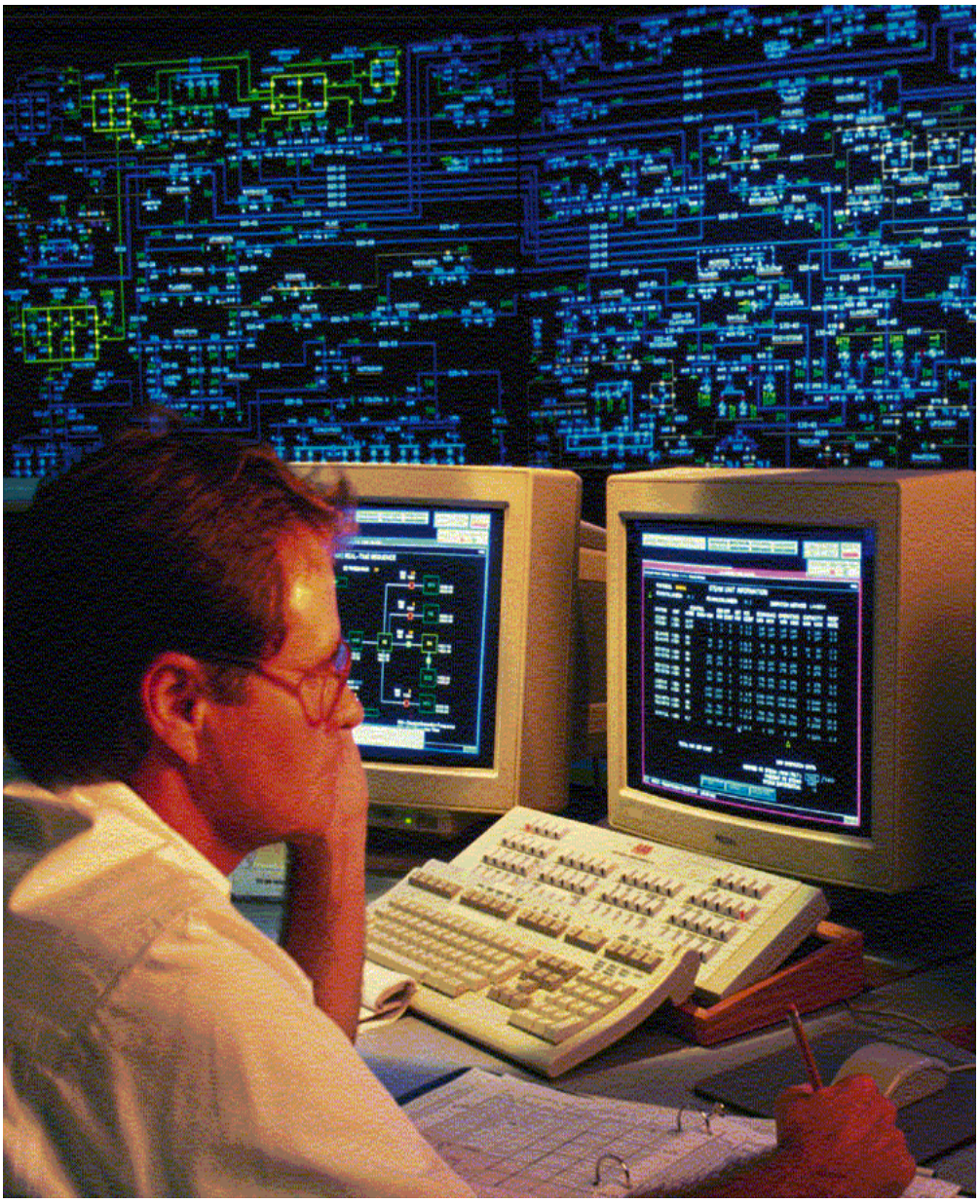
User's Manual – WinRCP v1.10



1. Contents

1. CONTENTS 2

2 INTRODUCTION 6

2.1 DEFINITIONS, ACRONYMS AND ABBREVIATIONS 6

3 PC, OPERATIVE SYSTEMS 7

4 OVERVIEW 8

4.1 WHAT IS WINRCP 8
4.2 TREE VIEW 9
4.2.1 Layout 9
4.2.2 Images and their meaning 10
4.3 WELCOME VIEW 10
4.4 PROPERTIES VIEW 11
4.4.1 Organization/Substation/Bay Properties View 11
4.4.2 IED Properties View 12
4.4.3 IED Settings Data View (IED Data View) 13
4.4.4 Programmable Contact Outputs (PCOs) View 15
4.4.5 Intermediate Target Data View 16
4.5 SADI TRANSPARENT (ASCII) MODE VIEW 16
4.6 MENU ITEMS & TOOLBAR BUTTONS 17
4.6.1 Main Menu Items 17
4.6.2 File Menu Items 18
4.6.3 Communications Menu Items 18
4.6.4 Passwords Menu Items 18
4.6.5 Oscillography Tools Menu Items 18
4.6.6 Tool-bar Buttons 19
4.6.7 Properties View – Buttons 19

5 CONFIGURATION 20

5.1 ADDING AN ORGANIZATION, SUBSTATION, BAY OR AN IED 20
5.2 CONFIGURING AN IED 21
5.2.1 Identification 22
5.2.2 Version Information 22
5.2.3 Model Information 23
5.2.4 Device Parameters 23
5.2.5 Communications Choice 23
5.2.6 Serial COMM Configuration 24
5.2.7 Code Operated Switch 24
5.2.8 Modem Properties 25
5.2.9 Telnet Properties 26
5.3 CONFIGURING SERIAL / MODEM PORTS 27

5.4 CONFIGURING PRINT LAYOUT SETTINGS 28

6 SETTINGS 31

6.1 CREATING NEW SETTINGS FOR AN IED – NEW 32
6.2 SETTINGS TO A FILE – SAVE 33
6.3 OPEN SETTINGS FROM A FILE – OPEN 34
6.4 DOWNLOAD SETTINGS FROM AN IED – GET 35
6.5 UPLOAD SETTING TO AN IED – SEND 36
6.6 COMPARE SETTINGS FROM A FILE TO THE SETTINGS FROM AN IED – COMPARE 37
6.7 PASSWORD MODE 38
6.8 SETTINGS INTER-OPERABILITY BETWEEN RCP AND WINRCP 39
6.9 SETTINGS FILES – NAMING CONVENTION 39

7 SECURITY 40

7.1 DESCRIPTION OF THE MASTER PASSWORD 40
7.2 DESCRIPTION OF THE SETTINGS PASSWORD 40
7.3 DESCRIPTION OF THE RELAY (IED) PASSWORD 41
7.4 CHANGING THE MASTER PASSWORD 41
7.5 CHANGING THE SETTINGS PASSWORD 41
7.6 CHANGING THE RELAY (IED) PASSWORD 42
7.7 FORGOTTEN MASTER PASSWORDS OR SETTINGS PASSWORDS 42

8 COMMUNICATIONS 43

8.1 DIRECT SERIAL COMMUNICATION 43
8.2 MULTI-DROP VIA BIRT 43
8.3 DIRECT COMMUNICATIONS USING MODEMS 43
8.4 MULTI-DROP USING MODEMS AND BIRT 44
8.5 COMMUNICATIONS USING A CODE OPERATED SWITCH (COS) OR A PORT SWITCH 44
8.6 TELNET COMMUNICATIONS 45

9 RELAY (IED) OPERATIONS 46

9.1 SETTINGS 46
9.2 REAL-TIME DATA 47
9.3 FAULT OPERATION SUMMARY 48
9.4 OSCILLOGRAPHY 49
9.5 TARGETS 50
9.6 PASSWORD COMMANDS 50

10 APPENDIX A – USING IP-SERVER AS A TELNET GATEWAY FOR REMOTE COMMUNICATIONS 51

10.1 REQUIREMENTS 51
10.2 PROCEDURE 51
10.2.1 Step 1: Configure the IP Addresses of the WinRCP PC and IP Server 51
10.2.2 Step 2: Configure the Serial Port on IP Server 52
10.2.3 Step 3: Connect WinRCP to IP Server using Ethernet Cable 52
10.2.4 Step 4: Connect IP Server Serial Port to the Relay using Serial Cable 52
10.2.5 Step 5: Run WinRCP 52

11. APPENDIX B – USING SEL 2030 AS A PORT SWITCH (CODE OPERATED SWITCH)..... 53

11.1 REQUIREMENTS..... 53
11.2 PROCEDURE 53
11.2.1 Step 1: Connections 53
11.2.2 Step 2: Configure the back Ports 2 and 10 of the SEL 2030 53
11.2.3 Step 3: Relay Configuration in WinRCP 54

12 APPENDIX C – USING SEL 2030 WITH MODEMS AS A PORT SWITCH (CODE OPERATED SWITCH) FOR REMOTE COMMUNICATIONS 55

12.1 REQUIREMENTS..... 55
12.2 PROCEDURE 55

13 APPENDIX D – SAMPLE CONFIGURATION 57

This is the user's manual for WinRCP.

Document number: TBD

Revision: 1.0

Issue date: September 2003

Data subject to change without notice

We reserve all rights to this document, even in the event that a patent is issued and a different commercial proprietary right is registered. Improper use, in particular reproduction and dissemination to third parties, is not permitted.

This document has been carefully checked. If the user nevertheless detects any errors, please notify us as soon as possible.

The data contained in this manual is intended solely for the product description and is not to be deemed to be a statement of guaranteed properties. In the interests of our customers, we constantly seek to ensure that our products are developed to the latest technological standards.

Author's address:
ABB Inc.
7036 Snowdrift Road
Allentown, PA 18106
Tel: (610) 395-7333 Toll Free: 800 634-6005
Fax: (610) 395-1055
E-mail:powerful.ideas@us.abb.com
Website: www.abb.com/substationautomation

ABB Inc.
4300 Coral Ridge Drive
Coral Springs, FL 33065
Tel: (954) 752-7600
Toll Free: 800 523-2620
Fax: (954) 345-5329

2 Introduction

WinRCP (Windows-based Remote Communications Program) is a PC based software tool that enables users to access and control the information in ABB Protective Relays.

The following Relays are supported by WinRCP:

RELAY	VERSION SUPPORTED
MDAR	**2.71; 2.23; 2.22; 2.02**
MMCO	**1.10**
REL301/2 PROTECTION	**1.72; 1.23; 1.22**
REL301/2 RECLOSER	**1.27; 1.25; 1.24**
REL350	**2.70; 2.62; 2.52**
REL352	**1.13; 1.12**
REL356	**1.31; 1.21; 1.20**
ERNI	**1.10**
RONI	**1.03; 1.02**
SADI	**1.15**

WinRCP incorporates the functionality of DOS based RCP Programs. In addition, WinRCP has the following additional features/improvements:

a) Remote Communications through External/Internal Modems
b) Remote Communications through Telnet Protocol
c) Enhanced User Interface
d) OSCillography data storage in COMTRADE format
e) Embedded OSCillography conversion Tool (from DOS-RCP format to COMTRADE format)
f) Compare Relay Settings with already stored Settings
g) Print Settings and other Information

2.1 Definitions, Acronyms and Abbreviations

This section describes some of the terms, abbreviations used in this Document.

RCP – Remote Communications Program (DOS-based settings program)
Device, IED, Relay – Intelligent Electronic Device (”Device” and “Relay” are commonly interchangeable with “IED”)
INCOM (**IN**tegrated **COM**munications Network) – Communications Protocol that IEDs use to talk to the WinRCP program
Grid – A table on the right side of the WinRCP display screen where the properties of selected Tree Items are displayed.

3 PC, operative systems

PC requirements are as:

Item	Minimum required
Processor/Frequency	Pentium /233MHZ
RAM	128 Mbyte
Disk space	500 Mbyte
Monitor / Resolution	VGA compatible / 800x600, 256 colors
CD-ROM drive / Floppy disk drive	Needed to install WinRCP

Requirements on operative systems are as:

Operative System AD-ONs
Windows 98
Windows 2000

This software has only been tested on Windows 98 and 2000. Do not install this software on any other Operating System.

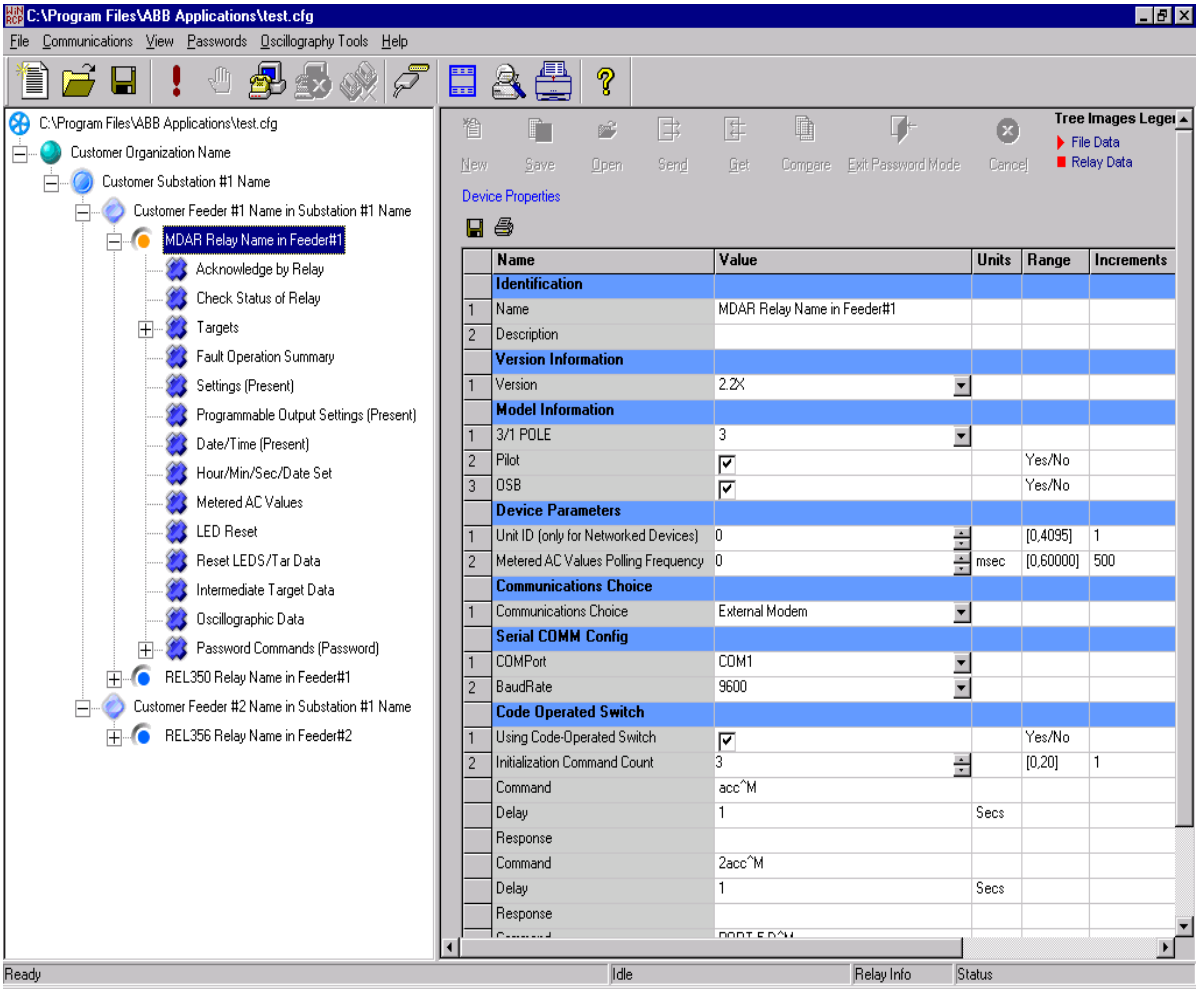
4 Overview

This section gives a brief architectural overview of the WinRCP program through text and selected screen shots.

4.1 What is WinRCP

WinRCP is a Windows (9x/NT/2000/XP) based Software Tool used to communicate with ABB Protective Relays using INCOM (**IN**tegrated **COM**munications Network) protocol.

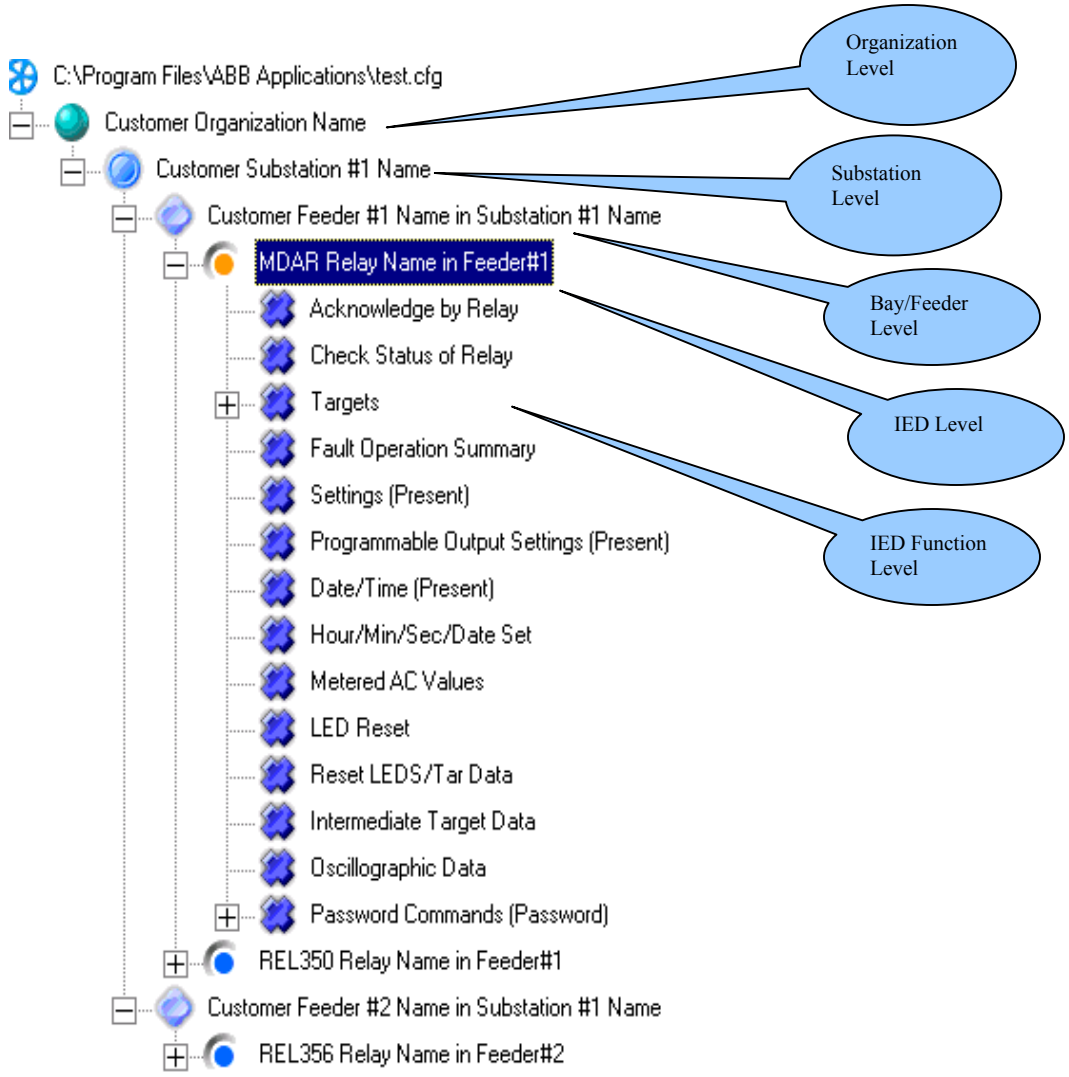
Following is a Screen-Shot of WinRCP Program.



4.2 Tree View

4.2.1 Layout

The following diagram shows the hierarchical structure of the typical WinRCP Configuration, subsequently referred to as the "Configuration Tree." (Section 5 of this User's Manual discusses the actual creation of a Configuration)



4.2.2 Images and their meaning

The following table describes the Tree-Images and their meaning. The first image in each row indicates the Unselected State and the second image indicates the Selected State.

Tree Images	Meaning
	Configuration File Name Unselected & Selected
	Organization Node Unselected & Selected
	Substations Node Unselected & Selected
	Bay File Name Unselected & Selected
	IED (Relay) Node Unselected & Selected
	Active (Communicating) IED Node Unselected & Selected
	IED Function Node Unselected & Selected
	IED Function Node (Viewing Data from a File) Unselected & Selected
	IED Function Node (Viewing Data from Relay) Unselected & Selected

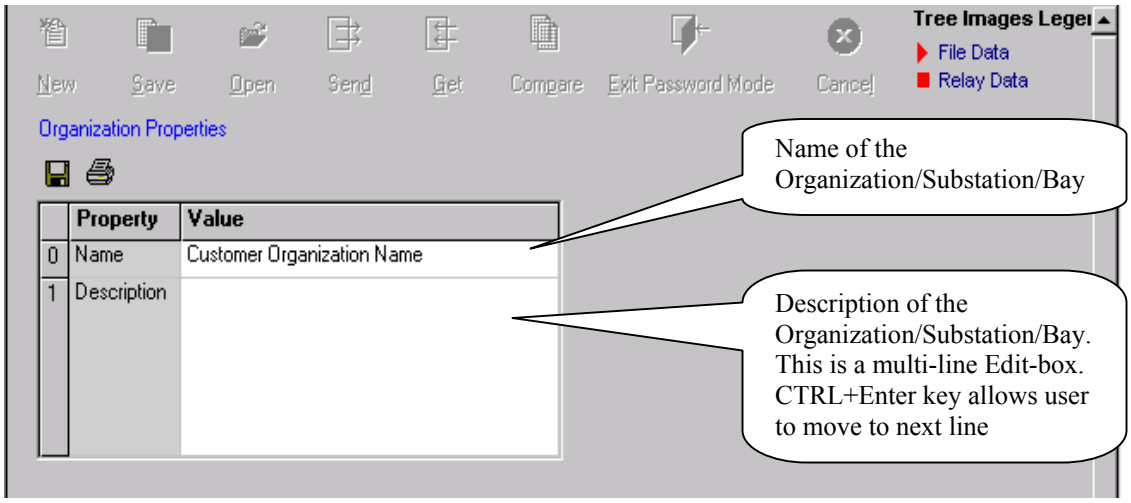
4.3 Welcome View

The following diagram is the Welcome Screen of WinRCP. This screen comes up on the Right side of WinRCP Window, when the Top-Level Node in the Tree View has been selected.

4.4 Properties View

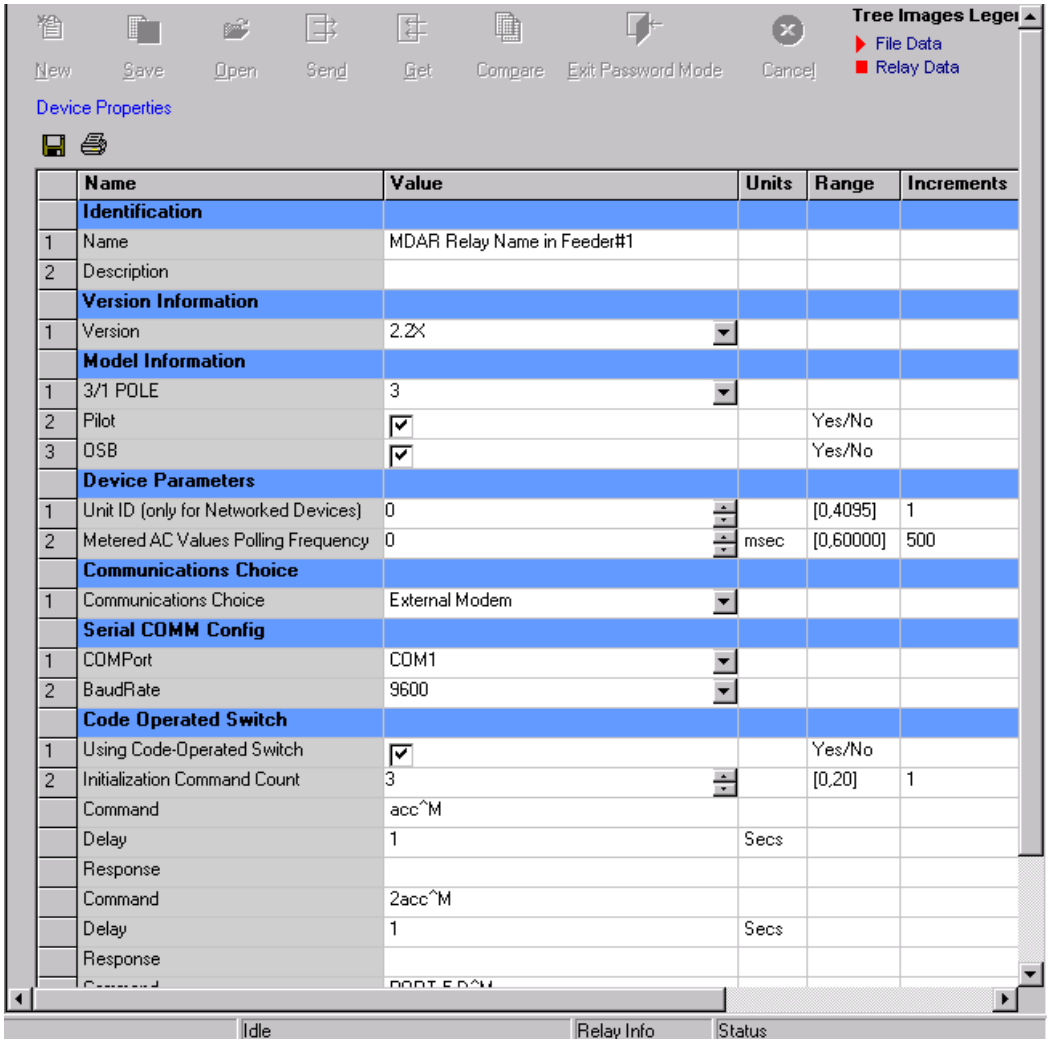
4.4.1 Organization/Substation/Bay Properties View

When user selects an Organization, Substation or Bay, the following screen will be shown on the Right-side Window on WinRCP. User can edit the Name or Description of the customer or organization and then click on the Main Toolbar Save button to save the Configuration.



4.4.2 IED Properties View

When user selects any IED Tree Item in the Configuration Tree, the following screen will be shown on the Right-side Window. User can edit the properties of the IED and save the Configuration by clicking the Main Toolbar Save button.



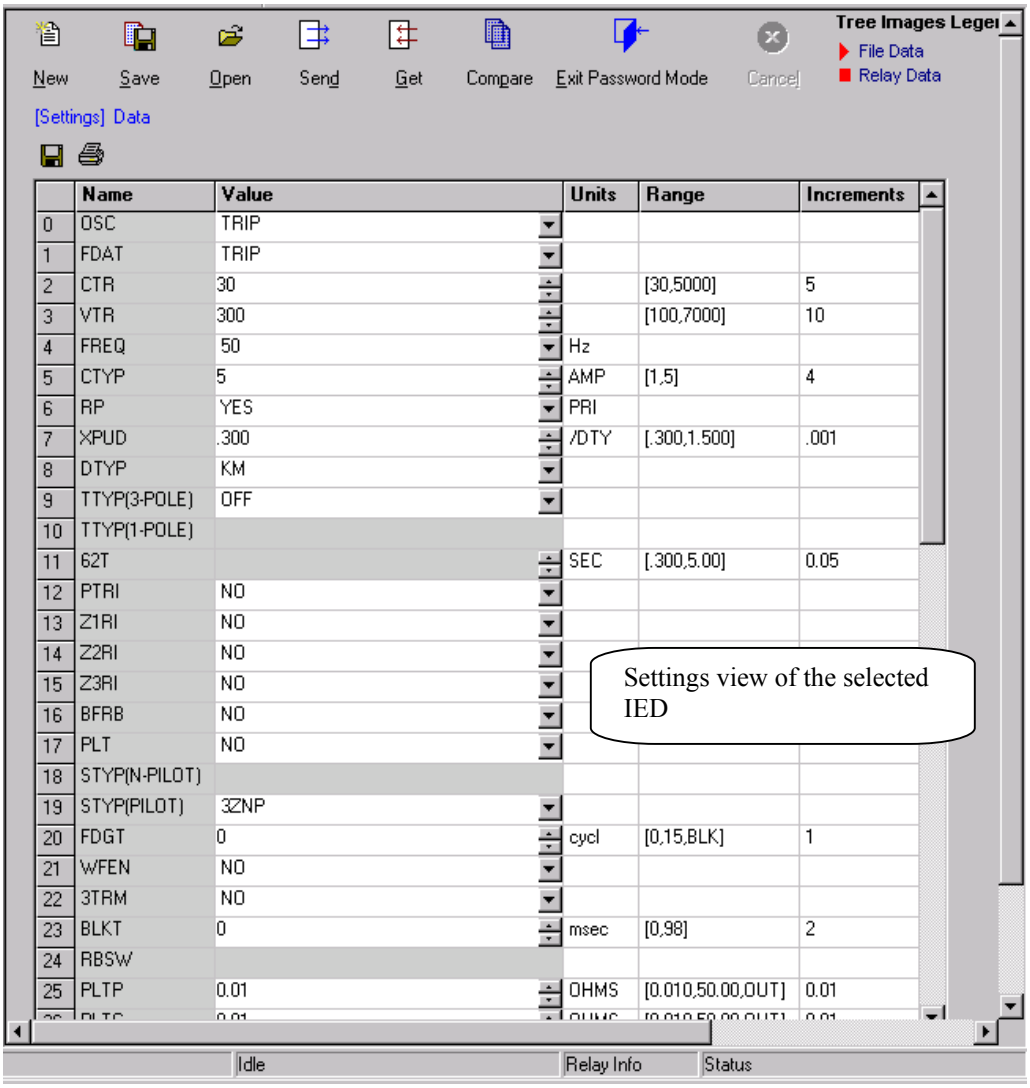
4.4.3 IED Settings Data View (IED Data View)

When user selects any child item (leaf nodes) under an IED Tree Item in the Configuration tree, generally, the following type of screen will be shown on the Right-side Window. Based on the selected Item, WinRCP enables the appropriate buttons (New, Save, Open, Get, Send, Compare and Exit Password Mode) at the top of the screen.

The typical table (Grid) below has 6 columns:

- Serial Number: Row Number (0-based)
- Name: Name of the Data Item
- Value: Value of the Data Item (If Send button is enabled, the Value cells become editable)
- Units: Unit of the Data Item (wherever applicable)
- Range: Data Value Range (wherever applicable)

- Increments: If the Data Value is editable, this column indicates the permissible level.. (for example, if the current Data Value is 30, Range is [30,5000] and the Increment is 5, then the only allowable values are 30,35,40,45 …4985,4990,4995,5000)



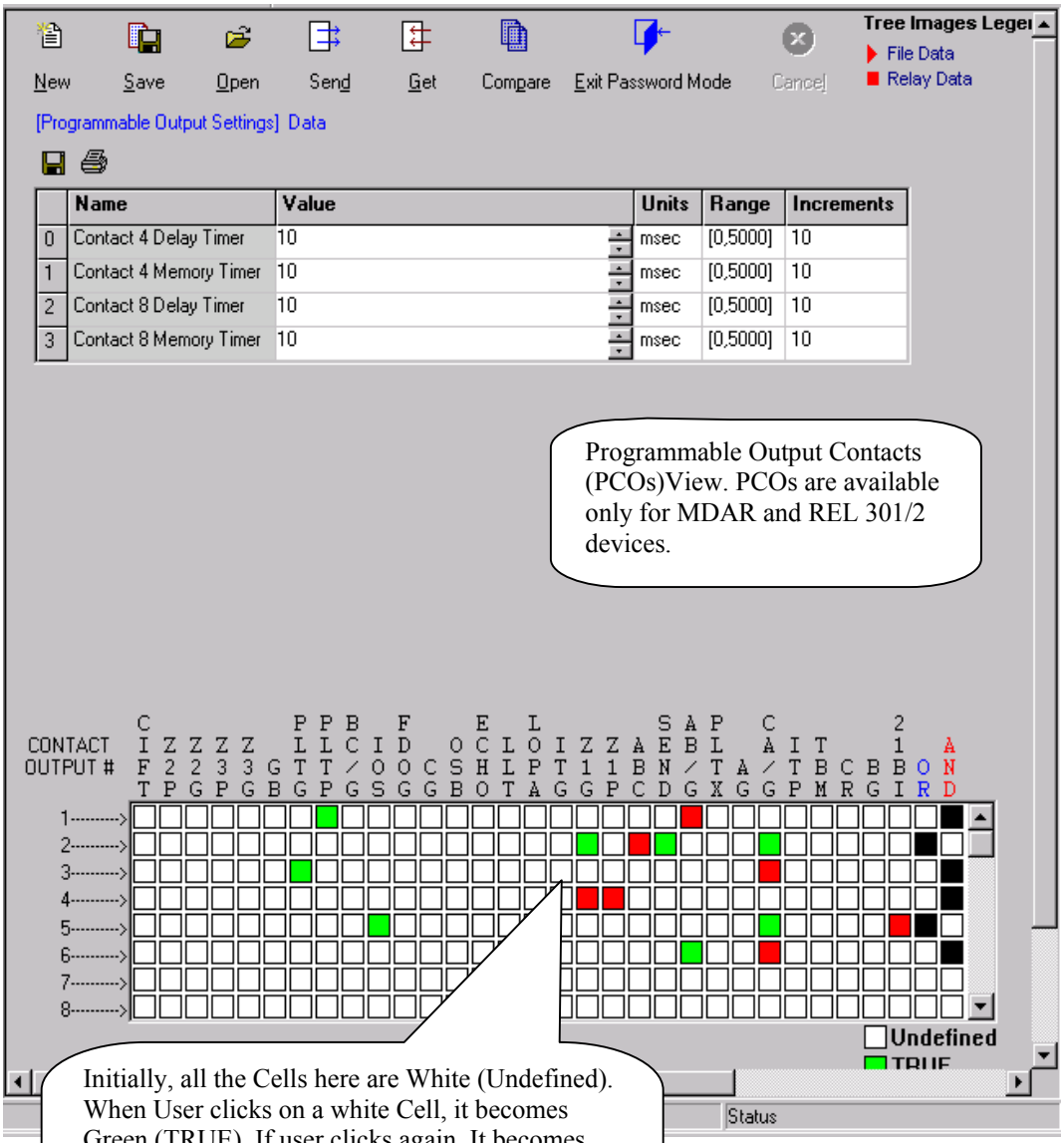
	Name	Value	Units	Range	Increments
0	OSC	TRIP			
1	FDAT	TRIP			
2	CTR	30		[30,5000]	5
3	VTR	300		[100,7000]	10
4	FREQ	50	Hz		
5	CTYP	5	AMP	[1,5]	4
6	RP	YES	PRI		
7	XPUD	.300	/DTY	[.300,1.500]	.001
8	DTYP	KM			
9	TTYP(3-POLE)	OFF			
10	TTYP(1-POLE)				
11	62T		SEC	[.300,5.00]	0.05
12	PTRI	NO			
13	Z1RI	NO			
14	Z2RI	NO			
15	Z3RI	NO			
16	BFRB	NO			
17	PLT	NO			
18	STYP(N-PILOT)				
19	STYP(PILOT)	3ZNP			
20	FDGT	0	cycl	[0,15,BLK]	1
21	WFEN	NO			
22	3TRM	NO			
23	BLKT	0	msec	[0,98]	2
24	RBSW				
25	PLTP	0.01	OHMS	[0.010,50.00,OUT]	0.01

4.4.4 Programmable Contact Outputs (PCOs) View

Programmable Contact Outputs are applicable only for MDAR and REL 301/2 Relay Types.

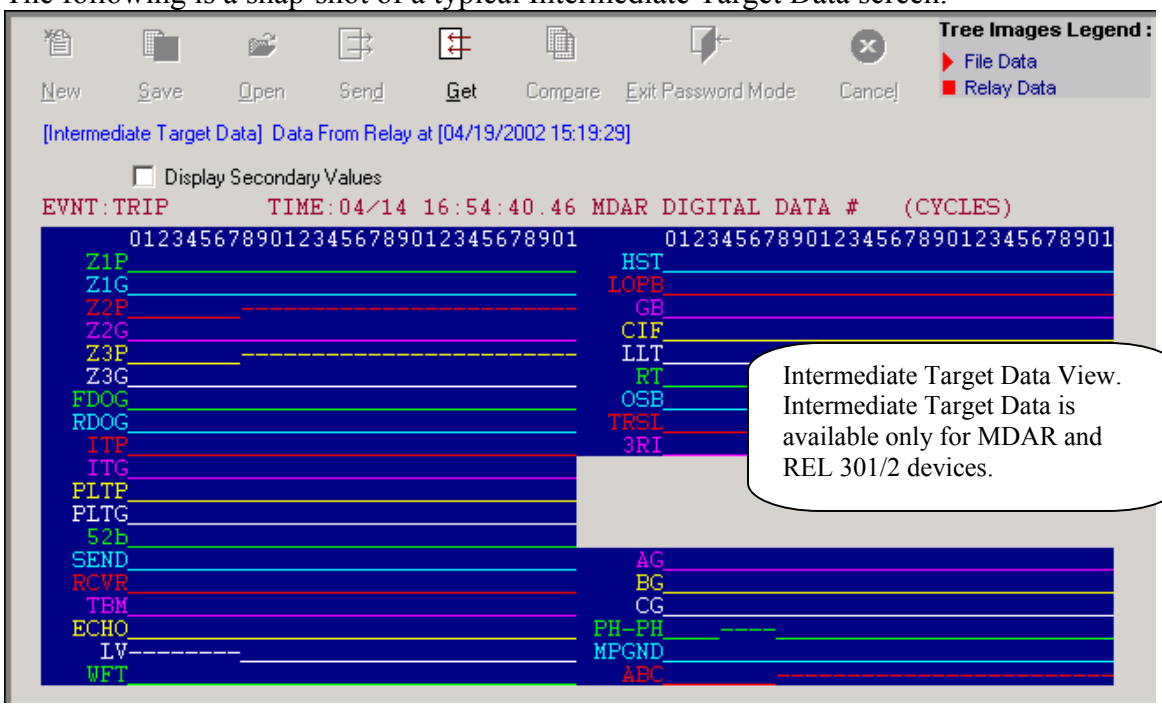
PCOs consist of two types of data:

1) Timer settings (displayed in the table)
2) Contact Output Logic settings (displayed below the table in a *Checker Control*)



4.4.5 Intermediate Target Data View

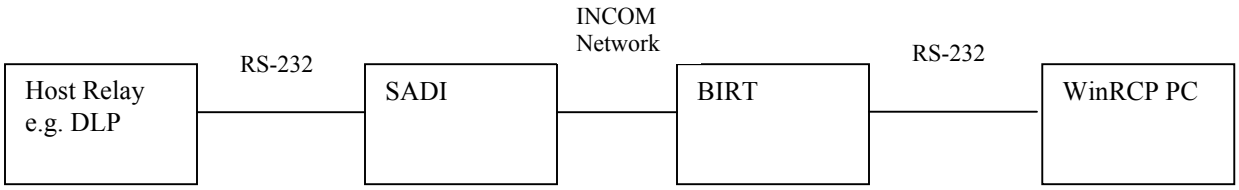
The following is a snap-shot of a typical Intermediate Target Data screen.



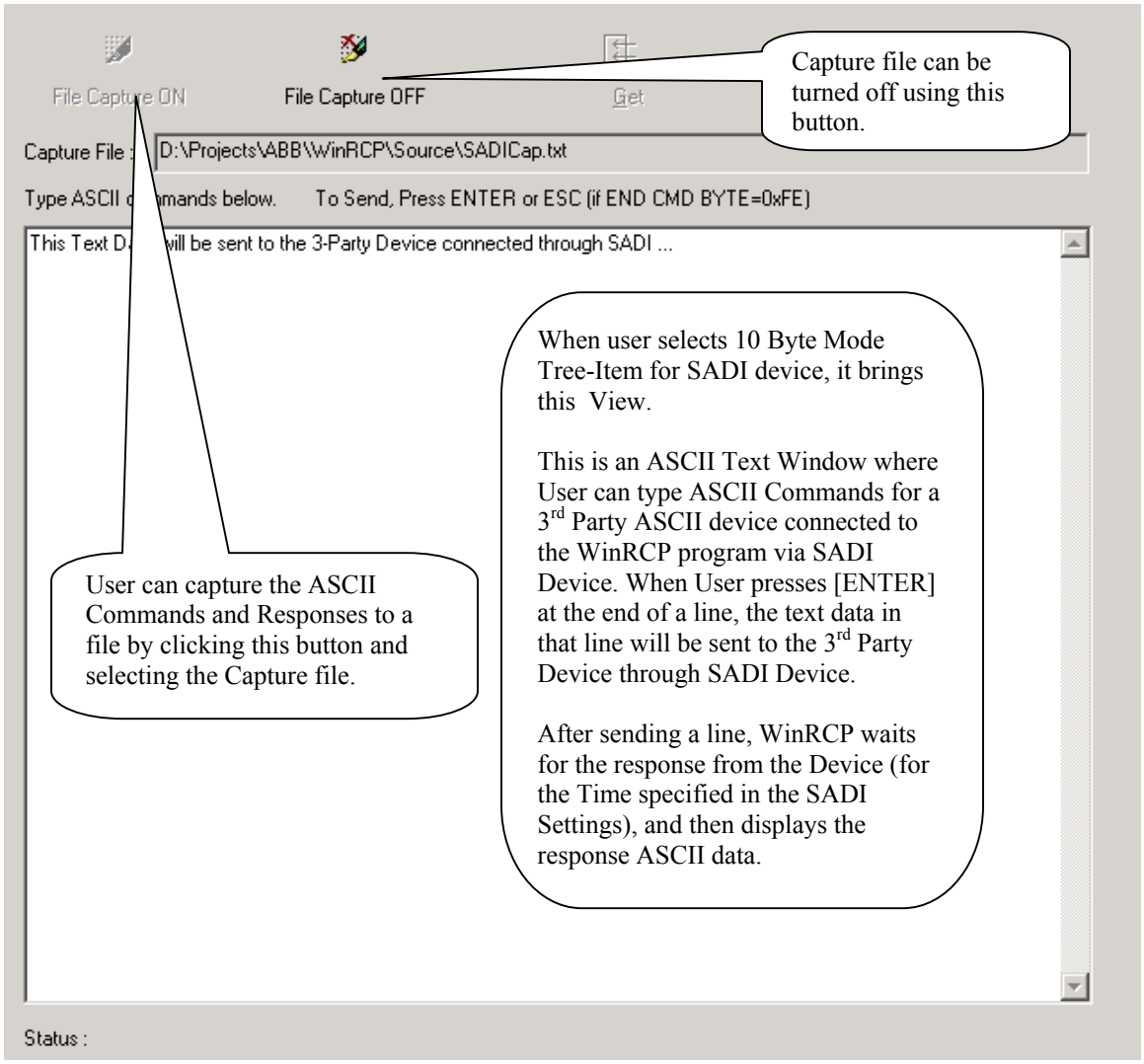
4.5 SADI Transparent (ASCII) Mode View

The SADI Device has a function (Tree Item) named – **10 Byte Mode**. When user selects this Item in the Tree View, the following screen will come up on the Right Side of the WinRCP Window.

The following diagram shows how SADI will be used to connect WinRCP to a 3rd Party ASCII Device:



SADI Device acts as a Gateway between WinRCP and the Host Relay



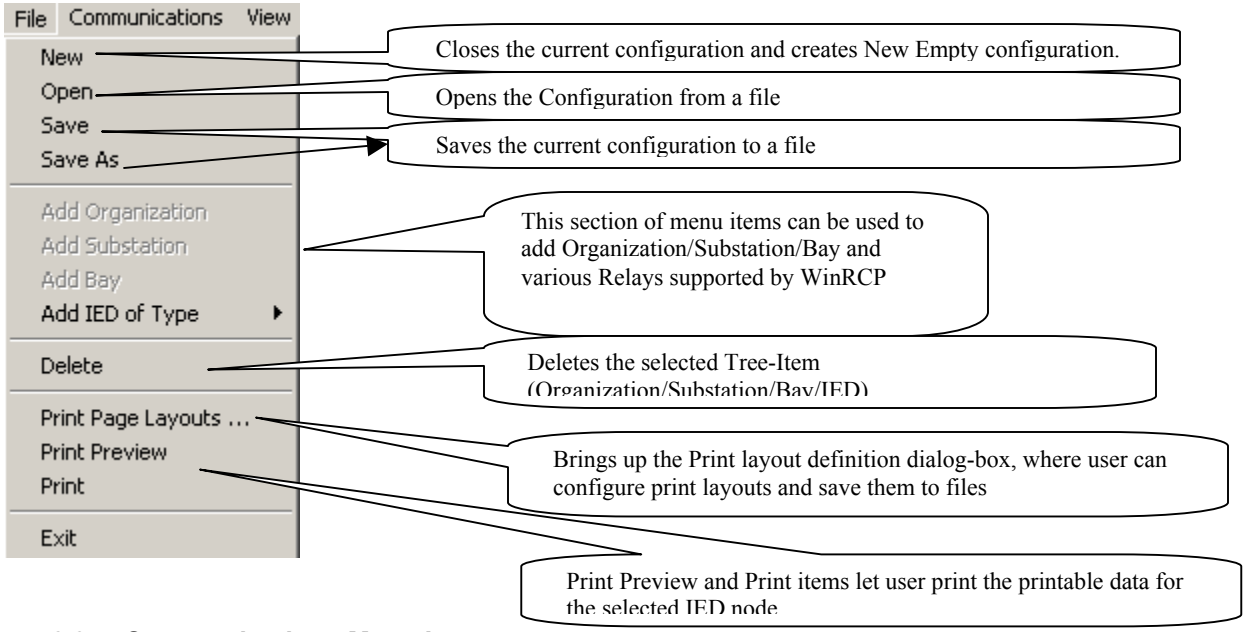
4.6 Menu Items & Toolbar Buttons

4.6.1 Main Menu Items

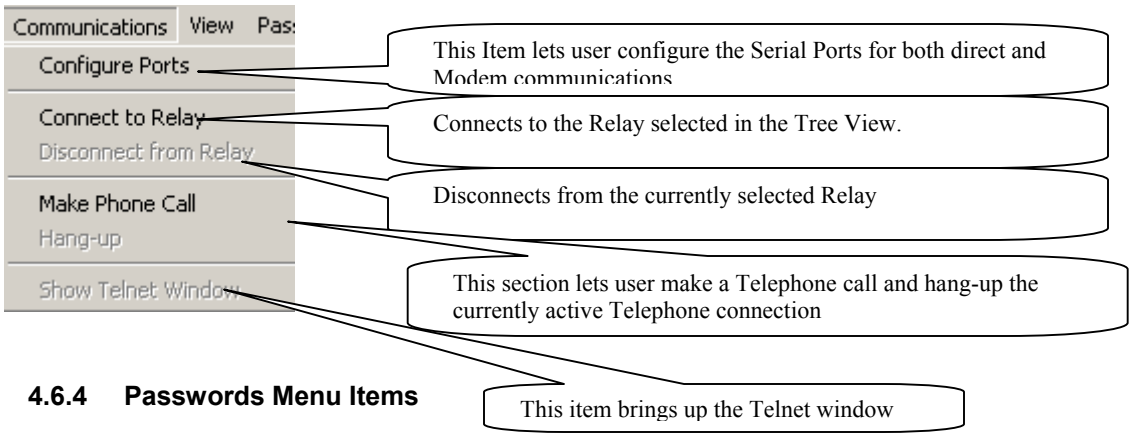
The following are the Main Menu Sections of WinRCP.

- File → This section contains all the Configuration and Print Related Menu Items
- Communications → This section contains the Relay Communications (Serial/Modem/Telnet) Menu Items
- Passwords → This section contains the Menu Items to change Passwords
- Oscillography Tools → This section contains the Oscillography Tools Menu items

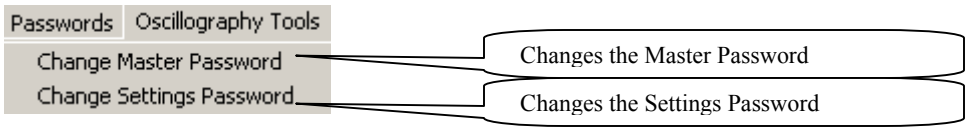
4.6.2 File Menu Items



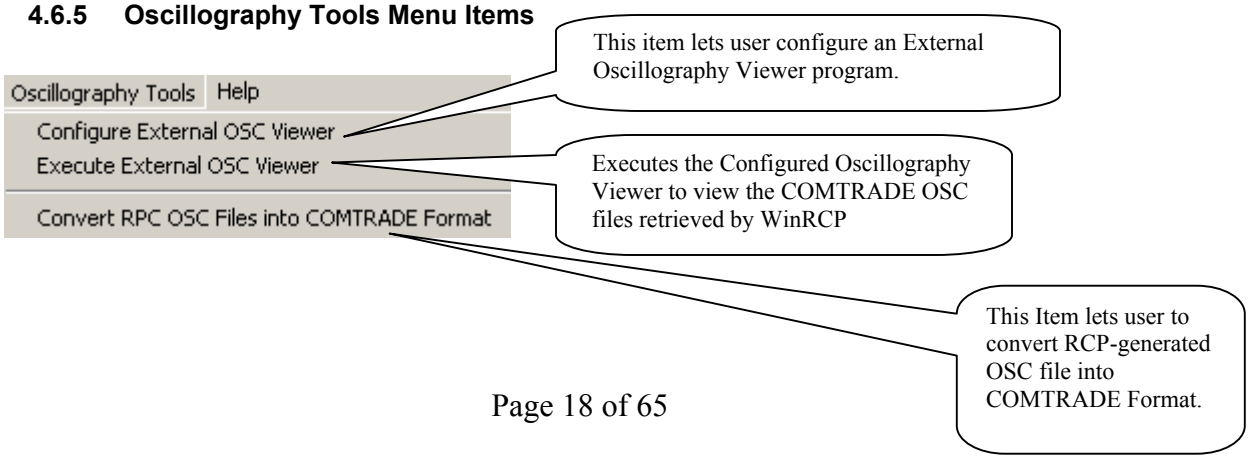
4.6.3 Communications Menu Items



4.6.4 Passwords Menu Items

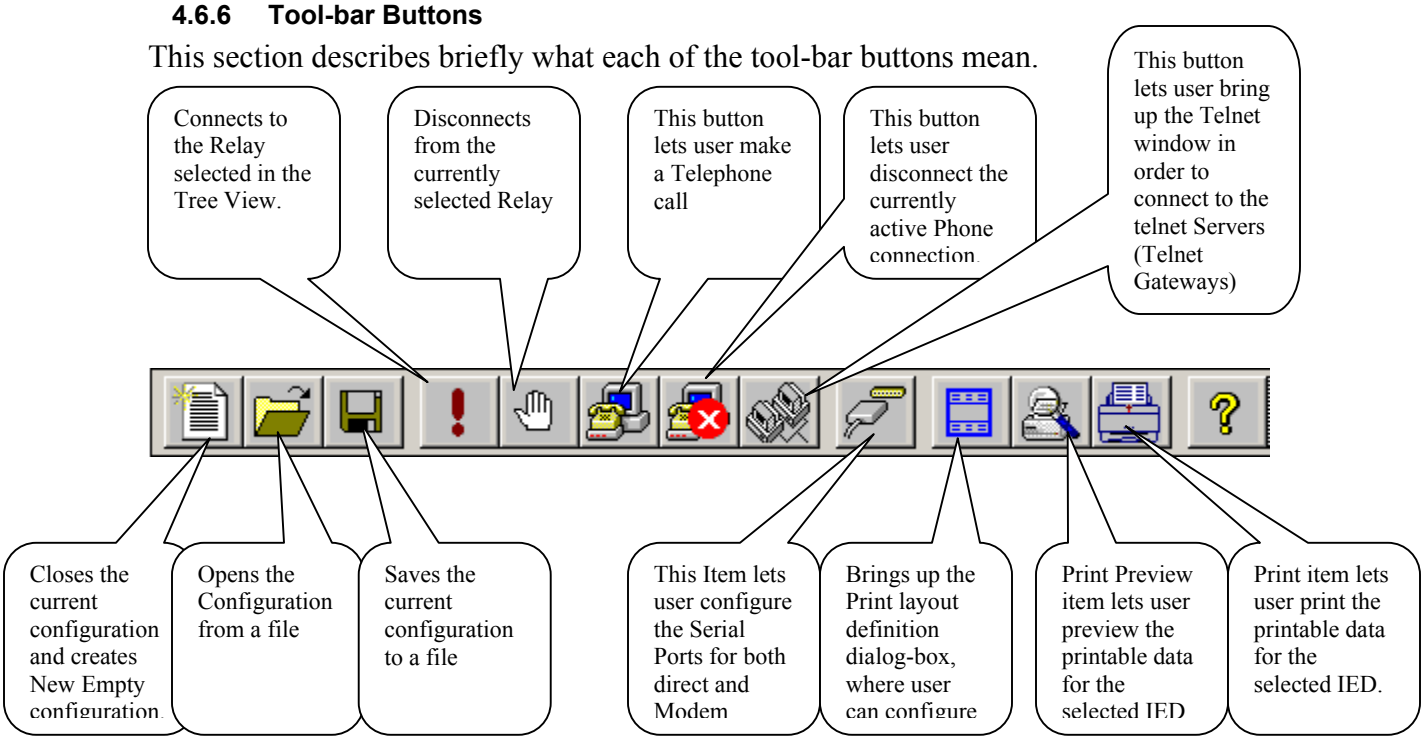


4.6.5 Oscillography Tools Menu Items



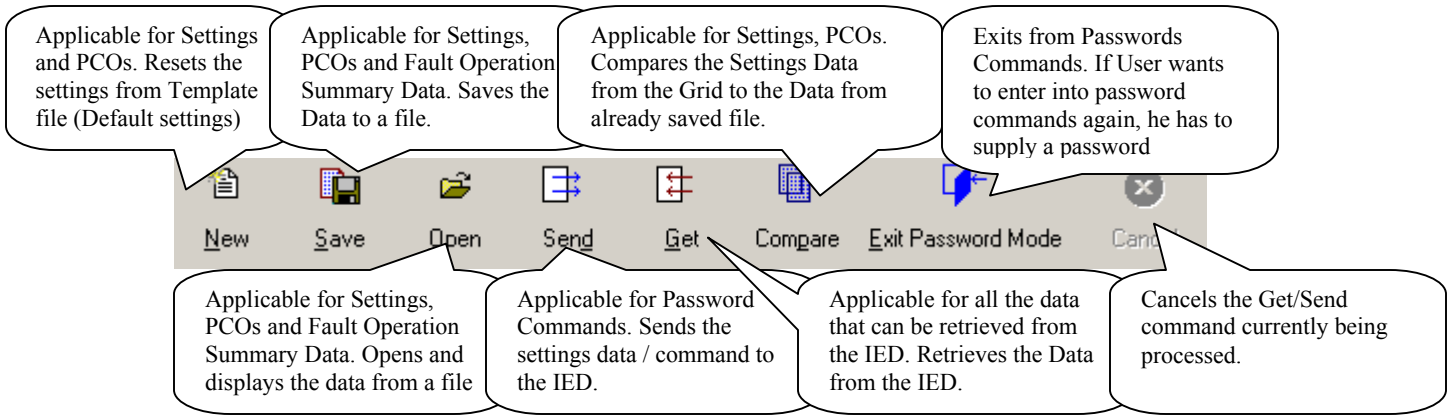
4.6.6 Tool-bar Buttons

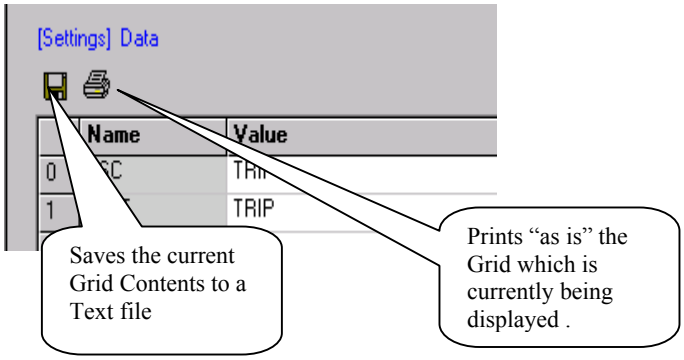
This section describes briefly what each of the tool-bar buttons mean.



4.6.7 Properties View – Buttons

This section describes the meaning of the various buttons in the Properties View.





5 Configuration

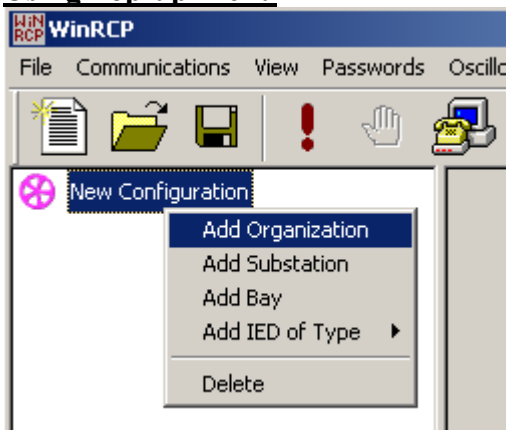
This section describes how to configure Relays and other items in WinRCP.

5.1 Adding an Organization, Substation, Bay or an IED

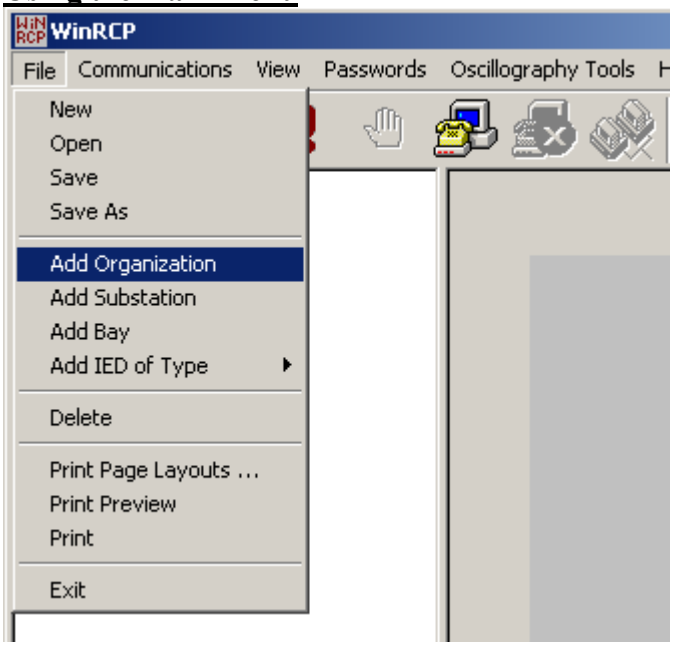
These can be configured using either Pop-up menus or the Main menu as shown below:

Step 1: Use Pop-up menu (or Main menu) to select what needs to be added (Organization/Substation/Bay/IED) right-click with the mouse.
Step 2: Configure the Properties of the added Item.
Step 3: Once finished configuring the Properties, use the Tool-bar Save Button to save the Configuration to a file.
For more details see example in Appendix D.

Using Pop-up Menu



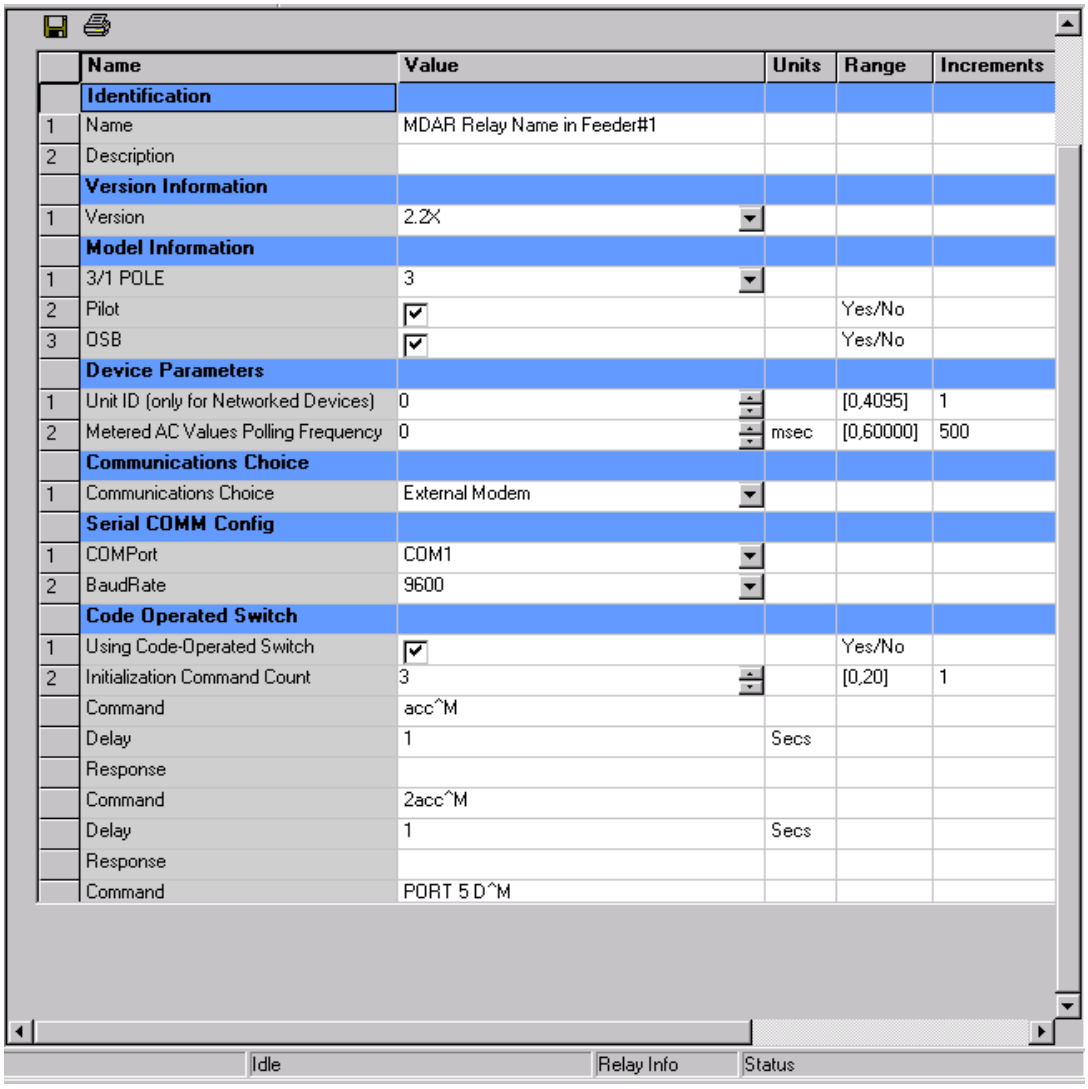
Using the main Menu



5.2 Configuring an IED

This section describes the Configuration properties of an IED in detail.

Please refer to the following diagram to identify the various Configuration sections.



	Name	Value	Units	Range	Increments
	Identification				
1	Name	MDAR Relay Name in Feeder#1			
2	Description				
	Version Information				
1	Version	2.2X			
	Model Information				
1	3/1 POLE	3			
2	Pilot	☑		Yes/No	
3	OSB	☑		Yes/No	
	Device Parameters				
1	Unit ID (only for Networked Devices)	0		[0,4095]	1
2	Metered AC Values Polling Frequency	0	msec	[0,60000]	500
	Communications Choice				
1	Communications Choice	External Modem			
	Serial COMM Config				
1	COMPort	COM1			
2	BaudRate	9600			
	Code Operated Switch				
1	Using Code-Operated Switch	☑		Yes/No	
2	Initialization Command Count	3		[0,20]	1
	Command	acc^M			
	Delay	1	Secs		
	Response				
	Command	2acc^M			
	Delay	1	Secs		
	Response				
	Command	PORT 5 D^M			

5.2.1 Identification

This section has the following two properties:

1) Name: The unique name of the IED. This name appears in the Tree-View for the IED.
2) Description: One-line description of the IED.

5.2.2 Version Information

This section allows the user to indicate which version of the IED is called for. User must select one of the available versions from the list.

5.2.3 Model Information

This section contains the Model Information of the IED. Each of the supported IEDs comes with various Options. Here, the user must indicate the appropriate purchased Options.

5.2.4 Device Parameters

This section contains the following device (IED) parameters:

1) Unit ID: If the IED is connected via BIRT, user must specify the Unit ID of the IED. Unit ID for a Device can be found in the back of the Device (the rotating 3-digit (Hex) number). If IED is directly connected, user must set this parameter to 0.
2) Metered AC Values Polling Frequency: This Parameter tells at what frequency the Metered AC Values (Real-time Data) for the currently selected device will be polled and updated on the screen. If user sets this parameter to 0, Automatic polling will be disabled (User must manually update by the Get button)

5.2.5 Communications Choice

This section contains all the available communications choices. User must pick one of the following choices.

1) Serial: WinRCP is connected to the device using RS-232 Serial cable
2) Internal Modem: WinRCP is connected to the device through an Internal Modem installed in the PC.
3) External Modem: WinRCP is connected to the device through an external Modem connected to the PC.
4) Telnet: WinRCP is connected to the device via Telnet Terminal Gateway (such as SEL 2030 or IP-Server).

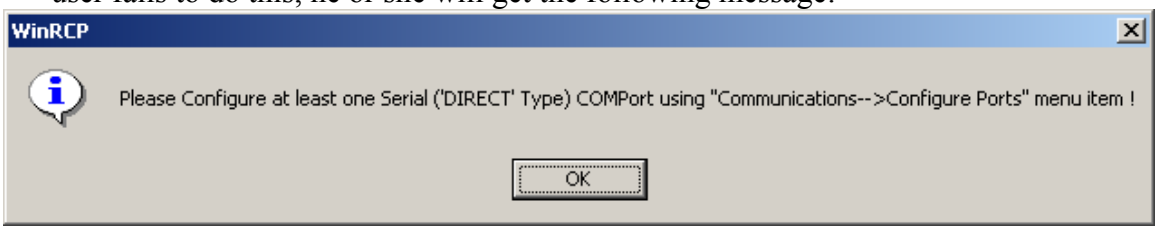
(Communications choices above are explained in detail in Section 8)

Communications section.

5.2.6 Serial COMM Configuration

This section describes the Serial Communications Parameters.

1) COMM Port: Before configuring this parameter, user must configure at least one Direct Serial Port through the Communications→Configure Ports menu item. If user fails to do this, he or she will get the following message:



2) Baud Rate: Allowed Baud rates are – 1200,2400,4800,9600,19200. User must select an appropriate Baud rate that matches the Device's Baud rate

5.2.7 Code Operated Switch

If WinRCP is connected to a device through a Code Operated Switch (or a Port Switch like SEL 2020), the user must configure the following section.

	Code Operated Switch				
1	Using Code-Operated Switch	☐		Yes/No	
2	Initialization Command Count	1		[0,20]	1
	Command	PORT 12			
	Delay	2	Secs		
	Response				
3	Termination Command Count	1		[0,20]	1
	Command	^D			
	Delay	0	Secs		
	Response				

1) Using a Code Operated Switch: Click this check-box if using COS or a Port Switch
2) Initialization Command Count: Sets the number of Initialization Commands required to accomplish the Port Switch. This is the number of sets of (Command, Delay and Response) fields which will be created automatically. For example, the above diagram shows that only one 'Initialization Command' (Command String: "PORT 12") is required. This example uses SEL 2020 as a Port Switch.
3) Initialization Command: The ASCII Command sent to the COS/Port Switch to accomplish a switch to the device currently being configured. All of the printable ASCII Codes and CTRL Key are allowable characters. For CTRL Key, use '^' character.
4) Initialization Delay: This indicates the delay in seconds waiting for a response for the Initialization Command.

5) Initialization Response: The expected Response in order to proceed to the next Initialization Command. If left blank, WinRCP will display the response it received for the Initialization Command and allow user to continue or stop.
6) Termination Command Count: This parameter is used to set how many Termination Commands are required to accomplish the termination of the current Active Transparent Mode of the COS/Port Switch.
7) Termination Command: This is similar to the Initialization Command. In the above example, CTRL+D (^D) is used as the Termination Command
8) Termination Delay: This is similar to Initialization Delay.
9) Termination Response: This is similar to Initialization Response.

5.2.8 Modem Properties

When the device is connected using a Modem, the user must configure the dialing properties for the Modem in this section.

1) Direct Dialing

	Modem Properties				
1	Telephone No.	92159965555			
2	Using Calling Card	☐		Yes/No	
3	Dial No.				
4	Wait for	Nothing			
5	Dial No.				
6	Wait for	Nothing			
7	Dial No.				
8	Wait for	Nothing			
9	Dial No.				
10	Wait for	Nothing			
11	Dial No.				
12	Wait for	Nothing			
13	Dial No.				
14	Wait for	Nothing			

While using a direct dial number, the user must enter the dial number (without any spaces or dashes) as shown in the above diagram.

2) Long Distance Direct Dialing or Dialing using Calling Card

	Modem Properties				
1	Telephone No.				
2	Using Calling Card	☑		Yes/No	
3	Dial No.	918008778000			
4	Wait for	10 Secs			
5	Dial No.	02159969238			
6	Wait for	8 Secs			
7	Dial No.	83456789012345			
8	Wait for	8 Secs			
9	Dial No.	4312			
10	Wait for	Done			
11	Dial No.				
12	Wait for	Nothing			
13	Dial No.				
14	Wait for	Nothing			

While using a Long distance number or a Calling Card, the user must follow these steps:

a) Click the 'Using Calling Card' check-box
b) Enter the First number to be dialed (ex: 1-800 number of the calling card company)
c) Select the waiting time (e.g.: 10 seconds)
d) Enter the next number to be dialed (ex: 0 followed by the 10-digit telephone number)
e) Select the waiting time (e.g.: 8 seconds)
f) Enter the next number to be dialed (e.g.: PIN number)
g) Select the waiting time (e.g.: 8 seconds)
h) Enter the next number (e.g.: an extension number 4312)
i) Select 'Done'.

Note: these steps are only an example of how to dial a long-distance number with a 4-digit extension using a SPRINT Calling card.

The user can enter any number of sets (number followed by delay) required to dial into the remote Modem to which the device is connected.

5.2.9 Telnet Properties

When the device is connected to a Telnet Terminal Server like SEL 2030 or IP-Server, WinRCP uses Telnet client functionality to establish transparent communications to the Device through the Terminal Server. In this case, the user must configure the following Telnet Properties.

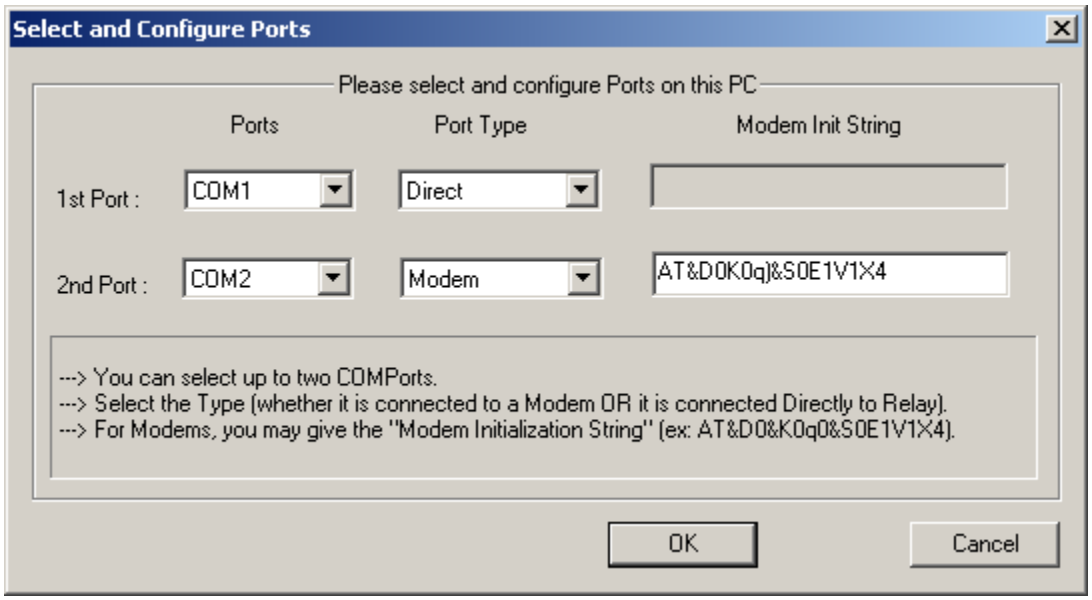
	Telnet Properties				
1	Show Telnet Window (Manual Setup)	☑		Yes/No	
2	HostName/IPAddress	206.159.169.58			
3	UserName				
4	Password				
5	Initialization Command Count	0		[0,20]	1
6	Termination Command Count	0		[0,20]	1

NOTE: We recommend using the Manual setup of the Telnet, which gives the user more control of the setup process..

1) Show Telnet Windows (Manual Setup): If user clicks this check box, a Telnet client window will pop-up when attempting to connect to the Device.
2) Host Name/ IPAddress: Host name or IP Address of the Terminal Server (ex: SEL 2030).
3) User Name: Telnet Account user name
4) Password: Password for the above user name
5) Initialization Commands, Termination Commands: These commands are similar to the Code Operated Switch Commands described in **5.2.7 Code Operated Switch**

5.3 Configuring Serial / Modem Ports

The user can configure up to two Serial Ports using the **Communications→Configure Ports** menu item.



In the above diagram, COM1 and COM2 are configured as Direct and Modem types respectively.

User can (optionally) specify the Initialization String for the Modem Type COM Ports.

5.4 Configuring Print Layout Settings

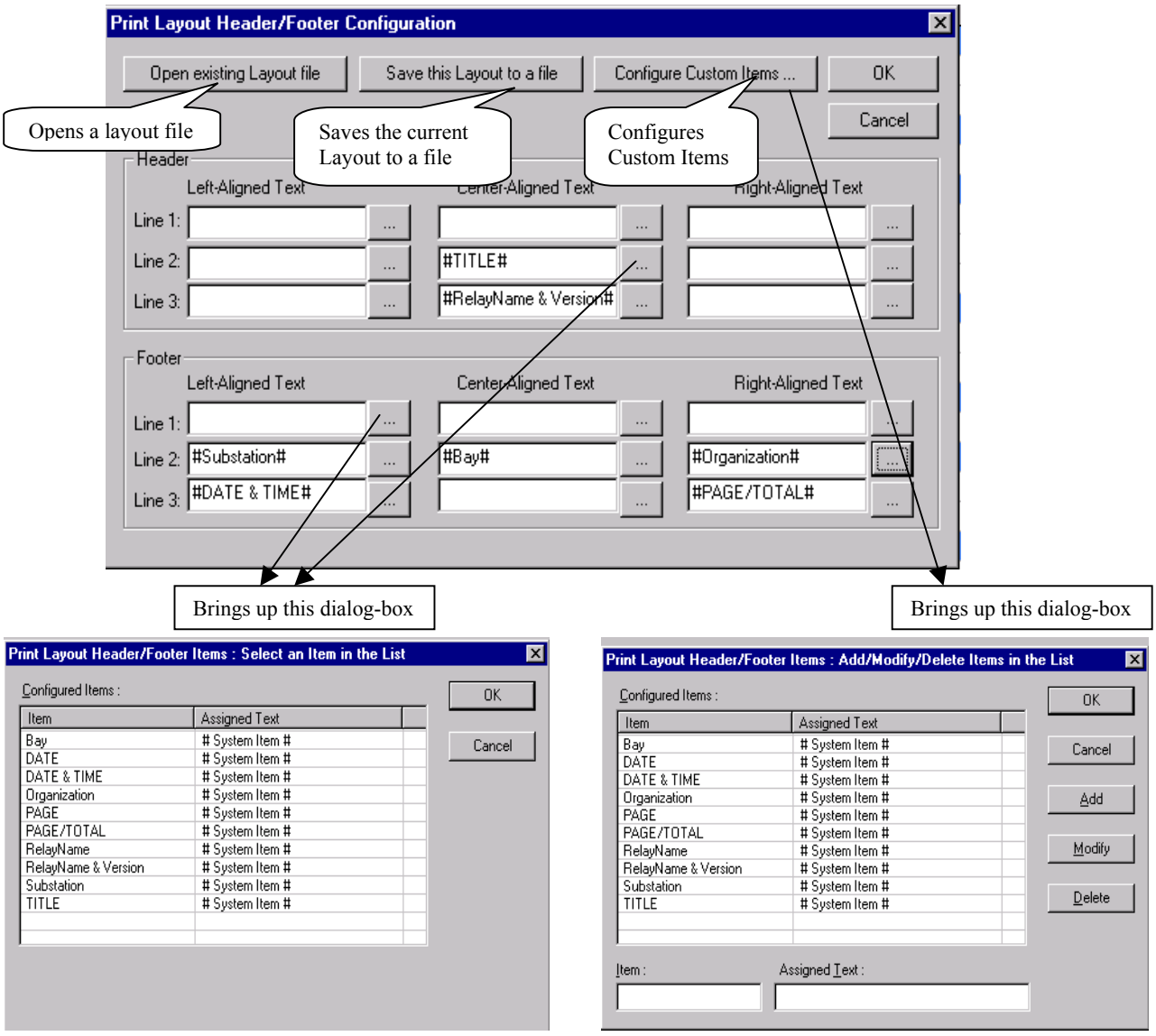
WinRCP lets the user print various data available in the IED's – such as Settings, Programmable Contact Outputs, Recloser Settings and Fault operation Summary.

User can define Print Layouts and save them permanently as Layout files.

Using **File→Print Page Layouts…** menu item - user can invoke the following dialog-box.

User can define the header and footer for the printable data in the using this dialog-box. Up to 3 lines of Header and 3 lines of footer is allowed. Each line can contain left-aligned, center-aligned and right-aligned texts. The following dialog-box allows the user to configure the Header and Footer lines using text-boxes.

User can enter any text in the text boxes or select the text from using the ... button.



In the above dialog box, user can select an Item to be inserted into the header/footer.

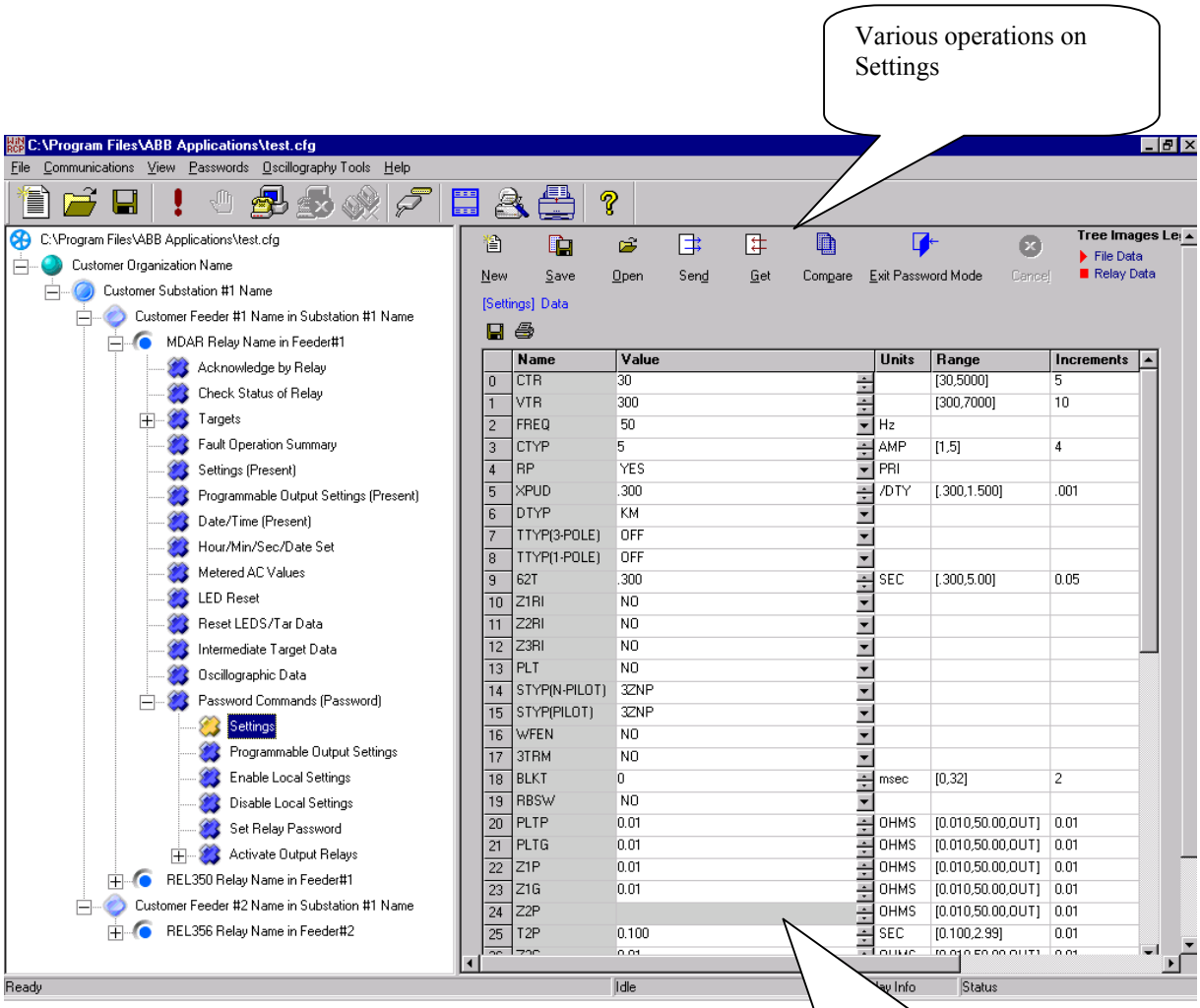
In the above dialog box, users can add/modify/delete custom Items. Each custom Item consists of an Item Name and the associated Text. When user selects the Item, the associated Text goes to the Printer.

The following pre-defined items (System Items) can be placed in the Header or Footer.

- DATE: Current Date at the time of printing.
- DATE & TIME: Current Date & Time at the time of printing.
- PAGE: Page number
- PAGE/TOTAL: Page number / Total number of Pages
- RelayName: Relay Name (Configured Name from the IED Properties)
- RelayName & Version: Relay Name and Relay Version
- TITLE: Title of the date being printed

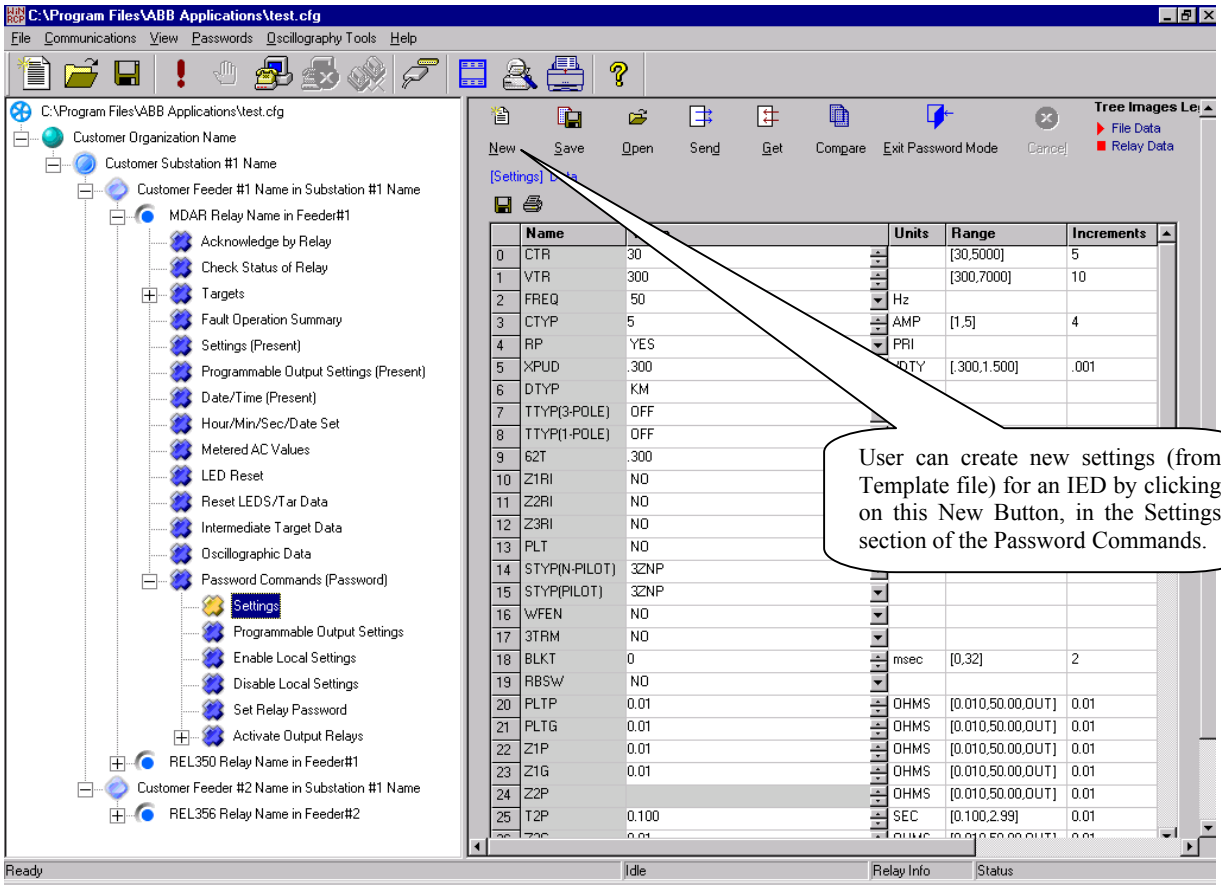
6 Settings

All the Relay Types supported by WinRCP (except ERNI) have Settings. This section describes various user operations on Relay Settings.



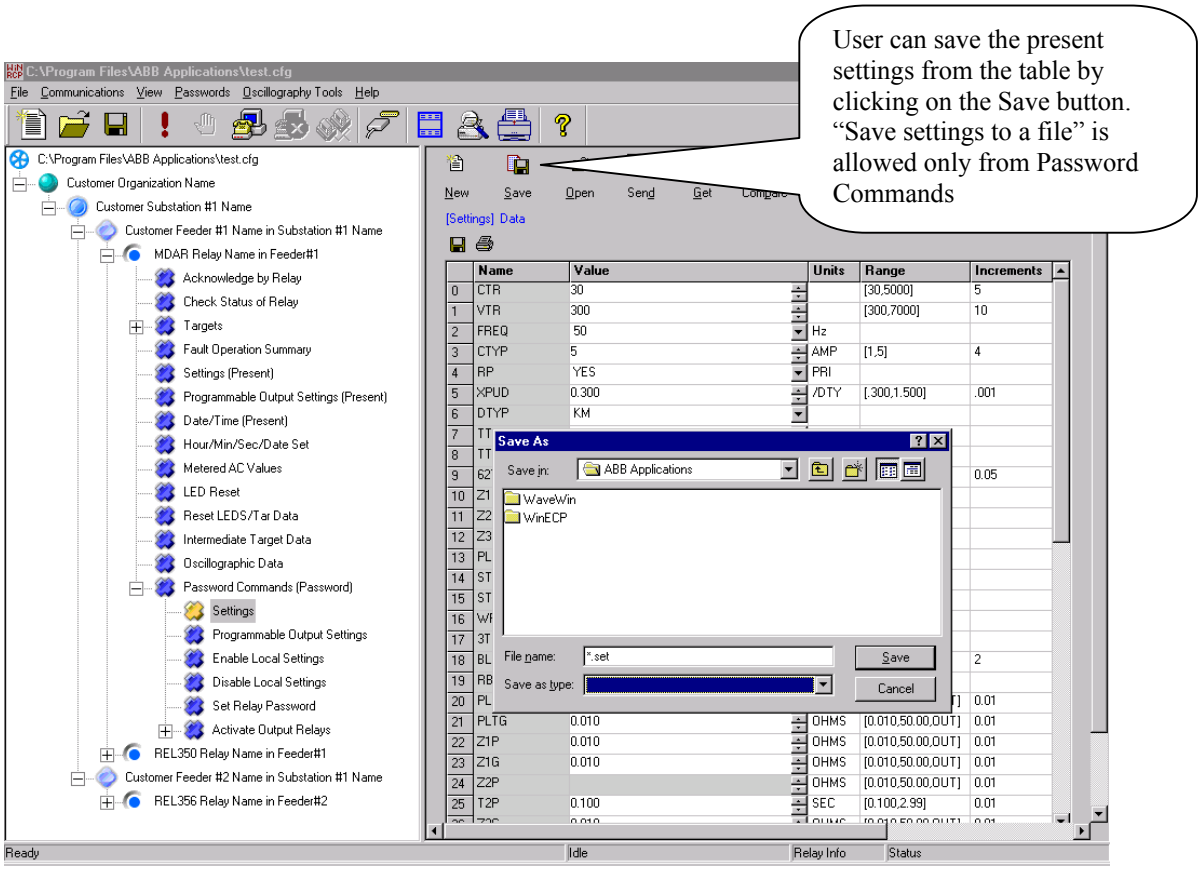
6.1 Creating New Settings for an IED – NEW

Every Relay has one or more Template files (each Template File uniquely identifying a Version of the Relay).
When the user clicks on the **New** button, WinRCP populates the Settings Table with the (default) values from the corresponding Template File for the selected IED.



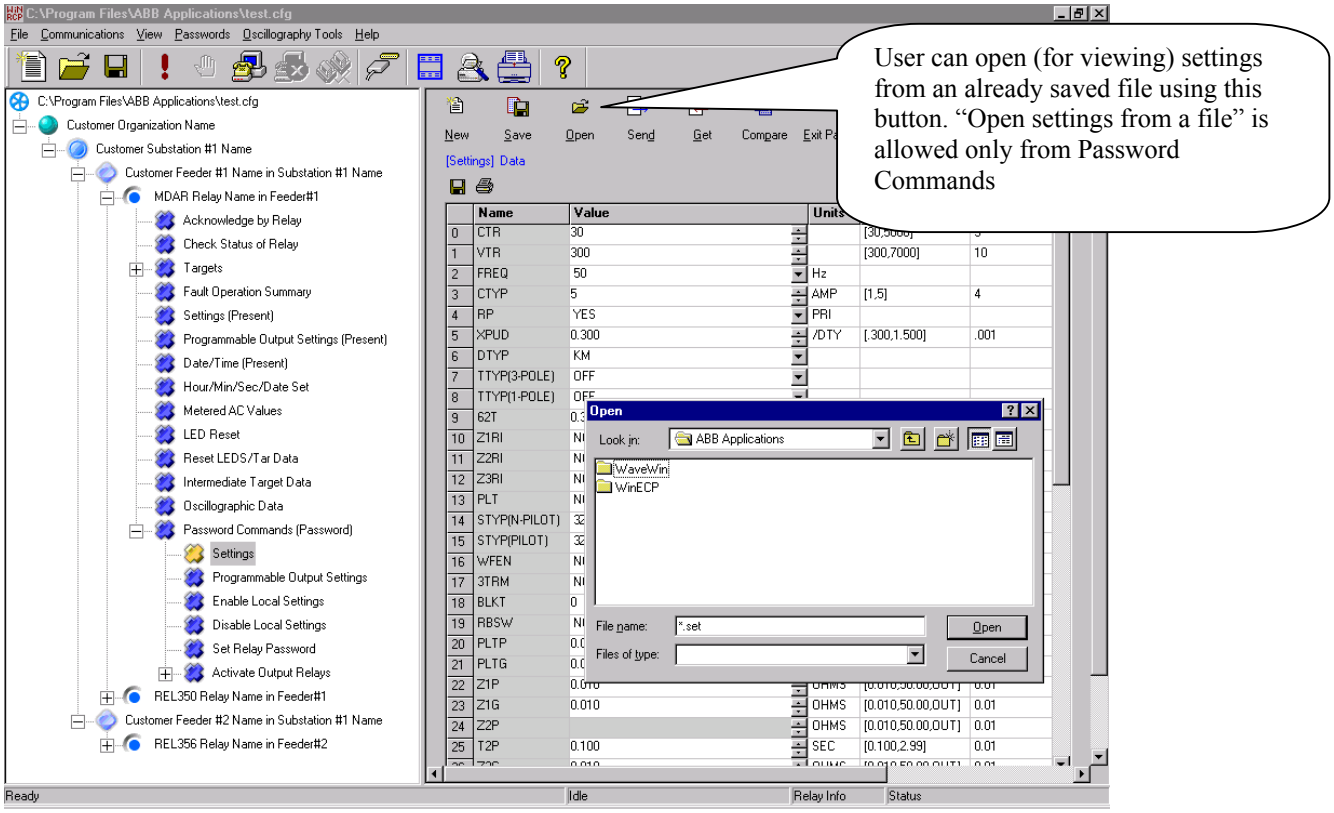
6.2 Settings to a File – SAVE

The following diagram shows how a user can save the settings to a file from the Table.



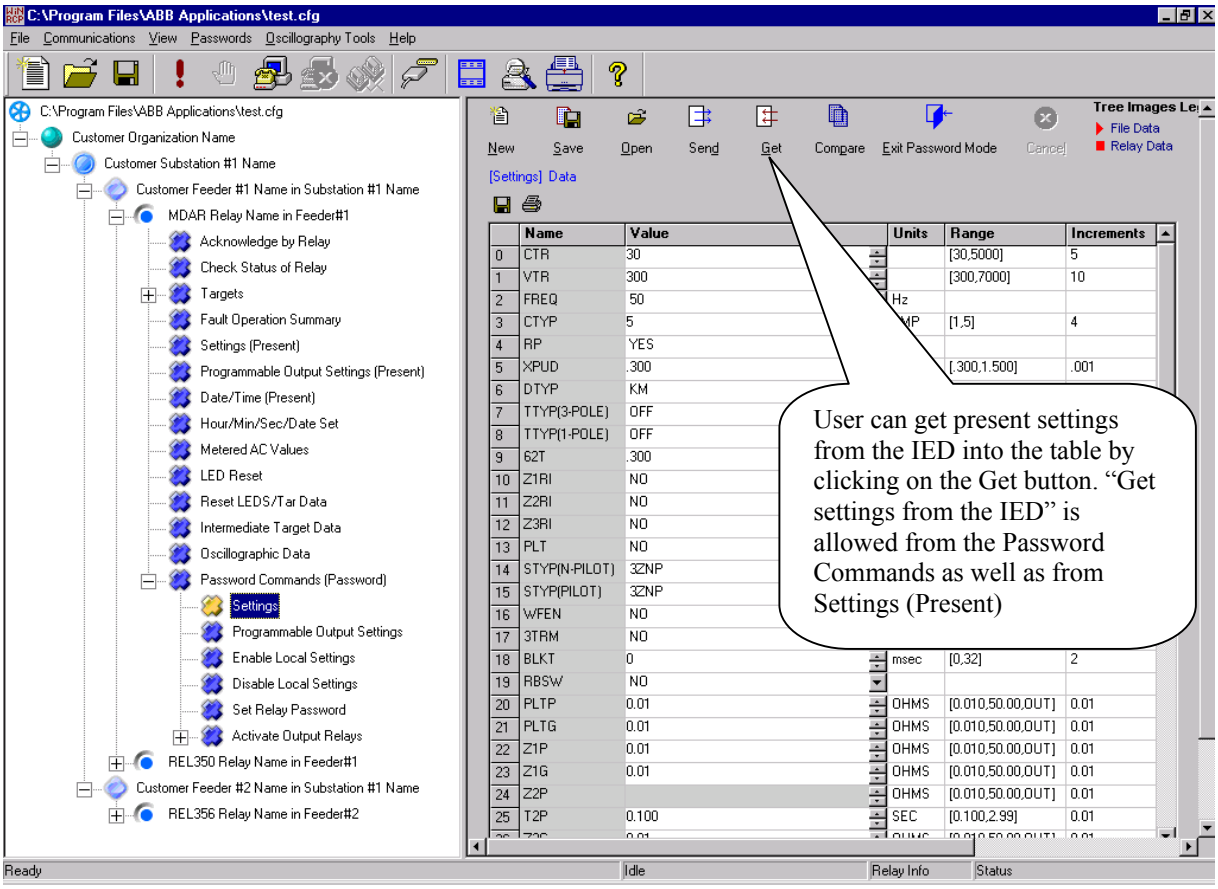
6.3 Open Settings from a File – OPEN

The following diagram shows how a user can open settings from a file into the Table.



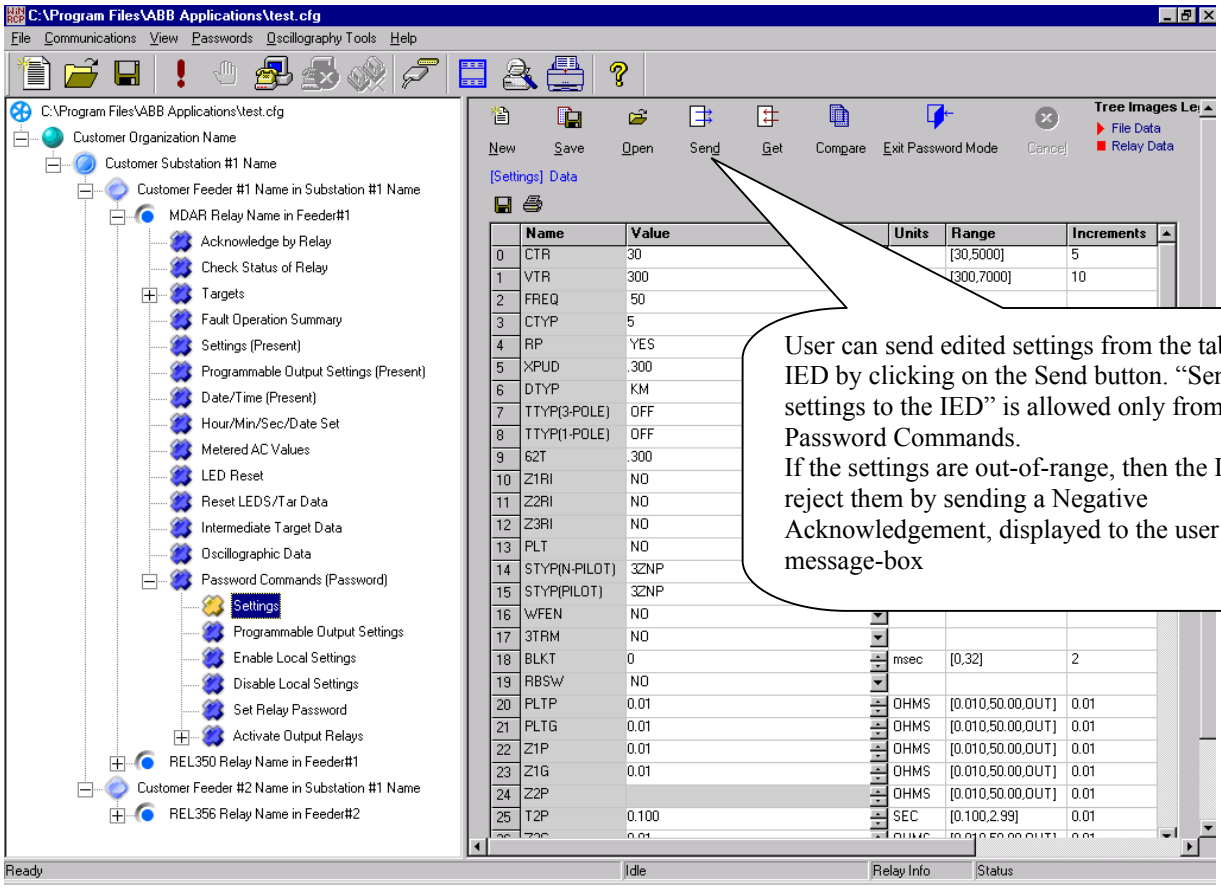
6.4 Download Settings from an IED – GET

The following diagram shows how a user can download settings from the Relay into the Table.



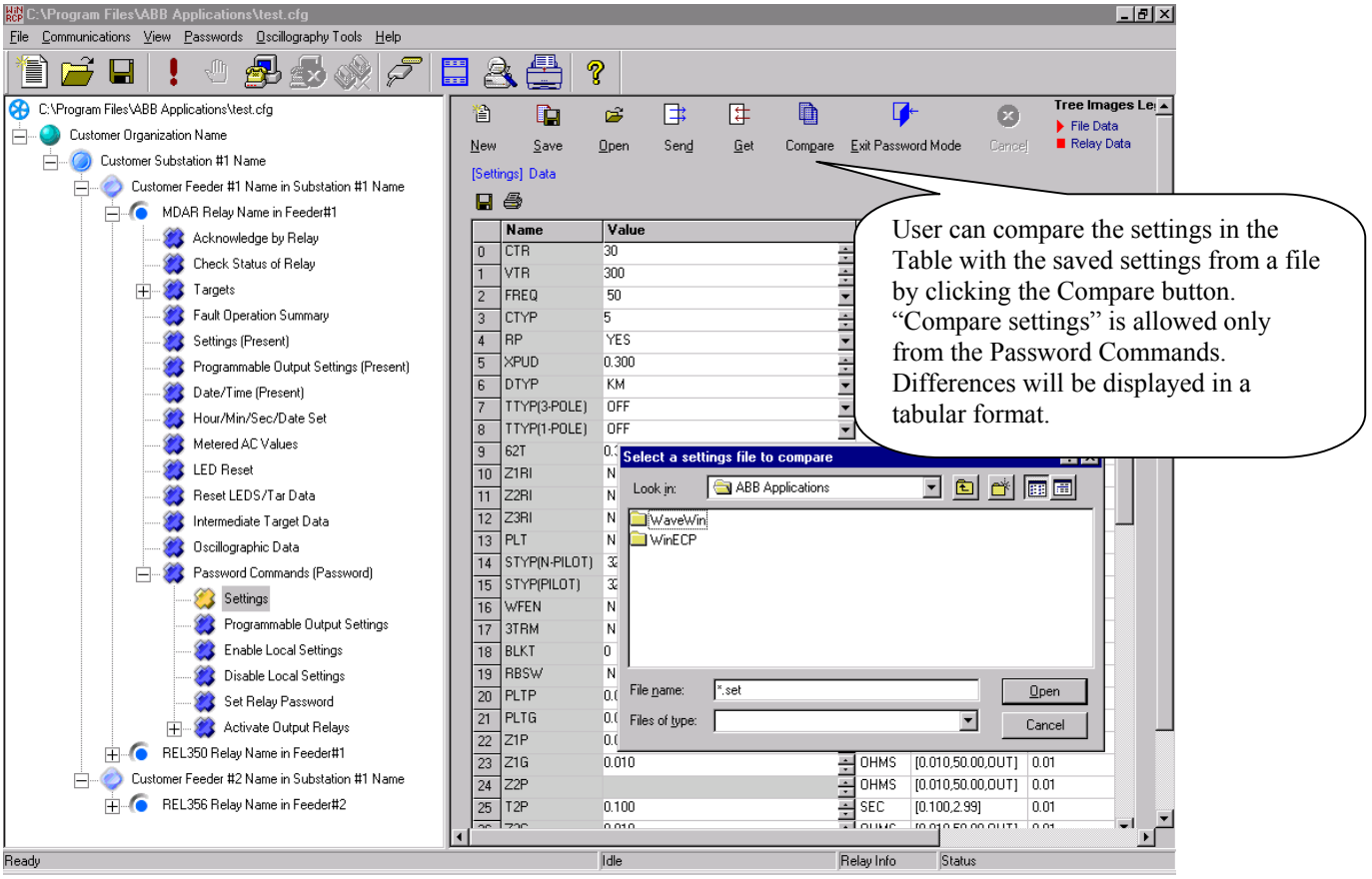
6.5 Upload Setting to an IED – SEND

The following diagram shows how user can send the settings from the Table to a Relay.



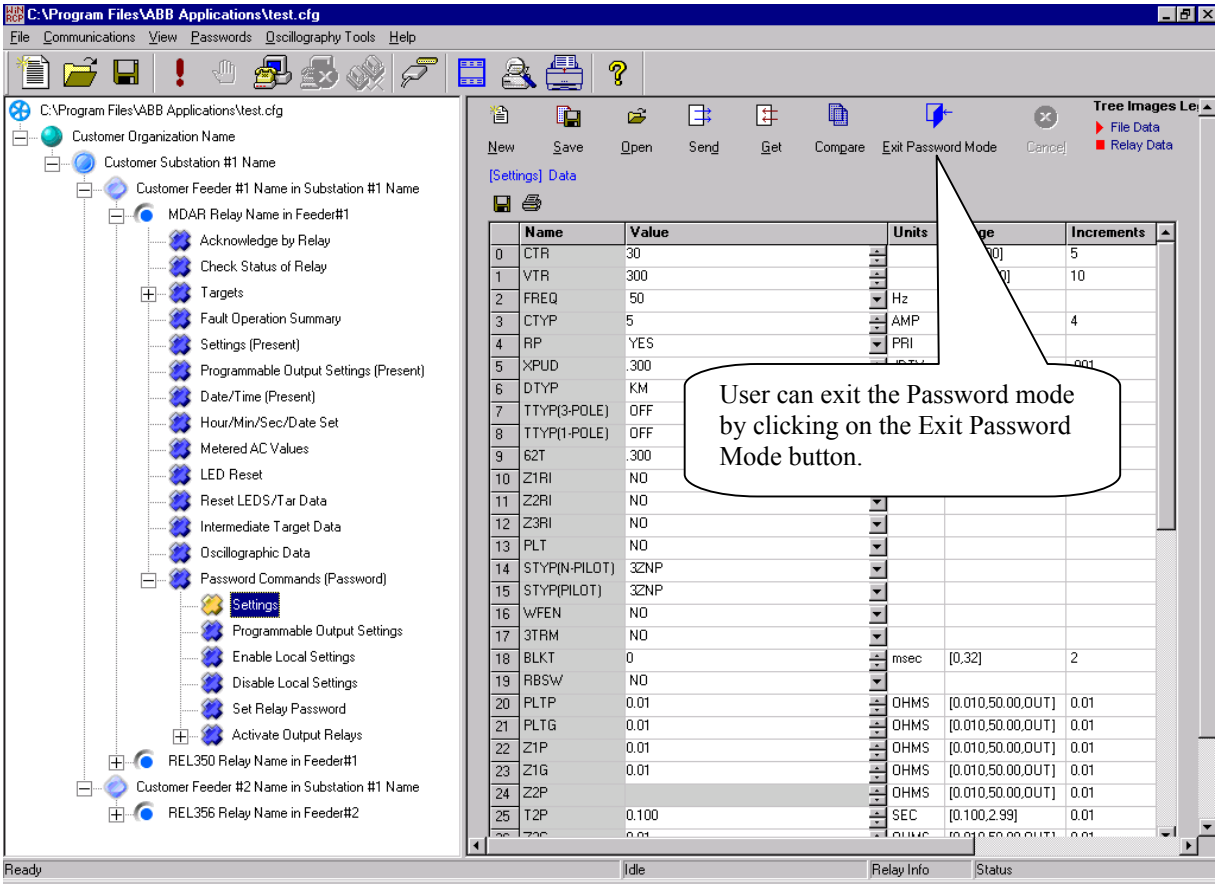
6.6 Compare Settings from a File to the Settings from an IED – COMPARE

The following diagram shows how a user can compare the settings in the Table to the settings in an already saved file.



6.7 Password Mode

The following diagram shows how a user can exit from the Passwords Mode



6.8 Settings Inter-operability between RCP and WinRCP

Settings files saved by WinRCP are backward compatible (i.e., Settings files saved through WinRCP can be opened through DOS-RCP and settings files saved through DOS-RCP can be opened through WinRCP).

6.9 Settings files – naming convention

The following are the file extensions (3-letters after the dot in the file name) used for the supported Relays. These extensions are compatible with DOS-RCP program generated Settings files.

IED (Relay) Type	Extension
MDAR	set
MDAR Programmable Contact Output Settings	spt
MMCO	sct
REL 301/2 (Protection)	s3t
REL 301/2 (Recloser)	s3r
REL 301/2 Programmable Contact Output Settings	s3p
REL 350	smt
REL 352	sph
REL 356	spi
SADI	sgt
RONI	srt

7 Security

WinRCP Program is protected from unauthorized users through Passwords at various levels.

7.1 Description of the Master Password

WinRCP is protected by a Password, which is called the **Master Password**.

The Master Password is the Password supplied by the user at the time of Installation of WinRCP (shown in the following Installation dialog-box). In order to run the WinRCP Application, user MUST have access to the **Master Password**.

7.2 Description of the Settings Password

The **Master Password allows a** user to View the Relay Data using WinRCP. However, if a user wants to Send any Commands to the Relays or Send settings to the Relays, he or she MUST have access to the **Settings Password.** In order to enter into the Password specific commands in the WinRCP Configuration Tree View, user must provide the **Settings Password**.

As with the **Master Password,** the **Settings Password** is supplied by the user at the time of Installation of WinRCP (shown in the above Installation dialog-box)

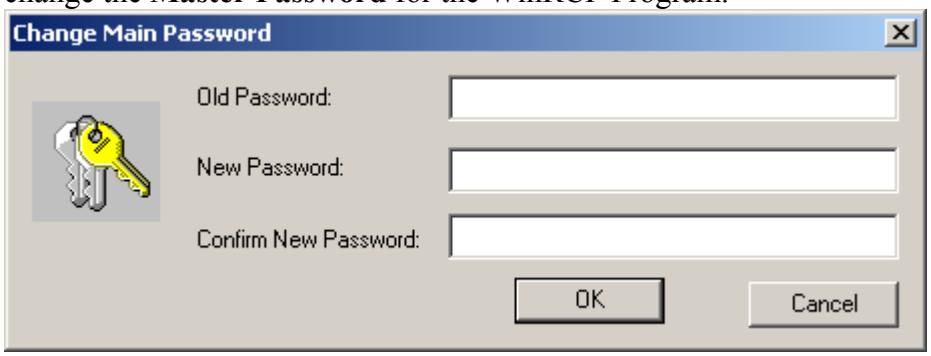
7.3 Description of the Relay (IED) Password

The Relay Password is the Password within the Relay, which is used by the Relay to protect from unauthorized upload of Settings and executions of commands.

WinRCP does NOT maintain this password. This password will be supplied by ABB along with the Relay.

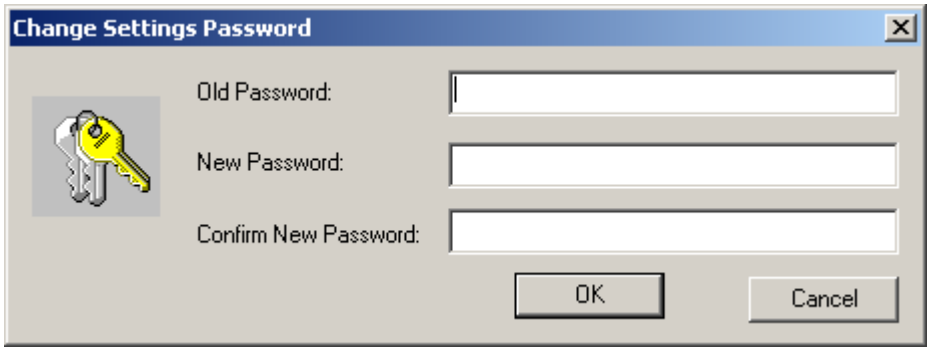
7.4 Changing the Master Password

In order to change the Master Password, user must select the **Password → Change Master Password** menu item. The following dialog-box will appear, allowing the user to change the **Master Password** for the WinRCP Program.



7.5 Changing the Settings Password

When the user selects the **Password → Change Settings Password** menu item, the following dialog-box will pop-up, where user can change the **Settings Password** for the WinRCP Program.



7.6 Changing the Relay (IED) Password

Every Relay supports a Command called **Set Relay Password** (typically found in the WinRCP Configuration Tree at IED→Password Commands (Password) → Set Relay Password).

A user can change the Relay Password by using this command. First, select Tree Item "Password Commands (Password) → Set Relay Password)" and then click on the **Send** button on the right side window. In the pop-up dialog-box, user must supply the old Relay Password along with the new Relay Password.

If the user forgot the old Relay Password, he or she must restart (Power off and on) the Relay. In the first 15 minutes of the restarting, the Relay will accept the string "**PASSWORD"** as the Password.

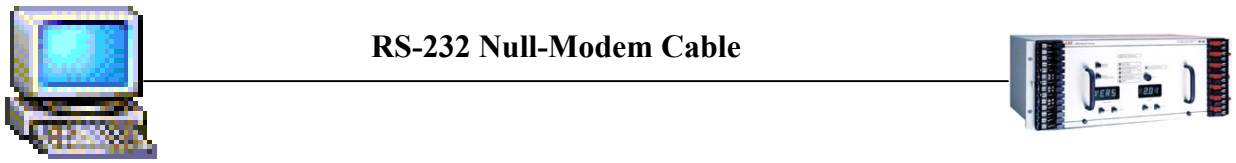
7.7 Forgotten Master Passwords or Settings Passwords

If Master or Settings Passwords are forgotten – the user must reinstall WinRCP from the Installation CD or Floppy Diskette in order to proceed. For this reason, the Installation Disks must be stored in a secure and easily accessible place.

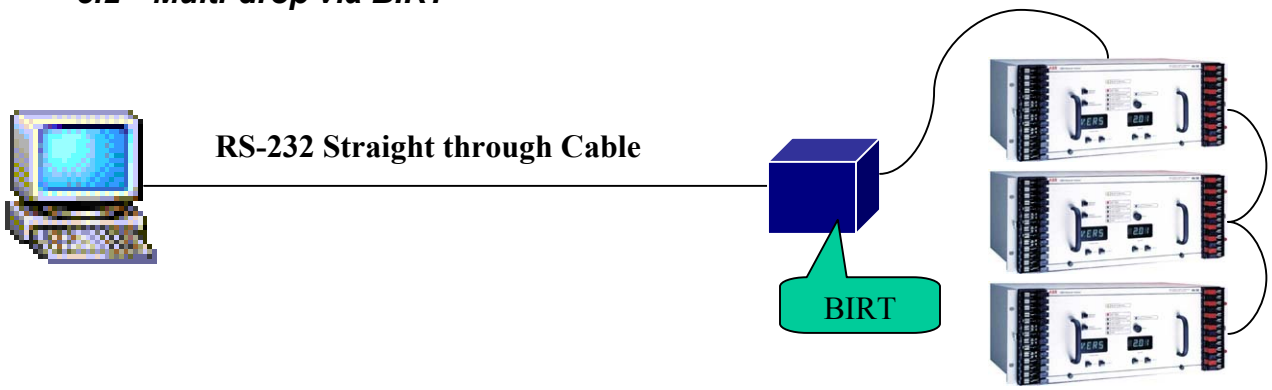
8 Communications

This section illustrates the various Communications Architectures possible with WinRCP.

8.1 Direct Serial Communication

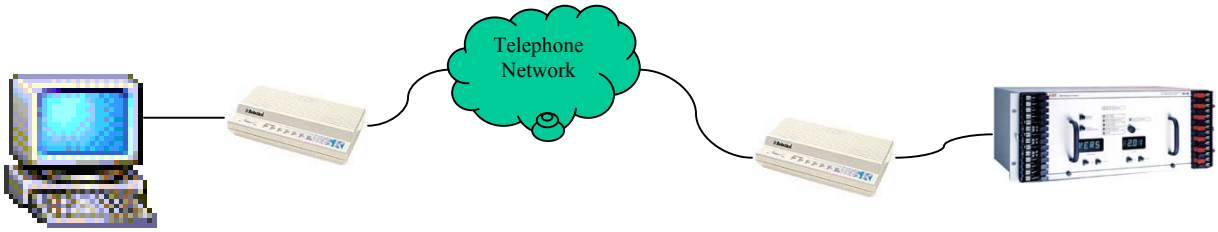


8.2 Multi-drop via BIRT

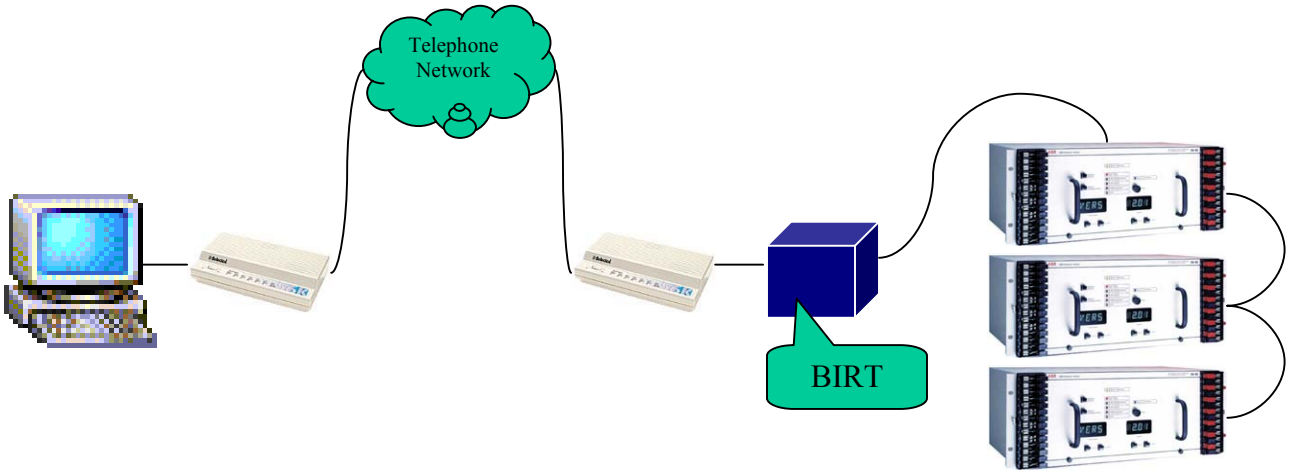


8.3 Direct Communications using Modems

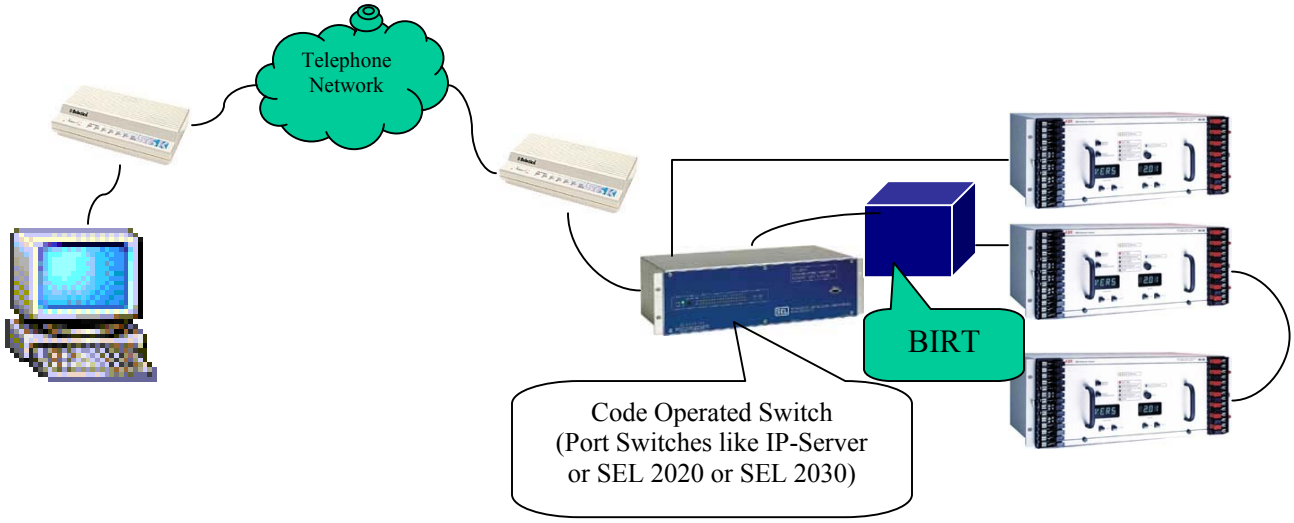
The modem attached to the WinRCP computer can be either an internal or an external Modem (as shown below).
Internal Modem – the Modem is directly installed in the PC.
External Modem (without driver installed) – Modem is attached to the PC's COMM Port and NO driver is installed in the PC for that driver.
External Modem (with driver installed) – Modem is attached to the PC's COMM Port (or Modem pool connected to the PC over LAN) for which the appropriate Modem Driver (or Service) is installed.



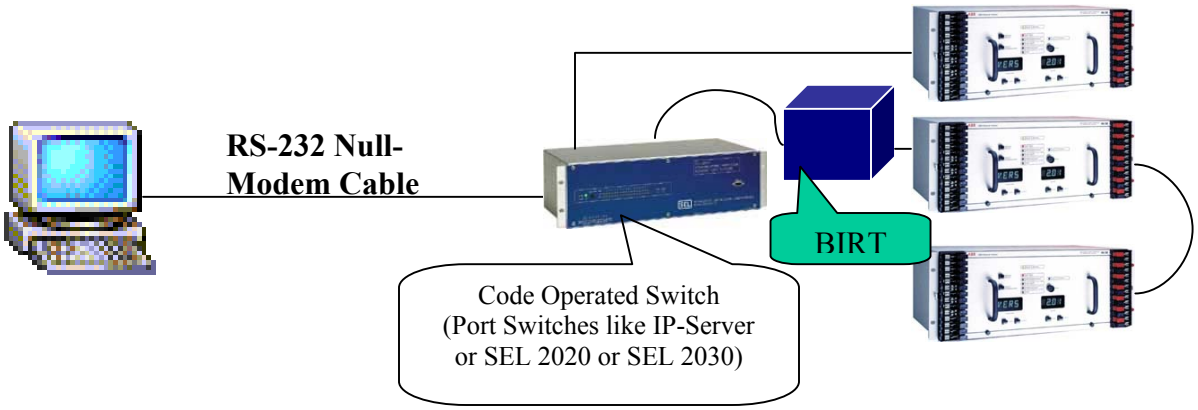
8.4 Multi-drop using Modems and BIRT



8.5 Communications using a Code Operated Switch (COS) or a Port Switch

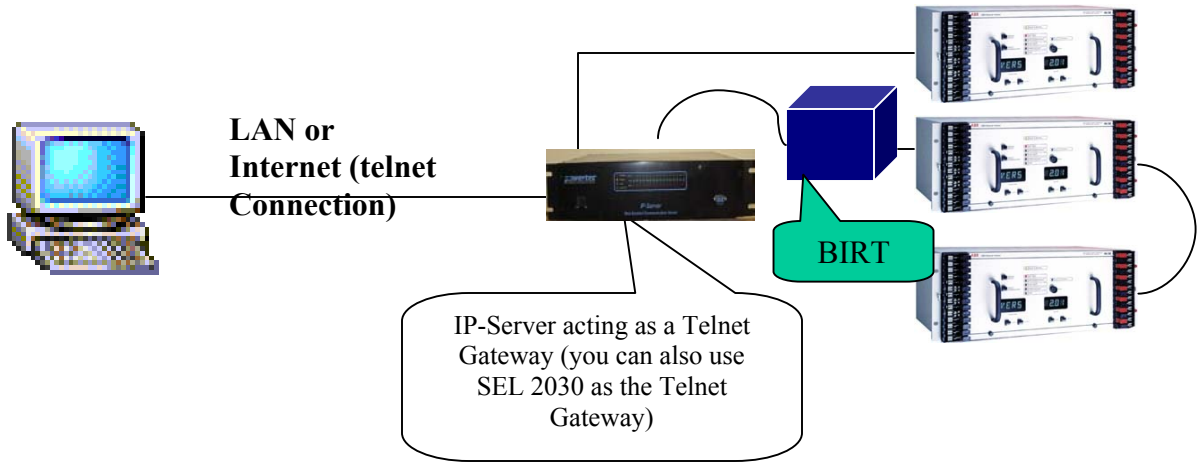


User can also use the Port Switch when directly connected to the WinRCP computer as shown below:



8.6 Telnet Communications

Please refer to the **Section 10 Appendix A – Using IP-Server as a Telnet Gateway for Remote Communications** for a detailed description of how to use an IP Server as a Telnet Gateway to communicate to remote devices.



9 Relay (IED) Operations

A detailed description of Relay Operations is outside the scope of this document. It is therefore recommended that users refer to the Relay Manuals. However, certain unique features of the Relay Operations are described in this section.

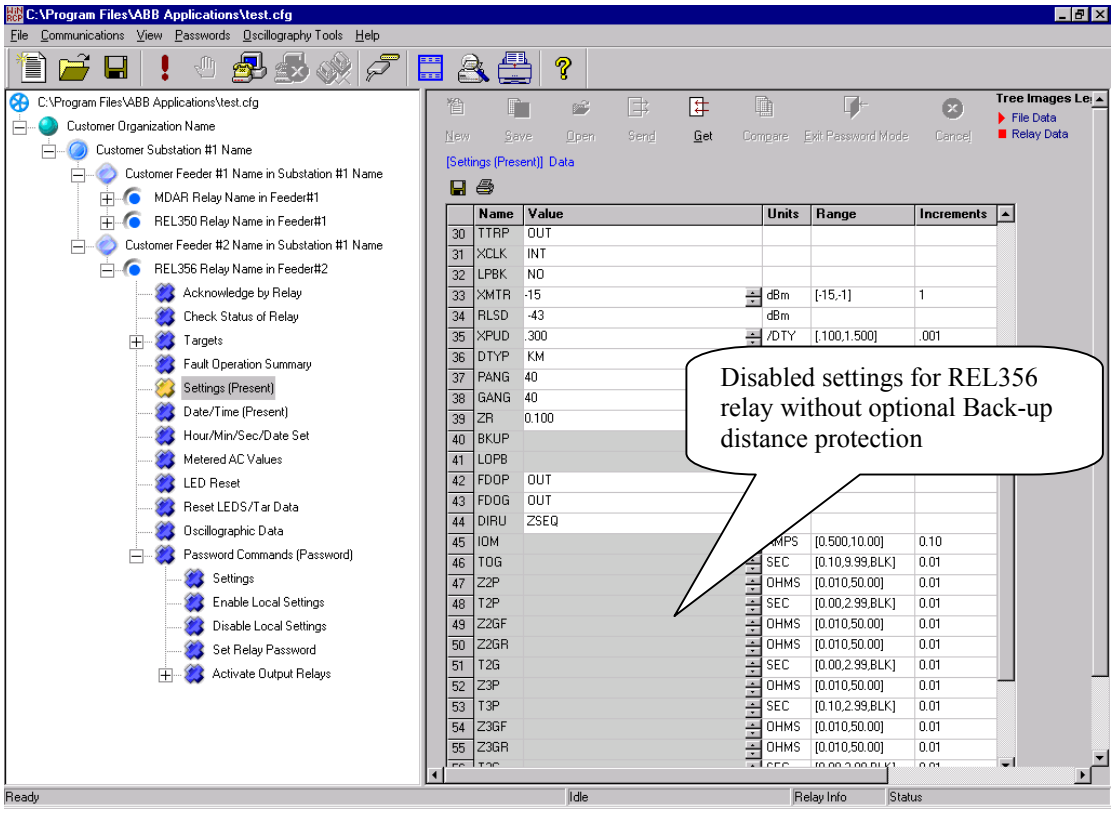
9.1 Settings

All the supported Relays … support Settings (except for the ERNI). Still, based on the Model & Version of a Relay, some of the settings may be disabled. These disabled settings will be visible (gray color) as shown in the following diagram.

User can only download (Get) settings from the Relay in the non-Password Mode. In order to do other operations like Save, Open, Send and Compare settings, user must enter into the Password Mode by clicking on the **Password Commands (Password)** Tree Item.

To upload settings, follow these 3 steps:

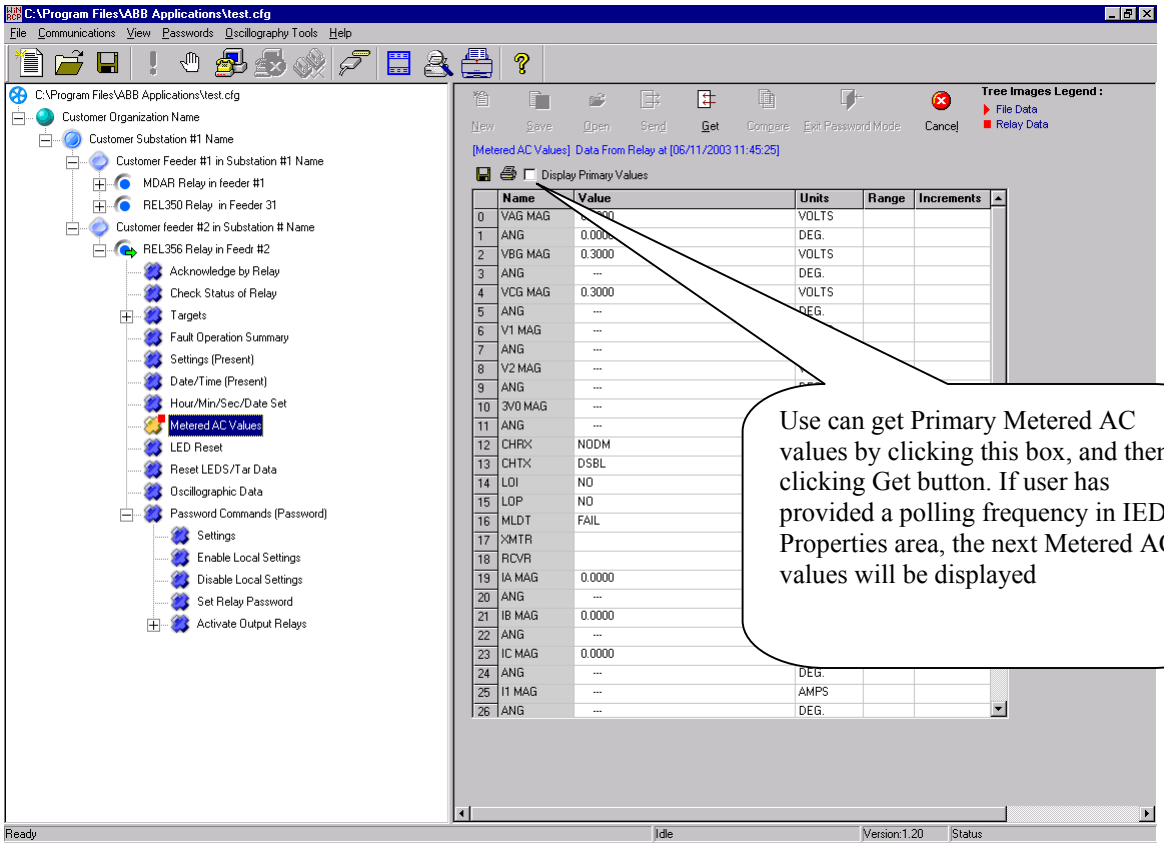
a) Send Settings
b) Wait for the Settings to be saved into EEPROM
c) Get Settings from the Relay and compare with the sent settings to verify that Send Settings is successful.



9.2 Real-Time Data

WinRCP provides a continuous polling mechanism for Metered AC Values (Real-time Data) for all IEDs. The user can configure the Polling Frequency (found in the IED Properties under **Device Parameters** section). Polling Frequency can be set any value between 0 to 60000 milliseconds (i.e., Poll just once to Poll once in every minute).

User can see Secondary Values by clicking the **Display Secondary Values** check box shown below

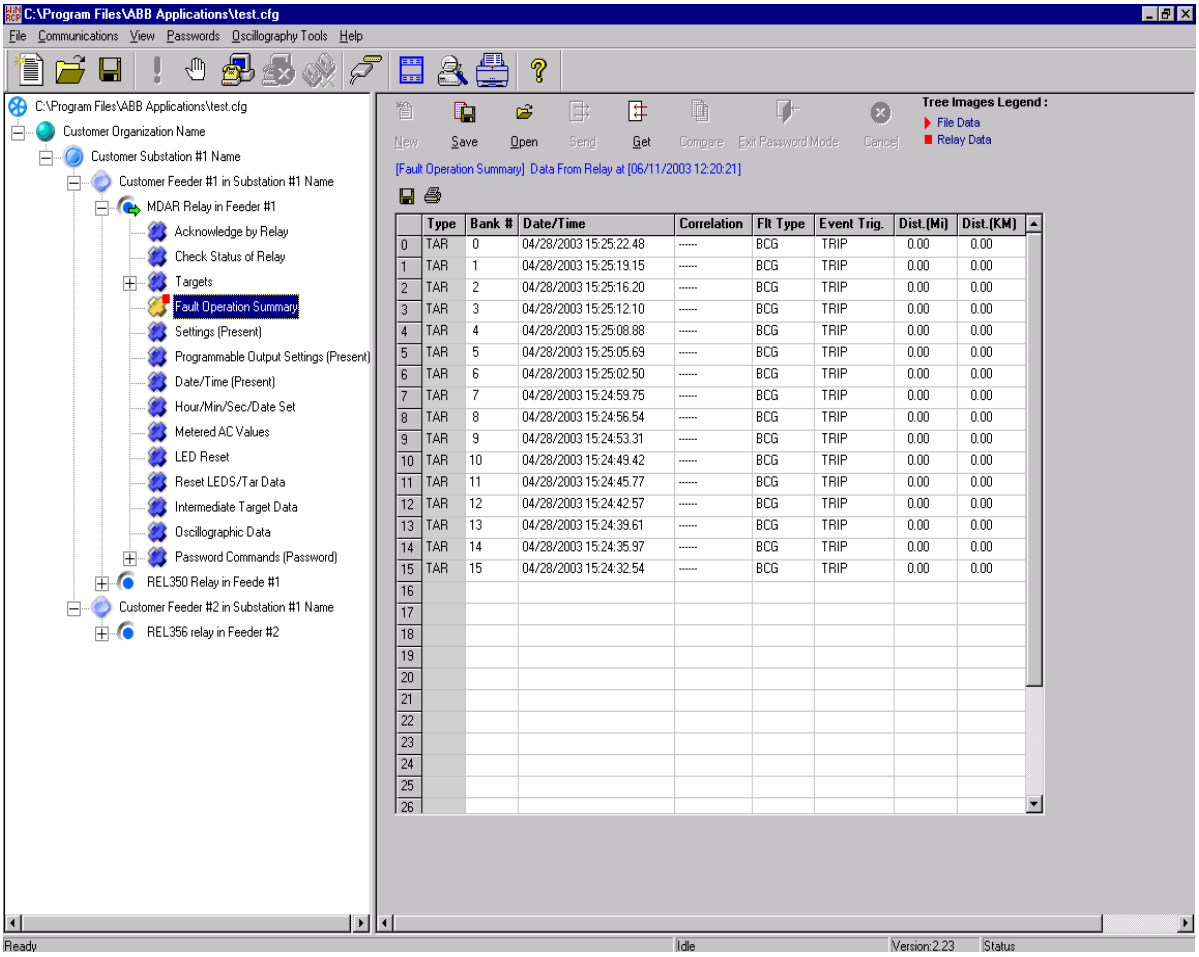


9.3 Fault Operation Summary

The following diagram shows the **Fault Operation Summary** from the Relay.

Typical **Fault Operation Summary** consists of :
Target Record Summary and
OSC Record Summary

Operations allowed for **Fault Operation Summary** consists of :
Get from the Relay
Save to a File from the Table (Grid)
Open from a File into the Table (Grid)



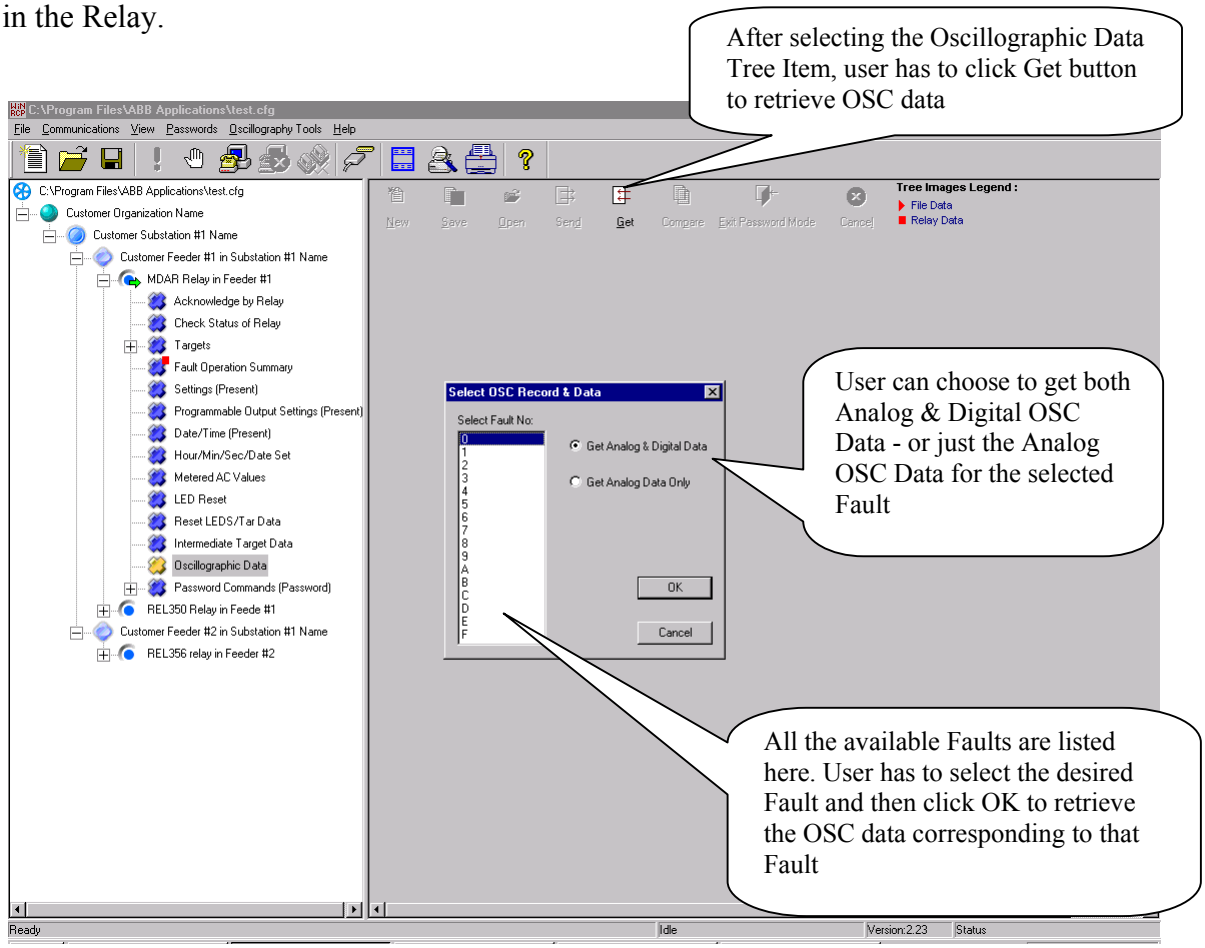
9.4 Oscillography

The following Relays support the Oscillographic Data (Fault Recorder Data)

MDAR
REL 301/2
REL 350
REL 352
REL 356

WinRCP can retrieve a selected OSCillography Record and save the data in COMTRADE – ASCII Format. Users can view and analyze these files via any COMTRADE Viewers (such as WaveWin from ABB).

The following diagram shows how to select and retrieve OSCillograhic Data for a Fault in the Relay.



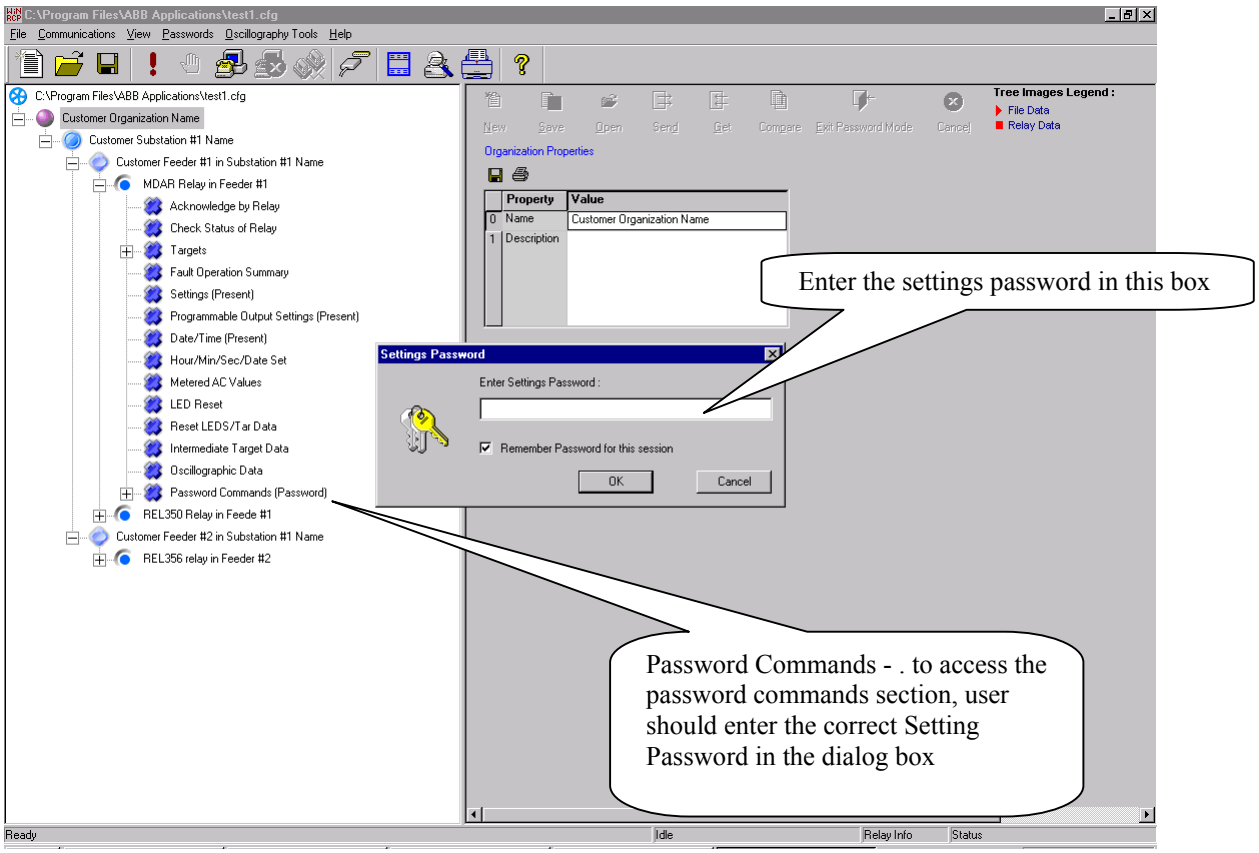
9.5 Targets

Most of the Relays have a maximum of 16 Targets available. To retrieve the Target Summary for a Target, user has to select the particular target (ex: **IED_REL30X → Targets → Target 3**) in the Tree-View, and then Click on the **Get** button on the right-side View to get the data for that target.

Wherever applicable, Primary values for Targets can also be displayed by clicking the **Display Primary Values** check-box.

9.6 Password Commands

WinRCP provides Password Protection on specific operations for all the Relays. These operations are under the Tree Item **Password Commands (Password).**
When user tries to expand this Tree Item, he or she will be asked to enter the Password as shown below.



10 Appendix A – Using IP-Server as a Telnet Gateway for Remote Communications

10.1 Requirements

Please make sure the following hardware and software is available before proceeding further.

- WinRCP installed on a PC/laptop
- Ethernet Cable
- IP-Server box
- At least one Relay (ex: MDAR)
- BIRT (optional)
- RS-232 Straight-through Cable (if connecting directly to the Relay)
- RS-232 Null Modem cable (if connecting to the Relay via BIRT)

10.2 Procedure

10.2.1 Step 1: Configure the IP Addresses of the WinRCP PC and IP Server

We will use the following IP Addresses for WinRCP PC and the IP Server:
10.10.10.10 → IP Address of IP Server
10.10.10.12 → IP Address of the WinRCP PC.
255.255.255.0 → Network Mask

How to set IP Address for IP Server
Use a NULL Modem Serial cable to connect PC to the IP Server's front PORT.
Open Hyper Terminal on the PC.
User 19200,N,8,1 as the COMM Parameters to communicate to the IP Server
You will see login Prompt.
Use the login: admin
Use password: ptc
Now, command prompt will appear on the Hyper terminal window.
Use "ipcfg" command to enter into Configuration mode where you can change the IP Address of the IP Server.
Follow the menu instructions to change the IP Address to 10.10.10.10
Ignore DNS address.
After finishing the change, use type in "reboot" and hit [ENTER] key to restart the IP Server:
Wait for 2 mins. before IP Server reboots.

10.2.2 Step 2: Configure the Serial Port on IP Server

Using internet explorer (or any browser), open http://10.10.10.10 (IP Address of IP Server)
You will see the IP Server's Welcome screen.
Select Configuration→Serial Devices menu item.
You will see the Serial Device Configuration screen.
Enter password (456) to edit the Configuration.
Make sure that the PORT SETTINGS for the Port on IP Server (which will be used to connect to the Relay) match with the Port settings of the Relay.

10.2.3 Step 3: Connect WinRCP to IP Server using Ethernet Cable

Connect WinRCP to IP Server using the Ethernet Cable

10.2.4 Step 4: Connect IP Server Serial Port to the Relay using Serial Cable

Connect IP Server Serial Port to the Relay using Serial Cable

10.2.5 Step 5: Run WinRCP

Configure the Relay in WinRCP with Telnet as the choice of communications.
Configure the Telnet Properties (in the IED Properties screen)
Try connecting to the Relay.
A Telnet window will pop-up with Login Prompt
Use 'admin' as the login and 'ptc' as the password
After successful login, you will see a prompt.
Use the following command:
connect <n>
(where 'n' is the Port Number on the back)
Now, click on the **Hide** button. WinRCP will attempt to connect to the Relay.

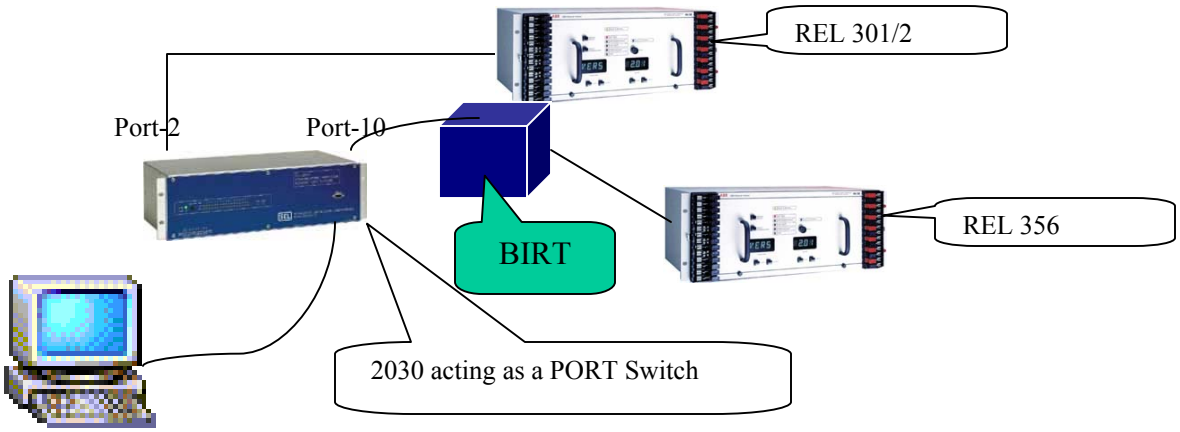
11. Appendix B – Using SEL 2030 as a Port Switch (Code Operated Switch).

11.1 Requirements

- WinRCP installed on a PC/laptop
- SEL 2030 box
- 2 Relays (REL 301/2 and REL 356)
- BIRT (optional)
- RS-232 Straight-through Cable (if connecting SEL 2030 to the Relay via BIRT)
- RS-232 Null Modem cable (if connecting SEL 2030 directly to the Relay)
- RS-232 Null Modem cable (if connecting WinRCP PC to SEL 2030 front port)

11.2 Procedure

11.2.1 Step 1: Connections



11.2.2 Step 2: Configure the back Ports 2 and 10 of the SEL 2030

Use a Null Modem cable to connect PC to the SEL 2030 front port 'PORT F'.
Open Hyper Terminal on the PC.
Use the proper COMM Parameters (refer to 2030 Manual) to communicate to the SEL 2030.
A prompt will appear.
Give the following commands in the following order
1.ACC^M (Level 1 User name)
2.OTTER^M (Level 1 Password)
3.2ACC^M (Level 2 User name)

4.TAIL^M (Level 2 Password)
5. SET PORT 2 (Command to change the back Port 2 settings)
6. SET PORT 10 (Command to change the back Port 10 settings)
Steps (5) and (6) above are used to change and save the COMM settings of Port 2 and Port 10 to match with the settings of REL 301/2 Relay and BIRT respectively.

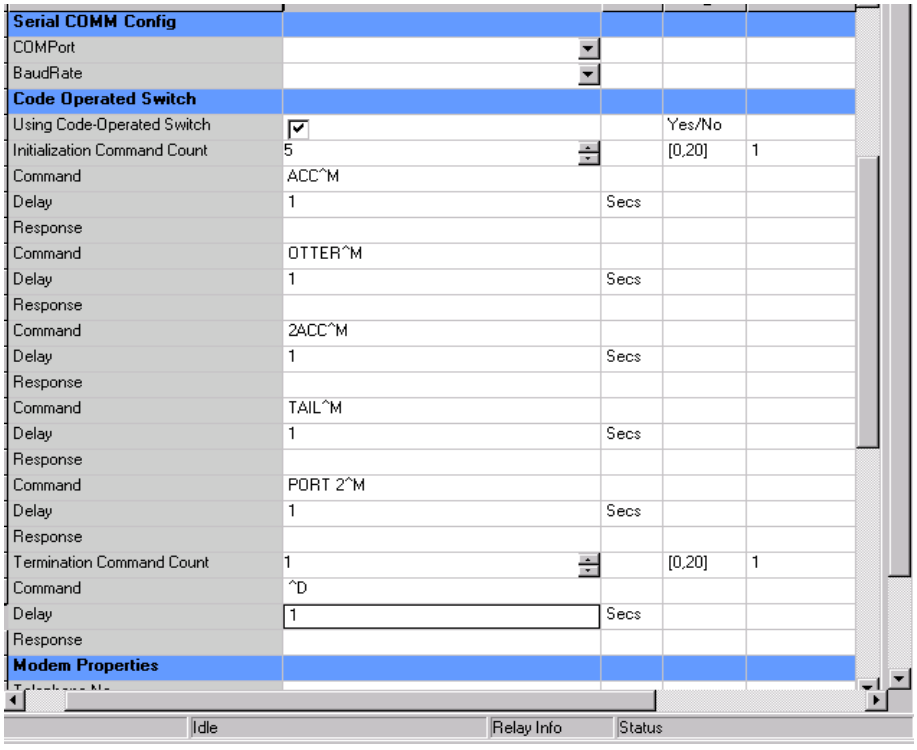
11.2.3 Step 3: Relay Configuration in WinRCP

Configure the Relays (REL 301/2 and REL 356) in WinRCP with the External Modem as the choice of communications.
Check the COS check box in the " Code Operated Switch" section, and give the following Initialization Commands and Termination Commands

Initialization Commands:

1. ACC
2. OTTER
3. 2ACC
4. TAIL
5. ^D (terminate any active transparent communications)
6. PORT x

Note: x is the no. of SEL 2030 port on which device is connected. (in the above example x will be 2 for REL 301/2 and 10 for BIRT)



Select the appropriate Relay and

Connect to the Relay by clicking button.

12 Appendix C – Using SEL 2030 with Modems as a Port Switch (Code Operated Switch) for Remote Communications

12.1 Requirements

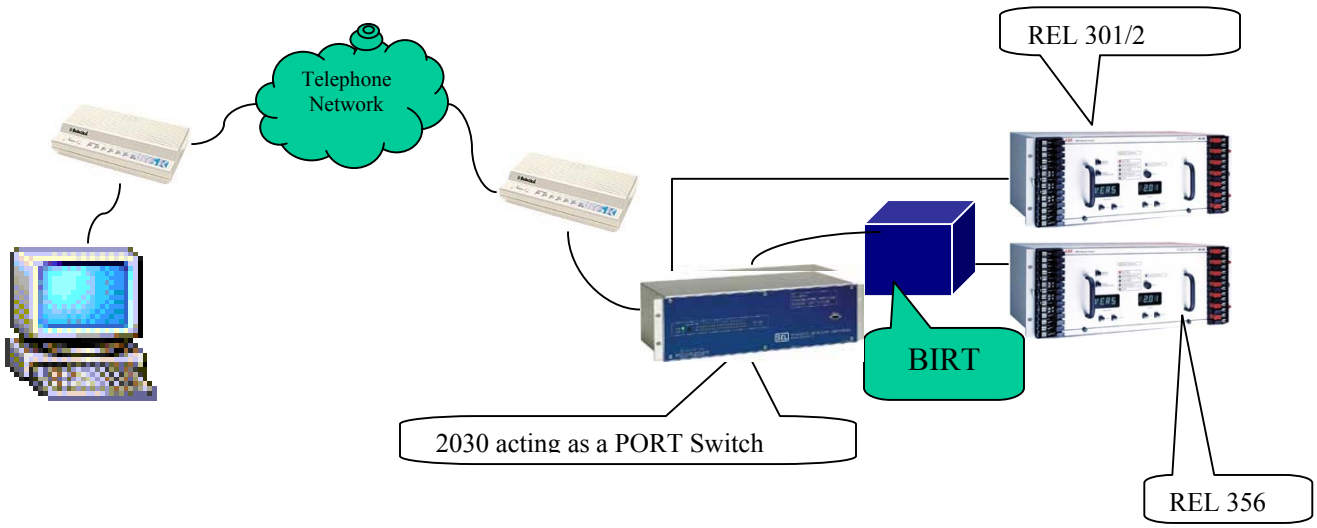
Please make sure the following hardware and software is available before proceeding further.

- WinRCP installed on a PC/laptop
- SEL 2030
- 2 Relays (REL 301/2 and REL 356)
- BIRT (optional)
- 2 US Hayes compatible modems
- RS232 Null Modem Cable (for connecting the Modem Port on SEL2030 to the Modem)
- RS 232 Null Modem Cable (for connecting the WinRCP PC to the Modem).

12.2 Procedure

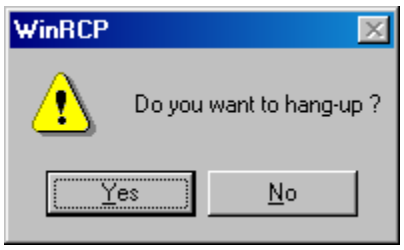
The Procedure is exactly same as the procedure described in **Appendix B**, except for the Modems' setup.

Refer to SEL 2030 Manual and set up Modem Communications between the PC on which WinRCP is running and the SEL 2030 Modem Port (PORT 8) as shown in the following diagram.



After finishing the above setup, follow the steps (2) and (3) from Appendix 2.

Note: To switch the communications between REL 301/2 to REL 356 (in the above setup), try to disconnect from the currently active Relay by clicking the button. You will see the following message box.



Click **No** if you want to retain the Telephone connection to the SEL 2030 (via Modems) and disconnect the currently active Relay. In this case, next time when you attempt to connect to another Relay, WinRCP will not have to dial the SEL 2030 as the Telephone connection will still be active.

If you want to disconnect to the Relay **and also hang up the telephone connection,** you have to click on the **Yes** button above.

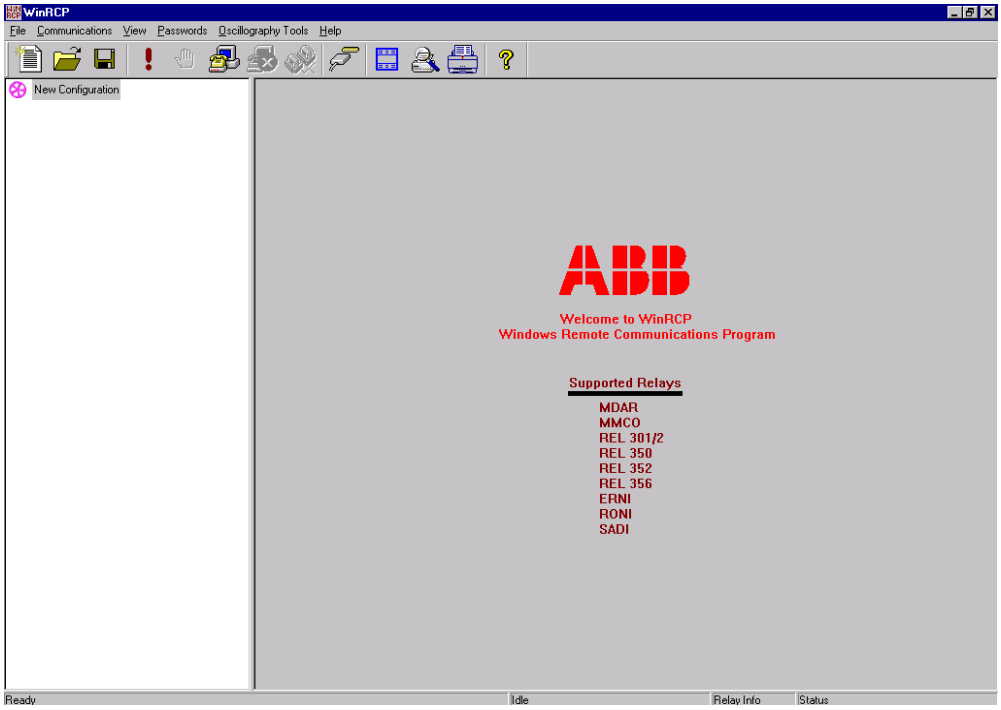
13 Appendix D – Sample Configuration

Assumptions for purpose of demonstration:

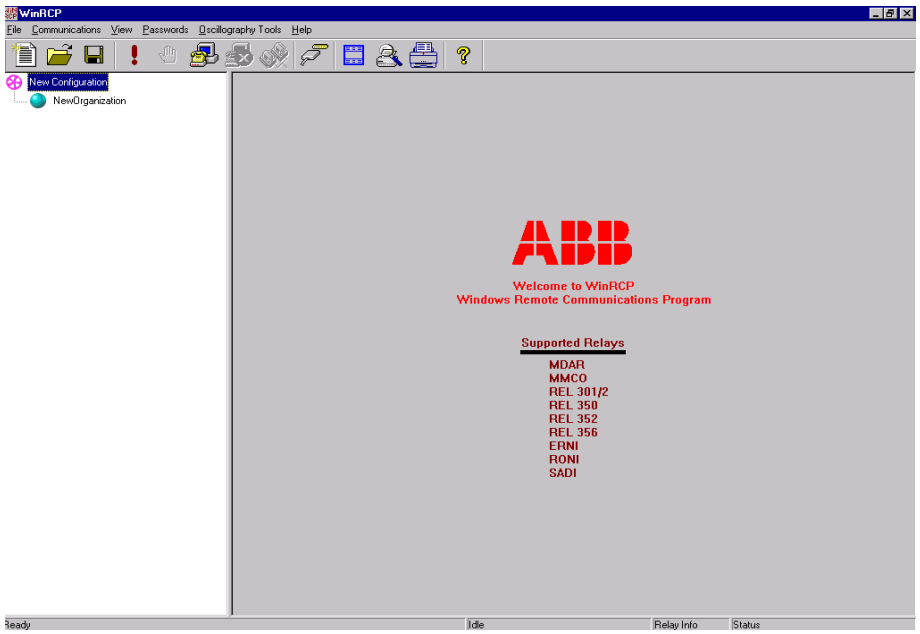
- at **Organization Level**, name is ABB Organization
- at **Substation Level**, two different substations will be named as Substation 1 and Substation 2
- at **Bay/Feeder level**, Substation 1 will have three Bay/Feeders named as Sub1Feeder1, Sub1Feeder2 and Sub1Feeder3. Substation2 will have two Bay/Feeders named as Sub2Feeder1 and Sub2Feeder2
- at **IED level**, SubFeeder1 will have REL356 relay, Sub1Feeder2 will have MDAR relay and Sub1Feeder3 will have REL301 relay. Sub2Feeder1 will have REL350 relay and Sub2Feeder2 will have MMCO relay.

13.1 Step 1: Add Organization

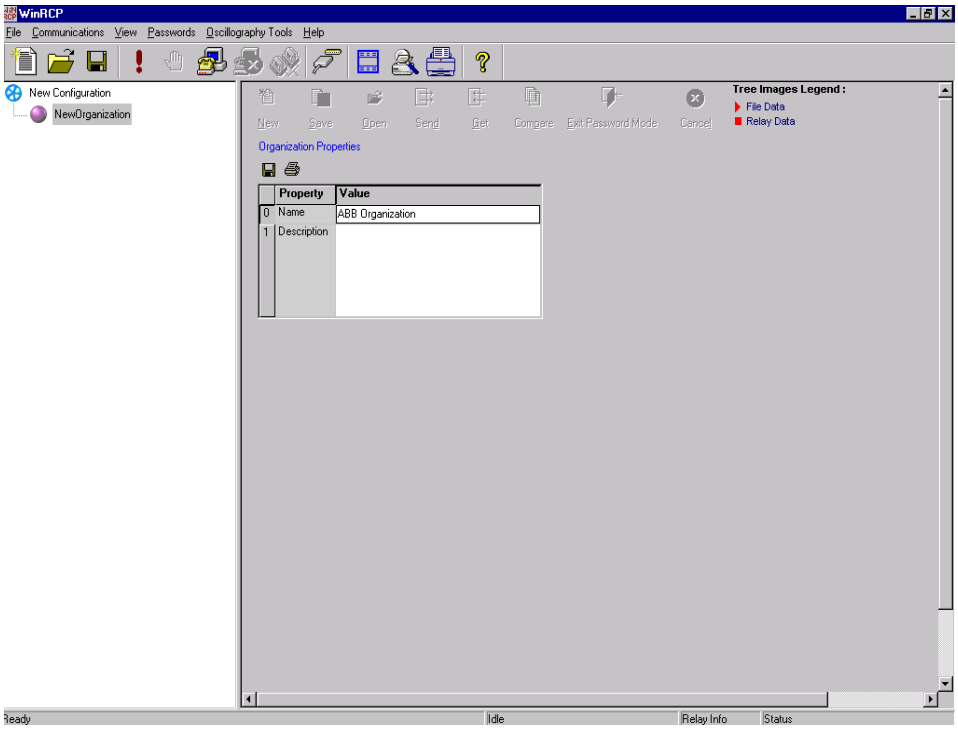
After starting the WinRCP program, the Welcome View will appear:



Using the Main Menu, under File, select Add Organization. A new window will appear:



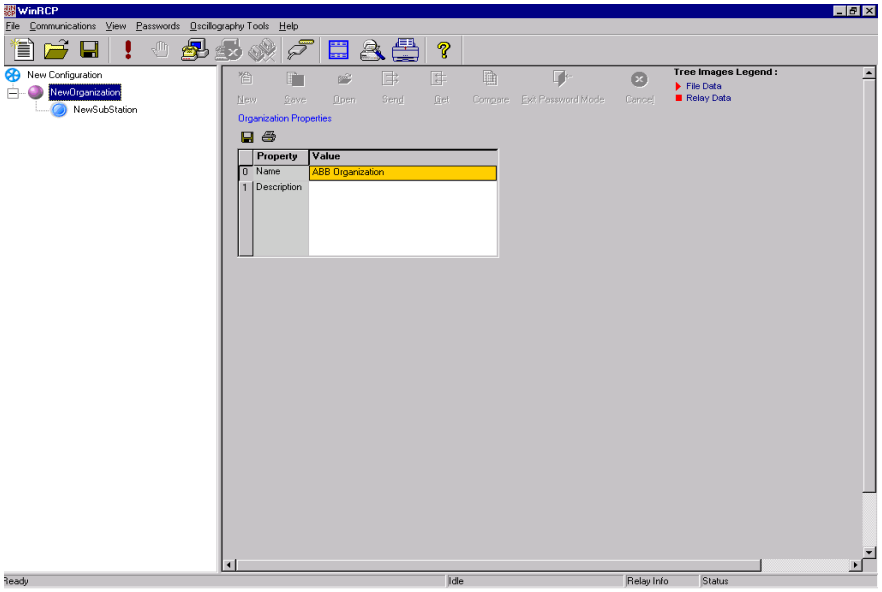
On the right side under Organization Properties, Select New Organization. Use ABB Organization in New Organization field.



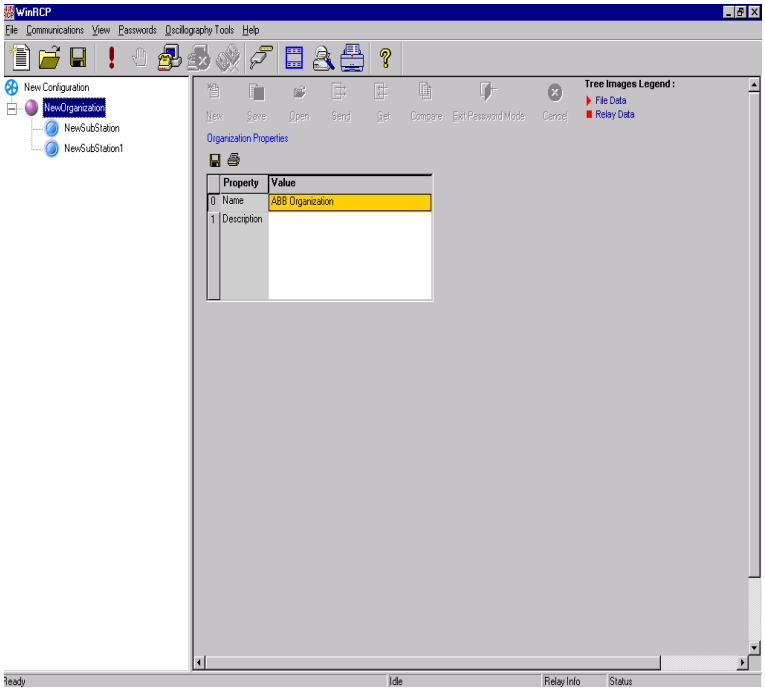
Save this selection under File, Save as. Now select the location where the Configuration will be stored.

13.2 Step 2: Add Substation 1 and Substation 2 under ABB Organization

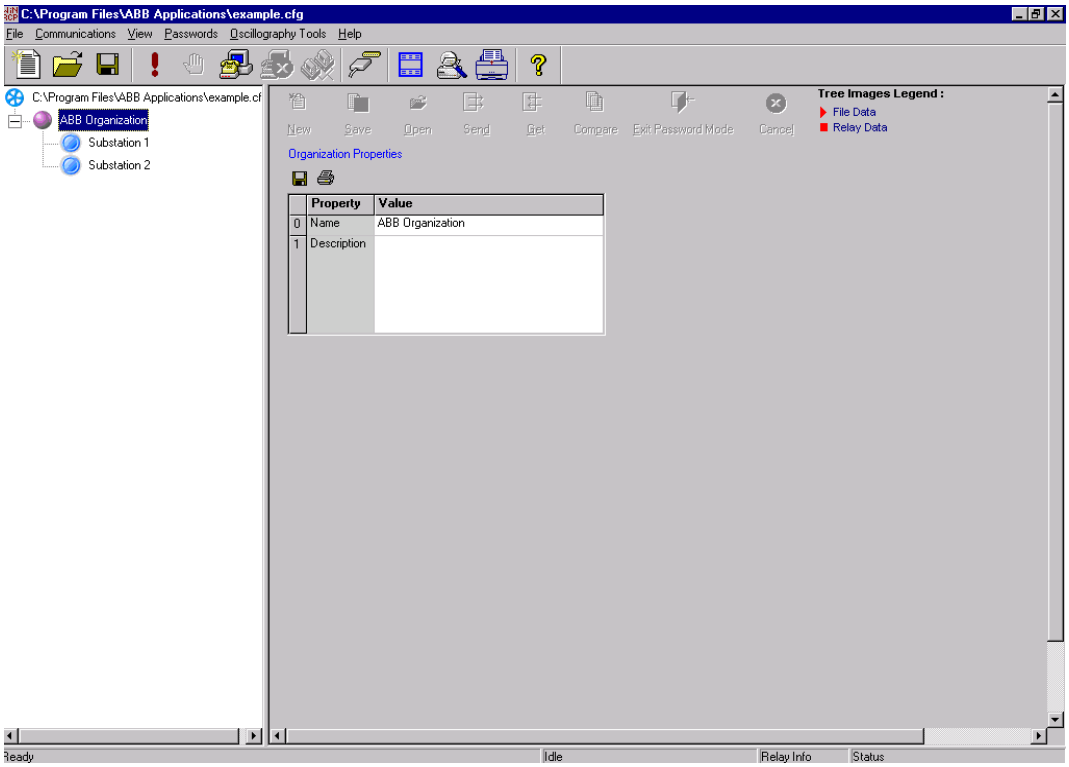
Select New Organization in tree menu on the left side of the window. Under File, select Add Substation. A new window will appear:



Again, select New Organization in tree menu on the left side of the window. Under File, select Add Substation. A new window will appear:



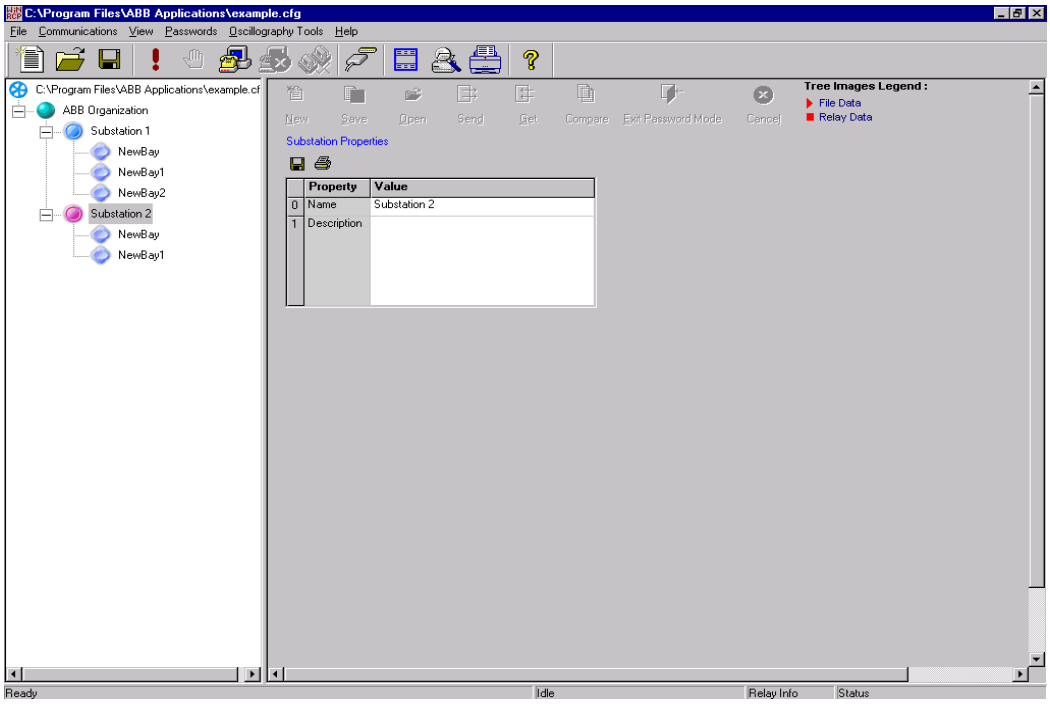
Selecting New Substation, on the right side under Substation Properties, place **Substation 1** name into New Substation field. Save this selection under File, Save . Next, place **Substation 2** name into New Substation1 field.. Save this selection under File, Save. A new window will appear:



13.3 Step 3: Add Sub1Feeder1, Sub1Feeder2 and Sub1Feeder3 under Substation 1 and Sub2Feeder1 and Sub2Feeder2 under Substation 2

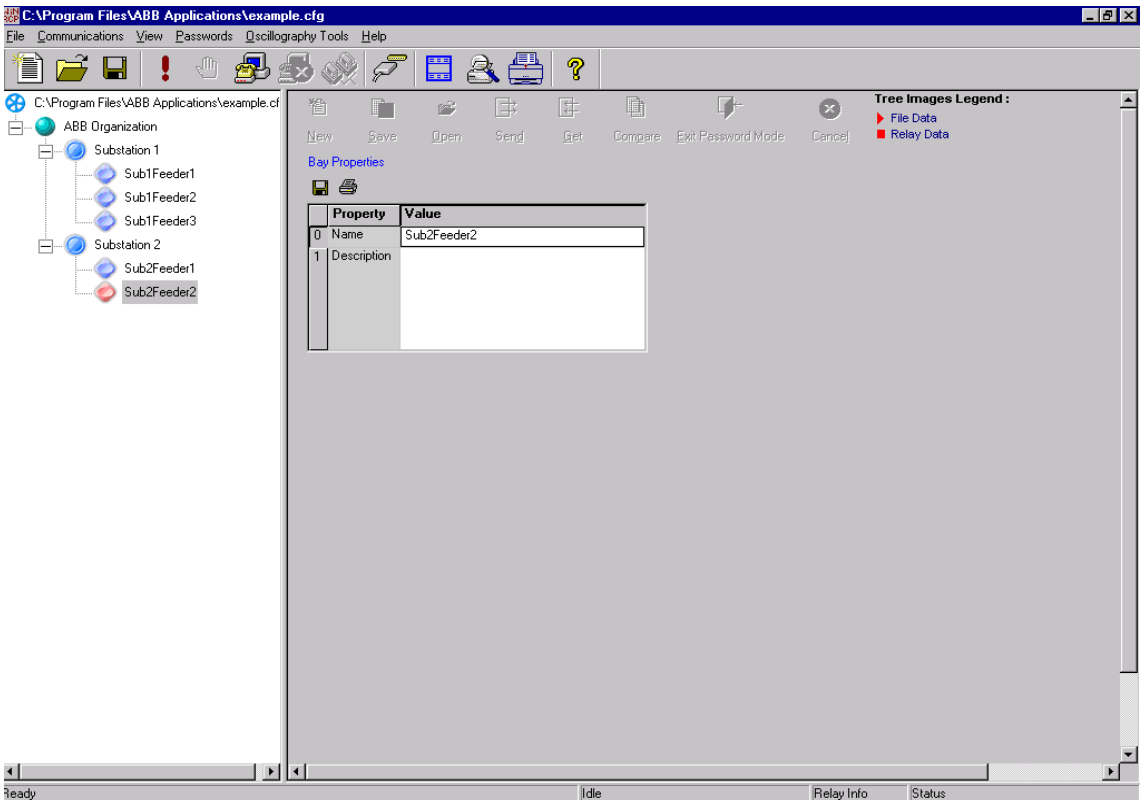
Select Substation 1 in tree menu on the left side of the window. Under File, select Add Bay. Repeat this two more times.

Next, select Substation 2 in tree menu on the left side of the window. Under File, select Add Bay. Repeat this one more time. A new window will appear:



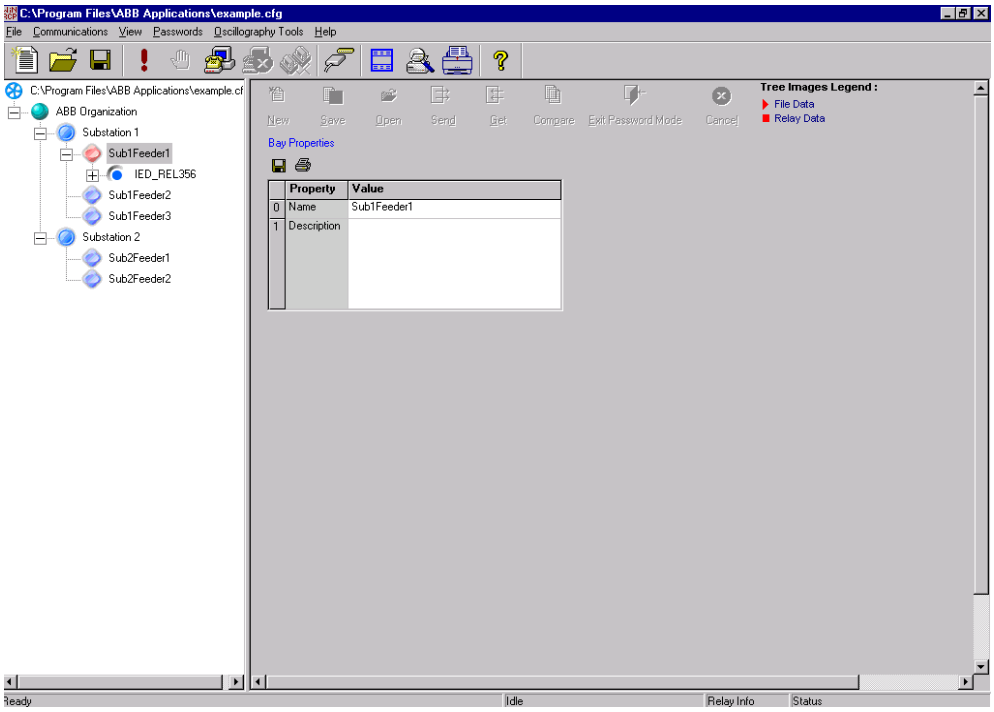
Select NewBay on the left side of window. On the right side under Bay Properties, place **Sub1Feeder1** name into NewBay field. Save this selection under File, Save .
Next, place **Sub1Feeder2 name into** NewBay1 field. Save this selection under File, Save.
Similarly **place Sub1Feeder3** name into NewBay2 field. Save this selection under File, Save.
Similarly, under Substation 2 there should be NewBay and NewBay1.
NewBay will be renamed as **Sub2Feeder1.** Save this selection File, Save.
NewBay1 will be renamed as **Sub2Feeder2.** Save this selection File, Save.

A new window will appear:


C:\Program Files\ABB Applications\example.cfg
File Communications View Passwords Oscillography Tools Help
C:\Program Files\ABB Applications\example.cf
ABB Organization
Substation 1
Sub1Feeder1
Sub1Feeder2
Sub1Feeder3
Substation 2
Sub2Feeder1
Sub2Feeder2
New Save Open Send Get Compare Exit Password Mode Cancel
Tree Images Legend :
File Data
Relay Data
Bay Properties
Property
Value
0 Name
Sub2Feeder2
1 Description
Ready
Idle
Relay Info
Status

13.4 Step 4: Add REL356 relay under Sub1Feeder1 in the Substation1

Select Sub1Feeder1 in tree menu on the left side of the window. Under File, select Add IED of Type. Select REL356 relay. The window will look like this:



IED_REL 356 may be changed with any name. Similarly, other IED's can be added under different Bay/Feeder.

Customer Feedback report

ABB Inc. would appreciate your comments on this product. Please grade the following questions by selecting one alternative per category. Your answer will enable us to improve our products.

How do you grade the quality of this product?

	Excellent	Poor
Total impression	☐	☐
Usability	☐	☐
Functionality	☐	☐

Comments:

_____

_____

_____

How do you grade the quality of this product?

	Excellent	Poor
Total impression	☐	☐
Layout	☐	☐
Illustration	☐	☐
Readability	☐	☐
Easy to find	☐	☐
Content structure	☐	☐

Comments:

_____

_____

_____

Suggestions for product improvements:

Please send this report to:

Author's address:
ABB Inc.
7036 Snowdrift Road
Allentown, PA 18106
Fax: (610) 395-1055
E-mail:powerful.ideas@us.abb.com

ABB Inc.
4300 Coral Ridge Drive
Coral Springs, FL 33065
Fax: (954) 345-5329