

# NGC MASS CONFIGURATION MANAGER

***Raychem***

USER'S MANUAL

## TABLE OF CONTENT

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|                                                            |    |
|------------------------------------------------------------|----|
| Section 1 – Introduction.....                              | 3  |
| Section 2 – Getting Started .....                          | 5  |
| Section 3 – Using The NGC Mass Configuration Manager ..... | 7  |
| Section 4 – Using The Advanced Tools .....                 | 27 |
| Section 5 – Reports .....                                  | 33 |
| Appendix.....                                              | 34 |

## SECTION 1 – INTRODUCTION

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### 1.1 Welcome

The Raychem NGC Mass Configuration Manager empowers Chemelex users to efficiently and accurately configure or update configurations of multiple NGC-40 controllers.

The NGC Mass Configuration Manager provides the following options:

- Import data from design tools via predefined Excel spread sheet files
- Validate the data while working offline and not connected to the NGC-40 panel
- Connect to the NGC-40 panel and retrieve the modules' CAN ID from the panel
- Provide on screen assistance for the user to Link the configurations as imported from the Excel spread sheet with the modules' CAN ID's retrieved from the panel
- Check that the firmware revisions used in the Excel spread sheet are compatible with the firmware revision in the NGC-40 Panel
- Upload and validate the configuration into the NGC-40 Panel
- Backup the NGC-40 Panel configurations to a backup data file
- Additional tools available to assist Field Service personnel in troubleshoot and maintenance

Note: Not all functionality is available in the Customer licensed version.

### 1.2 Vital Information

IMPORTANT: All information, including illustrations, is believed to be reliable. Users, however, should independently evaluate the suitability of each product for their particular application. Chemelex makes no warranties as to the accuracy or completeness of the information, and disclaims any liability regarding its use.

Chemelex only obligations are those in the Chemelex Standard Terms and Conditions of Sale for this product, and in no case will Chemelex or its distributors be liable for any incidental, indirect, or consequential damages arising from the sale, resale, use, or misuse of the product. Specifications are subject to change without notice. In addition, Chemelex reserves the right to make changes—without notification to Buyer—to processing or materials that do not affect compliance with any applicable specification.

### 1.3 User Responsibilities

The performance, reliability and safety of your heat-tracing system depend on proper design, selection and installation. The NGC Mass Configuration Manager program will help you configure a system that meets your requirements, but it is only a tool. It assumes that your input is accurate, that you are familiar with heat-tracing system design and configuration, and that you will ensure that all components of the heat-tracing system are installed, maintained and used as intended. Additional information relating to safety, design and installation is contained in Design Guides, Installation Manuals, Data Sheets, and other literature available from Chemelex. Be sure to consult these documents as needed.

### 1.4 Safety Warnings

There are important safety warnings shipped with our products and printed in our literature. Be sure to read and follow them to reduce the risk of fire, shock or personal injury. If you have any questions, contact your local Representative or Chemelex directly.

## 1.5 Technical Support

In North America, contact Chemelex directly at:

### **North America Chemelex**

Tel: +1 800 545 6258  
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## SECTION 2 – GETTING STARTED

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### 2.1 WHAT YOU WILL NEED

#### 2.1.1 System Requirements

The computers that are used to run the NGC Mass Configuration Manager needs to have the following software components installed:

- Microsoft .NET Framework 4.0 or higher
- Windows XP with SP3, Windows 7, Windows 8.
- Microsoft Excel 2007 or higher (if Importing or Exporting Excel Data file is required)

#### 2.1.2 NGC-40 Hardware Manager

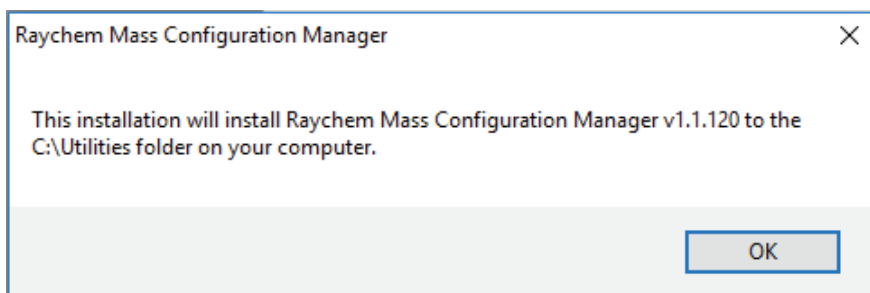
The firmware in the NGC-40 modules (HTC, HTC3, I/O) can only be upgraded using the NGC-40 Hardware Manager, which is a standalone program from the NGC Mass Configuration Manager. All module firmware needs to be up to date in order to use the NGC Mass Configuration Manager. If the NGC Mass Configuration Manager detects issues with the firmware versions, it will warn the user that an upgrade to the module firmware is necessary.

#### 2.1.3 License certificate information

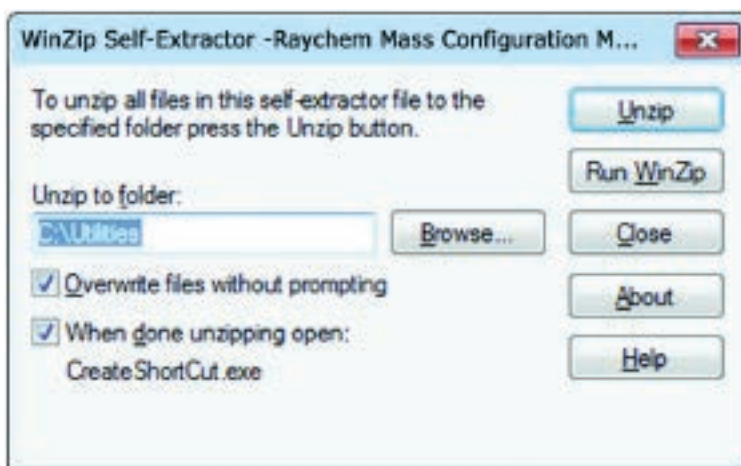
The NGC Mass Configuration Manager is built with a software license protection mechanism. The user must have the appropriate license information available to use the software the first time they run the application. The license information for the NGC Mass Configuration Manager can be obtained from the Product Managers responsible for Industrial Control Solutions.

### 2.2 INSTALLATION

The installation of NGC Mass Configuration Manager comes in a self-extracting executable file (i.e. Mass Configuration Manger.exe). To install the NGC Mass Configuration Manager to your computer, double click this file to start. The self-extracting executable will display the following dialogs:



Screen 2.2a WinZip Self Extractor Installation Message



Screen 2.2b WinZip Self Extractor Dialog

The installation will use the C:\Utilities folder as the default. Click the Unzip button to complete the installation. A Shortcut will be created on your desktop when the installation completes.



Screen 2.3 NGC Mass Configuration Manager Shortcut

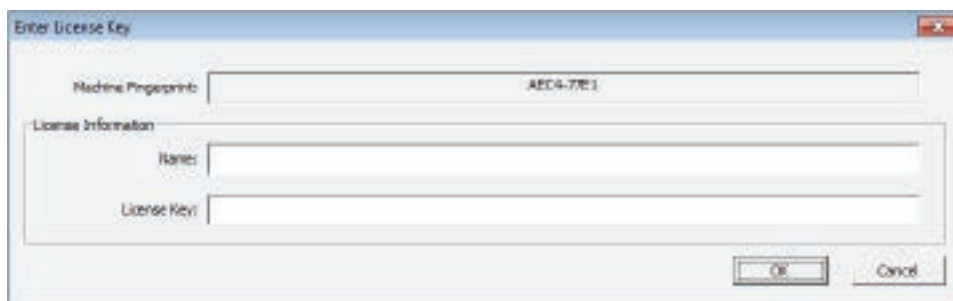
## SECTION 3 – USING THE NGC MASS CONFIGURATION MANAGER

### 3.1 Starting the application

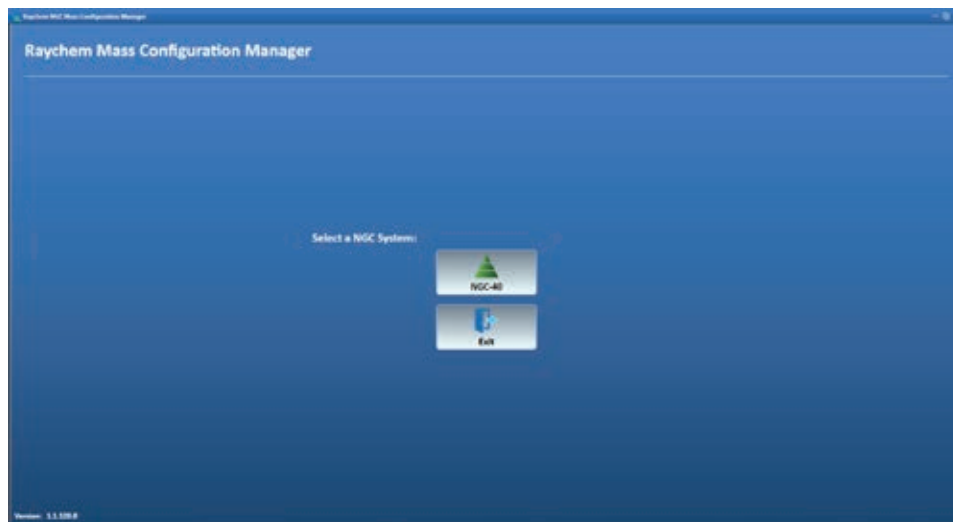
You can start the NGC Mass Configuration Manager using the shortcut by double clicking the shortcut on your desktop, or by double clicking the MassConfigManager.exe in the installation folder (i.e. C:\Utilities\RAYCHEM Mass Configuration Manager).

### 3.2 License Registration

The first time the NGC Mass Configuration Manager is run, it will initialize to the Enter License Key screen. the first time you run NGC Mass Configuration Manager. You are required to copy the Machine Fingerprint information and send this to the Product Manager for a valid license. The Product Manager can provide you the license information necessary to run the application. Please note the license information is valid only to your computer. If you install the NGC Mass Configuration Manager on another computer, another license is required since the Machine Fingerprint is unique for each computer. It is recommended to use Window's Copy and Paste functionality to set the Name and License Key information to reduce typing errors. Once the license information is accepted by the Enter License Key Dialog, you will see the NGC Mass Configuration Manager main menu screen. The Enter License Key dialog will not come up on subsequent times the NGC Mass Configuration Manager is run.



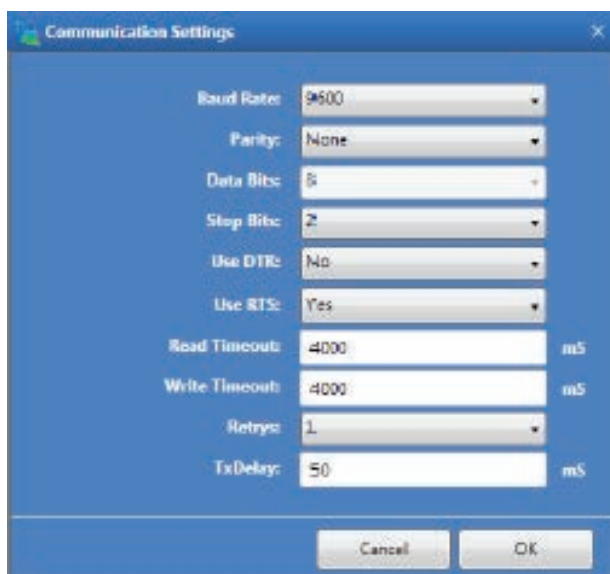
Screen 3.2a Enter License Key Dialog



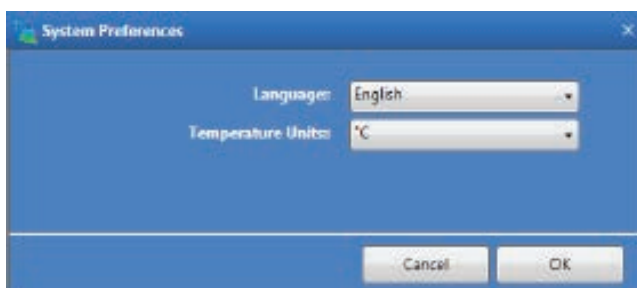
Screen 3.2b NGC Mass Configuration manager main menu screen

### 3.3 System Setup

If you are using the NGC Mass Configuration Manager for the first time, you will need to review and set the Communication Settings and Preferences. Both functions are under the System pull down menu on the NGC Mass Configuration Manager screen.



Screen 3.3a Communication Settings



Screen 3.3b System Preferences

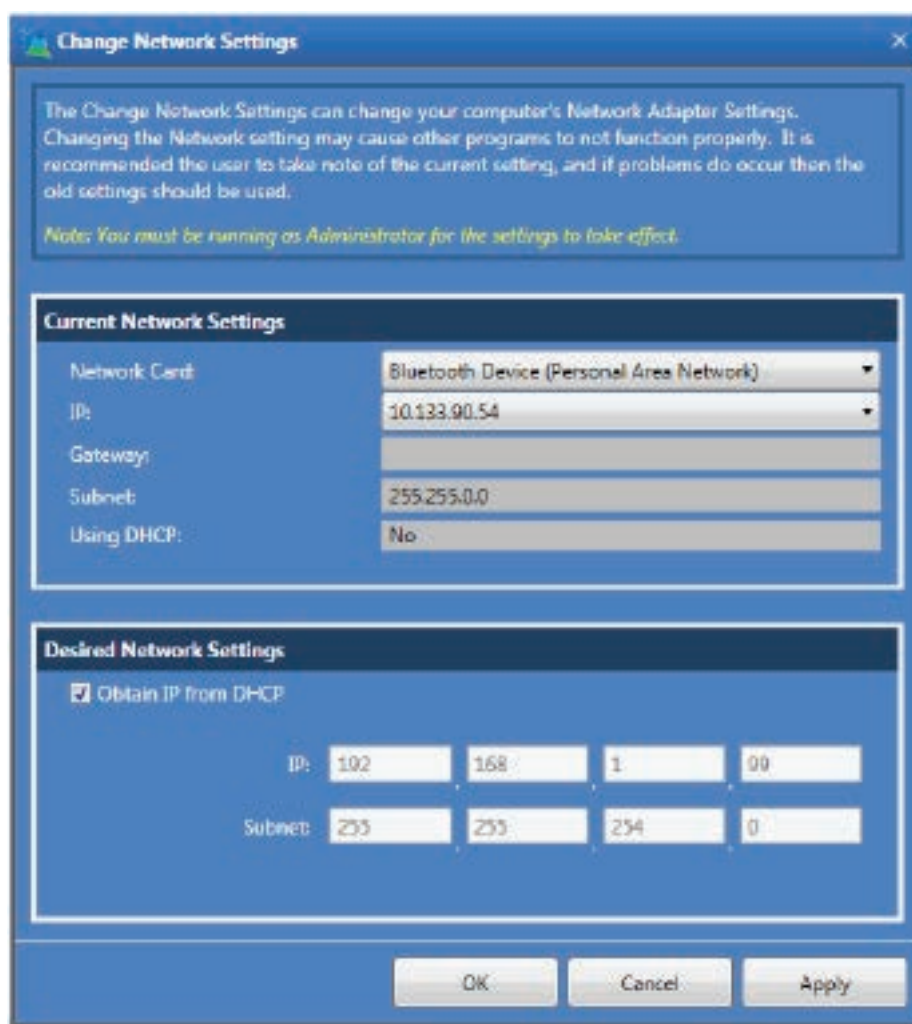
### 3.3.1 Change Network Settings

The Change Network Settings screen allows the user to change the IP address of his computer.

NOTE: The user must have administrative permission on his computer to do so.

The purpose of the Change Network Settings is to allow the user to change the computer's IP address to match the IP address of the NGC-40 Panel. For example the default IP address of an NGC-40 Bridge is 192.168.1.100. If the user's computer is setup with an IP address of 10.133.90.65, then the user will not be able to connect to this panel since both devices must be on the same network. For devices to be on the same network, both should have an IP address of 10.133.90.xx or 192.168.1.xx. As mentioned in previous sections, a computer can have multiple IP addresses by using multiple network cards or by adding a 2nd IP address to the same network card. The 3rd option available is to manually change the IP address of the computer dynamically. The Change Network Settings is used for that purpose. It is important to NOTE that this operation changes the IP address dynamically therefore it may affect other programs currently running on the computer. Afterward when the user finished using the NGC Mass Configuration Manager he/she should reset the computer's IP address to the previous setting.

The Change Network Settings screen contains warning information to make the user aware of the significance and impacts this function can have on the computer. There are 2 functional areas in this screen that provide additional information and for entry of the new settings. The first is the Current Network Settings area. In the Current Network Settings, the user can see the current network settings on his computer. This area is Read only and cannot be changed. If the computer has more than 1 network card installed, then the Network Card combo box will contain a pull down list of the cards. In the Desired Network Settings area the user can choose to get an IP address automatically or use a specific IP address. To force the computer to get an IP address automatically the user would check the Obtain IP From DHCP option. To force the computer to use a specific IP address, the Obtain IP From DHCP option must be unchecked. Only after this option is unchecked will the IP and Subnet address fields become editable. Finally the user clicks the Apply button to save his changes. If the changes are successful then the Current Network Settings area will be updated with the new settings.



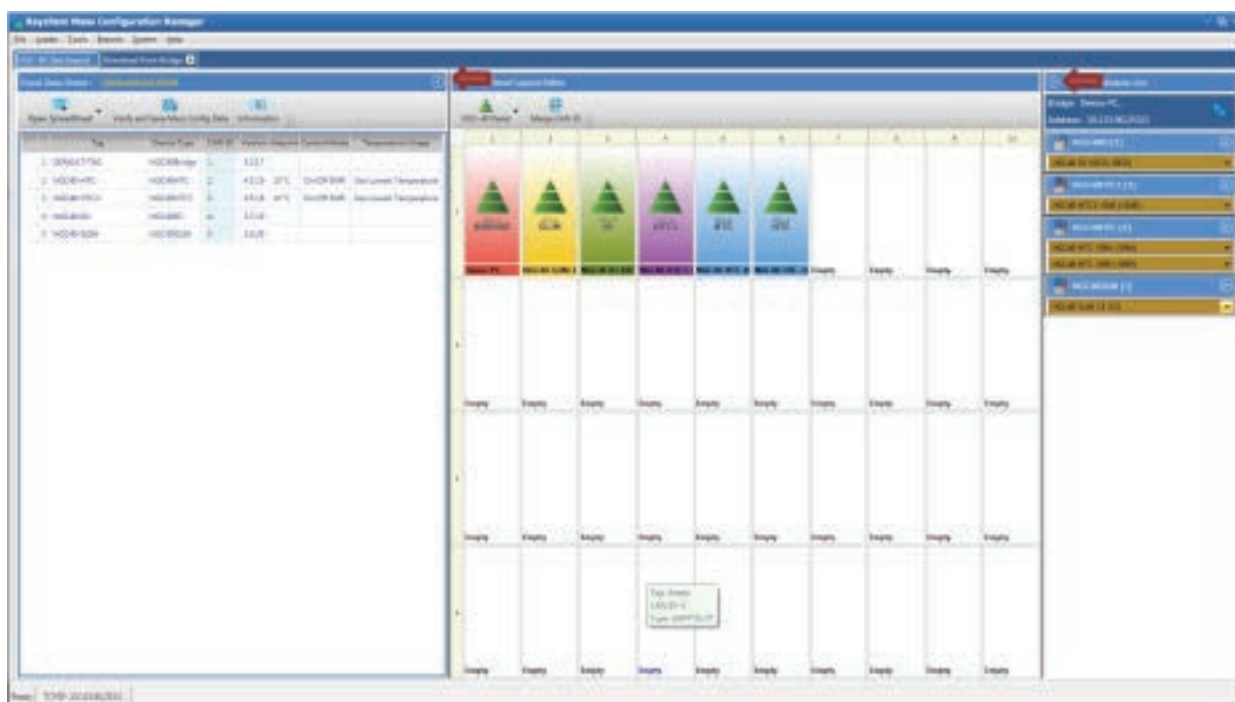
Screen 3.3.1a Change Network Settings Screen

## 3.4 Matching NGC-40 Module CAN ID with Excel Data

### 3.4.1 Using the Data Import

The Data Import screen is the default screen when the user first enters the NGC Mass Configuration Manager. The Data Import screen is where the user will make use of the Excel Spread sheet, and with the help of the NGC-40 Panel Layout Editor, and NGC-40 Module list associate the module configurations in the spread sheet to the physical modules on a NGC-40 Panel. There are 3 Windows Panes that are active here. From left to right, they are the Excel Data Sheet Pane, the NGC-40 Panel Layout Editor Pane, and the NGC-40 Module List Pane. Each Windows Pane is specialized and mostly works independently of each other. However data can be shared between panes.

For screen view manipulation, with reference to Screen 3.4.1a: NGC-40 Data Import, there are 2 RED right arrows. The arrows point to the expander buttons for the Excel Data sheet and NGC-40 Module List panes. The expander button will expand/shrink the corresponding pane. As well there are 2 Splitters between the 3 panes. User can use these controls if needed to set the screen to their desire settings. More details on each pane in the Data Import screen are described in the sections to follow.



Screen 3.4.1a NGC-40 Data Import

### 3.4.2 Excel Data Sheet Pane

The Excel Data Sheet Pane is the User Interface for importing data into the NGC Mass Configuration Manager. Two types of data file are supported, namely Excel data file (.XLSM) and Mass Configuration Data file (.MCD).

| Data File Type                      | Description of Data File                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Excel data file (.XLSM)             | This type of file is based on the Excel Template for NGC-40 which is included in the NGC Mass Configuration Manager installation folder. For example, C:\Utilities\RAYCHEM Mass Configuration Manager\ExcelTemplates\NGC NGC40-Template V1.XLSM. Users must use or follow the formats as specified in this template.                                                                                                          |
| Mass Configuration Data file (.MCD) | This type of file is generated by the NGC Mass Configuration Manager. For example using the <i>Verify and Save Mass Config Data</i> Toolbar button on the Excel Data Sheet Pane.                                                                                                                                                                                                                                              |
|                                     | Generally, a Mass Configuration Data file contains the complete configuration data for a NGC-40 Panel. This file is generated by the user when they have successfully merged their Excel data with the CAN IDs from the NGC-40 Panel, or from performing a backup of their NGC-40 Panel using the Download From Bridge operation. The main purpose of importing a MCD file is to view or verify the contents of the MCD file. |

### 3.4.2.1 Toolbar Buttons

The Excel Data Sheet Toolbar has the following toolbar buttons:

| Main Toolbar Button              | Sub Toolbar Button                | Sub-Sub Toolbar Button | Operation                                                                                                                                                                               |
|----------------------------------|-----------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Open Spreadsheet                 | Open Excel Spreadsheet File       | None                   | Opens and import an Excel .XLSM file into the Excel Data Sheet pane. The Excel .XLSM must be derived from the Excel template provided with the NGC Mass Configuration Manager software. |
|                                  | Open Mass Configuration Data File | None                   | Opens and import a Mass Configuration Data (MCD) file into the Excel Data Sheet pane. A MCD file is created with the Generate MCD function or with the Download From Bridge function.   |
| Verify and Save Mass Config Data | None                              | None                   | Generates a Mass Configuration Data file using the spreadsheet data.                                                                                                                    |
| Information                      | None                              | None                   | Display detail information for a NGC-40 module.                                                                                                                                         |

### 3.4.2.2 Viewing Excel Data Sheet Data

After the data file is imported, the Excel Data Sheet pane will be populated with the data from the data file. The data are displayed as rows in ascending order. The order is derived from the Equipment List worksheet in the Excel data file, or if the Equipment list is not available, it will be in the order the modules are read in from the data file.

Raychem NGC Mass Configuration Manager

File Loader Tools Reports System Help

NGC-40 Data Import

Excel Data Sheet: CustomData40\_ExcelNGM

Open Spreadsheet Verify and Save Mass Config Data Information

|    | Tag           | Device Type | CAN ID | Version | Setpoint | Control Mode | Temperature Usage       |
|----|---------------|-------------|--------|---------|----------|--------------|-------------------------|
| 1  | DEFAULT-TAG   | NGC40Hedge  | 1      | 5.15.7  |          |              |                         |
| 2  | NGC40-HTC--2  | NGC40HTC    | 2      | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 3  | NGC40-HTC--3  | NGC40HTC    | 3      | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 4  | NGC40-HTC--4  | NGC40HTC    | 4      | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 5  | NGC40-HTC--5  | NGC40HTC    | 5      | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 6  | NGC40-HTC--6  | NGC40HTC    | 6      | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 7  | NGC40-HTC--7  | NGC40HTC    | 7      | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 8  | NGC40-HTC--8  | NGC40HTC    | 8      | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 9  | NGC40-HTC--9  | NGC40HTC    | 9      | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 10 | NGC40-HTC--A  | NGC40HTC    | A      | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 11 | NGC40-HTC--B  | NGC40HTC    | B      | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 12 | NGC40-HTC--C  | NGC40HTC    | C      | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 13 | NGC40-HTC--D  | NGC40HTC    | D      | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 14 | NGC40-HTC--E  | NGC40HTC    | E      | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 15 | NGC40-HTC--F  | NGC40HTC    | F      | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 16 | NGC40-HTC--10 | NGC40HTC    | 10     | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 17 | NGC40-HTC--11 | NGC40HTC    | 11     | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 18 | NGC40-HTC--12 | NGC40HTC    | 12     | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 19 | NGC40-HTC--13 | NGC40HTC    | 13     | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 20 | NGC40-HTC--14 | NGC40HTC    | 14     | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 21 | NGC40-HTC--15 | NGC40HTC    | 15     | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 22 | NGC40-HTC--16 | NGC40HTC    | 16     | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 23 | NGC40-HTC--17 | NGC40HTC    | 17     | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 24 | NGC40-HTC--18 | NGC40HTC    | 18     | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 25 | NGC40-HTC--19 | NGC40HTC    | 19     | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 26 | NGC40-HTC--1A | NGC40HTC    | 1A     | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 27 | NGC40-HTC--1B | NGC40HTC    | 1B     | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 28 | NGC40-HTC--1C | NGC40HTC    | 1C     | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |
| 29 | NGC40-HTC--1D | NGC40HTC    | 1D     | 4.5.19  | 500 °C   | PASC ENR     | Use Average Temperature |

Screen 3.4.2.2a Excel Data Sheet Pane

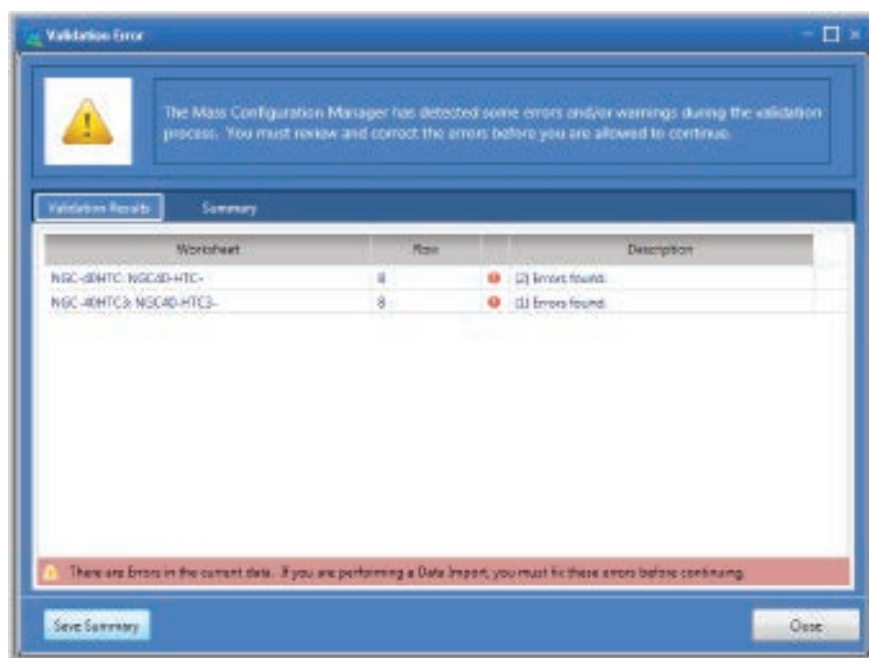
Each row in the Excel Data Sheet pane represents 1 NGC-40 module. Currently we include the following columns:

| Column # | Name          | Description                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Import Status | This is the import status of the module. A blank column indicates that no errors were found during the import. A Warning icon indicates warnings are found for this module but are not critical. The Error icon indicates errors have been detected for this module. If any Error icons are present then the NGC Mass Configuration Manager will not allow the user to Generate a Mass Configuration Data file. |
| 2        | Row Number    | This is the Row number identifier.                                                                                                                                                                                                                                                                                                                                                                              |
| 3        | Tag           | This is the module's Tag as defined in the import data file.                                                                                                                                                                                                                                                                                                                                                    |
| 4        | Device Type   | This is the module's Device Type as defined in the import data file.                                                                                                                                                                                                                                                                                                                                            |
| 5        | CAN ID        | This is the module's CAN ID as defined in the import data file. This field can be left undefined in spread sheet; in this case a random number will be used.                                                                                                                                                                                                                                                    |

| Column # | Name              | Description                                                                                                                                                             |
|----------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6        | Version           | This is the module's firmware version as defined in the data file. This field can be left undefined, and in that case the most current version for this module is used. |
| 7        | Setpoint          | This is the module's control set point as defined in the import data file. This column applies only to HTC and HTC3 modules.                                            |
| 8        | Control Mode      | This is the module's Control Mode as defined in the import data file. This column applies to HTC and HTC3 modules.                                                      |
| 9        | Temperature Usage | This is the module's Temperature Usage as defined in the import data file. This column applies to HTC and HTC3 modules.                                                 |

### 3.4.2.3 Generating MCD Data File

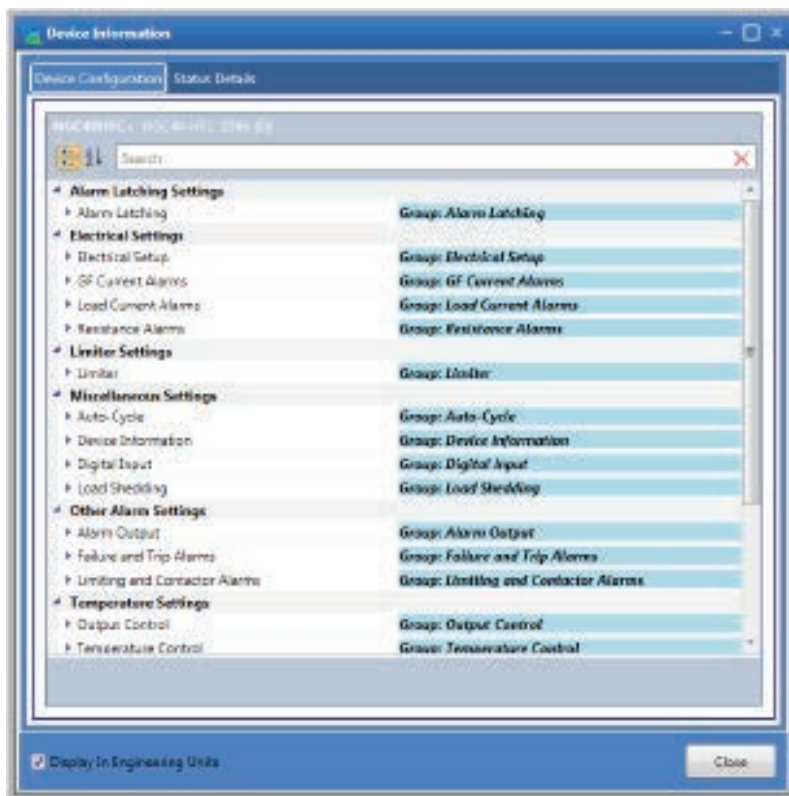
The Verify and Save Mass Configuration Data Toolbar button will be used to generate a MCD file. When this button is clicked, the NGC Mass Configuration Manager will perform data validation, and display the Generate Mass Configuration Data Summary screen. The user will not be able to generate a MCD file if there are Errors detected during the import. In this case the user will have to edit the data file using Excel. The user can use the File->Save Import Summary toolbar button to generate the error results and use it as the reference to correct their data file. Once the user has updated the import data file, they can try importing it again. The user can perform these procedures in the office using the NGC Mass Configuration Manager, as many times as required until the data are valid. Once the user has successfully imported the data into the NGC Mass Configuration Manager, the user can proceed to generate a MCD file. The user will be prompted to enter a name for the MCD file, and the verified data are saved to a file with that name. The MCD file will be used by the Upload To Bridge operation to update the NGC-40 Panel. See the Upload To Bridge section for more details of this operation.



Screen 3.4.2.3a Validation Error Display

### 3.4.2.4 Information Display

The Information Toolbar button is used to display more detailed information for a NGC-40 module. This is a shared display used in other areas of the NGC Mass Configuration manager. On this display, there are 2 tabs; Device Configuration and Status Details. Each tab will show the appropriate information. However the Status Details will be empty if there are no validation errors detected for the selected module.



Screen 3.4.2.4a Device Information

### 3.4.3 NGC-40 Panel Layout Editor

The NGC-40 Panel Layout Editor Pane serves as a drawing pad for creating a virtual panel of NGC-40 modules. The NGC-40 Panel Layout Editor Pane must be used in conjunction with the NGC-40 Module List Pane (See Section 3.4.4 NGC-40 Module List Pane for more information). The user would drag a module from the NGC-40 Module List Pane and drop it onto the NGC-40 Panel Layout Editor Pane. The idea is to match the order of the modules as they are in the Excel Data Sheet. It is the responsibility of the user to create the necessary data in the Import data sheet file and to include the correct orders.

The NGC-40 Panel Layout Editor will give the user a graphical view of the NGC-40 modules as they are installed in the Panel. This provides a visual aid for the user to align the modules with the Spread sheet data. Once there are modules in the NGC-40 Panel Layout Editor Pane, the user can move them to other locations within this pane by using the drag and drop method. To help identify a module in a Panel, the Identify Module function in the NGC-40 Module List pane is used. See the NGC-40 Module List pane section for details. By using the Identify Module function, the user can identify the location of a module on a NGC-40 Panel by looking for flashing LEDs on the module. Once identified, the user can move the module from the NGC-40 Module List Pane to the appropriate Row/Slot location in the NGC-40 Panel Layout Editor Pane. The user would repeat this process until all modules are identified and moved to their corresponding position in the virtual panel. The next step is to use the Merge CAN ID toolbar button to tell the Panel Editor Pane to transfer the CAN IDs of the modules in the Panel Editor to the list in the Excel Data Sheet Pane. When the Excel Data Sheet is filled with the appropriate CAN IDs the user can proceed to generate a MCD file. The user can manually enter the CAN ID into the Excel Data sheet directly if desired. If there are incorrectly typed CAN IDs entered, the user can still generate a MCD file. However, the incorrect CAN IDs will be detected by the NGC Mass Configuration Manager when the user tries to use the MCD file with the Upload To Bridge function. The user will be warned when this occurs. See the Upload To Bridge Section for more details.

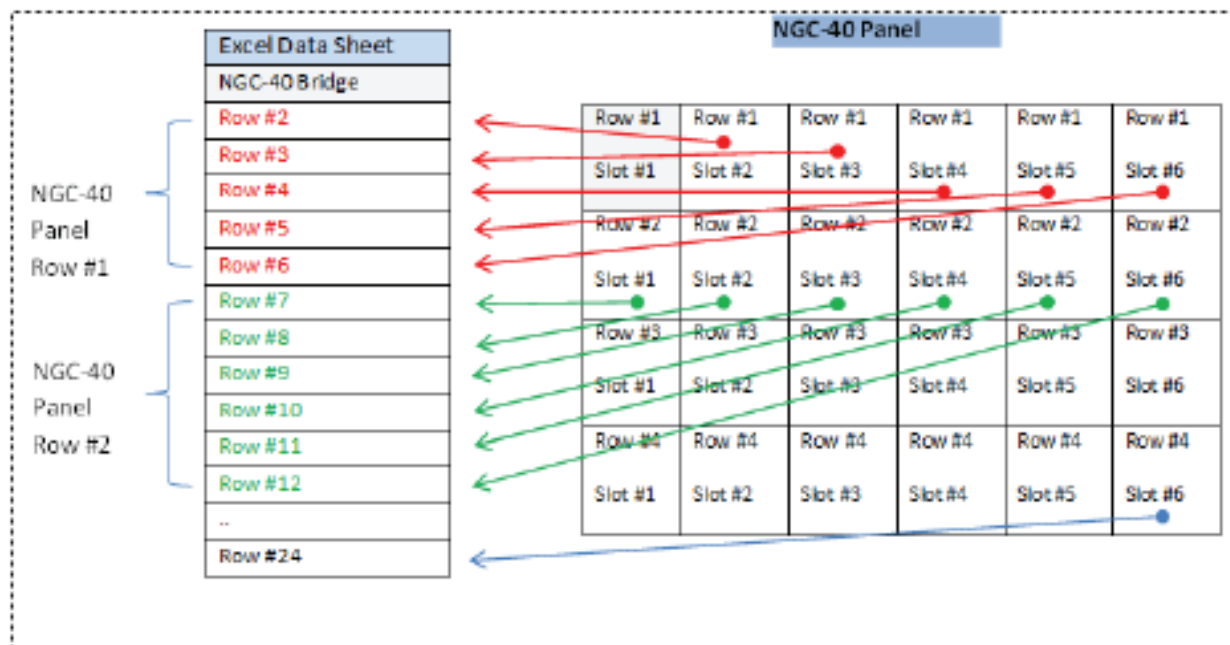
#### 3.4.3.1 Toolbar Buttons

The NGC-40 Panel Layout Editor Toolbar has the following toolbar buttons:

| Main Toolbar Button | Sub Toolbar Button | Sub-Sub Toolbar Button | Operation                                                                                                                                                                                                                                                                                          |
|---------------------|--------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NGC-40 Panel        | Clear Panel        | None                   | Remove all modules from the virtual NGC-40 panel except the NGC-40 Bridge.                                                                                                                                                                                                                         |
|                     | Resize Panel       | None                   | Allows the user to resize the row and slot of the panel. The range for a virtual panel is:<br>Maximum rows is 8 Maximum Slot is 20                                                                                                                                                                 |
|                     | Identify Module    | None                   | Allow the user to perform the Identify Module operation.                                                                                                                                                                                                                                           |
|                     | Test Panel         | None                   | Allows the user to perform automatic Identify Module operation. Each module will be tested in order from left to right and top and bottom.<br>If the user has a module preselected, then the Test Panel will begin starting from the selected module.<br>Each module will be tested for 5 seconds. |
|                     | Open Panel Layout  | None                   | Allows the user to reuse the panel information that was saved with the Save Panel Layout function.                                                                                                                                                                                                 |
|                     | Save Panel Layout  | None                   | Allows the user to save the current information in the NGC-40 Panel Layout Editor Pane to a file.                                                                                                                                                                                                  |
| Merge CAN ID        | None               | None                   | This tells the Panel Editor to transfer the CAN ID's from the NGC-40 Panel Layout Editor to the Excel Data Sheet pane.                                                                                                                                                                             |

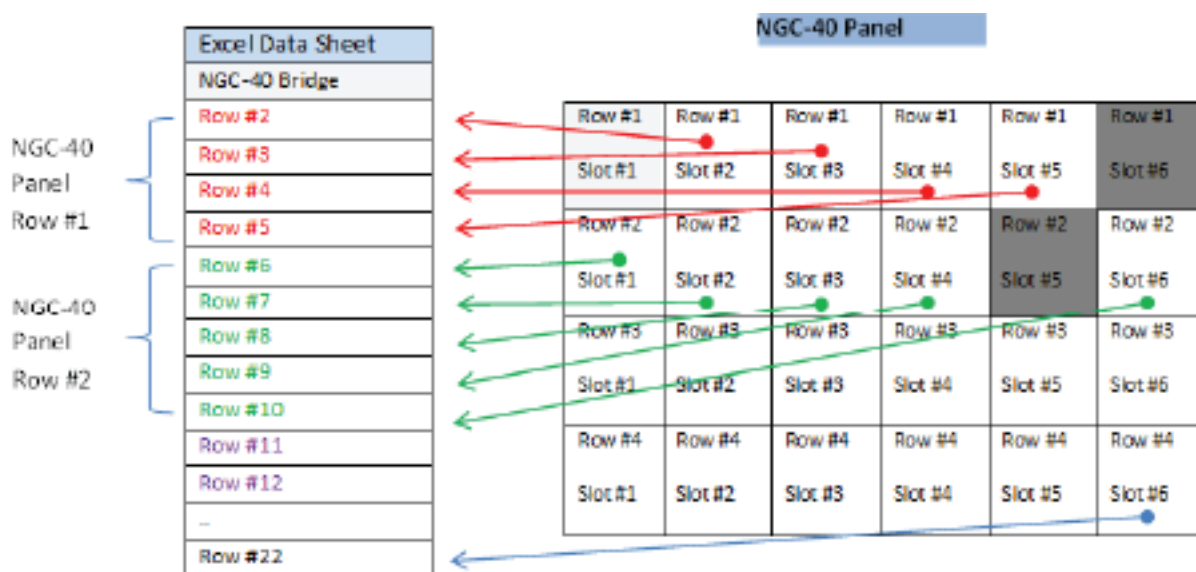
### 3.4.3.2 Merge CAN ID Operation

The Merge CAN ID function simply transfers the CAN IDs from the NGC-40 Panel Layout Editor to the Excel Data Sheet. The concept is to align the NGC-40 modules from left to right and top to bottom which should correspond to the Excel Data starting from the first data row and going downward. The following diagrams illustrate this concept.



Screen 3.4.3.2a Illustration of Merge CAN ID algorithm

The screen above shows the NGC-40 Panel Layout Editor is fully populated with a set of NGC-40 modules. The size of panel is a 4 row by 6 slot panel. A NGC-40 Bridge occupies Row #1/Slot #1. The Row information from the Excel Data Sheet will map to the NGC-40 Panel starting from Row #1/Slot #2 moving left to right. As part of the Merge process, the module types in the NGC-40 Panel Layout Editor must match the types in the Excel Data sheet, for example the module in the Excel row and NGC-40 Panel Layout Editor row/slot must be both of type NGC-40 HTC, or HTC-40 IO, etc., otherwise the user will be warned and the mapping process will abort. It is important to note that the list in the Excel Data Sheet is an ORDERED list and no gaps are allowed in the list (i.e. empty row). However, in the NGC-40 Panel Layout Editor, there can be empty slots. This is to allow the user to set up a panel with different number of modules in a row, for example, 8 modules in Row #1, and 10 modules in Row #2, etc. Here is an example of how the Excel Data Sheet mapping will be done for that scenario.

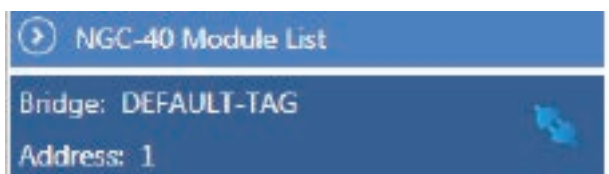


Screen 3.4.3.2b NGC-40 Layout Editor with Two Empty Slots

The example screen 3.4.2.2b shows the NGC-40 Panel Layout Editor has 2 Empty slots (i.e. Row #1/Slot #6 and Row #2 Slot #5). The NGC Mass Configuration Manager will ignore Empty slot, therefore the mapping of the modules to the Excel rows will be slightly different, as show in the above diagram. Since there are 2 empty slots, the total is 22 modules instead of 24, as reflected in the Excel Data Sheet. The important thing to remember is that the Excel Data Sheet is an ordered list and is the reference for the modules in the NGC-40 panel. The NGC-40 Panel Layout Editor is a simply a visual aid to help the user to organize and align the NGC-40 modules properly. Once the NGC-40 Panel is populated, the Merge CAN ID will transfer the CAN IDs to the Excel Data sheet correctly.

### 3.4.4 NGC-40 Module List Pane

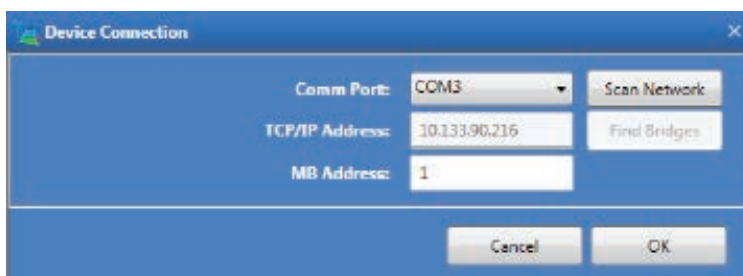
The NGC-40 Module List Pane is the User Interface for displaying the NGC-40 module list in a NGC-40 Panel. The user must first connect to a NGC-40 Panel. Upon successful connection, the NGC-40 Module list will be filled with the NGC-40 module list. The user can use the Connect To NGC-40 Bridge button to connect to a Panel.



Screen 3.4.4a NGC-40 Module List Information

#### 3.4.4.1 Connecting to a NGC-40 Bridge

The Connect To NGC-40 Bridge button will bring up the Device Connection screen.



Screen 3.4.4.1a Device Connection using Serial Communication

The user can choose to use either Serial or Ethernet connections. For Serial connection, the user can select from a list of COM port that are available in the computer. COM ports up to port 255 can be used with the NGC Mass Configuration Manager. To setup the communication settings such as baud-rate, stop-bits, etc., the user would use the System-Communication Setup pull down menu. The Scan Network button would scan the Modbus network for NGC-40 Bridges, in situations when the user does not know the Bridge's Modbus address. When this button is used, the user will be prompted to enter a starting Modbus address. When the scanning is complete, a list of bridges will available for the user to select from.

**Device Connection**

Comm Port:

TCP/IP Address:

MB Address:

| Tag         | IP Address    | MB Address | Firmware Version |
|-------------|---------------|------------|------------------|
| DEFAULT-TAG | 10.133.90.216 | 1          | 5.22.2           |

Screen 3.4.4.1b Device Connection using Serial Communication with NGC-40 Bridges found

For Ethernet connection, the user can use the Find Bridge button. The Find Bridge button will query the network for NGC-40 Bridges and display a list of available bridges for the user to select from.

**Connect to NGC-40 Bridge**

Comm Port:

TCP/IP Address:

MB Address:

| Tag           | IP Address    | MB Address | Firmware Version |
|---------------|---------------|------------|------------------|
| DEFAULT-TAG   | 10.133.90.216 | 1          | 5.22.2           |
| Demo-PC_      | 10.133.90.253 | 1          | 5.15.7           |
| Kim's Bridge1 | 10.133.90.240 | 1          | 5.20.761         |
| DEFAULT-TAG   | 10.133.90.254 | 1          | 5.15.7           |

Screen 3.4.4.1c Device Connection using TCP/IP communication with NGC-40 Bridges found

If a bridge is already connected by someone else other than you, it will be shown with a Red background. If a bridge is connect by you, then it will be shown with a Green background

Please NOTE the Find Bridge function can locate NGC-40 Bridges on the same network the computer is on. For example if the computer has an IP address of 10.133.90.65 and the Find Bridges function is called, any bridges with an IP address in the range 10.133.90.01 to 10.133.90.255 will respond to the query, thus they will get detected by the Find Bridge function. If the Bridge has a different IP address such 192.168.1.101 it will not respond to the Find Bridge query thus it will not be detected by the Find Bridge function. There are several ways to overcome this to problem.

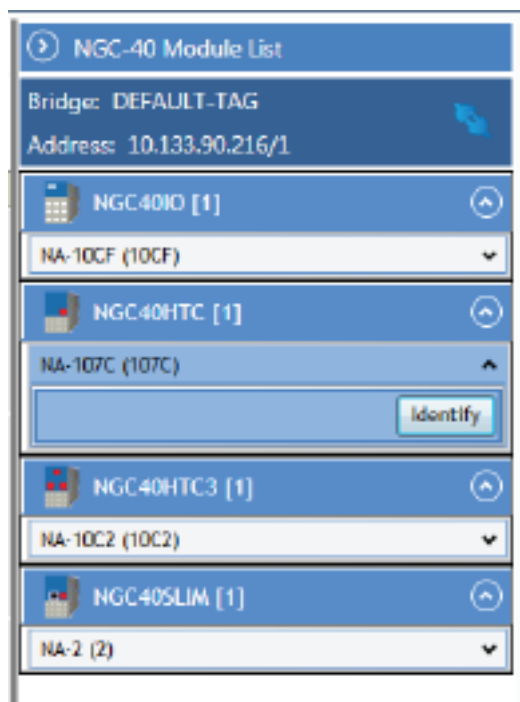
1. The user must add a 2nd Network card to the computer and setup the IP address to be 192.168.1.xx
2. The user must add a 2nd IP address to the same Network card in the computer and setup the IP address to be 192.168.xx.
3. Use the Change Network Settings function in the System Preferences to change the IP address of the computer to 192.168.1.xx. See Section 3 System Setup for more information on this function.

In order to proceed with any of the above options, the user must have ADMINISTRATIVE permission for his login account, or find someone that has to perform the task for him.

When the Find Bridges function is called in the NGC Mass Configuration Manager, it will automatically detect if there are multiple IP addresses assigned in the computer. If there are multiple IP addresses, then it will perform the Find Bridges function for each of the found IP addresses and display the list of NGC-40 bridges found in the Bridge List. The user selects the bridge he/she wants to connect to then click the OK button to continue.

#### 3.4.4.2 NGC-40 Module List Operation

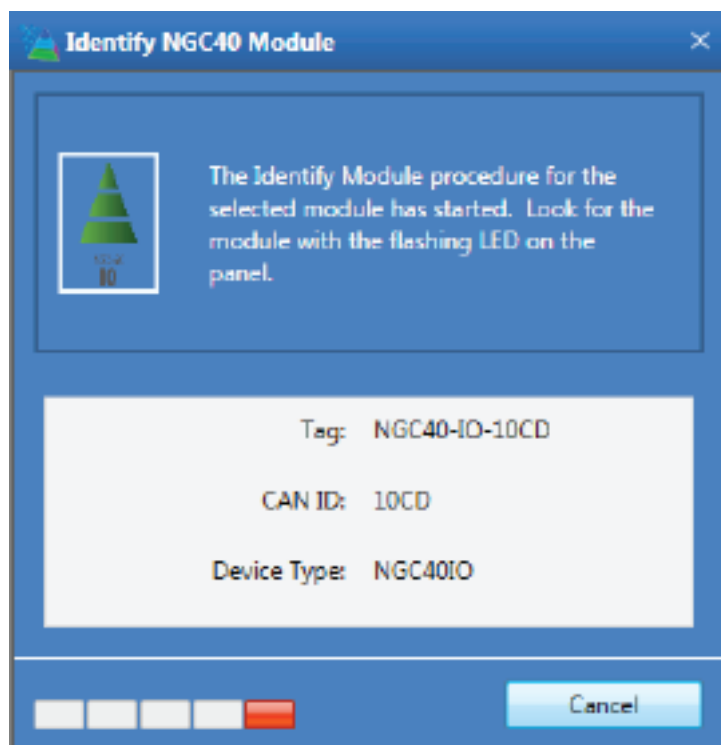
Once a successful connection is made to a NGC-40 Panel, the NGC-40 Module list will be displayed in grouped format, for example, HTC2, HTC3, IO, and SLIM groupings. Each grouping can be expanded to list all the modules for that grouping. Vice versa it can be toggled to hide all the modules for that grouping. There is a module count next to each grouping to provide additional information for the user.



Screen 3.4.4.2a NGC-40 Module Grouping Expanded

When a grouping is expanded, such as shown in the above screen, all modules for that grouping will be displayed. Each module will be displayed by its tag and CAN ID. The user can select a module then drag and drop it onto the NGC-40 Panel Layout Editor Pane. Each module can also be expanded to show more information and/or available buttons to perform additional functions. To do that the user would use the Item expander button on the item. Currently we have the Identify Button. With this button the user can tell the NGC-40 Panel to perform the Module Identification test. When the Module Identification test is running, the LEDs on the selected module will be flashing, while the LEDs on the rest of the module will be turned OFF. The user can quickly locate the module and determine its Row/Slot assignment. From there the user can drag and drop this module to the corresponding Row/Slot in the

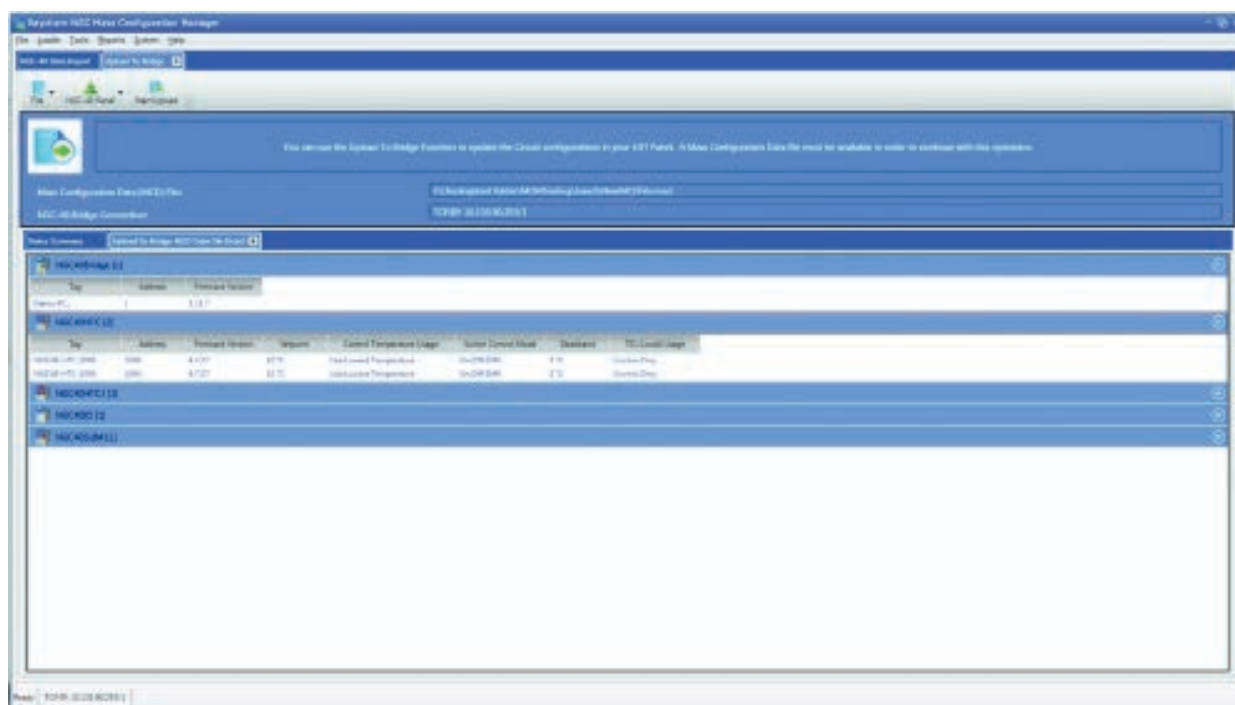
NGC-40 Panel Layout Editor pane. The user would repeat this process until he/she has identified all modules on the NGC-40 Panel.



Screen 3.4.4.2b Identify NGC-40 Module

### 3.5 Updating Configuration Settings on a NGC-40 Panel

When the user has generated a MCD file, the user can now update the NGC-40 Panel using the NGC Mass Configuration Manager's Upload To Bridge function. The Upload To Bridge screen is composed of 3 functional areas; toolbar button menu, screen information, and operations tab.



Screen 3.5a NGC-40 Upload To Bridge

### 3.5.1 Toolbar Buttons

The Upload To Bridge Toolbar has the following toolbar buttons:

| Main Toolbar Button | Sub Toolbar Button | Sub-Sub Toolbar Button | Operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|--------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| File                | Open               | None                   | The user uses the Open button to select a MCD file. Upon opening the file, the File Details Tab in the Operations area will be displayed. See 3.5.2 File Details Tab section for more details.                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                     | Show Details       | None                   | The Show Details button will display detail information of a selected module in the File Details list. The details screen will be similar to the Module Information screen in the Excel Data Sheet Pane. See Section 3.4.2 Excel Data Sheet Pane for more information.                                                                                                                                                                                                                                                                                                                                                   |
|                     | Save Summary       | None                   | The Save Summary button will allow the user to save the Upload To Bridge Status Summary to a text file. The contents of the text file are from the Status Summary Tab.                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| NGC-40 Panel        | Connect To Bridge  | None                   | The Connect To Bridge button brings up the Device Connection screen. This allows the user to select and connect to a NGC-40 Bridge.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                     | Compare            | None                   | <p>The Compare button initiates a compare operation. The Compare operation will compare the installed module list in the MCD file with the list in the NGC- 40 Bridge. The NGC Mass Configuration Manager will determine if there are any discrepancies and display them to the user.</p> <p>The Upload To Bridge function automatically performs a Compare before it proceeds to update the NGC-40 Bridge. If there are discrepancies found, it will warn the user. The user has the option to continue or abort. If critical errors (i.e. corrupt data, .etc.) are found then the user is not allowed to continue.</p> |

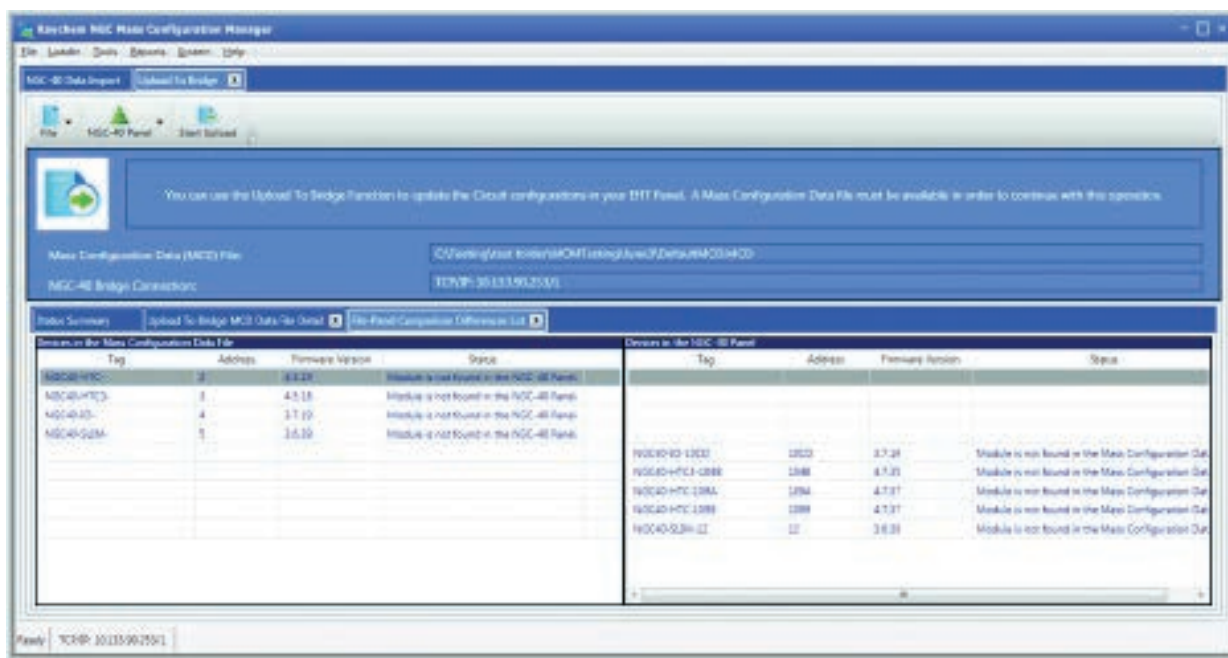
| Main Toolbar Button | Sub Toolbar Button | Sub-Sub Toolbar Button | Operation                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------|--------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Start Upload        | None               | None                   | <p>The Start Upload button will initiate the Write process. The process involved are:</p> <ol style="list-style-type: none"> <li>1) Data Validation of the MCD data. Validation must pass before the next step starts.</li> <li>2) Compare the module list in the MCD data with the list in the NGC-40 Panel. Discrepancies are displayed to the user. User has option to proceed to the next step.</li> <li>3) Update the NGC-40 Panel module by module.</li> </ol> |

### 3.5.2 File Details Tab

The File Details Tab displays the installed module list as they are found in the selected MCD file. The tab contains a list that show modules grouped in 5 different device types. These include a Bridge, NGC-40 HTC2, NGC-40 HTC3, NGC-40 IO, and a NGC-40 SLIM group. Each group can be expanded and the list of modules will be displayed for that group. The user can choose to view details of a module, but selecting a module and then click the File->Show Details Toolbar button. This brings up the Module Information screen (i.e. Screen ??) that displays the configuration settings for this module.

### 3.5.3 Differences List Tab

The Differences List Tab is the results of a compare operation performed on the contents in the selected MCD file and the installed controllers in the connected NGC-40 Panel. A compare operation is manually initiated by the user using the NGC-40 Panel->Compare toolbar button, or automatically by the Loader's Start Upload toolbar button. The Differences List identifies the discrepancies that are found during the Compare process. If discrepancies are found, the Manager will decide from the discrepancies found and the data validation results of the MCD file before allowing the user an option to continue. The user will be prompted as such and if allowed, user has the option to proceed if they choose to do so.

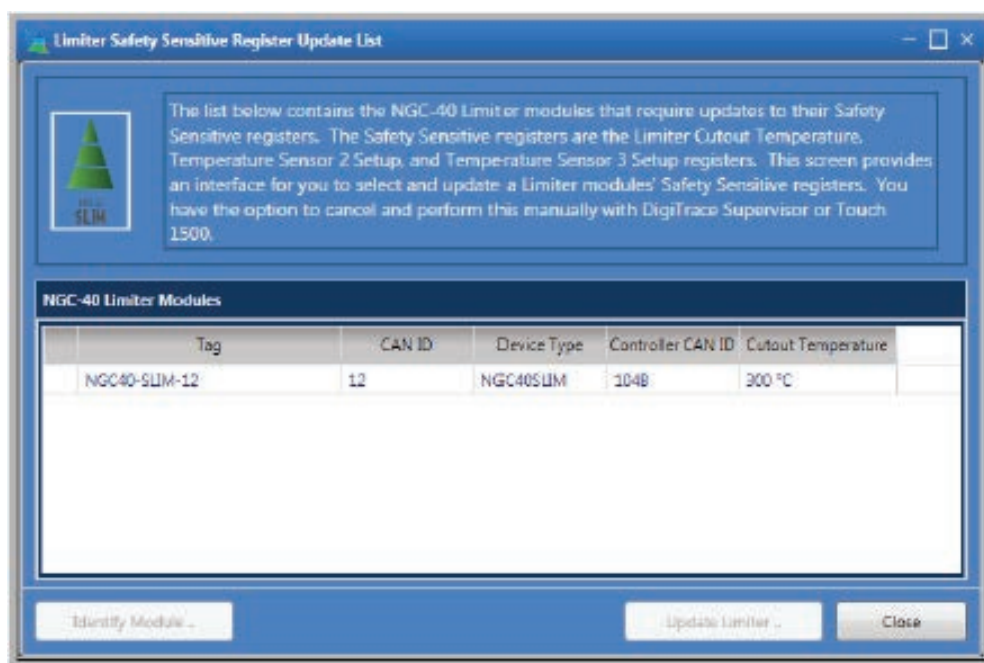


Screen 3.5.3a File-Panel Comparison Differences List

### 3.5.4 Status Summary Tab

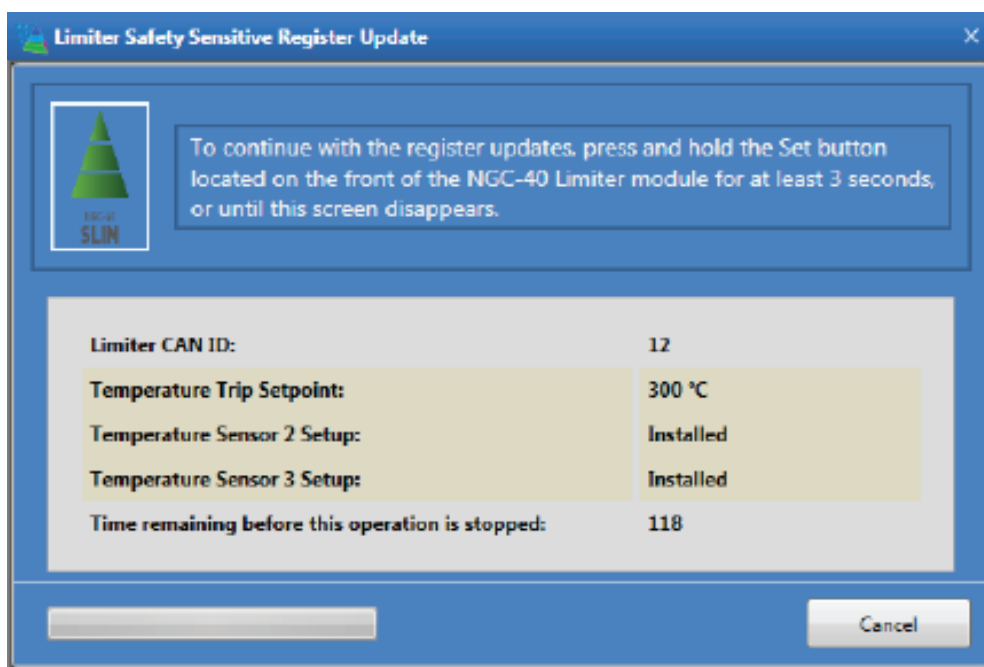
The Status Summary records each step of the Upload To Bridge process. The information recorded is contained in the Status Summary Tab screen, which can be saved to a text file using the File->Save Summary toolbar button. As well the Write Summary screen is a Windows Text box. Like any Windows Text box, the Windows Copy and Paste functions are available to use.





Screen 3.5.5a: Limiter Safety Sensitive Register Update List

When the Update Limiter button is clicked, the Limiter Safety Sensitive Register Update screen appears. Once the update process is completed for a Limiter module, a completion indicator will appear for that module (i.e. a Checkmark).

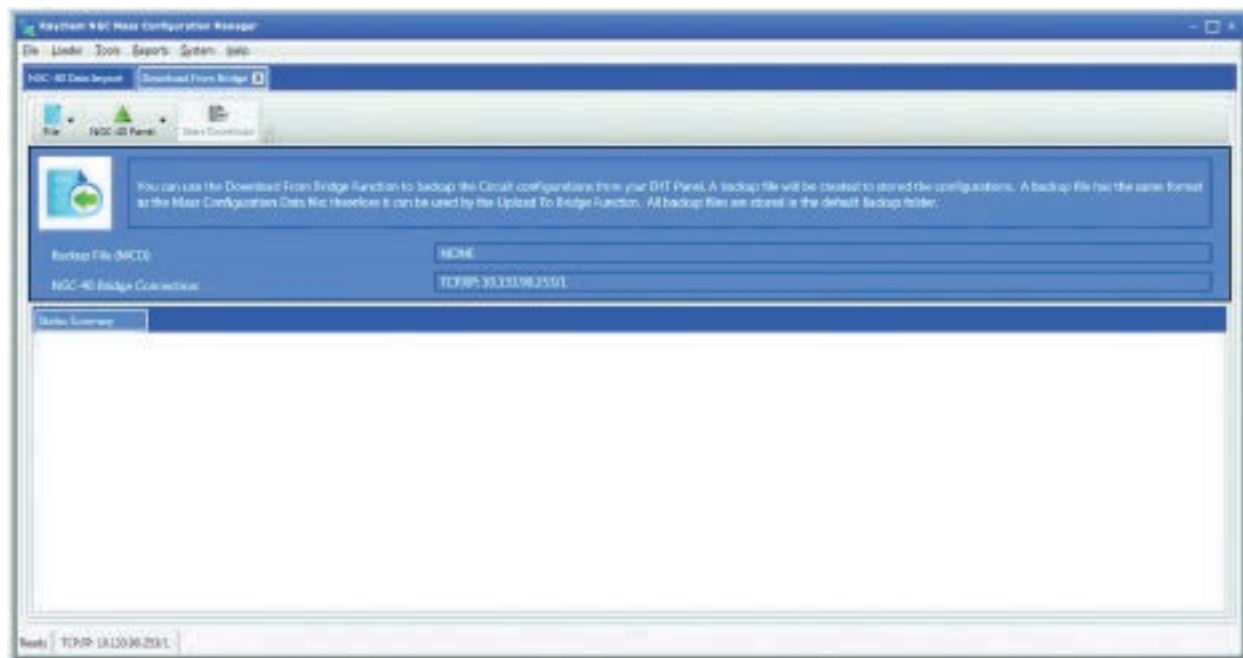


Screen 3.5.5b: Limiter Safety Sensitive Register Update

When this screen appears, the user must press and hold the Set button on the front of the Limiter module in order for the controller to accept the setting. A Modbus command is sent to the controller every 10-15 sec. We set the limit of 120 seconds that this process will be repeated. After the elapsed time, the sending of the Modbus command will stop.

### 3.6 Backing up a NGC-40 Panel Configuration Settings

The Download From Bridge Operation is used to back up the configuration settings of all the modules in a NGC-40 Panel. This operation will read data from the Bridge and individual modules in the Panel, then format and stored them in a MCD file. The Download From Bridge screen is composed of 3 functional areas; toolbar button menu, screen information, and operations tab.



Screen 3.6a: NGC-40 Download From Bridge

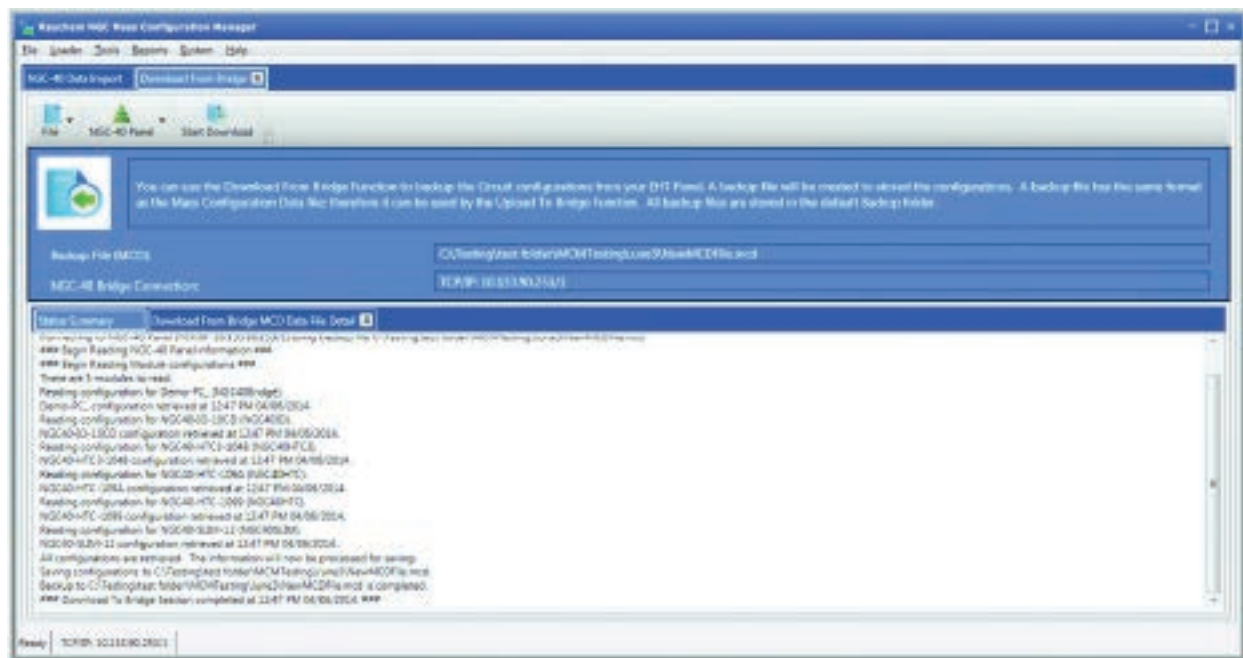
#### 3.6.1 Toolbar Buttons

The Download From Bridge Toolbar has the following toolbar buttons:

| Main Toolbar Button | Sub Toolbar Button       | Sub-Sub Toolbar Button | Operation                                                                                                                                                                                                                                                              |
|---------------------|--------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| File                | Select                   | None                   | The user uses the Select button to select a MCD file for backup.                                                                                                                                                                                                       |
|                     | Show Details             | None                   | The Show Details button will display detail information of a selected module in the File Details list. The details screen will be similar to the Module Information screen in the Excel Data Sheet Pane. See Section 3.4.2 Excel Data Sheet Pane for more information. |
|                     | Save Summary             | None                   | The Save Summary button will allow the user to save the Download From Bridge Status Summary to a text file. The contents of the text file are from the Status Summary Tab.                                                                                             |
| NGC-40 Panel        | Connect To NGC-40 Bridge | None                   | The Connect To NGC-40 Bridge button brings up the Device Connection screen. This allows the user to select and connect to a NGC-40 Bridge.                                                                                                                             |
| Start Download      |                          | None                   | Starts the Download From Bridge Operation.                                                                                                                                                                                                                             |

### 3.6.2 Status Summary Tab

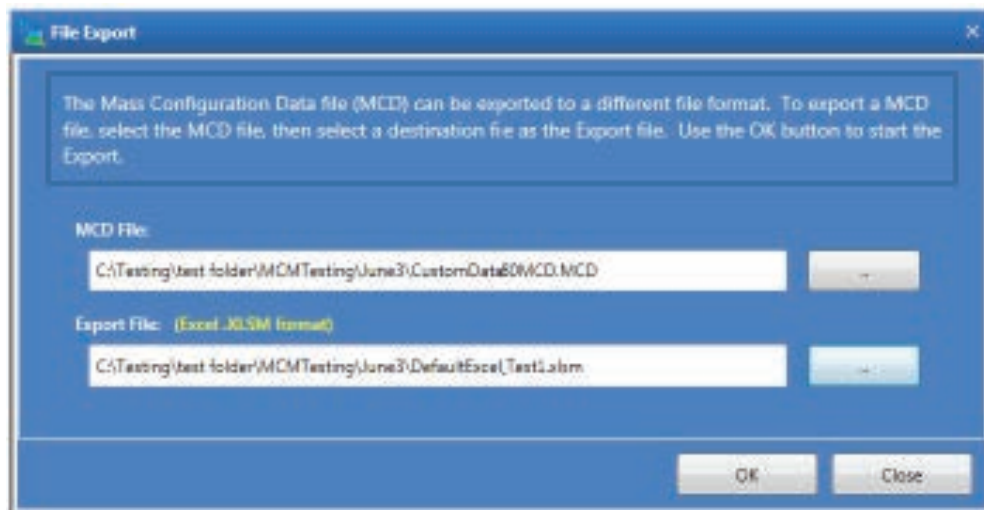
The Status Summary records each step of the Download From Bridge process. The information recorded is contained in the Status Summary Tab screen, which can be saved to a text file if the user uses the File->Save Summary toolbar button.



Screen 3.6.2a: Status Summary

### 3.7 Exporting Data

The user can use the Export Data screen to export a MCD file to an Excel data file. The Excel data file follows the same format as the Excel template file provided by the NGC Mass Configuration Manager. This gives the user the option to save an "As Build" file for backup purposes.



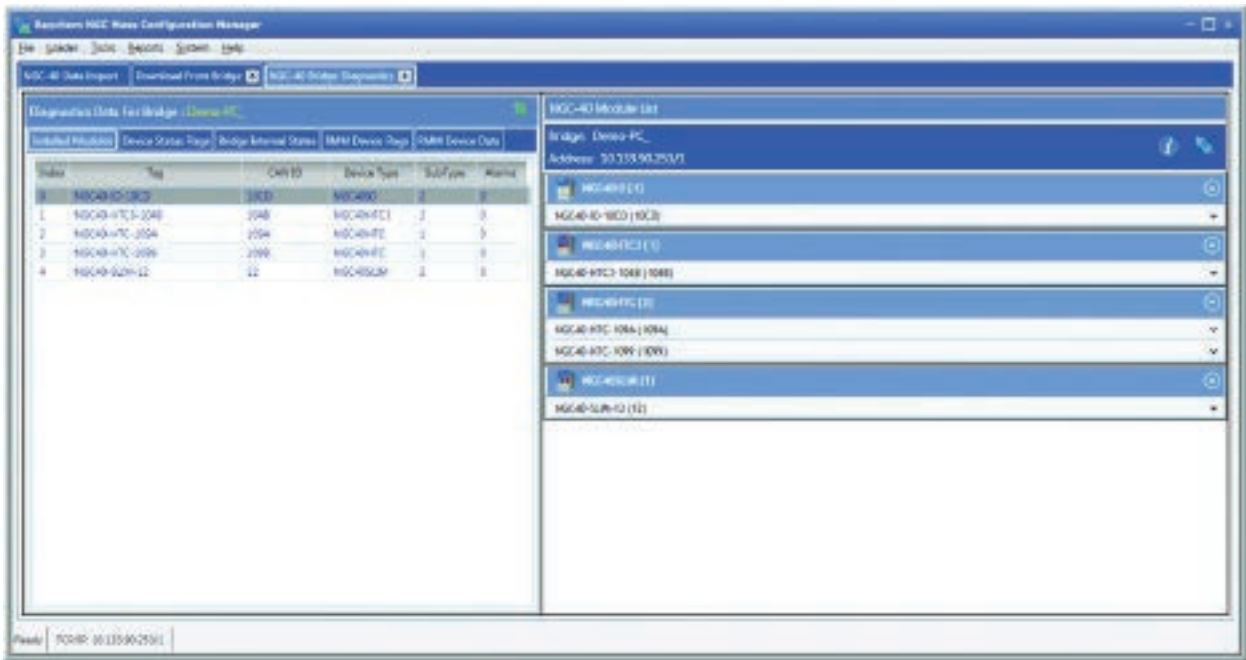
Screen 3.7a File Export Screen

Note: The equipment list order may not be the same if the MCD file was from derived from a backup done using the Download From Bridge operation, since the data obtained from the NGC-40 Bridge will have a different order.

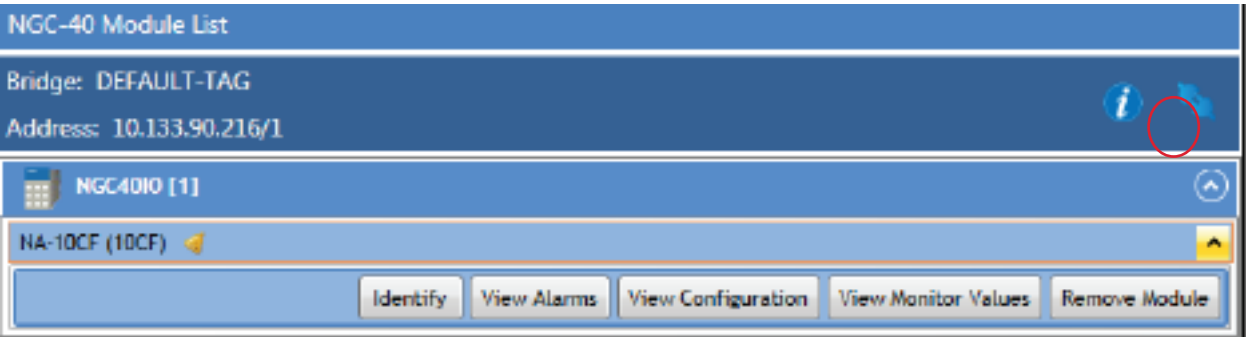
SECTION 4 – USING THE ADVANCED TOOLS

4.1 NGC-40 Bridge Diagnostics

The NGC-40 Bridge Diagnostics has a set of functions that the user can use to view different locations in the NGC-40 Bridge memory. This information is found in the NGC-40 Bridge Modbus Map. The NGC-40 Bridge Diagnostics screen is divided into 2 Windows Panes. The left pane shows the Bridge specific information. The right pane is the NGC-40 Module List. This is the same list as the NGC-40 Module List in the Data Import screen. However, there are added functions available for the user to view alarms, configuration settings, or monitor data for a NGC-40 module.



Screen 4.1a: NGC-40 Bridge Diagnostics



Screen 4.1b: Additional Module specific functions

| Function Button     | Operation                                                              |
|---------------------|------------------------------------------------------------------------|
| Identify            | Allow the user to perform the Identify Module operation.               |
| View Alarms         | Allow the user to view the current alarms in a module.                 |
| View Configuration  | Allow the user to view the current configuration settings in a module. |
| View Monitor Values | Allow the user to view the monitor values in a module.                 |
| Remove Module       | Allow the user to remove the module from the Bridge.                   |

On the NGC-40 Module List, the highlighted icon is used to view Bridge configuration settings (see Screen 4.1b).

## 4.2 Change Multiple Parameters

The Change Multiple Parameters function gives the user the ability to change configuration parameters for 1 or more controllers in a NGC-40 Panel. For example, if the user wants to update the Control Temperature Set-point for 30 Circuits in the Panel. For the initial release of the NGC Mass Configuration Manager, only HTC and HTC3 module configuration can be changed with this function.

The Change Multiple Parameters screen is composed of 3 functional areas; toolbar button menu, screen information, and Operations.

### 4.2.1 Toolbar Buttons

The Change Multiple Parameters Toolbar has the following toolbar buttons:

| File         | Open Recipe       | None                                                                                                                                                                          | Opens and loads the Controller Parameters list from a Recipe file. |
|--------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
|              | Save Recipe       | None                                                                                                                                                                          | Save the current list of Controller Parameters to a Recipe file.   |
| NGC-40 Panel | Connect to NGC-40 |                                                                                                                                                                               |                                                                    |
| Bridge       | None              | The Connection button brings up the Device Connection screen. This allows the user to select or connect to a NGC-40 Bridge, if a connection has not already been established. |                                                                    |
| Start Write  | None              | None                                                                                                                                                                          | This button starts the Change Multiple Parameters operation.       |

### 4.2.2 NGC-40 Change Multiple Parameters Operation

The NGC-40 Change Multiple Parameters screen consists of 2 Windows Panes. There are the Controller Parameters and the NGC-40 Controllers pane. The Controller Parameters pane holds the list of Parameters that the user has selected to be changed. There are function buttons on the Controller Parameters title bar for users to manage and maintain the parameter list.



The function buttons from left to right are for Edit, Add, and Delete Controller Parameters. When the user clicks the Add Controller Parameters function button, the following screen appears.

 A blue dialog box titled 'Add Parameters'. It contains three input fields: 'Parameter Group:' with a dropdown menu showing 'Temperatures', 'Parameter Name:' with a dropdown menu showing 'Control Temperature Setpoint', and 'Parameter Value:' with a text box containing '10' and a unit indicator '°C'. At the bottom right, there are two buttons: 'Add' and 'Cancel'.

Screen 4.2.2a: Add Parameters screen

For the initial release of the NGC Mass Configuration Manager, the selections will include the parameters found in the BASIC settings tab in the Touch 1500.

For Editing a Control Parameter, the same screen will be used with the title updated to Edit Parameter instead.

If the user chose to use a Recipe file, the Controller Parameters pane will be cleared and the Parameters defined in the Recipe file will be loaded.

The user must have a connection to a NGC-40 Panel before a list of HTC/HTC3 modules is displayed in the NGC-40 Controllers Pane. Once a connection is made and the list is displayed, the user must select the modules that will be changed. A toggle all button on the NGC-40 Controllers title bar is available for the user to select/deselect all. The final step is to use the Start Upload button to start the Change Multiple Parameters process.

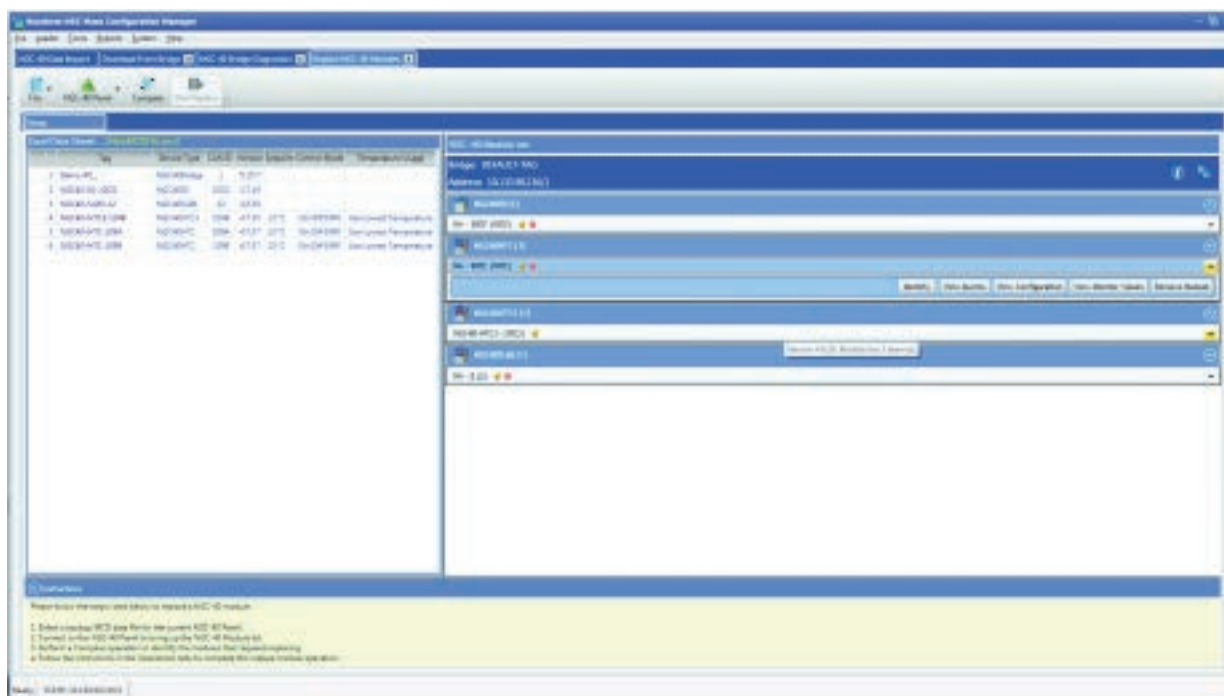


Note: If the Controller Parameters list includes NGC-40 HTC3 specific Parameters, the NGC Mass Configuration Manager will update only the NGC-40 HTC3 with those Parameters (i.e. line 1 current, line 2 current, .etc.). The same apply to NGC-40 HTC specific Parameters (i.e. line current).

### 4.3 Replace NGC-40 Modules

The Replace NGC-40 Modules function provides the user the ability to transfer configuration settings from 1 or more failed modules to their replacement modules. In order to proceed with the Replace NGC-40 Modules operation, the user should have the original or backup version of MCD data file used for the NGC-40 Panel being serviced.

Replace NGC-40 Modules screen is composed of 3 functional areas; toolbar button menu, Operations, Instructions. The Operations area is the large area in the middle of screen between the toolbar button menu and Instructions. This area is organized with 3 tabs; Setup, Operation, and Status Summary. Not all tabs are visible until the user initiates a replace operation.



Screen 4.3a: Replace NGC-40 Modules

### 4.3.1 Toolbar buttons

The Change Multiple Parameters Toolbar has the following toolbar buttons:

| Main Toolbar Button | Sub Toolbar Button       | Sub-Sub Toolbar Button | Operation                                                                                                                                                                                   |
|---------------------|--------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| File                | Select                   | None                   | Opens and loads a Mass Config Data (MCD) file.                                                                                                                                              |
|                     | Show Information         | None                   | Display detail information for a NGC-40 module in the Excel Data Sheet.                                                                                                                     |
|                     | Save Summary             | None                   | The Save Summary button will allow the user to save the Status Summary to a text file. The contents of the text file are from the Status Summary Tab.                                       |
| NGC-40 Panel        | Connect To NGC-40 Bridge | None                   | The Connect To NGC-40 Bridge button brings up the Device Connection screen. This allows the user to select or connect to a NGC-40 Bridge, if a connection has not already been established. |
| Compare             | None                     | None                   | This button starts the compare on the data in the Excel Data Sheet and NGC-40 Module List.                                                                                                  |
| Start Replace       | None                     | None                   | This button starts Replace operation.                                                                                                                                                       |

### 4.3.2 Using the Instructions

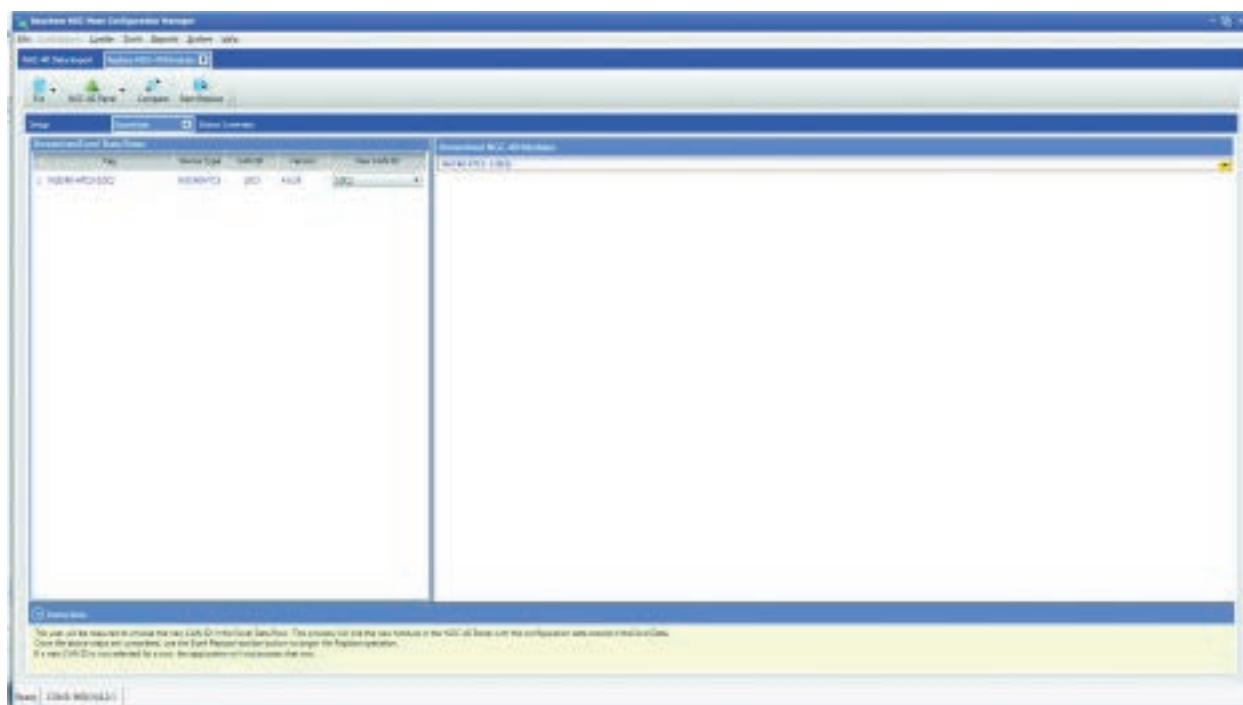
The Instructions area is located at the bottom of the Replace NGC-40 Modules screen and it describes the steps required to complete the Replace operation. This area can be collapsed if more viewing space is required for the Operations area.

### 4.3.3 Performing the Compare Operation

The Compare toolbar button is used to start a Compare operation. The Compare operation will attempt to find difference between the Excel Data Sheet and the NGC-40 Module List. Any NGC-40 Modules that does not have a matching NGC-40 module in both lists will be tagged as differences. After the Compare operation completes, the Operation Tab will appear.

### 4.3.4 Performing the Replace Operation

The Operation tab has 2 display areas; Unresolved Excel Data Row and Unresolved NGC-40 Modules.



Screen 4.3.4a: Operation tab

The Unresolved Excel Data Rows shows a list of NGC-40 modules from the Excel Data Sheet that cannot be matched with any NGC-40 modules in the NGC-40 Module List. Vice versa, the Unresolved NGC-40 Modules shows a list of NGC-40 modules from the NGC-40 Module List in the Setup tab that cannot be matched with any NGC-40 modules in the Excel Data Sheet. In order for the Replace to proceed, the user must manually match the NGC-40 modules from the 2 unresolved lists. For this step, the user has to use the New CAN ID pull down box in the Unresolved Excel Data Row and select a CAN ID. The pull down box contains only CAN ID's from modules of the same type (i.e. HTC2, or HTC3, .etc.). If the New CAN ID field is left blank, the Replace operation will not process it. When the user is ready to start the Replace operation, the user clicks the Start Replace toolbar button. The Status Summary tab will appear displaying the current progress of the Replace operation. When the Replace Modules operation has completed successfully, depending on what modules are replaced, the application will prompt the user if the IO or Limiter modules requires updating. The user has the option to skip this if they choose to.

## 4.4 Comparing MCD Data Files

The MCD File Compare can be used to compare 2 MCD data files. The screen is divided into 3 functional areas; File Selection, Differences found based on modules, and Configuration settings of the 2 MCD data file. The Differences found based on modules is the area beneath the File Selection area. It has 2 display areas showing data from the 2 MCD data files. The Configuration settings of the 2 MCD data file are located on the right portion of the screen. This area displays the configuration settings for 2 NGC-40 modules, one from each of the MCD data files. Any differences found will be displayed in red text.

Screen 4.4a: MCD File Compare

## 4.5 Comparing Excel Data Files

The Excel File Compare can be used to compare 2 Excel data files. The screen is divided into 3 functional areas; File Selection, Differences found for rows in a Worksheet, and Values on the columns that are different for the 2 worksheet Rows. The Differences found for rows in a Worksheet is the area beneath the File Selection area. It has 2 display areas showing data from the 2 excel files. Please note only differences will be shown. To view differences for another Worksheet, use the Excel Worksheet pull down box and select the worksheet to view. The Values on the columns that are different for the 2 worksheet Rows are located on the right portion of the screen. This area displays only differences of the column values for the same Row on the 2 Excel file. For example Values of Row #10, Column 1, etc.

Screen 4.5a Excel File Compare

[illegible]

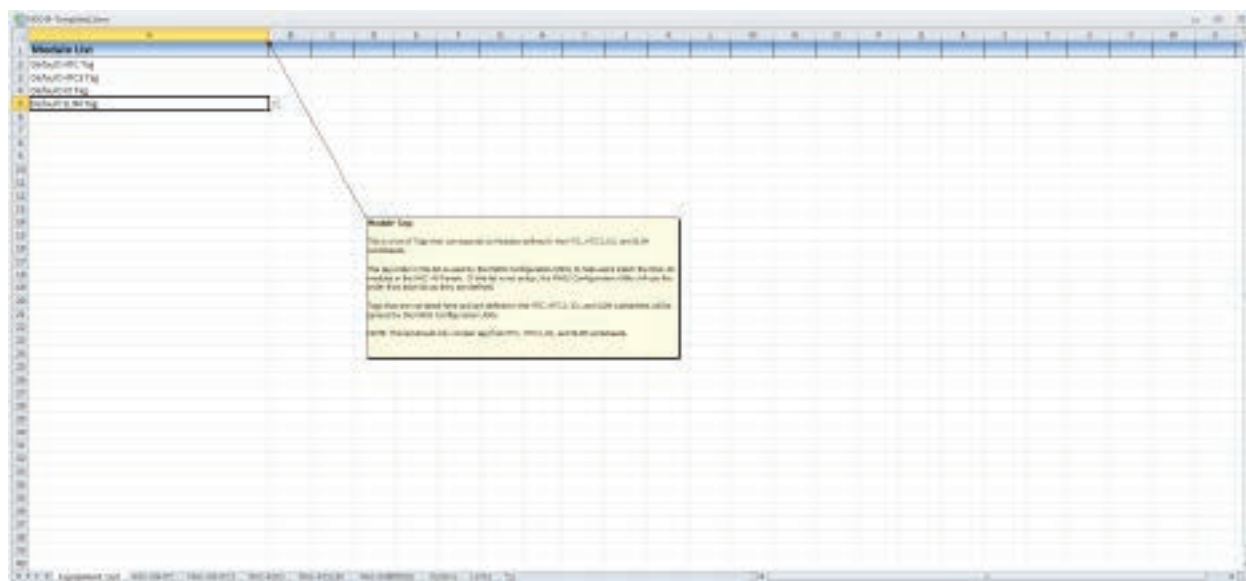
## Appendix A Trouble Shooting and Maintenance

1. Get the error when opening an Excel data file: Unable to cast COM object of type 'Microsoft.Office.Interop.Excel.ApplicationClass' to interface type 'Microsoft.Office.Interop.Excel.\_Application'. This operation failed because the QueryInterface call on the COM component for the interface with IID '{000208D5-0000-0000-C000-000000000046}' failed due to the following error: Library not registered. (Exception from HRESULT: 0x8002801D (TYPE\_E\_LIBNOTREGISTERED))
2. When problems occur during the import of an Excel file with the Com Object. Chances are the Registry is not correct anymore
3. Go to HKCR\TypeLib\{00020813-0000-0000-C000-000000000046} and check if there is only 1 value (for 2007 this should be 1.7) with data in it
4. For example HKCR\TypeLib\{00020813-0000-0000-C000-000000000046}\1.7 Delete all other ones. Always be sure to export the keys before altering them in case of a mistake. Do NOT delete all of them, as the COM object will not work anymore

## Appendix B Excel Template

### 1. Equipment List Worksheet

The Equipment List worksheet is a list of Tag from the NGC-40 modules in the NGC-40HTC, NGC-40HTC3, NGC-40IO, and NGC-40SLIM worksheets.



#### Appendix B.1 Equipment List Worksheet

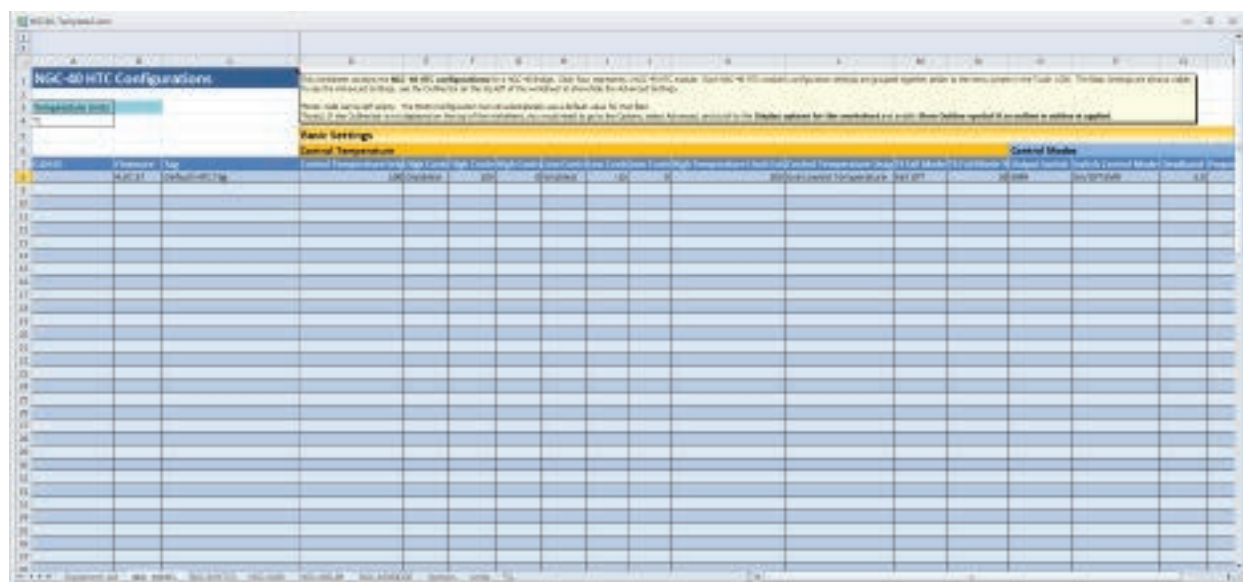
The Equipment List worksheet is a special worksheet. This worksheet holds the order of the modules as they are layout in the NGC-40 Panel, not including the Bridge module. The list is ordered from 1 to 80, starting from Row #2 and it corresponds to the row and slot of the module on the Panel. For example, Row #2 in this worksheet corresponds to the 1<sup>st</sup> module in the NGC-40 Panel which is normally the module next to the Bridge module. The ordering sequence for the NGC-40 Panel is from top to bottom and from left to right. The bridge module is identified as residing on Row #1/Slot #1 on the panel. The module next to the bridge module is identified as Row #1/Slot # 2, .etc. With reference to the Module List in this worksheet, the data starts on Row #2. Therefore, the module on Row #2 in the Module list will correspond to the NGC-40 module on Row #1/Slot #2 on the NGC-40 Panel. The module on Row #3 in the Module list will correspond to the NGC-40 module on Row #1/Slot #3, .etc. More detail explanation of this mapping scheme is described in

*Section 3.4.3 NGC-40 Panel Layout Editor Pane.* The module's configuration settings are stored in the other worksheets, but are referenced by their Tags in the Equipment List. The NGC Mass Configuration Manager makes use of this information in its Excel Data Sheet and

NGC-40 Panel Layout Editor Pane. Since the NGC-40 Panel size may vary, the NGC Mass Configuration Manager will figure out how to map this ordered list when the Panel size changes (i.e. Row containing 8 modules instead of 10 modules). If the Equipment List is empty then the NGC Mass Configuration Manager will set the order automatically starting with the row items in the NGC40HTC worksheet, then the NGC40HTC3 worksheet, .etc.

## 2. NGC-40 HTC Worksheet

The NGC-40HTC worksheet holds the configuration settings for all the NGC-40 HTC modules in a NGC-40 Panel.

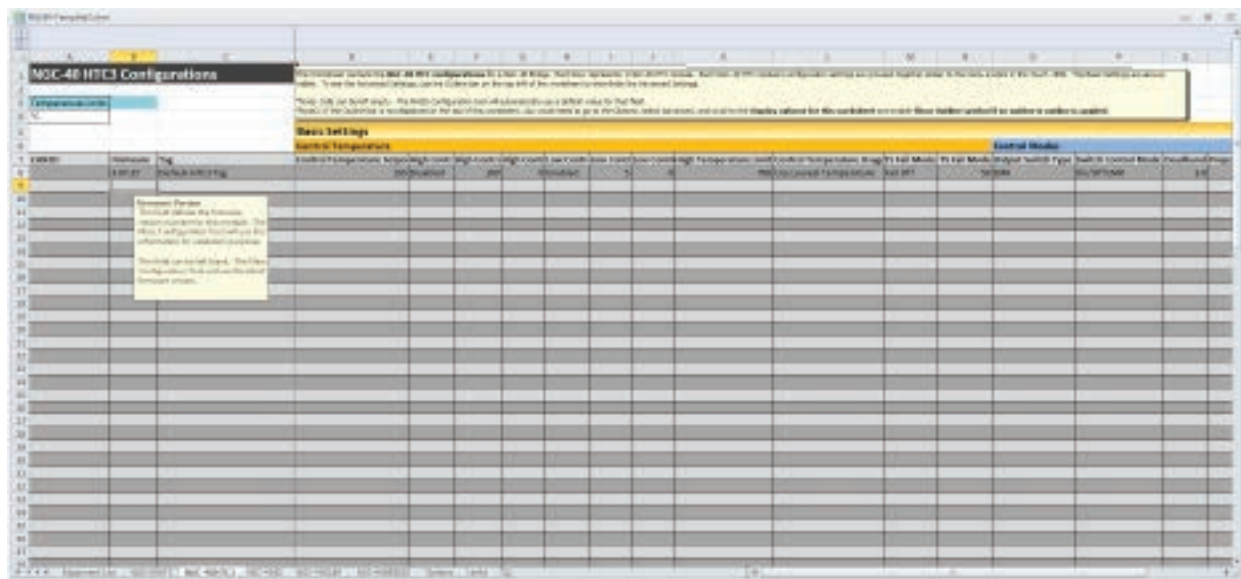


Appendix B.2 NGC-40HTC Worksheet

This worksheet will show the BASIC SETTINGS which are the same as the parameters used in the Touch 1500 BASIC SETTINGS tab. If the user wants to see the ADVANCED SETTINGS, the user must click on the Outline buttons (top left corner of the worksheet, for example button 1, 2) to toggle the view of the ADVANCED SETTINGS. Each row starting from Row #8 holds the configuration settings for 1 NGC-40 HTC module. Fields can be left blank. If a field is blank the NGC Mass Configuration Manager will automatically use the default value for it. It is important to mention that the TAG column should be filled in for a row of data; otherwise the NGC Mass Configuration Manager will ignore that row. The Tag field is a key used by the NGC Mass Configuration Manager to reference this module. For example it will be used in all fields that require a CAN ID value, since CAN IDs are not known at the time a template is created. This allows the template to display a set of tags that the user has already entered, for any CAN ID required fields (i.e. Temperature Source 1 Device CAN ID, Temperature source 2 Device CAN ID, etc.).

### 3. NGC-40 HTC3 Worksheet

The NGC-40HTC3 worksheet holds the configuration settings for all the NGC-40 HTC3 modules in a NGC-40 Panel.



#### Appendix B.3 NGC-40HTC3 Worksheet

This worksheet will show the BASIC SETTINGS which are the same as the parameters used in the Touch 1500 BASIC SETTINGS tab. If the user wants to see the ADVANCED SETTINGS, the user must click on the Outline buttons (top left corner of the worksheet, for example button 1, 2) to toggle the view of the ADVANCED SETTINGS. Each row starting from Row #8 holds the configuration settings for 1 NGC-40 HTC3 module. Fields can be left blank. If a field is blank the NGC Mass Configuration Manager will automatically use the default value for that field. It is important to mention that the TAG column should be filled in for a row of data; otherwise the NGC Mass Configuration Manager will ignore that row. The Tag field is a key used by the NGC Mass Configuration Manager to reference this module. For example it will be used in all fields that require a CAN ID value, since CAN ID is not known at the time the template is created. This allows the template to display a set of tags that the user has already entered, for any CAN ID required fields (i.e. Temperature Source 1 Device CAN ID, Temperature source 2 Device CAN ID, etc.).

#### 4. NGC-40 IO Worksheet

The NGC-40IO worksheet holds the configuration settings for all the NGC-40 IO modules in a NGC-40 Panel.

The screenshot shows a spreadsheet titled "NGC-40 IO Configurations". It has a header section with tabs for "General", "Alarm Settings", and "Temperature Sensors". The "General" tab is active, showing columns for "CAN ID", "Filter", "Tag", "Device Serial Number", "Signal Input Configuration", "Alarm Output", "Alarm Output 2", "T1 RTD Type", "T1 RTD Input", "T1 RTD Tag", "T1 High Temp (T1)", "T1 Low Temp (T1)", "T2 RTD Type", "T2 RTD Input", "T2 RTD Tag", "T2 High Temp (T2)", "T2 Low Temp (T2)", "T3 RTD Type", "T3 RTD Input", "T3 RTD Tag", "T3 High Temp (T3)", "T3 Low Temp (T3)", "T4 RTD Type", "T4 RTD Input", "T4 RTD Tag", "T4 High Temp (T4)", "T4 Low Temp (T4)", "T5 RTD Type", "T5 RTD Input", "T5 RTD Tag", "T5 High Temp (T5)", "T5 Low Temp (T5)", "T6 RTD Type", "T6 RTD Input", "T6 RTD Tag", "T6 High Temp (T6)", "T6 Low Temp (T6)", "T7 RTD Type", "T7 RTD Input", "T7 RTD Tag", "T7 High Temp (T7)", "T7 Low Temp (T7)", "T8 RTD Type", "T8 RTD Input", "T8 RTD Tag", "T8 High Temp (T8)", "T8 Low Temp (T8)", "T9 RTD Type", "T9 RTD Input", "T9 RTD Tag", "T9 High Temp (T9)", "T9 Low Temp (T9)", "T10 RTD Type", "T10 RTD Input", "T10 RTD Tag", "T10 High Temp (T10)", "T10 Low Temp (T10)". The rows are numbered 1 through 100 on the left side.

#### Appendix B.4 NGC-40IO Worksheet

In this worksheet, the configuration settings are grouped in columns. You can use Outline buttons (top left corner of the worksheet, for example buttons 1, 2) to expand the view to show each column group. Each row starting from Row #8 holds the configuration settings for 1 NGC-40 IO module. Fields can be left blank. If the field is blank the NGC Mass Configuration Manager will automatically use the default value for that field. It is important to mention that the TAG column should be filled in for a row of data; otherwise the NGC Mass Configuration Manager will ignore that row. The Tag field is a key used by the NGC Mass Configuration Manager to reference this module. For example it will be used in all fields that require a CAN ID value, since CAN ID is not known at the time the template is created. This allows the template to display a set of tags that the user has already entered, for any CAN ID required fields (i.e. Temperature Source 1 Device CAN ID, Temperature source 2 Device CAN ID, etc.).

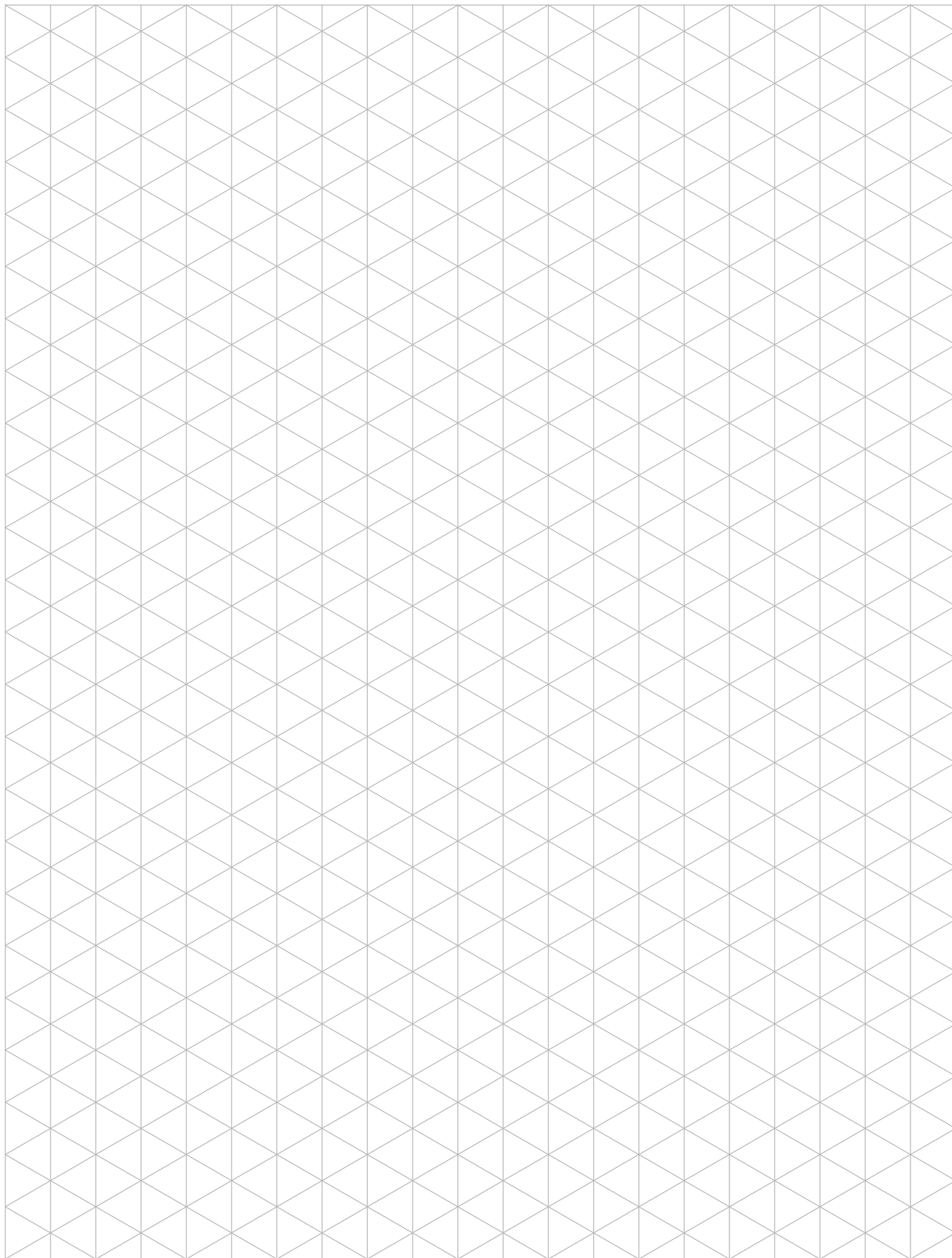
## 5. NGC-40 SLIM Worksheet

The NGC-40SLIM worksheet holds the configuration settings for all the NGC-40 SLIM modules in a NGC-40 Panel.

The screenshot shows a spreadsheet titled "NGC-40 SLIM Configurations". It features a header row with tabs for "General", "Alarm", and "Alarm Link Settings". The main area is a grid of rows and columns. A yellow callout box is visible on the left side of the grid, containing text about the "Temperature Source 1 Device CAN ID".

Appendix B.5: NGC-40SLIM Worksheet

In this worksheet, the configuration settings are grouped in columns. You can use Outline buttons (top left corner of the worksheet, for example buttons 1, 2) to expand the view to show each column group. Each row starting from Row #8 holds the configuration settings for 1 NGC-40 SLIM module. Fields can be left blank. If the field is blank the NGC Mass Configuration Manager will automatically use the default value for that field. It is important to mention that the TAG column should be filled in for a row of data; otherwise the NGC Mass Configuration Manager will ignore that row. The Tag field is a key used by the NGC Mass Configuration Manager to reference this module. For example it will be used in all fields that require a CAN ID value, since CAN ID is not known at the time the template is created. This allows the template to display a set of tags that the user has already entered, for any CAN ID required fields (i.e. Temperature Source 1 Device CAN ID, Temperature source 2 Device CAN ID, etc.).



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