Settings, Data and Software Tool

PC Application Software for SuperTAPP SG

User Manual

FUNDAMENTALS
PAST EXPERIENCE | PRESENT SOLUTIONS | FUTURE PROOF

About this manual

Software Supplier and Publisher

The PC Application software is supplied by, and this manual is published by:

Fundamentals Limited
Unit 2, Hillmead Industrial Park
Marshall Road
Swindon
SN5 5FZ
UK

Document Reference FP1034-U-10 v2.3

Version Information

Issue	Date	Description of Main Changes	Software version
1.0	Sept. 2016	First issue	1.0.0.297
2.0	July. 2019	Updated to latest revision of PC tool	2.11.0.0
2.1	Oct 2020	Updated to latest revision of PC tool	3.00
2.2	Oct 2021	Updated to latest revision of PC tool	3.3.0
2.3	May 2022	Updated location	3.3.0

Table of Contents

1 List of Figures

2 Introduction

The SuperTAPP SG settings, data and software tool is designed to communicate with SuperTAPP SG and act as a PC user interface. The application performs the following functions:

- Allow the application to control the relay via a USB connection
- Facilitates setting the date and time
- Identifies software version number
- Updates software
- Downloads setting values from the relay
- Facilitates editing and uploading new setting values to the relay
- Loads the saved setting data and saves the edited data
- Facilities access to analogue and event data.

The application is fully compatible with Windows 7, Windows 8, Windows 8.1 and Windows 10.

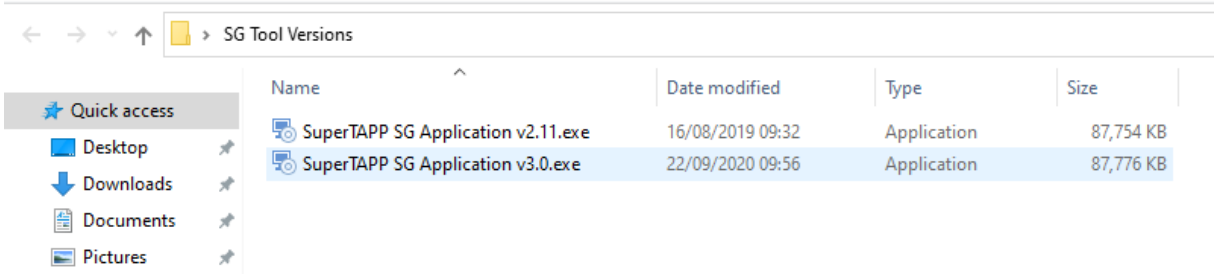
3 Installation Procedures

If any versions of the SuperTAPP SG Application have previously been installed, these must be uninstalled before completing a new installation process. This means uninstalling it following the uninstall process in 3.2 and then deleting any files left in the OS(C:)>Program files(x86)>SuperTAPP SG folder.

3.1 Installation

1. Double click on the desired version of SuperTAPP SG Application installer

Figure 1:SuperTAPP SG Application file



2. An installation window should appear with required memory and file destination. When this criterion is as desired, proceed by pressing install.
3. After the installation has been completed the following window should be displayed.

Figure 2:Window after successful Installation

3.2 Uninstalling

1. This should be completed in Microsoft settings/apps and searching for SuperTAPP SG, then clicking uninstalling.
2. The Modify, Repairing or Remove window will appear. Clicking remove will uninstall the application and completion will be confirmed.

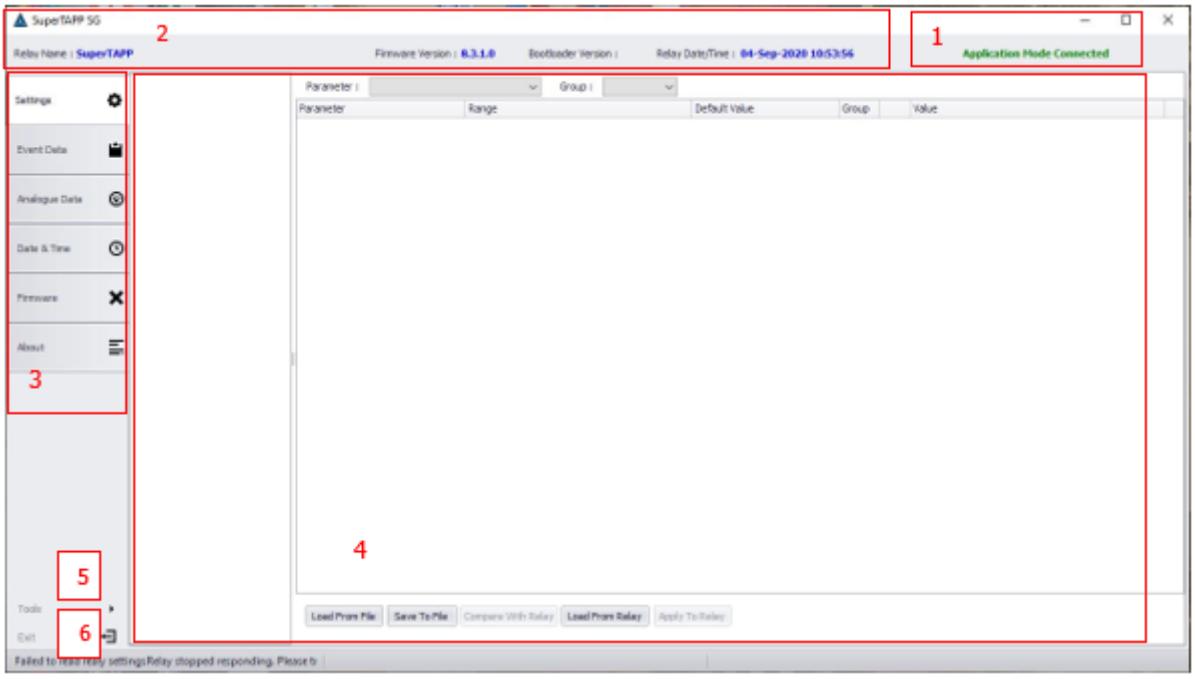
Figure 3:Removing a previously installed application

4 User Interface Description

The application window consists of the following parts, referring to Figure 4:

1. Connection status
2. Relay information bar
3. Function tabs
4. Main application area
5. Tools menu
6. 'Exit' button.

Figure 4:Application window



Below is a short description of what each part does:

4.1 Connection Status

The connection between the PC application and the relay is established via USB. This connection allows the tool to control and make settings changes to the relay. The status of this connection is shown by text in the top right corner of the screen which can show one of following labels:

▲ **Not connected** This can mean one of three things: the relay is off, the relay is not connected or the communication cable is broken in some way. Users can still load settings files from the PC and modify them.

- **Application mode** This means that the tool is successfully connected to the relay and user can download/upload settings to the relay, view/download logs and set the date and time.
- **Bootloader mode** This means that the tool is successfully connected to the relay which is in bootloader mode. The user can now update software as described in section 5.5.

4.2 Relay Information bar

This section displays useful information about the connected relay. Referring to Figure 4

- **Relay Name** The relay name as configured in the connected relay settings. This field is blank if no relay is connected.
- **Software Version** Main relay software version which is running on the connected relay. This field is blank if no relay is connected.
- **Bootloader Version** Bootloader software version which is installed on the connected relay. This field is blank if no relay is connected.
- **Board Date/Time** Current date and time on the connected relay. This is defaulted to "01-Jan-1900 00:00:00" if no relay is connected.

4.3 Function tabs

As displayed in Figure 4 these tabs allow the user to navigate between different functions of the application. The tabs are:

- **Settings tab** Facilitates the loading, saving of setting values to/from disk, editing settings values, downloading setting values from the relay and uploading the loaded or changed setting values to the relay.
- **Event Data tab** Facilitates the copying of the event data from the relay storage to the PC disk. It also allows the user to filter the event data by date.
- **Analogue Data tab** Facilitates the copying of analogue data from the relay storage to the PC disk. It also has a feature that allows the user to filter by the date.
- **Date & Time tab** Allows the user to retrieve and set date and time for relay.
- **Software tab** Facilitates the option of uploading software versions to the relay.
- **About tab** Displays the application version number.

4.4 Main application area

The main application area is where the user carries out the different functions of the tool. The contents of the main application area as shown in Figure 4, is dependent on the selected function tab and is described in detail for each function in section 5.

4.5 Tools menu

PC software offers several tools to perform diagnostics on the relay as well as itself. One of the tools allows the user to check the storage of a SuperTAPP SG as displayed in Figure 5. This operation checks the consistency of storage and fixes any errors that are found. The checking process needs additional PC privileges for the user to use. The application will be restarted in privilege mode and the user will be asked to allow this as Figure 6 illustrates.

Figure 5:Tools menu

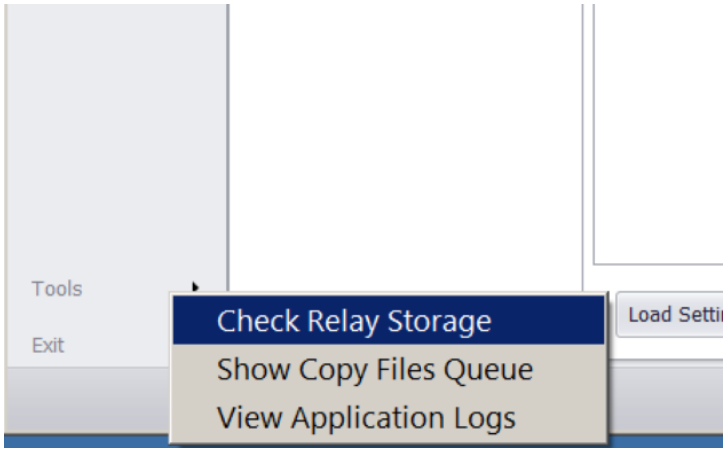
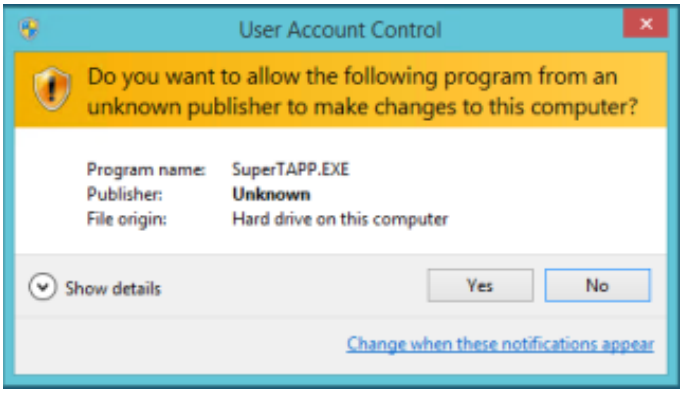


Figure 6:Privilege mode warning



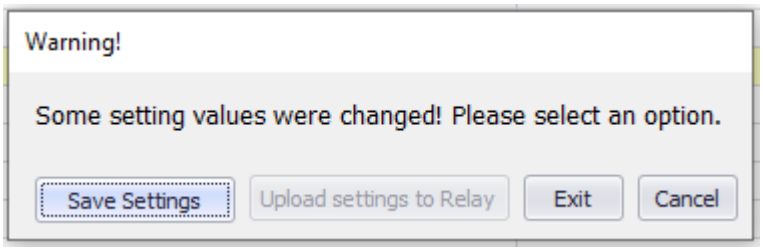
After the completing of the checking process, the application will be restarted in normal mode.

'View Application Logs' tool is provided to help in diagnosing any problems experienced by users while using PC software.

4.6 Exit button

The Exit button is used to stop the application. If some setting values were changed, a warning message will be displayed as see in Figure 7.

Figure 7:Changed values warning



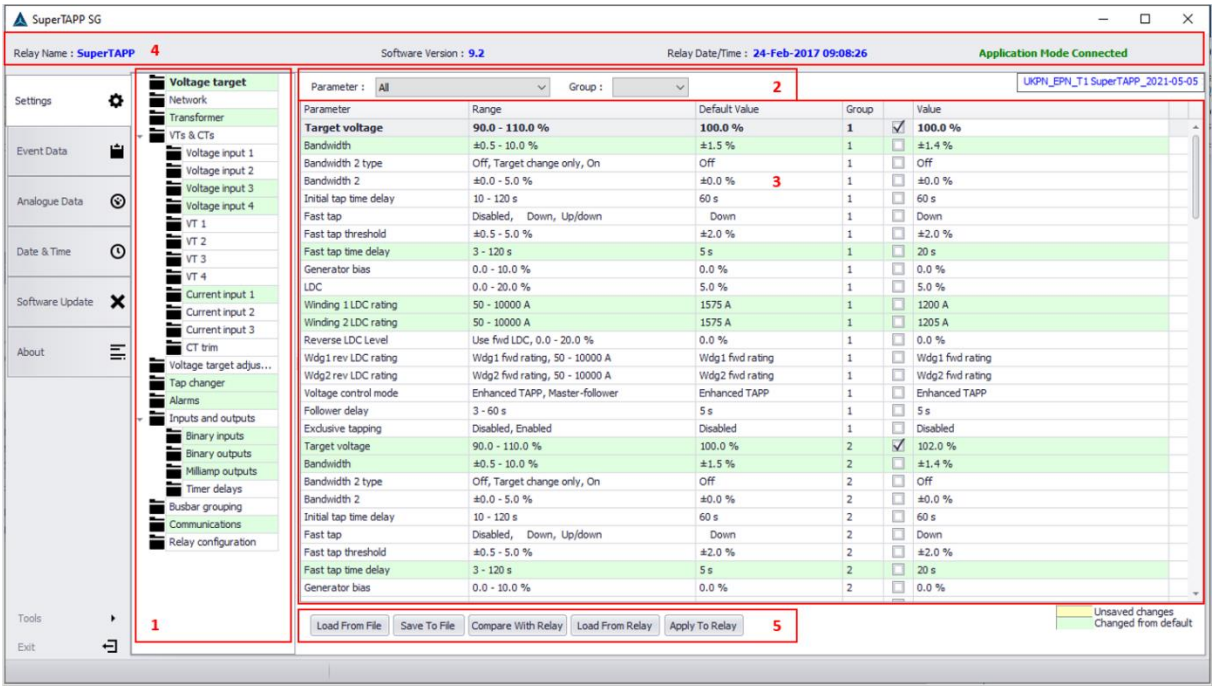
5 Application Functions

5.1 Settings

The settings functionality consists of following parts, referring to Figure 8:

1. Menu tree
2. Settings selection
3. Setting viewer/editor
4. Settings source information
5. Control-panel

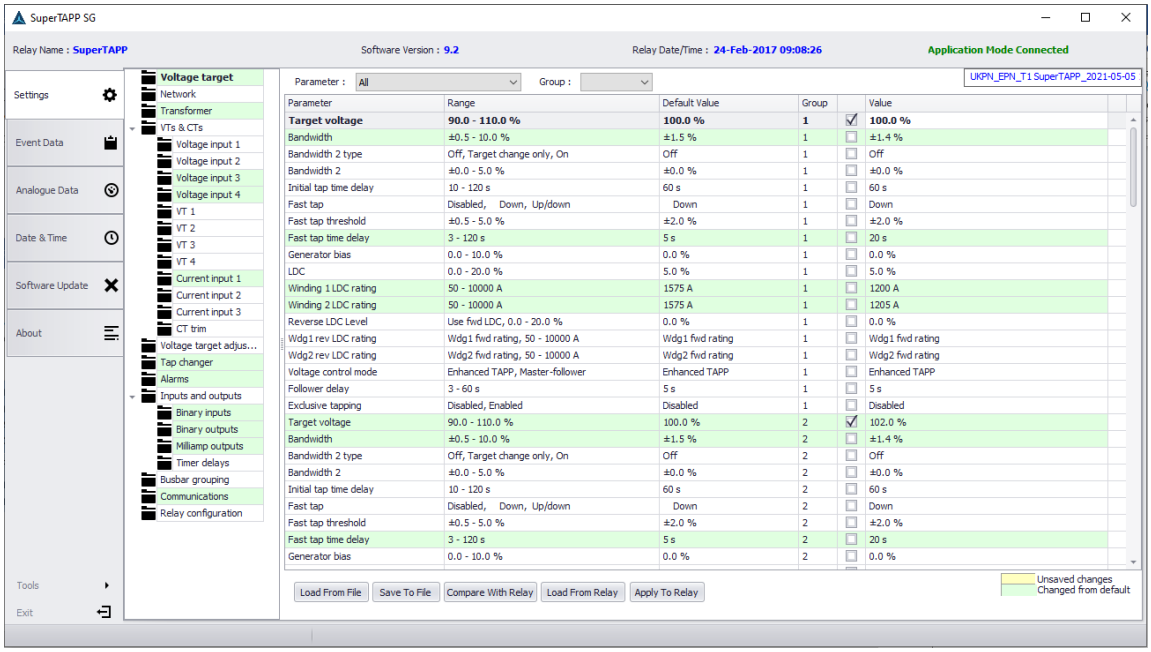
Figure 8:Settings view



5.1.1 Menu tree

The settings are in hierarchical form, corresponding to the setting menus and submenus within the SuperTAPP SG. You can select a menu in the settings tree to display all the settings from that menu as in Figure 9.

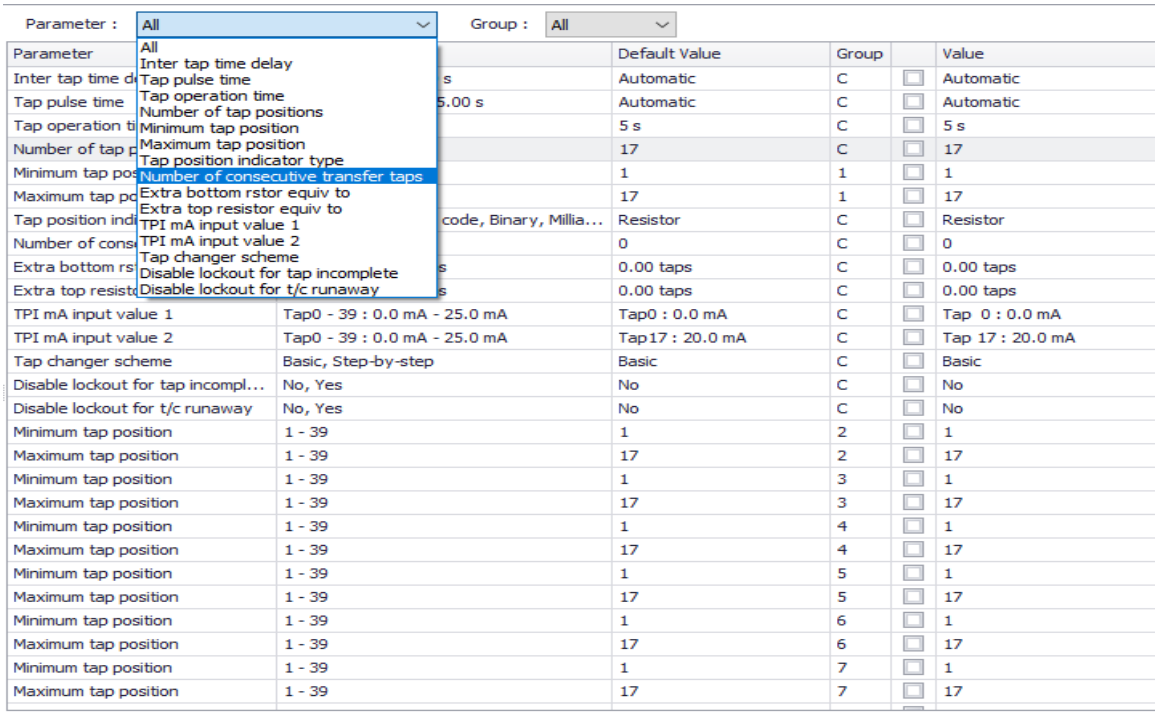
Figure 9:Menu view



5.1.2 Settings selection

You can choose to show a particular setting or all the settings from the selected menu using 'Parameter' combo box. Also, you can choose to show selected setting(s) values from a particular setting group or all setting groups using 'Group' combo box, see Figure 10. Setting groups functionality is explained in settings viewer/editor (5.1.3) description below.

Figure 10:Settings selection view



Parameter		Default Value	Group		Value
Inter tap time d	s	Automatic	C	☐	Automatic
Tap pulse time	5.00 s	Automatic	C	☐	Automatic
Tap operation ti		5 s	C	☐	5 s
Number of tap p		17	C	☐	17
Minimum tap pos		1	1	☐	1
Maximum tap pc		17	1	☐	17
Tap position indi	code, Binary, Millia...	Resistor	C	☐	Resistor
Number of cons		0	C	☐	0
Extra bottom rs	s	0.00 taps	C	☐	0.00 taps
Extra top resist	s	0.00 taps	C	☐	0.00 taps
TPI mA input value 1	Tap0 - 39 : 0.0 mA - 25.0 mA	Tap0 : 0.0 mA	C	☐	Tap 0 : 0.0 mA
TPI mA input value 2	Tap0 - 39 : 0.0 mA - 25.0 mA	Tap17 : 20.0 mA	C	☐	Tap 17 : 20.0 mA
Tap changer scheme	Basic, Step-by-step	Basic	C	☐	Basic
Disable lockout for tap incompl...	No, Yes	No	C	☐	No
Disable lockout for t/c runaway	No, Yes	No	C	☐	No
Minimum tap position	1 - 39	1	2	☐	1
Maximum tap position	1 - 39	17	2	☐	17
Minimum tap position	1 - 39	1	3	☐	1
Maximum tap position	1 - 39	17	3	☐	17
Minimum tap position	1 - 39	1	4	☐	1
Maximum tap position	1 - 39	17	4	☐	17
Minimum tap position	1 - 39	1	5	☐	1
Maximum tap position	1 - 39	17	5	☐	17
Minimum tap position	1 - 39	1	6	☐	1
Maximum tap position	1 - 39	17	6	☐	17
Minimum tap position	1 - 39	1	7	☐	1
Maximum tap position	1 - 39	17	7	☐	17

Source Information

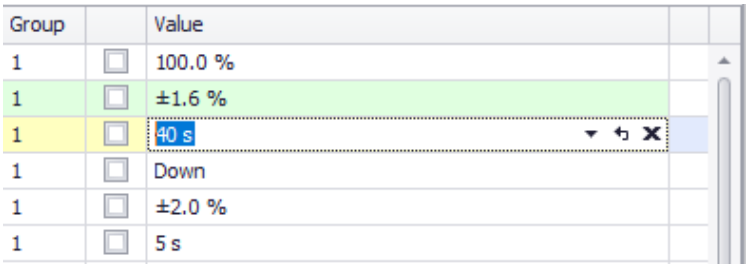
A label on the top right corner shows information about the source of displayed settings.

- ▲ **Current Relay settings** Displayed settings are loaded from the relay.
- ▲ **File name** Settings are loaded from a file and file name is displayed.

5.1.3 Settings Viewer/Editor

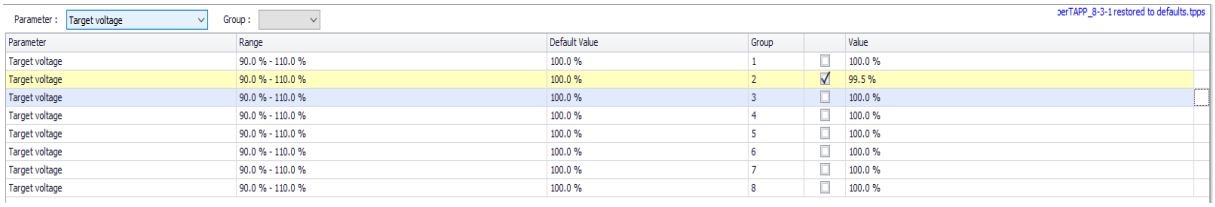
For each setting, the name, range, default value, current settings value and its group number are displayed. The editing mode is activated when the user clicks the desired value to be altered. The value editor will then open as seen in Figure 11.

Figure 11:Setting value editor



You can select the new value from the combo box, or by typing in the new value and pressing enter. Rejecting the entered value can be done by clicking the 'cross' icon or pressing the 'Esc' key. After this, the value editor will be closed.

Figure 12:Changing a setting value in a group



If the value of a setting or its group is changed, the setting row will change to a light-yellow color to signify an unsaved setting change. Once saved, this will turn green, as seen in Figure 11, to highlight the settings that have been altered from default. If any setting has been converted this is highlighted in red, as viewed in Figure 13.

Figure 13:Colour references

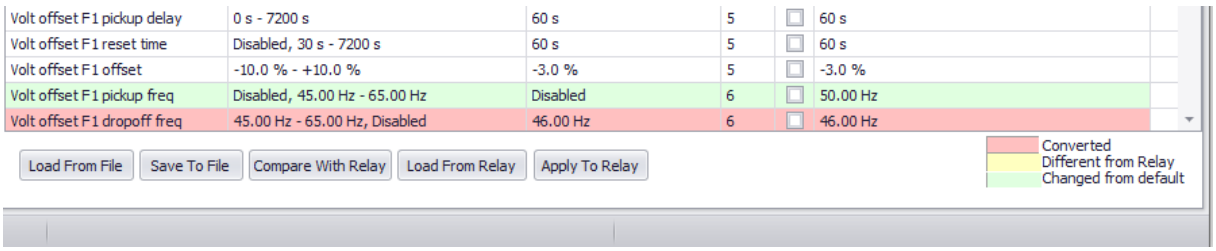
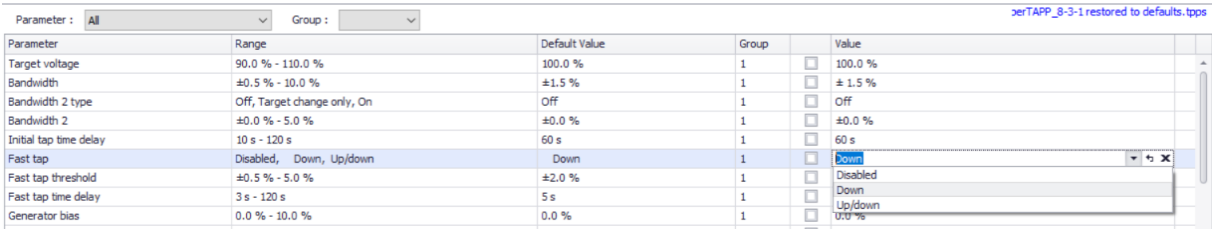


Figure 14:Changed setting value



The value editor only allows you to select a value within the range from the drop-down menu as shown in figure 14. The editor also allows you to undo an executed command. Trying to add a value outside the range is not permissible and would return to its original setting.

5.1.3.1 Setting groups and customization

The SuperTAPP SG relay allows up to eight groups of settings to be saved so that a relay can be rapidly configured for a new application. Certain settings can be customized for a particular group. If a setting is customizable, its groups number will be between 1 and 8 otherwise it will be 'C' (classed as common in all setting groups). To change a settings value in a particular group, tick (✓) the checkbox which is adjacent to the group number as seen in Figure 12.

5.1.4 Source Information

A label on the top right corner shows information about the source of displayed settings.

- **Current Relay settings** — Displayed settings are loaded from the relay.
- **File name** — Settings are loaded from a file and the file name is displayed.

5.1.5 Control-Panel

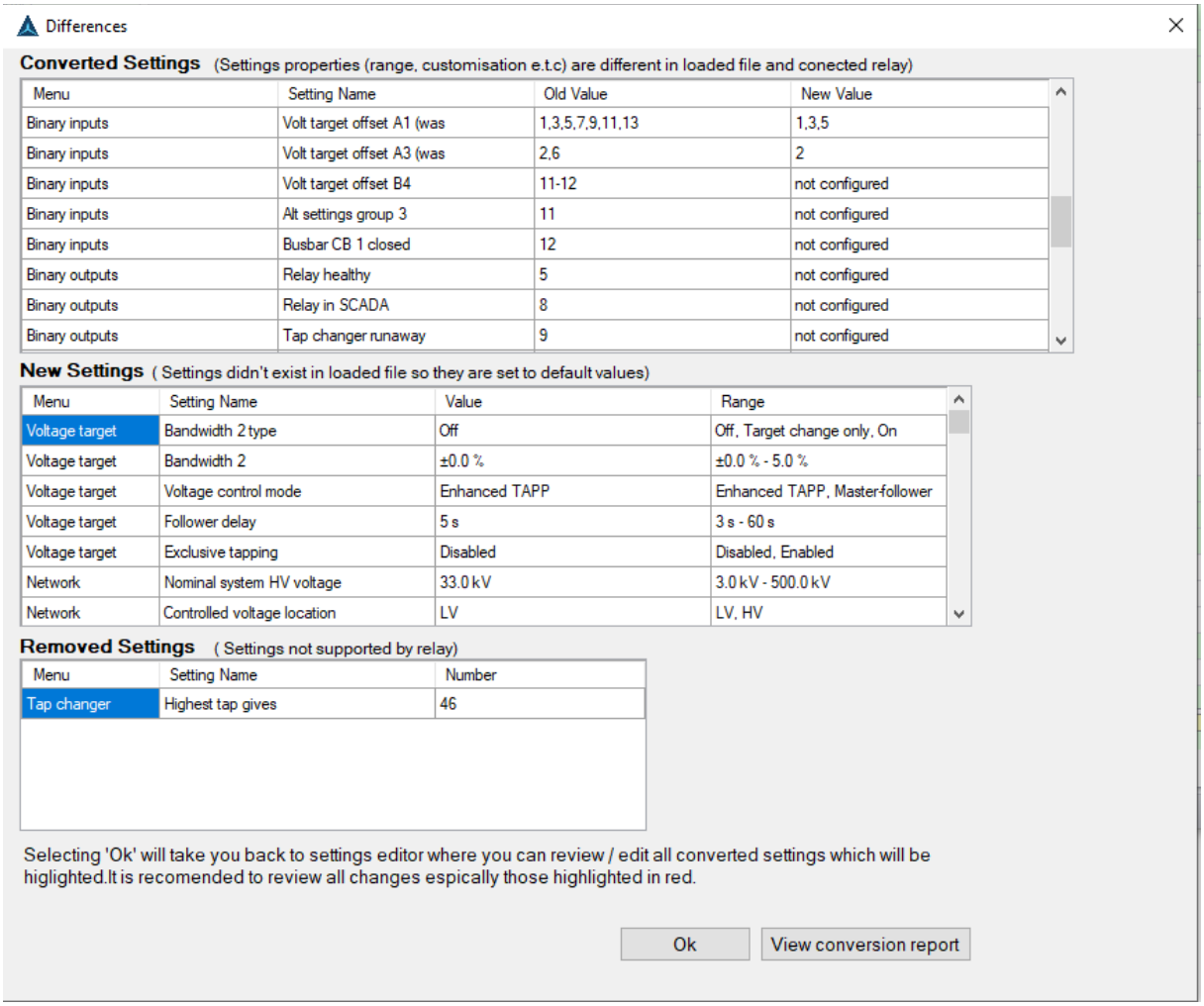
There are several buttons at the bottom of the application window, as previously seen in Figure 8

- **Load From File** — Loads the saved setting values from a file. It opens a standard windows dialog box for file selection.
- **Save To File** — Saves the currently loaded or downloaded setting values to a file. It opens a standard windows dialog box to select a destination folder,

name, and type of file. The dialog suggests a filename according to current date and time. The default file type suggested by dialogue is ".tpps" (tool specific file type) but you can also choose to save it as an Excel file. If the settings values are not loaded or downloaded, this button is disabled.

- **Compare with Relay** — Compares the currently loaded setting values with setting values in the connected relay. Settings loaded from a file are removed if they do not exist in the relay, due to software or hardware variations. Also, any settings in the relay which do not exist in the loaded file are set to default values. A Range check is also performed against these values. If there are significant differences, the user is informed about them as Figure 15 illustrates. If a setting value in the application is different to the setting value in the relay, then this setting will be highlighted in yellow. If a setting parameter has been converted this will be highlighted in red.
- **Load From Relay** — Downloads the setting values from the relay that is currently connected. If there is no relay connection, this button is disabled.
- **Apply to Relay** — Clicking this button uploads the settings to the relay. The tool compares the existing relay settings and the edited settings (as done in compare with relay) before applying and warn the user about significant changes. If setting values are loaded and the relay is connected, this button becomes active.

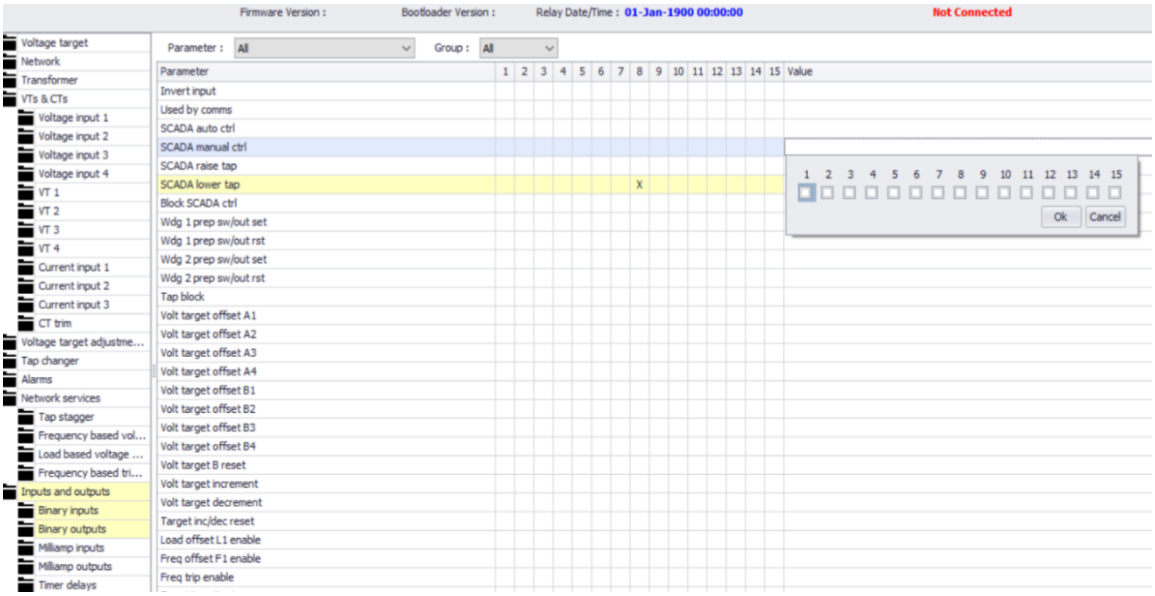
Figure 15:Differences between loaded settings and relay settings



5.1.6 Editing Binary I/O

Editing a binary input or output can be done by clicking on the grid corresponding to the I/O parameter as shown in Figure 16. Using ‘Enter’ and arrow keys on your keyboard can also be used to navigate/change values in the settings values window.

Figure 16:Editing a Binary I/O in settings

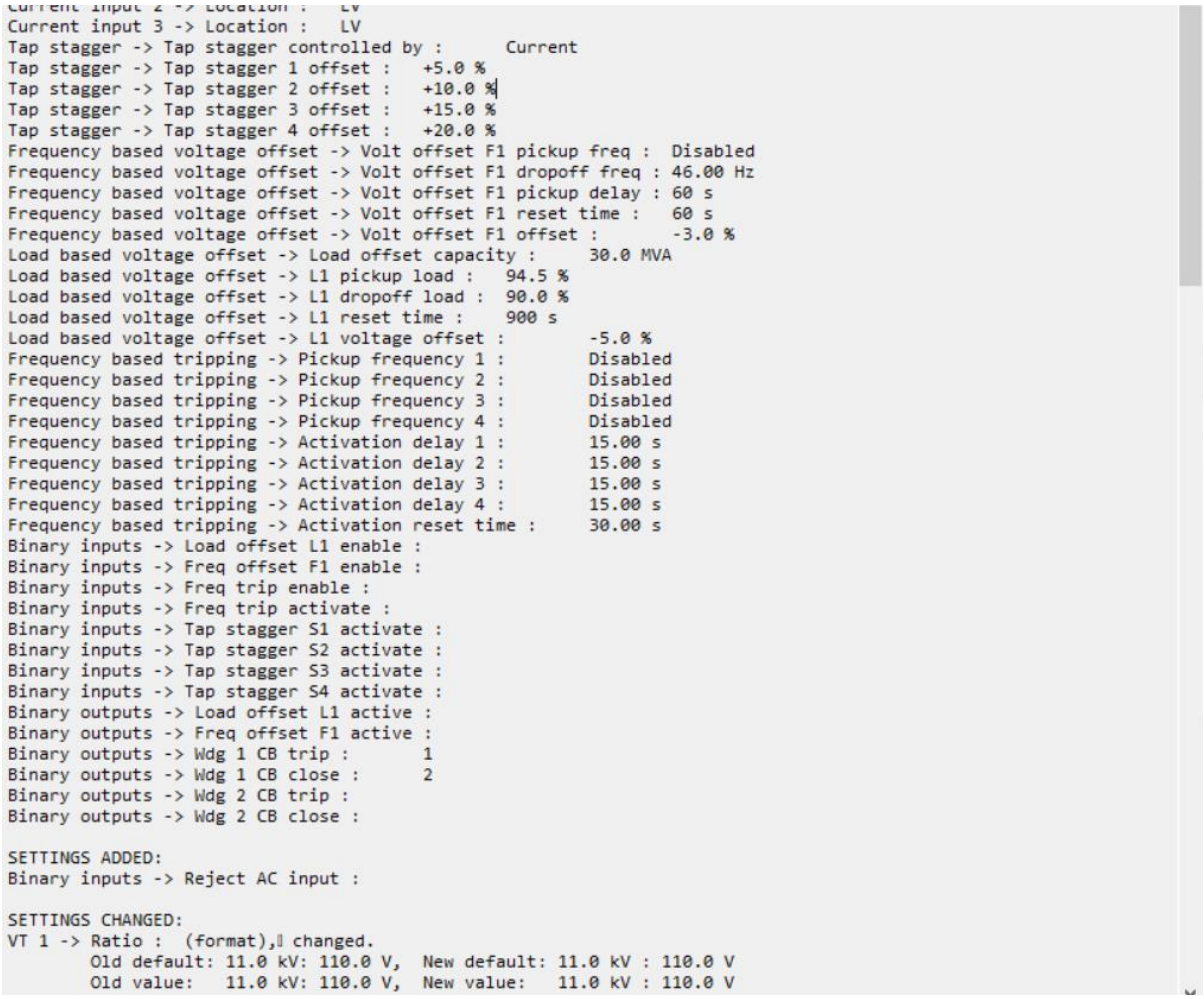


5.1.7 Conversion Report

A conversion report is available to be viewed when you use the compare with relay function. A Conversion report as seen in Figure 17, gives you a list of all the settings that will be Removed, Added or Changed on a setting file when loaded. A conversion is done to make the setting file compatible with whichever version of SuperTAPP SG in use.

- **Settings Removed** — These are settings parameters which have not got the same parameter as in the relay. If a newer version setting file is trying to be uploaded to an earlier version of relay, then expect to see these.
- **Settings Added** — These are settings parameters that are present in the relay, but not on the setting file you are trying to load. This is likely when the relay is of a newer version than the setting file.
- **Settings Changed** — These are displayed when a setting value is different in the file than on the relay. These should be the most common form in the report.

Figure 17:Conversion Report



```
Current input 2 -> Location :   LV
Current input 3 -> Location :   LV
Tap stagger -> Tap stagger controlled by :      Current
Tap stagger -> Tap stagger 1 offset :   +5.0 %
Tap stagger -> Tap stagger 2 offset :   +10.0 %
Tap stagger -> Tap stagger 3 offset :   +15.0 %
Tap stagger -> Tap stagger 4 offset :   +20.0 %
Frequency based voltage offset -> Volt offset F1 pickup freq :  Disabled
Frequency based voltage offset -> Volt offset F1 dropoff freq : 46.00 Hz
Frequency based voltage offset -> Volt offset F1 pickup delay : 60 s
Frequency based voltage offset -> Volt offset F1 reset time :   60 s
Frequency based voltage offset -> Volt offset F1 offset :       -3.0 %
Load based voltage offset -> Load offset capacity :     30.0 MVA
Load based voltage offset -> L1 pickup load :   94.5 %
Load based voltage offset -> L1 dropoff load :  90.0 %
Load based voltage offset -> L1 reset time :    900 s
Load based voltage offset -> L1 voltage offset :        -5.0 %
Frequency based tripping -> Pickup frequency 1 :        Disabled
Frequency based tripping -> Pickup frequency 2 :        Disabled
Frequency based tripping -> Pickup frequency 3 :        Disabled
Frequency based tripping -> Pickup frequency 4 :        Disabled
Frequency based tripping -> Activation delay 1 :        15.00 s
Frequency based tripping -> Activation delay 2 :        15.00 s
Frequency based tripping -> Activation delay 3 :        15.00 s
Frequency based tripping -> Activation delay 4 :        15.00 s
Frequency based tripping -> Activation reset time :     30.00 s
Binary inputs -> Load offset L1 enable :
Binary inputs -> Freq offset F1 enable :
Binary inputs -> Freq trip enable :
Binary inputs -> Freq trip activate :
Binary inputs -> Tap stagger S1 activate :
Binary inputs -> Tap stagger S2 activate :
Binary inputs -> Tap stagger S3 activate :
Binary inputs -> Tap stagger S4 activate :
Binary outputs -> Load offset L1 active :
Binary outputs -> Freq offset F1 active :
Binary outputs -> Wdg 1 CB trip :       1
Binary outputs -> Wdg 1 CB close :      2
Binary outputs -> Wdg 2 CB trip :
Binary outputs -> Wdg 2 CB close :

SETTINGS ADDED:
Binary inputs -> Reject AC input :

SETTINGS CHANGED:
VT 1 -> Ratio :  (format), changed.
        Old default: 11.0 kV: 110.0 V,  New default: 11.0 kV : 110.0 V
        Old value:   11.0 kV: 110.0 V,  New value:   11.0 kV : 110.0 V
```

5.1.8 Printing Settings File in Excel

The settings file can be saved in excel format and gives users the possibility to print the settings sheets for site use. This can be performed by clicking the save settings button which brings up the standard ‘save as’ window. This then gives the option of saving in 2 formats, ‘SuperTAPP SG settings’ and ‘Excel’. Then just print from Excel

5.2 Settings File Info

The feature to capture Relay information when saving its settings to a file is introduced with PC application version 3.3.0.

The Settings File Info view consists of the following parts, referring to Figure 18:

1. Settings File Info tab [dynamic]

The Settings File Info tab will appear automatically when a setting file created with PC Application version 3.3.0 or newer is loaded onto the application using the "Load From File" button in the Settings tab view.

2. Setting file

   The setting file's name and full path location.

3. PC Application version info

   This is a note which indicates the version of the PC application used to save the loaded setting file.

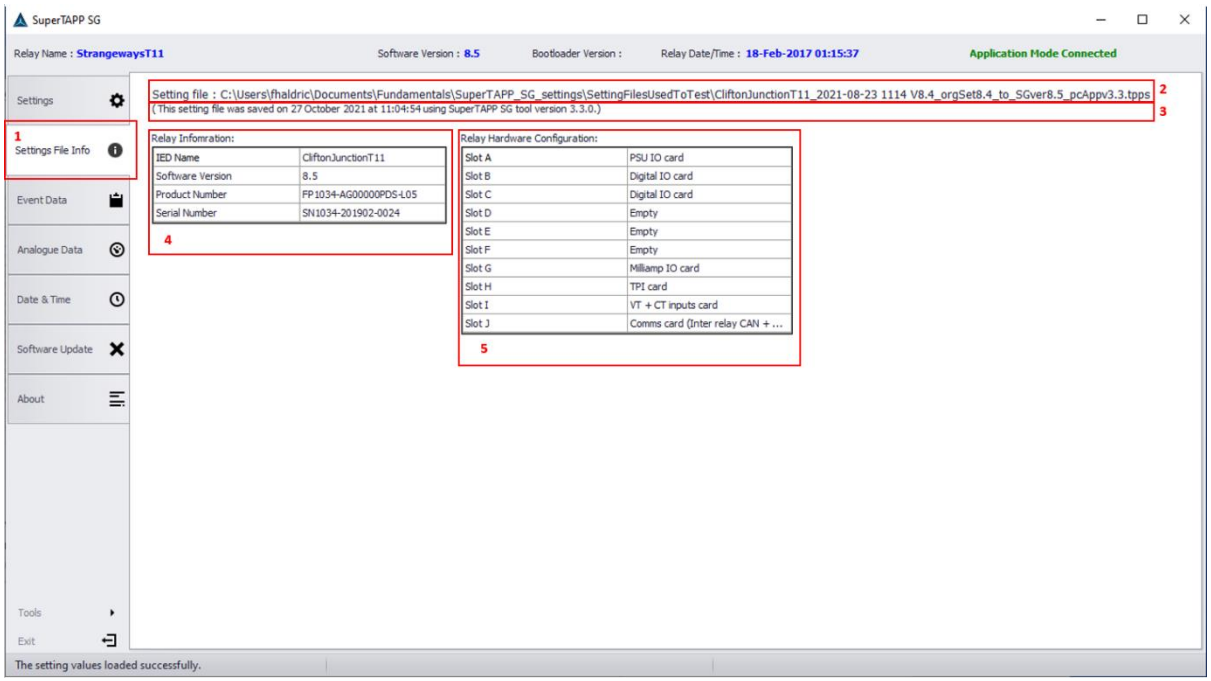
4. Relay Information

   This section contains basic information related to the Relay which the settings were saved from. The information captured is the Relay's name, software version, product and serial numbers.

5. Relay Hardware Configuration

   This section shows the cards configured in each of the Relay's slot at the time the settings were saved.

Figure 18:Settings File Info view



5.3 Event Data

The Event Data function as seen in Figure 18, allows you to copy event data files from SuperTAPP SG storage to a hard disk. Enter the name of a destination folder into the 'Save Path/Location' field. You can also use the 'Browse' button to select.

Then select a file for copying in the grid view. You can select multiple files in the grid view using the 'Ctrl' or 'Shift' key. You can select a range of files by date. Select 'Start Date' and 'End Date' values then press the 'Apply' button. The files that correspond to the range of dates will be selected in the grid view.

Select the 'Download' button to start the copying process. The progress bar displays the advancement through the operation as displayed in Figure 19.

Figure 19:Event data view

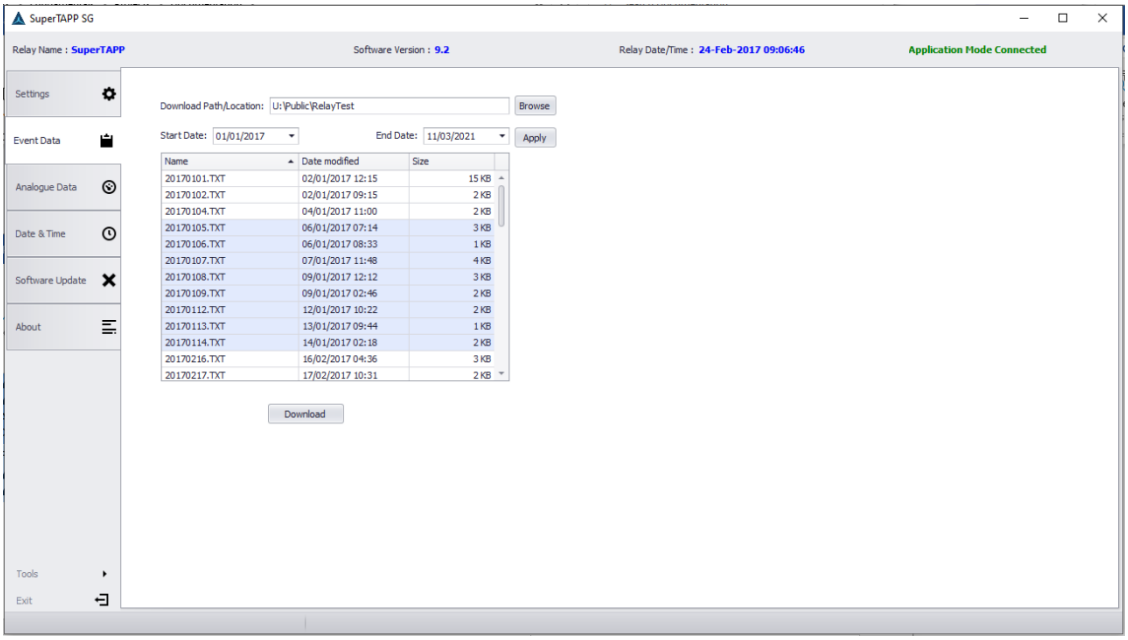


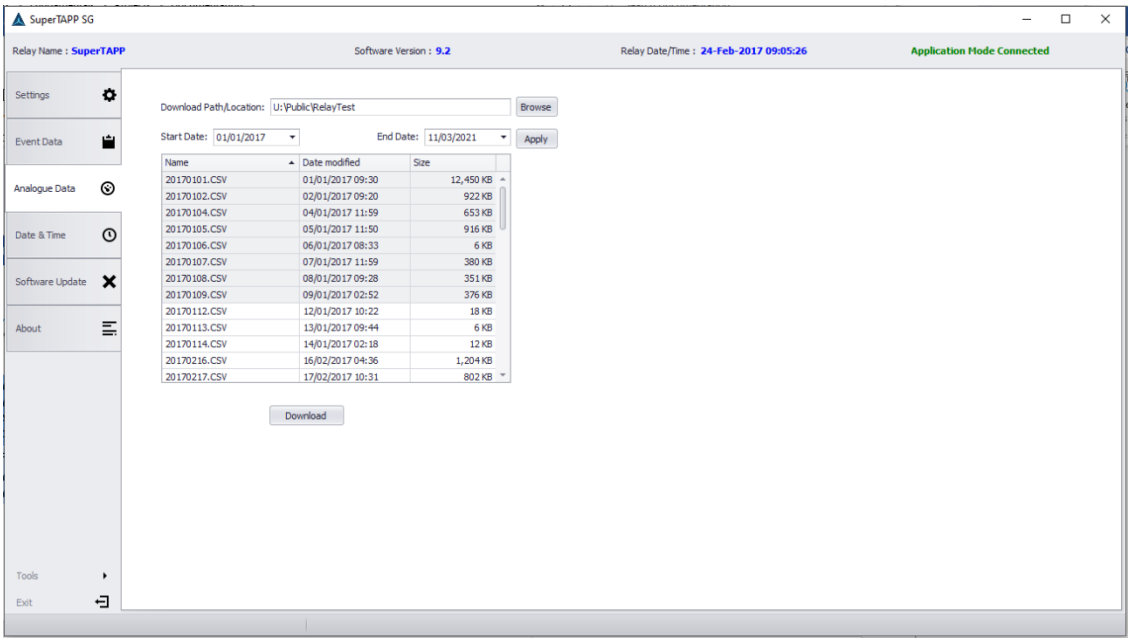
Figure 20:Event download Progress bar

If a SuperTAPP SG is not connected, the controls of this view will be disabled.

5.4 Analogue Data

The Analogue Data function allows you to copy analogue data files from SuperTAPP SG storage to a hard disk. The operations of this function are the same as the Event Data function. See the previous section for a description of the use of this function. Analogue data is formatted as an excel file and stores the information in the same timestamped priority as in the event files.

Figure 21:Analogue Data View

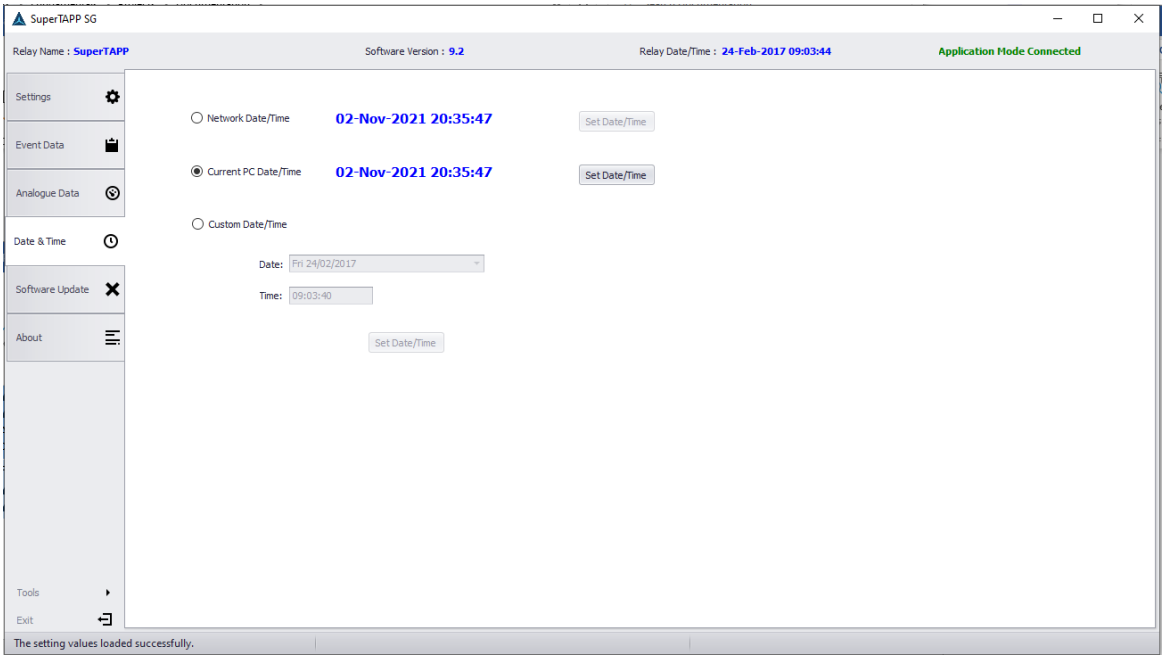


5.5 Date & Time

The PC tool periodically reads the date and time from the relay, which it displays on the relay information bar as described in 4.2. This function allows the setting of the date & time for the connected relay, this is acquired from following sources:

- **Network** — Gets the time form NTP server. You can sync relay time with this time source by selecting 'Network Date/Time' radio button and clicking on 'Set Date/Time' button which is next to it.
- **Network Current PC** — You can set your current PC time to the relay by selecting 'Current PC Date/Time' radio button and clicking on 'Set Date/Time' button next to it.
- **Custom Date and Time** — Also, you can select 'Custom Date/Time' radio button which will let you enter date in the 'Date' field and time in the 'Time' field. You can then send this to the relay by clicking on 'Set Date/Time' below it.

Figure 22:Date and time view



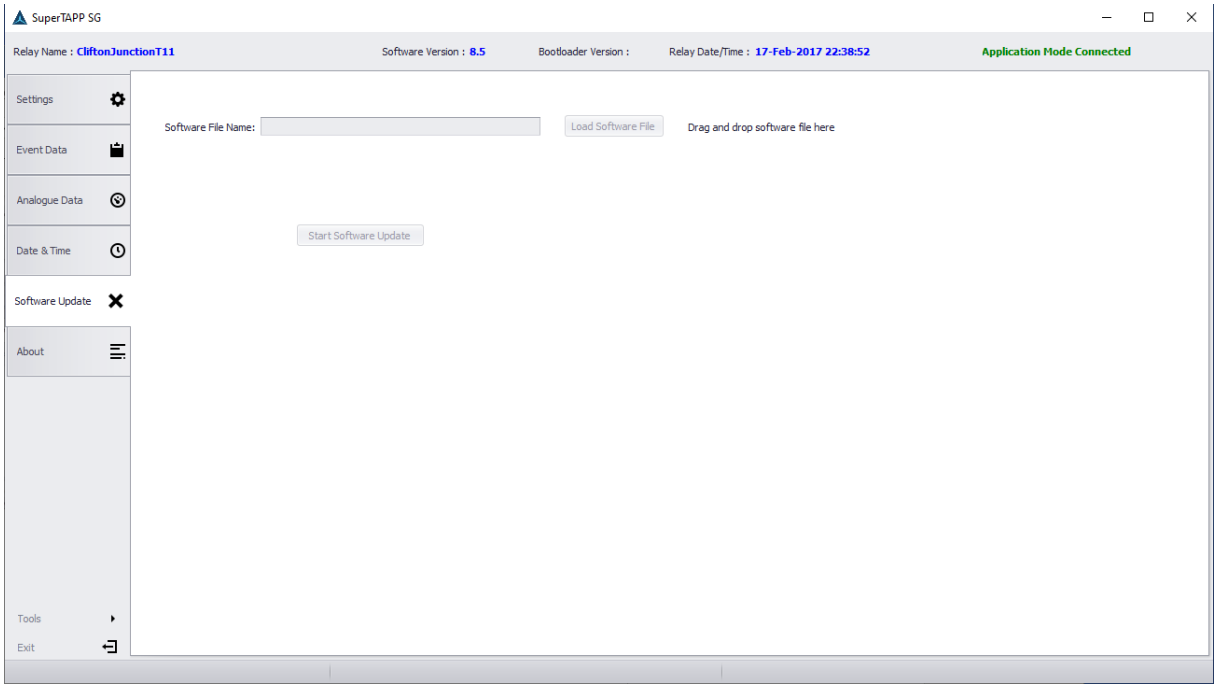
If a SuperTAPP SG is not connected, the controls of this view will be disabled.

5.6 Software Update

The PC tool reads the current software version of the relay and displays it in the relay information bar as described in 4.2. If the SuperTAPP SG is operating in its normal (AVC) mode, the controls in this function displays are disabled.

If you want to update the SuperTAPP SG software, you should select 'Upgrade software' in the Relay configuration settings menu on the SuperTAPP SG. The SuperTAPP SG will then reboot into bootloader mode, and the 'Load Software File' button in this menu will become active. Click this button to browse and load software file or you can alternatively drag and drop a file here as well. Finally click the 'Send Software to Relay' button to start the update process. The progress bar displays the advancement through the process. After the sending of the software is completed, the SuperTAPP SG will automatically reboot and return to its normal mode.

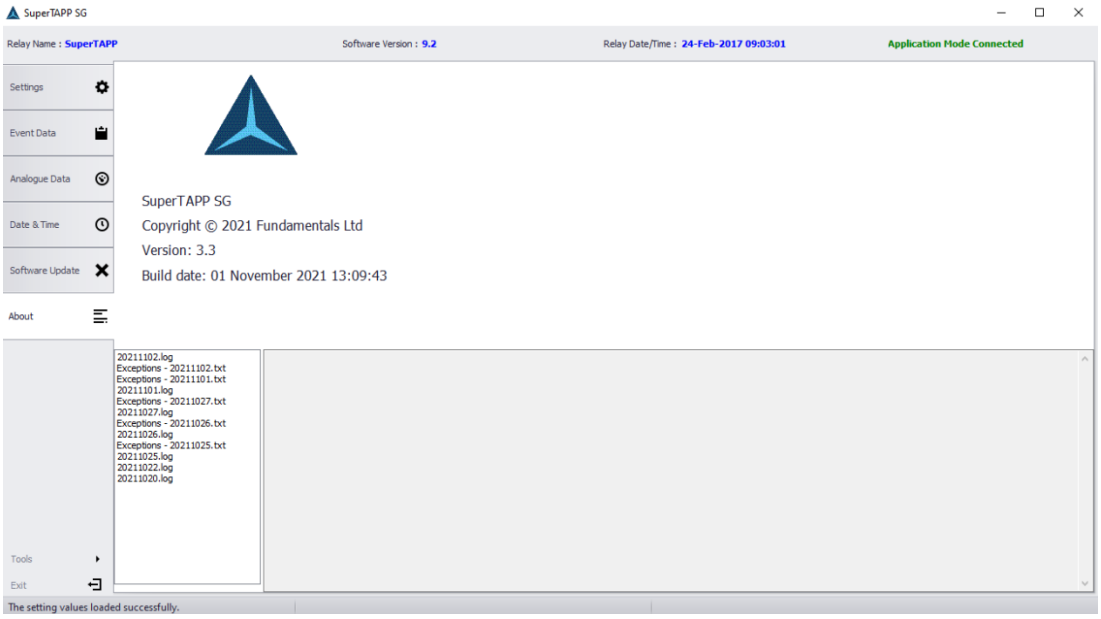
Figure 23:Software Update view



5.7 About

This view displays the name, copyright and current version of application.

Figure 24:About view



5.8 Locations

United Kingdom and Europe

Fundamentals Ltd

Swindon
Unit 2, Hillmead Enterprise Park
Marshall Road, Swindon
Wiltshire, SN5 5FZ
United Kingdom
Tel: +44 (0)1793 847163
Fax: +44 (0)1793 847245
www.fundamentalsltd.co.uk
tech@fundamentalsltd.co.uk

Belfast
City East Business Centre
68-72 Newtownards Road
Belfast, BT4 1GW
United Kingdom

Australia

Fundamentals Australia Pty Ltd

Sydney
Unit 11, 25 Stoddart Road,
Prospect NSW 2148
Tel: +61 (0)2 9896 3221
www.fundamentalsltd.co.uk/australia

Value Added Resellers

Power Economy Middle East Co. LLC

U.A.E.
Industrial City of Abu Dhabi
P.O.Box 6072
Tel: +971-(0)2-5501077
Email: sales@powereconomy.net
www.powereconomy.net

JET Engineering Solutions Sdn. Bhd.

Malaysia
(1284649-K) R-03A-22, Emporis,
Persiaran Surian, Kota Damansara,
47810 Petaling Jaya, Selangor.
info@jetengsolutions.com