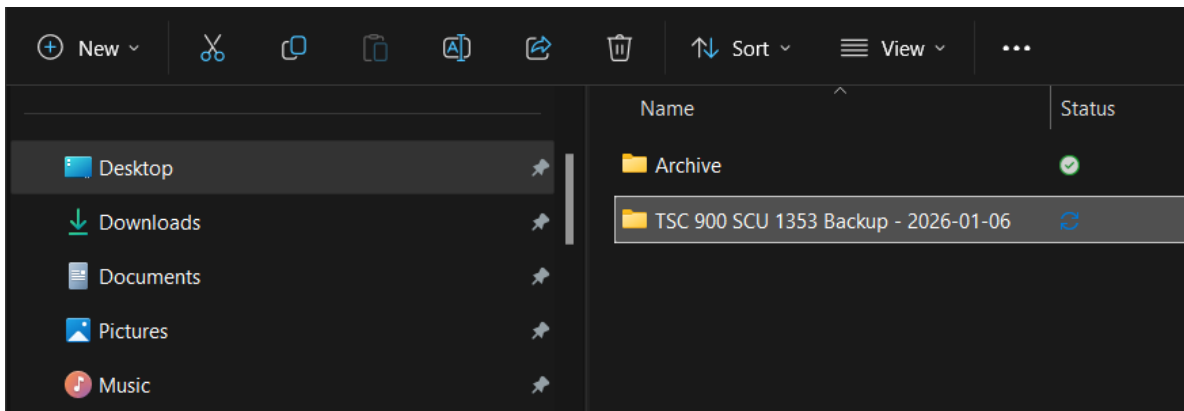
#### 1.3.1 Procedure:

1. **Obtain New SD Card – Contact** Thomson Power Systems' support and provide your ATS Serial Number. Note that the SCU cards are specific to your ATS model and application the serial number is needed to select the right SCU card.
2. Receive the replacement **SD card** from Thomson Power Systems. It will be preloaded with:
  - The SCU 1354 firmware file (e.g., SCU1354.bin) in the card's root directory.
  - Default configuration files for your ATS type (in the /CONFIG folder).

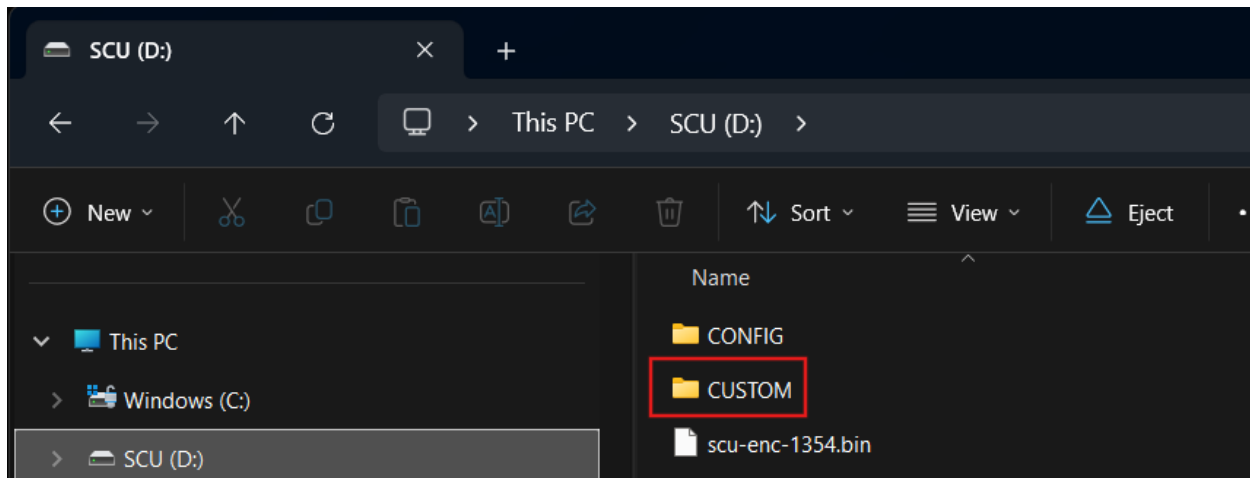
- (The card will *not* contain your site-specific CUSTOM settings yet - you will add these in the next steps.)
- 3. **Power Down and Remove Old SD Card:** Following the safety steps above, ensure the SCU controller is completely de-energized. Refer to sections 3.5.1 and 3.5.2 for more information.
- 4. **SCU cover:** Remove the SCU controller cover to access the SD slot. Refer to section 3.5.3 for more information. As mentioned previously, Press the old SD card inward until the latch clicks, then release to eject it. Remove the old SD card and place it in a computer with an SD card reader.
- 5. **Copy the “CUSTOM” Folder to Desktop:** Using your PC’s file explorer, navigate to the old SD card (usually the D: drive) and locate the “CUSTOM” folder (this folder contains your ATS specific settings).



Create a backup folder on the desktop to keep the files organized, then copy the entire CUSTOM folder from the old card and paste it into the newly created folder on your desktop. Eject the old SD card and then remove the card from the reader and/or laptop.



6. **Copy the files from Desktop to new SD card:** Insert the new SD card into the SD card reader and/or laptop. Then, copy the files inside the CUSTOM folder on the desktop. Next, locate the new SD card (usually D: drive), open the CUSTOM folder, and paste the copied files from the desktop into the new SD card. Ensure that all files in the CUSTOM folder (e.g. configuration JSONs unique to your site) are transferred. *Do not overwrite or modify other folders on the new card.* The new card should now have all original CUSTOM files alongside the Thomson-supplied SCU 1354 firmware and config files.



7. **Insert the New Card:** Eject the new SD card from the PC, and insert the **new SD card (with 1354)** into the SCU's SD card slot. Press it firmly until it clicks and locks in place. Reattach the SCU controller cover and all previously removed connections (except leave engine start isolated until completion). Refer to section 3.5.5 for more information.
8. **Power Up and Update:** Reapply power to the SCU by reconnecting the power (PL15) and sensing (PL12) plugs. The SCU will boot using the new SD card. **Note:** The first startup with the

new firmware card may take a few minutes as the SCU loads the 1354 firmware and internal processes initialize. Wait until the GHC panel or SCU indicators show the system is fully booted.

9. **Verification – Firmware and Logging:** After boot, verify the SCU firmware version. On the GHC display, navigate to *System Information* and confirm that the SCU firmware is reported as **1354** . Next, log in to the Admin profile by selecting the profile and then entering “pass” for the password.  
Next, confirm that debug logging is disabled by navigating to the Settings menu, selecting the advanced settings using the drop-down menu, and finding the “Disable SCU Debug Logging” option.  
Verify the Value is set to “No”. If Not, change it to “No”.  
Note . the description is misleading (“No” = Debug logging is disabled)
10. **Verification – Configuration:** Confirm that all site-specific settings carried over correctly from the CUSTOM folder:
  - Check system configuration parameters such as nominal voltages, phase rotation, timers, input/output assignments, communication settings, exerciser schedules, etc.
  - These should match your pre-upgrade configuration. If you have a backup or record of settings (from before the upgrade), compare it to the current settings on the GHC interface. All custom settings should be intact. In the unlikely event that some settings did not carry over, they may need to be re-entered manually. Refer to your notes and/or photos taken earlier.
11. **Restore Normal Operation:** Once satisfied that the firmware is updated and the configuration is correct, reconnect the engine start connections (and/or return generator controls to AUTO mode) to allow the ATS to resume automatic function. Close the ATS enclosure and clear any lock-out/tag-out devices.
12. The system is now running SCU 1354. Perform a functional test if the site permits using offload and/or on-load tests to confirm everything operates normally.

#### 1.4 Path 2: Manual Update Using Downloaded Files (Field Update on Existing SD Card)

This method allows you to update the SCU firmware by modifying the existing SD card, avoiding the need for a complete card swap. It requires downloading the SCU 1354 firmware file and a logging configuration file from Thomson Power Systems’ support site and performing a few file operations on the card. This approach keeps all existing configuration and CUSTOM data in place by design.

##### 1.4.1 Procedure:

1. Take note of the current configurations that have been set in the settings menu for Voltage, phases, and phase rotation. Refer to section 3.2 for more information.

2. **Download Update Files:** Access the Thomson Power Systems' support website <https://www.thomsonps.com/Resources/Software-Updates> (or provided download link) and download the zip file containing the two files required for the update:
  - **SCU1354.bin** – The SCU firmware binary for version 1354
  - **cfgval-opt.log.JSON** –file located under the “CUSTOM” folder.

Unzip and save both files to a convenient location on your PC.
3. **Power Down and Remove SD Card:** Follow the **Safety Precautions** to shut down the SCU controller completely (power removed, wait for discharge). Refer to section 3.5 and onwards for more information. Remove the SD card from the SCU by pressing the SD card inward until the latch clicks, then release it to eject it.
4. **Clean LOG Folder:** On the SD card, open the LOG folder. **Delete all “.TXT” log files.** These files will have numbered extensions (eg. Log-13824.TXT). **Do not delete any “.JSON files”** in the LOG folder. These JSON files store the logs for the number of transfers, runtime hours, etc.
5. **Update Firmware File:** In the **root directory** of the SD card (top level of the drive), locate the current firmware file SCU1353.bin and delete it. Once removed, copy the new SCU1354.bin file into the root of the SD card. Ensure it resides in the exact same location as the old file did (do not put it inside any folder).
6. **Add cfgval-opt.log.JSON Config File:** Copy the downloaded **cfgval-opt.log.JSON** into the **“CUSTOM” folder in the SD card** as well. If the custom folder does not exist, create a folder named “CUSTOM”. If a file with the same name already exists on the card, overwrite it with the new one.
7. **Double-Check SD Card Contents:** Verify that:
  - SCU1354.bin is present in the root (and the old 1353 bin is gone).
  - The logging JSON file is present in the “CUSTOM” folder.
  - The CONFIG and CUSTOM folders remain unchanged (they should be as before, containing your config and custom settings).
  - The LOG folder is now mostly empty (only JSON files).

After verification, properly eject the SD card from your PC to ensure all file operations are saved.
8. **Reinsert SD Card and Power Up:** Place the SD card back into the SCU controller, clicking it into the slot. Restore power to the SCU (reconnect the plugs, etc.). Allow the SCU to boot up. The initial boot with new firmware might take a few minutes as the firmware is applied; this is normal.
9. **Firmware Verification:** After boot, verify the SCU firmware version. On the GHC display, navigate to *System Information* and confirm that the SCU firmware is reported as 1354. If it still shows 1353, then the new .bin was not recognized – in that case, double-check the file placement and name on the SD card.

**10. Logging Verification:** Confirm that SCU debug logging is now disabled:

On the GHC display, log in to the Admin profile by selecting the and then entering “pass” for the password.

Next, confirm that debug logging is disabled by navigating to the Settings menu, selecting the advanced settings using the drop-down menu, and finding the “Disable SCU Debug Logging” option.

Verify the Value is set to “No”. If Not, change it to “No”.

Note . the description is misleading (“No” = Debug logging is disabled)

**11. Configuration Verification:** Since this was an in-place update, all your settings and the CUSTOM folder should have remained on the card. They should load normally on boot, but please confirm important configuration points on the GHC like:

- System nominal values (voltage, frequency, phase config).
- Transfer timers and settings.
- I/O mappings, communications settings (Modbus, etc.).

If any of the settings reverted to the default values, please first start by refreshing the settings on the GHC. Refer to section 6.1 for more information. After the GHC reboots, check the settings for any changes. In the event that they are still missing, the settings can be modified to match the previous values, or by deenergizing the SCU again, removing the card, inserting the SD card into the laptop, and then checking that the CUSTOM folder and config files are in place. For assistance on this matter, please contact support if needed.

If the settings are back to the original, desired values, then proceed with the step below.

**12. Return to Service:** As with Path 1, reconnect any engine start or control circuits that were isolated, close up the controller, and restore the ATS to normal operation (Auto mode). If applicable, set the external gen controller back to AUTO mode. If the site permits, monitor the first automatic transfer or operation to ensure the SCU responds correctly, using offload and or on-load tests as required.