



Settings, Data and Software Tool

PC Application Software for SuperTAPP SG

User Manual

About this manual

This document contains proprietary information that is protected by copyright. All rights are reserved. No part of this publication may be reproduced in any form or translated into any language without the prior, written permission of Fundamentals Limited. The information contained in this document is subject to change without notice.

Registered names, trademarks, etc., used in this document, even when not specifically marked as such, are protected by law.

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 v2.4

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
2.4	Aug 2023	Updated branding	3.3.0

Version Information



Table of Contents

Version	Information2
Table of	Contents
1 2 3	List of Figures
3.1 3.2	Installation5 Uninstalling
4	User Interface Description7
4.1 4.2 4.3 4.4 4.5 4.6	Connection Status7Relay Information bar8Function tabs8Main application area8Tools menu8Exit button9
5	Application Functions11
5.1	Settings
	5.1.2 Settings selection 12 5.1.3 Settings Viewer/Editor 13 5.1.4 Source Information 14 5.1.5 Control-Panel 14 5.1.6 Editing Binary I/O 16 5.1.7 Conversion Report 17 5.1.8 Printing Settings File in Excel 18
5.2 5.3 5.4 5.5 5.6 5.7	5.1.3 Settings Viewer/Editor 13 5.1.4 Source Information 14 5.1.5 Control-Panel 14 5.1.6 Editing Binary I/O 16 5.1.7 Conversion Report 17



1 List of Figures

Figure 1:SuperTAPP SG Application file5
Figure 2:Window after successful Installation
Figure 3:Removing a previously installed application
Figure 4:Application window7
Figure 5:Tools menu9
Figure 6:Privilege mode warning9
Figure 7: Changed values warning 10
Figure 8:Settings view 11
Figure 9: Menu view 12
Figure 10:Settings selection view
Figure 11:Setting value editor
Figure 12: Changing a setting value in a group 13
Figure 13:Colour references14
Figure 14:Changed setting value14
Figure 15:Changed setting value
Figure 16:Editing a Binary I/O in settings
Figure 16:Settings File Info view
Figure 17:Event data view
Figure 18:Event download Progress bar 20
Figure 19: Analogue Data View
Figure 20:Date and time view
Figure 21:Software Update view
Figure 22:About view



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

$\leftrightarrow \rightarrow \cdot \uparrow$	> SG	Tool Versions			
		Name	Date modified	Туре	Size
Quick access		둸 SuperTAPP SG Application v2.11.exe	16/08/2019 09:32	Application	87,754 KB
💻 Desktop 🖶 Downloads	*	🐁 SuperTAPP SG Application v3.0.exe	22/09/2020 09:56	Application	87,776 KB
Documents	*				
Pictures	*				

- 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

SupertAPP SS	2					1 - 0	×
Relay None SuperTAPI	-	Firmware Version : 8.3.1.0	Bootbader Version : Rela	y Date/Tine : 04-Sep-2020 100	3:56	Application Mode Connected	
Settings O	Paranetar i Paranetar	Range	v Group i v	Default Value	Group	Value	
Event Data							
Aradisgue Data 🥥							
Date & Tena							
Freeware 🗙							
About 📰	1						
5	4						
Tade	Load Prov	Seve To Pie Company With	Today Load Prov Salay Appl	y To-Radary			
Failed to read ready sets	ngsRelay stopped responding. Please to						

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

• Application mode

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. 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 Facilitates the copying of analogue data from the relay storage to disk. It also has a feature that allows the user to the PC tab 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

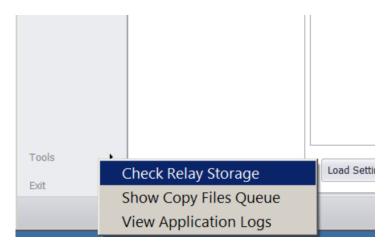
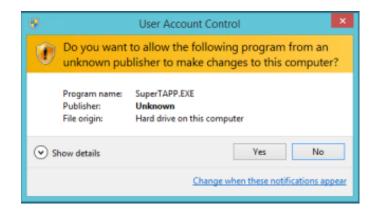


Figure 6:Privilege mode warning



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

Warning!
Some setting values were changed! Please select an option.
Save Settings Upload settings to Relay Exit Cancel



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

elay Name : Supe	TAPP	4	Software Ver	'sion : 9.2	Relay Date/Time :	24-Feb-201	7 09:08:26		Application Mode Conne	cted
	1.2	Voltage target	Parameter : All	✓ Group :	~	2			UKPN_EPN_T1 Sup	erTAPP_2021-05
lettings	٥	Network	Parameter	Range	Default Va	lue	Group		Value	
	_	Transformer	Target voltage	90.0 - 110.0 %	100.0 %		1	V	100.0 %	
vent Data	÷	VTs & CTs	Bandwidth	±0.5 - 10.0 %	±1.5 %		1		±1.4 %	
vent Data		Voltage input 1	Bandwidth 2 type	Off, Target change only, On	Off		1		Off	
		Voltage input 2	Bandwidth 2	±0.0 - 5.0 %	±0.0 %	3	1		±0.0 %	
nalogue Data	\odot	Voltage input 3	Initial tap time delay	10 - 120 s	60 s		1		60 s	
		Voltage input 4	Fast tap	Disabled, Down, Up/down	Down		1		Down	
	_	VT 1	Fast tap threshold	±0.5 - 5.0 %	±2.0 %		1		±2.0 %	
ate & Time	0	VT 2	Fast tap time delay	3 - 120 s	5 s		1		20 s	
Ŭ	0	VT 3	Generator bias	0.0 - 10.0 %	0.0 %		1		0.0 %	
		VT 4	LDC	0.0 - 20.0 %	5.0 %		1		5.0 %	
Software Update	Current input 1	Winding 1 LDC rating	50 - 10000 A	1575 A		1		1200 A		
		Current input 2	Winding 2 LDC rating	50 - 10000 A	1575 A		1	F	1205 A	
		Current input 3	Reverse LDC Level	Use fwd LDC, 0.0 - 20.0 %	0.0 %		1		0.0 %	
bout	E	CT trim	Wdg1 rev LDC rating	Wdg1 fwd rating, 50 - 10000 A	Wdg1 fwd	ration	1		Wdg1 fwd rating	
		Voltage target adjus	Wdg2 rev LDC rating	Wdg2 fwd rating, 50 - 10000 A Wdg2 fwd rating, 50 - 10000 A	Wdg2 fwd	and the second s	1	T	Wdg2 fwd rating	
		Tap changer	Voltage control mode	Enhanced TAPP, Master-follower	Enhanced		1		Enhanced TAPP	
		Alarms	Follower delay	3 - 60 s	5 s	TAPP	1		5 s	
	Ψ.	Inputs and outputs		Disabled, Enabled	Disabled		1	H	Disabled	
	e & Time O tware Update X ut E Data Bar	Binary inputs	Exclusive tapping		100.0 %			V	102.0 %	
		Binary outputs	Target voltage	90.0 - 110.0 %			2	M		
		Milliamp outputs	Bandwidth	±0.5 - 10.0 %	±1.5 %		2	4	±1.4 %	
		Timer delays	Bandwidth 2 type	Off, Target change only, On	Off		2		Off	
		Busbar grouping	Bandwidth 2	±0.0 - 5.0 %	±0.0 %		2		±0.0 %	
		Communications	Initial tap time delay	10 - 120 s	60 s		2		60 s	
		Relay configuration	Fast tap	Disabled, Down, Up/down	Down		2		Down	
			Fast tap threshold	±0.5 - 5.0 %	±2.0 %		2		±2.0 %	
			Fast tap time delay	3 - 120 s	5 s		2		20 s	
			Generator bias	0.0 - 10.0 %	0.0 %		2		0.0 %	
pols									Un	saved changes hanged from def

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

Relay Name : Supe	rTAPP		Software Version	: 9.2 Rela	ay Date/Time: 24-Feb-20	17 09:08:26		Application Mode Connected		
	-	Voltage target	Parameter : All		UKPN_EPN_T1 SuperTAPP_202					
Settings	¢	Network	Parameter	Range	Default Value	Group		Value		
		Transformer	Target voltage	90.0 - 110.0 %	100.0 %	1	\checkmark	100.0 %		
Event Data	i de l'	VTs & CTs Voltage input 1	Bandwidth	±0.5 - 10.0 %	±1.5 %	1		±1.4 %		
Lvent Data		Voltage input 1	Bandwidth 2 type	Off, Target change only, On	Off	1		Off		
			Bandwidth 2	±0.0 - 5.0 %	±0.0 %	1		±0.0 %		
Analogue Data	\odot	Voltage input 3	Initial tap time delay	10 - 120 s	60 s	1		60 s		
endrogue burta		Voltage input 4	Fast tap	Disabled, Down, Up/down	Down	1		Down		
	_	VT 1	Fast tap threshold	±0.5 - 5.0 %	±2.0 %	1		±2.0 %		
Date & Time	0	VT 2	Fast tap time delay	3 - 120 s	5 s	1		20 s		
Date & Time ① Software Update	VT 3	Generator bias	0.0 - 10.0 %	0.0 %	1		0.0 %			
		VT 4	LDC.	0.0 - 20.0 %	5.0 %	1		5.0 %		
Software Update	Current input 1	Winding 1 LDC rating	50 - 10000 A	1575 A	1		1200 A			
		Current input 2	Winding 2 LDC rating	50 - 10000 A	1575 A	1		1205 A		
		Current input 3	Reverse LDC Level	Use fwd LDC, 0.0 - 20.0 %	0.0 %	1		0.0 %		
About	=	CT trim	Wdg1 rev LDC rating	Wdg1 fwd rating, 50 - 10000 A	Wdg1 fwd rating	1		Wdg1 fwd rating		
		Voltage target adjus	Wdg2 rev LDC rating	Wdg2 fwd rating, 50 - 10000 A	Wdg2 fwd rating	1		Wdg2 fwd rating		
		Tap changer	Voltage control mode	Enhanced TAPP, Master-follower	Enhanced TAPP	1		Enhanced TAPP		
		Alarms	Follower delay	3 - 60 s	5.5	1		55		
	-	Inputs and outputs	Exclusive tapping	Disabled, Enabled	Disabled	1		Disabled		
	Jpdate X	Binary inputs	Target voltage	90.0 - 110.0 %	100.0 %	2	1	102.0 %		
		Binary outputs	Bandwidth	±0.5 - 10.0 %	±1.5 %	2		±1.4 %		
		Miliamp outputs	Bandwidth 2 type	Off, Target change only, On	Off	2		Off		
		Timer delays	Bandwidth 2	±0.0 - 5.0 %	±0,0 %	2		±0.0 %		
		Busbar grouping	Initial tap time delay	10 - 120 s	£0.0 %	2		60 s		
		Communications	Fast tap	Disabled, Down, Up/down	Down	2		Down		
		Relay configuration	Fast tap threshold	±0.5 - 5.0 %	±2.0 %	2		±2.0 %		
			Fast tap time delay	3 - 120 s	±2.0 %	2		20 s		
			Fast tap time delay Generator bias	3 - 120 S 0.0 - 10.0 %	0.0 %	2				
			Generator bias	0.0 - 10.0 %	0.0 %	2		0.0 %		
Tools	•							Unsaved changes Changed from defa		
			Load From File Save To File	Compare With Relay Load From Relay App	oly To Relay			Changed from defa		

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 : All		~	Group :	All	\sim		
Parameter All	er tap time dela	av.			Default Value	Group	Value
Inter tap time d Tap	pulse time		s		Automatic	С	Automatic
Number of tap positions Tap operation ti Minimum tap position Number of tap p Minimum tap position indicator type Minimum tap position indicator type Maximum tap position indicator type Extra bottom rstor equiv to Extra bottom rstor equiv to		5.00 s		Automatic	С	Automatic	
				5 s	С	5 s	
				17	С	17	
				1	1	1	
				17	1	17	
		code, Binary,	, Millia	Resistor	С	Resistor	
		e 2			0	С	0
		me r tap incomplete	s		0.00 taps	С	0.00 taps
Extra top resiste Disa	sist(Disable lockout for t/c runaway		s		0.00 taps	С	0.00 taps
TPI mA input value 1	L	Tap0 - 39 : 0.0 mA -	- 25.0 mA		Tap0:0.0 mA	С	Tap 0:0.0 mA
TPI mA input value 2	2	Tap0 - 39 : 0.0 mA -	- 25.0 mA		Tap17:20.0 mA	С	Tap 17:20.0 mA
Tap changer scheme	2	Basic, Step-by-step			Basic	С	Basic
Disable lockout for ta	ap incompl	No, Yes			No	С	No
Disable lockout for t/	/c runaway	No, Yes			No	C 2	No 1
Minimum tap position	ı	1 - 39			1		
Maximum tap positio	n	1 - 39			17	2	17
Minimum tap position	ı	1 - 39			1	3	1
Maximum tap positio	n	1 - 39			17	3	17
Minimum tap position	1	1 - 39			1	4	1
Maximum tap positio	n	1 - 39			17	4	17
Minimum tap position	ı	1 - 39			1	5	1
Maximum tap positio	n	1 - 39			17	5	17
Minimum tap position	ı	1 - 39			1	6	1
Maximum tap positio	n	1 - 39			17	6	17
Minimum tap position	ı	1 - 39			1	7	1
Maximum tap positio	n	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

Group	Value	
1	100.0 %	*
1	±1.6 %	
1	40 s - + X	
1	Down	
1	±2.0 %	
1	5 s	

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

Parameter : Target voltage v Gr	pup: 🗸				perTAPP_8-3-1 restored to defaults.tpps
Parameter	Range	Default Value	Group		Value
Target voltage	90.0 % - 110.0 %	100.0 %	1		100.0 %
Target voltage	90.0 % - 110.0 %	100.0 %	2	\checkmark	99.5 %
Target voltage	90.0 % - 110.0 %	100.0 %	3		100.0 %
Target voltage	90.0 % - 110.0 %	100.0 %	4		100.0 %
Target voltage	90.0 % - 110.0 %	100.0 %	5		100.0 %
Target voltage	90.0 % - 110.0 %	100.0 %	6		100.0 %
Target voltage	90.0 % - 110.0 %	100.0 %	7		100.0 %
Target voltage	90.0 % - 110.0 %	100.0 %	8		100.0 %

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.



olt offset F1 pickup delay	0 s - 7200 s	60 s	5	60 s		
olt offset F1 reset time	Disabled, 30 s - 7200 s	60 s	5	60 s		
olt offset F1 offset	-10.0 % - +10.0 %	-3.0 %	5	-3.0 %		
olt offset F1 pickup freq	Disabled, 45.00 Hz - 65.00 Hz	Disabled	6	50.00 Hz		
olt offset F1 dropoff freq	45.00 Hz - 65.00 Hz, Disabled	46.00 Hz	6	46.00 Hz		
Load From File Save To File	Compare With Relay Load From Relay	Apply To Relay			Converted Different from Rela Changed from defa	

Figure 13:Colour references

Figure 14:Changed setting value

	Value	Group	Default Value	Range	Parameter
	100.0 %	1	100.0 %	90.0 % - 110.0 %	arget voltage
	± 1.5 %	1	±1.5 %	±0.5 % - 10.0 %	Bandwidth
	Off	1	Off	Off, Target change only, On	Bandwidth 2 type
	±0.0 %	1	±0.0 %	±0.0 % - 5.0 %	Bandwidth 2
	60 s	1	60 s	10 s - 120 s	nitial tap time delay
• t X	Down	1	Down	Disabled, Down, Up/down	ast tap
	Disabled	1	±2.0 %	±0.5 % - 5.0 %	ast tap threshold
	Down Up/down	1	5 s	3 s - 120 s	Fast tap time delay
	0.0 %	1	0.0 %	0.0 % - 10.0 %	Generator bias

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 (\checkmark) 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 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:Changed setting value

	sungs (Setting:		ustomisation	e.t.c) are different in loa	ided file and			^
Menu		Setting Name		Old Value		New Value		_^
Binary inputs		Volt target offset A1 (wa		1,3,5,7,9,11,13		1,3,5		
Binary inputs		Volt target offset A3 (wa	as	2,6		2		
Binary inputs		Volt target offset B4		11-12		not configured		
Binary inputs		Alt settings group 3		11		not configured		
Binary inputs		Busbar CB 1 closed	12			not configured		-1
Binary outputs		Relay healthy		5			not configured	
Binary outputs		Relay in SCADA		8		not configured		
Binary outputs		Tap changer runaway		9		not configured		~
New Settings	(Settings didn't	exist in loaded file so	they are set t	o default values)				
Menu	Setting Name		Value		Range		^	
Voltage target	Bandwidth 2 type		Off		Off, Target change only, On			
Voltage target	Bandwidth 2		±0.0 %	0 %		±0.0 % - 5.0 %		
Voltage target	Voltage control m	ode	Enhanced TA	ced TAPP		Enhanced TAPP, Master-follower		
Voltage target	Follower delay		5 s	3		3 s - 60 s		
Voltage target	Exclusive tapping	1	Disabled	ed		Disabled, Enabled		
Network	Nominal system H	IV voltage	33.0 kV	33.0 kV		3.0 kV - 500.0 kV		
Network	Controlled voltage	e location	LV		LV, HV		~	
Removed Se	ttings (Setting	s not supported by re	lay)					
Menu	Setting Name		Number					
Tap changer	Highest tap gives	l.	46					

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.



		Firmware Version :	Boo	tloader Versi	on :		Rela	ay Dat	e/Tim	e: 0	1-Jar	-190	0 00	0:00:	:00			Not Connected
Voltage target	Parameter :	All	~	Group :	All		~											
Network	Parameter				1	2	3	4 !	5 6	7	8 0	10	11	12	13	4 1	5 1	Value
Transformer	Invert input					-						10		**				TURU,
VTs & CTs	Used by comms																	
Voltage input 1	SCADA auto ct																	
Voltage input 2	SCADA auto co																	
Voltage input 3	SCADA manual SCADA raise ta																+	
Voltage input 4																		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
VT 1	SCADA lower ta										X							
VT 2	Block SCADA ct																-1	Ok Cancel
VT 3	Wdg 1 prep sw																-1	OK CONCO
VT 4	Wdg 1 prep sw																	
Current input 1	Wdg 2 prep sw																	
Current input 2	Wdg 2 prep sw	/out rst																
Current input 3	Tap block																	
CT trim	Volt target offs																	
Voltage target adjustme	Volt target offs																	
Tap changer	Volt target offs																	
Alarms	Volt target offs	et A4																
Network services	Volt target offs																	
Tap stagger	Volt target offs																	
Frequency based vol	Volt target offs	et B3																
Load based voltage	Volt target offs	et B4																
Frequency based tri	Volt target B re	set																
Inputs and outputs	Volt target incr	ement																
Binary inputs	Volt target dec	rement																
Binary inputs Binary outputs	Target inc/dec	reset																
Milliamp inputs	Load offset L1	enable																
	Freq offset F1	enable																
Milliamp outputs Timer delays	Freg trip enable																	

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
- Settings Added I here 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

```
A Conversion report
                                                                                                                                                                                       П
                                                                                                                                                                                                   X
SETTINGS REMOVED:
Current input 1 -> Location :
Current input 2 -> Location :
                                                        LV
                                                        LV
 Current input 3 -> Location :
                                                         LV
Tap stagger -> Tap stagger controlled by :
Tap stagger -> Tap stagger 1 offset : +5.
Tap stagger -> Tap stagger 2 offset : +10
                                                                                    Current
                                                                    +5.0 %
 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 :
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 :
                                                                                                  30.0 MVA
Load based voltage offset -> L1 voltage offset :

Frequency based tripping -> Pickup frequency 1 :

Frequency based tripping -> Pickup frequency 2 :

Frequency based tripping -> Pickup frequency 3 :

Frequency based tripping -> Pickup frequency 4 :

Frequency based tripping -> Activation delay 1 :

Frequency based tripping -> Activation delay 2 :

Frequency based tripping -> Activation delay 3 :

Frequency based tripping -> Activation delay 4 :
                                                                                                  -5.0 %
                                                                                                  Disabled
                                                                                                 Disabled
                                                                                                 Disabled
                                                                                                 Disabled
                                                                                                 15.00 s
                                                                                                  15.00 s
                                                                                                 15.00 s
Frequency based tripping -> Activation delay 4 :
Frequency based tripping -> Activation delay 4 :
Binary inputs -> Load offset L1 enable :
Binary inputs -> Freq offset F1 enable :
                                                                                                  15.00 s
                                                                                                 30.00 5
 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 :
 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:
                              (format), changed.
 VT 1 -> Ratio :
              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 17:Settings File Info view

ettings	•	Setting file : C:\Users	s\fhaldric\Documents\Fundament ed on 27 October 2021 at 11:04:54 usi	als\SuperTAPP_SG_setti	ings\SettingFilesUsedToTest\CliftonJunction	T11_2021-08-23 1114 V8	4_orgSet8.4_to_SGver8.5_pcAppv3.3.tpps
	-1	Relay Infomration:		Relay Hardware Config		7	
ttings File Info	0	IED Name	CliftonJunctionT11	Slot A	PSU IO card		
		Software Version	8.5	Slot B	Digital IO card		
ent Data	-	Product Number	FP 1034-AG00000PDS-L05	Slot C	Digital IO card		
en vaid		Serial Number	SN1034-201902-0024	Slot D	Empty		
				Slot E	Empty		
alogue Data	\odot	4		Slot F	Empty		
				Slot G	Milliamp IO card		
	~			Slot H	TPI card		
ate & Time			Slot I	VT + CT inputs card			
			Slot J	Comms card (Inter relay CAN +			
oftware Update	×			5			
pout	Ξ						

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.

	TAPP ¢	Download Path/Location: U:	Software Vers	sion : 9.2	
		Download Path/Location: U:\			
Event Data		Download Path/Location: U:\			
Event Data			Public\RelayTest		Browse
		Start Date: 01/01/2017	▪ End Date	e: 11/03/2021 •	Apply
		Name	 Date modified 	Size	
	~	20170101.TXT	02/01/2017 12:15	15 KB 🔺	
Inalogue Data	\odot	20170102.TXT	02/01/2017 09:15	2 KB	
		20170104.TXT	04/01/2017 11:00	2 KB	
Date & Time	0	20170105.TXT	06/01/2017 07:14	3 KB	
Date & time	0	20170106.TXT	06/01/2017 08:33	1 KB	
		20170107.TXT	07/01/2017 11:48	4 KB	
Software Update	×	20170108.TXT	09/01/2017 12:12	3 KB	
	~	20170109.TXT	09/01/2017 02:46	2 KB	
		20170112.TXT	12/01/2017 10:22	2 KB	
About	Ξ.	20170113.TXT	13/01/2017 09:44	1 KB	
		20170114.TXT	14/01/2017 02:18	2 KB	
		20170114.TXT 20170216.TXT	14/01/201702:18 16/02/201704:36	2 KB 3 KB	

Figure 18:Event data view

Figure 19:Event download Progress bar

Copying (65%) M:\events\20180114.TXT	Pause	Cancel	Show Queue
--------------------------------------	-------	--------	------------

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 20: Analogue Data View

telay Name : Super Settings	TIAPP		Software Vers				n n n n n n n n n n n n n n n n n n n	
Settings			Software vers	on : 9.2		Relay Date/Time: 24-Feb-2017 09:0	5:26 Application Mode Connect	ed
-	¢							
	-	Download Path/Location: U:\Pui	olic\RelayTest		Browse			
Event Data		Start Date: 01/01/2017 -	End Date	: 11/03/2021	Apply			
		Name 🔺	Date modified	Size				
	~	20170101.CSV	01/01/2017 09:30	12,450 KB				
Analogue Data	\odot	20170102.CSV	02/01/2017 09:20	922 KB				
		20170104.CSV	04/01/2017 11:59	653 KB				
Date & Time	0	20170105.CSV	05/01/2017 11:50	916 KB				
	0		06/01/2017 08:33	6 KB				
			07/01/2017 11:59	380 KB				
Software Update	×		08/01/2017 09:28	351 KB				
			09/01/2017 02:52	376 KB				
About		20170112.CSV	12/01/2017 10:22	18 KB				
	Ξ	20170113.CSV	13/01/2017 09:44	6 KB				
		20170114.CSV	14/01/2017 02:18	12 KB				
		20170216.CSV	16/02/2017 04:36	1,204 KB				
		20170217.CSV	17/02/2017 10:31	802 KB 1				

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.



🛕 SuperTAPP SG			- 🗆 ×
Relay Name : SuperTAPP	Software Version : 9.2	Relay Date/Time: 24-Feb-2017 09:03:44	Application Mode Connected
Settings	Network Date/Time 02-Nov-2021 20:35:47	Set Date/Time	
Event Data		Set Date/Time	
Analogue Data 🕥	Current PC Date/Time 02-Nov-2021 20:35:47	Set Date/Time	
Date & Time 🕚	O Custom Date/Time		
	Date: Fri 24/02/2017 ~		
Software Update 🗙	Time: 09:03:40		
About 🚍	Set Date/Time		
Tools •			
Exit 🗲			

Figure 21: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.

A SuperTAPP SG					- 0	×
Relay Name : CliftonJ	unctionT11	Software Version : 8.5	Bootloader Version :	Relay Date/Time: 17-Feb-2017 22:38:52	Application Mode Connected	
Settings	•		Load Software File			
Event Data	Software File Name	22	Load Software Pie	Drag and drop software file here		
Analogue Data	9					
Date & Time (D	Start Software Update				
Software Update	K					
About	E					
Tools •						
Exit 🗲	1					

Figure 22:Software Update view



5.7 About

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

Figure 23:About view

🛕 SuperTAPP SG				- 0	\times				
Relay Name : SuperTAPP		Software Version : 9.2	Relay Date/Time: 24-Feb-2017 09:03:01	Application Mode Connected					
Settings	•								
Event Data									
Analogue Data	SuperTAPP SG								
Date & Time	Copyright © 2021 Fundame	Copyright © 2021 Fundamentals Ltd							
Software Update		version: 3.3 vuild date: 01 November 2021 13:09:43							
About									
E E E	20211102.log Exceptions - 2021102.txt Exceptions - 2021103.txt 2021103.log Exceptions - 20211027.txt 20211027.log Exceptions - 20211026.txt 20211026.log 20211025.log 20211022.log 20211020.log				^				
Tools •					~				
The setting values loaded	successfully.								



6 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

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

Malaysia

Bhd.

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

JET Engineering Solutions Sdn.

