# **REF 542plus**

## Connectivity Package

Configuration manual

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## 1. Introduction

### 1.1. This manual

The purpose of this document is to bring out the REF 542plus Connectivity Package features. A Connectivity Package is a collection of software and information related to a specific IED, in this case the REF 542plus, that provides means for applications and tools to connect and interact with the IED. The Connectivity Packages' main purpose is to provide description of an IED topology in SCL and the needed data to all the supported tool components. This implies, for example, an IEC61850 compatible description of IED parameters and dispatcher components for communication purposes.

This document is intended to explain the complete user interaction and the functionality of the REF 542plus Connectivity Package. The document is mainly used by the operator who intends to use the PCM600 Version 2.1, COM600-CET and the standard tools to interact with REF 542plus.

This manual is divided into following sections:

#### **Product overview**

This section gives an overview of the purpose of the Connectivity Package application with respect to REF 542plus' connectivity package.

#### Installation

This section provides general information on installation and uninstallation of the REF 542plus Connectivity packages.

#### **Communication Wizard**

This section describes the functionality of Communication Wizard.

#### **SCL Configuration Wizard**

This section describes the functionality of SCL Configuration Wizard.

#### SCL File import and export

This section describes the functionality of SCL File Import and Export.

#### Parameter setting connectivity package

This section describes the functionality of Parameter Setting Connectivity Package.

#### Disturbance handling connectivity package

This section describes the functionality of Disturbance Handling Connectivity Package.

1.2.

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#### Product documentation

Name of the manual	Document ID
Real-time Clock Synchronization, IRIG B Input Time Master	1MRS755870
CAN Manual	1VTA100189
Configuration Manual	1MRS755871
i-Button Programmer User Manual	1MRS755863
Manual Part 3, Installation and Commission	1VTA100004
Manual Part 4, Communication	1VTA100005
Motor Protection with ATEX Certification Manual	1MRS755862
Operator's Manual	1MRS755869
Protection Manual	1MRS755860
Technical Reference Manual	1MRS755859
Technical Reference MODBUS RTU	1MRS755868
Web Manual, Installation	1MRS755865
Web Manual, Operation	1MRS755864
SCL Tool Configuration Manual	1MRS756342
IEC 61850 PIXIT	1MRS756360
IEC 61850 Conformance Statement	1MRS756361
IEC 61850 TISSUES Conformance Statement	1MRS756362
Lifecycle Service Tool	1MRS756725

### 1.3.

#### **Document revisions**

Version	IED Rev No	Date	Comment
A	2.5	15.06.2007	First release
В	2.6	29.01.2010	Release 2.6

Applicability

This manual is applicable to REF 542plus Release 2.6, software version V4F06x.

## 2. Product overview

REF 542plus Connectivity Packages contains an REF 542plus IED-specific support in PCM 600&COM600-CET and their tool components. The PCM600/COM600-CET, in this case, is the user of the ConnPacks.

### 2.1. Features of the product

The project involves the creation of connectivity packages for REF 542plus IEDs to various PCM600&COM600-CET components.

Transparent SPA (SPA over TCP-IP) is used for communication between PCM600 and REF 542plus. The above set of PCM component tools is released to be used with the REF 542plus release 2.6 SP1 and Ethernet board 2.0. FTP protocol is used to get the COMTRADE file from REF 542plus.

### 2.2. Feature list

The connectivity packages are made for the following PCM component tools in PCM600:

Object Type	
Configuration Wizard (CW)	to prepare an SCL file as per REF 542plus Configuration
Language Handler (LH)	for native/national language support
Parameter Setting Tool (PST)	to view and change REF 542plus protection settings
Disturbance Record Component (DRC)	to access REF 542plus fault recordings
PST and DRC are online tools that requ	ire connectivity between PCM600 and REI

PST and DRC are online tools that require connectivity between PCM600 and REF 542plus.

#### 2.3. Prerequisites and requirements

## **REF 542plus**

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2.3.1.	Hardware requirements
	Minimum specifications
	Windows XP SP2
	Pentium III, 500 MHz
	128 MB RAM
	40 MB disk space
	Recommended specification
	Windows XP SP2
	Pentium 4, 2.4 GHz
	512 MB RAM
	50 MB free disk space
2.3.2.	Software requirements
	The following software should be installed in PC before installing the REF 542plus Connectivity Package.
	.Net Framework 2.0
	PCM600, version 2.1 or above/COM600-CET Version 3.2 or above
	IEC 61850 Connectivity package
2.3.3.	Supported IEDs
	The supported system products, protocols and tools for a medium-voltage IED by the Connectivity Package.

REF 542plus Connectivity Package	
Communication Engineering Tool for CO	M600 Version 3.0.1 or later
IEC 61850	Version 2.0 or later
SPA	-
SPA TCP	Version 2.0 or later
LON	-
COM600 Version 3.2 or later	
SLD Editor	Version 2.0 or later
Parameter Filtering Tool	Version 2.0 or later
MicroSCADA ProSYS 600 version 9.0 or	later
Communication Engineering Tool for IEC 61850	Version 2.0 or later
SCL importer	-
Protection and Control IED Manager PC	M 600 Version 1.5
IEC 61850	Version 2.1 or later
SPA	-
SPA TCP	Version 2.1 or later
LON	-

REF 542plus Connectivity Package	
Parameter Setting Tool	Version 2.1 or later
Disturbance Handling	Version 2.1 or later
Event ViewerT	-
Signal Monitoring	-
Signal Matrix	-
SCL Configuration Wizard	Version 3.1 or later

# 2.3.4. Supported medium-voltage IED revisions in connectivity packages

REF 542plus Release	2.6	2.6 SP1	
	yes	yes	

#### 2.3.5. Logical node mapping for IEDs

The connectivity package contains the descriptions for logical nodes. REF 542plus Configuration Tool and REF 542plus SCL Tool are used to convert the IED configuration into an SCL file (.CID/.ICD).

When the SCL file is imported to, for example, Communication Engineering Tool (CET) for COM600/MicroSCADA, the logical devices (LD) and logical nodes (LN) configured in the REF 542plus SCL file can be seen.

An IED object can include many logical devices, and a logical device can include many logical nodes. The logical node names are composed of three different parts: LN prefix, LN class and LN instance number.

The LN prefix is an ABB specific string with a maximum of four characters (see the table below). The LN class is the name of the logical node class defined in the IEC 61850-7-4 specification. For the REF 542plus, the LN instance number is the SPA channel number of the corresponding FUPLA function block configured in the REF 542plus Configuration Tool.

Figure shows an example of designation code for the logical nodes in the connectivity package. In the following example, the logical node name is INRB PIOC 50.



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Description as per IEC 61850-7- 4	LN Prefix	LN Class	LN Inst. No.	Description of REF 542plus function				
Ethernet Board								
Logical node zero		LLN0		Logical node zero				
Physical device information		LPHD	1	Physical device information				
Generic process I/O	CD	GGIO	1	EB Communication Diagnostics				
Generic process I/O	PS	GGIO	1	Ethernet Board Port Status 0				
Generic process I/O	PS	GGIO	2	Ethernet Board Port Status 1				
REF 542plus	I							
Logical node zero		LLN0		Logical node zero				
Physical device information		LPHD	1	Physical device information				
Control set information	ACTSET	GGIO	80	Set1/Set2 Selection				
REF 542plus Mea	asurands							
Measurement	UI	MMXU	1,2					
Generic process I/O	UI	GGIO	1,2					
REF 542plus Pro	tections							
Instantaneous overcurrent	INRB	PIOC	50	Inrush Blocking				
Generic process I/O	INRB	GGIO	50	Inrush Blocking				
Instantaneous overcurrent	INRH	HAR	180	Inrush Harmonic				
Generic process I/O	INRH	GGIO	180	Inrush Harmonic				
Instantaneous overcurrent	IOI	PIOC	51	Instantaneous overcurrent				
Generic process I/O	IOI	GGIO	51	Instantaneous overcurrent				
Time overcurrent	DTH	PTOC	52	Overcurrent Definite Time, High set				
Generic process I/O	DTHOI	GGIO	52	Overcurrent Definite Time, High set				
Time overcurrent	DTL	PTOC	53	Overcurrent Definite Time, Low set				
Generic process I/O	DTLOI	GGIO	53	Overcurrent Definite Time, Low set				
Time overcurrent	DIRH	PTOC	54	Overcurrent Direction, High set				
Generic process I/O	DHOI	GGIO	54	Overcurrent Direction, High set				
Time overcurrent	DIRL	PTOC	55	Overcurrent Direction, Low set				

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Description as per IEC 61850-7- 4	LN Prefix	LN Class	LN Inst. No.	Description of REF 542plus function
Generic process I/O	DLOI	GGIO	55	Overcurrent Direction, Low set
Time overcurrent	INV	PTOC	56	Overcurrent IDMT, Normally inverse
Generic process I/O	INVOI	GGIO	56	Overcurrent IDMT, Normally inverse
Time overcurrent	INV	PTOC	57	Overcurrent IDMT, Very inverse
Generic process I/O	INVOI	GGIO	57	Overcurrent IDMT, Very inverse
Time overcurrent	INV	PTOC	58	Overcurrent IDMT, Extremely inverse
Generic process I/O	INVOI	GGIO	58	Overcurrent IDMT, Extremely inverse
Time overcurrent	INV	PTOC	59	Overcurrent IDMT, Long-time inverse
Generic process I/O	INVOI	GGIO	59	Overcurrent IDMT, Long-time inverse
Time overcurrent	EFNDH	PTOC	66	Earth fault, Non- directional, High set
Generic process I/O	EFNDH	GGIO	66	Earth fault, Non- directional, High set
Time overcurrent	EFNDL	PTOC	67	Earth fault, Non- directional, Low set
Generic process I/O	EFNDL	GGIO	67	Earth fault, Non- directional, Low set
Time overcurrent	EFINV	PTOC	68	Earth fault IDMT Normal inverse
Generic process I/O	EFIOI	GGIO	68	Earth fault IDMT Normal inverse
Time overcurrent	EFINV	PTOC	69	Earth fault IDMT Very inverse
Generic process I/O	EFIOI	GGIO	69	Earth fault IDMT Very inverse
Time overcurrent	EFINV	PTOC	70	Earth fault IDMT Very inverse
Generic process I/O	EFIOI	GGIO	70	Earth fault IDMT Very inverse
Time overcurrent	EFINV	PTOC	71	Earth fault IDMT Long- time inverse
Generic process I/O	EFIOI	GGIO	71	Earth fault IDMT Long- time inverse
Time overcurrent	EFDH	PTOC	72	Earth fault Directional, High set
Generic process I/O	EFDH	GGIO	72	Earth fault Directional, High set
Time overcurrent	EFDL	PTOC	73	Earth fault Directional, High set

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Description as per IEC 61850-7- 4	LN Prefix	LN Class	LN Inst. No.	Description of REF 542plus function
Generic process I/O	EFDL	GGIO	73	Earth fault Directional, High set
Sensitive direction earth fault	EFD	PSDE	88	Sensitive earth fault directional
Sensitive direction earth fault	EFD	GGIO	88	Sensitive earth fault directional
Time overcurrent	EFD	PTOC	190-199	Earth fault directional sector
Generic process I/O	EFDI	GGIO	190-199	Earth fault directional sector
Overvoltage	IOU	PTOV	60	Instantaneous overvoltage
Generic process I/O	IOU	GGIO	60	Instantaneous overvoltage
Overvoltage	DTH	PTOV	61	Instantaneous overvoltage
Generic process I/O	DTHOU	GGIO	61	Instantaneous overvoltage
Overvoltage	DTL	PTOV	62	Instantaneous overvoltage
Generic process I/O	DTLOU	GGIO	62	Instantaneous overvoltage
Undervoltage	IUU	PTUV	63	Undervoltage instantaneous
Generic process I/O	IUU	GGIO	63	Undervoltage instantaneous
Undervoltage	DTH	PTUV	64	Undervoltage Definite Time, High set
Generic process I/O	DTHUU	GGIO	64	Undervoltage Definite Time, High set
Undervoltage	DTL	PTUV	65	Undervoltage Definite Time, Low set
Generic process I/O	DTLUU	GGIO	65	Undervoltage Definite Time, Low set
Overvoltage	RDTH	PTOV	82	Residual Overvoltage Definite Time, High set
Generic process I/O	RDTHU	GGIO	82	Residual Overvoltage Definite Time, High set
Overvoltage	RDTL	PTOV	83	Residual Overvoltage Definite Time, High set
Generic process I/O	RDTLU	GGIO	83	Residual Overvoltage Definite Time, High set
Thermal overload	MTHL	PTTR	74	Thermal Overload
Generic process I/O	MTHL	GGIO	74	Thermal Overload

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Description as per IEC 61850-7- 4	LN Prefix	LN Class	LN Inst. No.	Description of REF 542plus function
Motor restart inhibition	MSTUP	PMRI	80	Motor start Protection
Generic process I/O	MSTUP	GGIO	80	Motor start Protection
Motor starting time supervision	RBLK	PMSS	86	Blocker Rotor Protection
Generic process I/O	RBLK	GGIO	86	Blocked Rotor Protection
Motor restart inhibition	MNS	PMRI	87	Number of starts
Generic process I/O	MNS	GGIO	87	Number of starts
Differential	DIF	PDIF	79	Differential protection
Generic process I/O	DIF	GGIO	79	Differential protection
Differential	RDIF	PDIF	95	Restricted Differential Protection
Generic process I/O	RDIF	GGIO	95	Restricted Differential Protection
Time overcurrent	ILD	PTOC	75	Asymmetrical Load (Unbalanced Load)
Generic process I/O	ILD	GGIO	75	Asymmetrical Load (Unbalanced Load)
Directional overpower	DIROP	PDOP	76	Directional Power Protection
Generic process I/O	DIROP	GGIO	76	Directional Power Protection
Directional underpower	DIRUP	PDUP	77	Low Load Protection
Generic process I/O	DIRUP	GGIO	77	Low Load Protection
Thermal overload	THLS	PTTR	78	Thermal Supervision
Generic process I/O	THLS	GGIO	78	Thermal Supervision
Frequency supervision	FRQS	PTOF	84	Frequency supervision
Generic process I/O	FRQS	GGIO	84	Frequency supervision
Synchronism check	SCHK	RSYN	85	Synchrocheck
Time overvoltage	SRSNC	PTOC	89	Switching Resonance
Generic process I/O	SRSNC	GGIO	89	Switching Resonance
Time overvoltage	HHRM	GGIO	93	High Harmonic
Generic process I/O	HHRM	GGIO	93	High Harmonic

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Description as per IEC 61850-7- 4	LN Prefix	LN Class	LN Inst. No.	Description of REF 542plus function
Underfrequency	FRN1	PTUF	150-155	Frequency Protection Net1
Generic process I/O	FRN1	GGIO	150-155	Frequency Protection Net1
Underfrequency	FRN2	PTUF	160-165	Frequency Protection Net2
Generic process I/O	FRN2	PTUF	160-165	Frequency Protection Net2
Autoreclosing	ARCL	RREC	250	Autoreclose 2
Generic process I/O	ARCL	GGIO	250	Autoreclose 2
Protection Trip Conditioning	GTR	PTRC	260	Protection Trip Conditioning
Time overcurrent	EFND	PTOC	220-227	Earth fault Non- directional
Generic process I/O	EFND	GGIO	220-227	Earth fault Non- directional
Time overcurrent	EFDS	PTOC	230-237	Earth fault Directional
Generic process I/O	EFDS	GGIO	230-237	Earth fault Directional
Time overcurrent	OCND	PTOC	200-207	Overcurrent Non- directional
Generic process I/O	OCND	GGIO	200-207	Overcurrent Non- directional
Time overcurrent	DOC	PTOC	210-217	Overcurrent Directional
Generic process I/O	DOC	GGIO	210-217	Overcurrent Directional
REF 542plus Pri Switch ESW)	mary Switches (C	ircuit Breaker CB	, Disconnec	tor DCO and Earthing
Interlocking	CB, DCO, ESW	CILO	Same as SPA CH number	
Switch controller	CB, DCO, ESW	CSWI	Same as SPA CH number	
Circuit breaker	СВ	XCBR	Same as SPA CH number	
Circuit switch	DCO, ESW	XSWI	Same as SPA CH number	
REF 542plus Ger	neral Status and	Control		
Generic process I/O	To be filled by user	GGIO	Same as SPA CH number	

#### 2.4. Installation

#### 2.4.1. Prerequisites

The following software should be installed in the system before installing REF 542plus ConnPacks.

- .Net Framework 2.0
- PCM600, version 2.1 or above/COM600-CET Version 3.2 or above

#### 2.4.2. Installing

The connectivity installation steps and the installer package contents are briefly explained below.

Name 🔺	Size	Туре	Date Modified	
BABB REF542plus Connectivity Package Ver. 2.1a.msi	9,156 KB	Windows Installer Package	5/29/2009 4:03 PM	
				A1001

• Start the Setup.msi file to install the REF 542plus Connectivity Package.

The REF 542plus ConnPacks installation dialog box opens. This dialog has buttons for proceeding and canceling.

🙀 ABB REF542plus Connectivi	ty Package Ver. 2.1a Setup	
H8277 H836 H0378 States Cod Cod	Welcome to the ABB REF542plus Connectivity Package Ver. 2.1a Installation Wizard	
	It is strongly recommended that you exit all Windows programs before running this setup program.	
	Click Cancel to quit the setup program, then close any programs you have running. Click Next to continue the installation.	
$\mathbf{S}$	WARNING: This program is protected by copyright law and international treaties.	
	Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.	
	< <u>₿</u> ack. <mark>Next&gt;</mark> Cancel	

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Fig. 2.4.2.-1 Setup Wizard – welcome screen

Click Cancel in any dialog box to quit the installation.

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Fig. 2.4.2.-2 Setup Wizard – confirmation dialog for exiting the installer

- Click **Resume** in the confirmation dialog box to continue the installation or click **Exit Setup** to quit the installation.
- Click Next to proceed to the License Agreement dialog box.



Fig. 2.4.2.-3 Setup Wizard – License Agreement dialog

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Click "I accept the license agreement" to enable Next.Click Next to continue.

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🙀 ABB REF542plus Connecti	vity Package Ver. 2.1a Setup	<u>_                                    </u>
	The Wise Installation Wizard will install the files for REF542plus Connectivity Package Ver. 2.1a in t folder. To install into a different folder, click the Browse select another folder. You can choose not to install ABB REF542plus ( Package Ver. 2.1a by clicking Cancel to exit the Installation Wizard. Destination Folder C:\Program Files\ABB\Connectivity Packages\ Bro	or ABB he following button, and Connectivity Wise
	< Back Next >	Cancel

Fig. 2.4.2.-4 Setup Wizard – folder selection dialog

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• Select the folder to which REF 542plus ConnPacks Application needs to be installed. Use **Browse** to browse for the desired folder.

👘 ABB REF542	plus Connectivity Package Ver. 2.1a Setup		×
Look in:	🗀 Connectivity Packages	-	<b>e</b> 💣
eCB	lus		
Eolder name:	C:\Program Files\ABB\Connectivity Packages\		OK
			Cancel

Fig. 2.4.2.-5 Setup Wizard – folder selection dialog

- Click **OK** to return to the previous dialog.
- Click **Next** to continue the installation.

Configuration manual

🖓 ABB REF542plus Connectivi	ty Package Ver. 2.1a Setup	
	<b>Copying new files</b> File: Copying new files Directory: Size:	
		Cancel

Fig. 2.4.2.-6 Setup Wizard – installation progress dialog

ABB REF542plus Connectivity Package Ver. 2.1a Setup	- <u> </u>
Image: Construction of the state of the	
Can	cel

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Fig. 2.4.2.-7 Setup Wizard – installation progress dialog

After the installation of REF 542plus Connectivity Package, the installer displays the "Installation Complete" dialog.

#### Connectivity Package Configuration manual

ABB REF542plus Connectivity Package Ver. 2.1a has been successfully installed. Click the Finish button to exit this installation.
< Back Finish Cancel

Fig. 2.4.2.-8 Setup Wizard – Installation complete dialog

• Click **Finish** to exit the installer.

#### 2.4.3. Uninstalling

Uninstalling of REF 542plus Connectivity Package is similar to that of a standard windows application.

• Open the Add or Remove Programs dialog by clicking the **Start** button on the Windows task bar, then clicking **Settings**, then clicking **Control Panel** and then double-clicking **Add or Remove Programs**.



Fig. 2.4.3.-1 REF 542plus in Add and Remove Programs

- Select REF 542plus Connectivity Package and click Remove.
- Click Yes in the appearing dialog to confirm the uninstallation.

a or R	emove Programs	
2	Are you sure you want to remove ABB REF542plus Connectivity Package Ver. 2.1a from your computed on the second sec	te

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Fig. 2.4.3.-2 Confirmation dialog for the uninstallation

A progress dialog displays the uninstallation progress. The uninstallation removes all the installed items (folders and files) from the installed folder of REF 542plus ConnPacks.

Configuration manual



*Fig. 2.4.3.-3* Dialog with the uninstallation progress bar

1MRS756387

## 3. REF 542plus Connectivity Package Applications

3.1.

#### REF 542plus ConnPack files and folders

Critical folders and files are installed by the REF 542plus Connectivity Package installer.

Address C:\Program Files\ABB\Connectivity Packages\REF542plus\2.1				
Folders ×	Name 🔺	Size	Туре	Date Modified
🖃 🦳 Program Files	Communication		File Folder	10/22/2009 5:18 PM
	Documents		File Folder	10/22/2009 5:17 PM
E Connectivity Parkages	Cons		File Folder	10/22/2009 5:18 PM
eCB	Parameters		File Folder	10/22/2009 5:18 PM
E BEE542plus	SCL Tool		File Folder	10/22/2009 5:18 PM
	ABB.FI.ParameterReader_2	44 KB	Application Extension	1/3/2008 9:44 AM
Communication	ABB.PCM.ObjectTypes.Objec	16 KB	Application Extension	1/3/2008 9:44 AM
Documents	ABB.PCM.REF542plus.Comtra	56 KB	Application Extension	5/29/2009 3:39 PM
Cons	ABB.PCM.REF542Plus.CP.DR.dll	68 KB	Application Extension	5/29/2009 3:45 PM
Parameters	ABB.PCM.REF542Plus.CP.Obj	56 KB	Application Extension	5/29/2009 3:45 PM
E G SCL Tool	ABB.PCM.REF542Plus.CP.PST	72 KB	Application Extension	5/29/2009 3:45 PM
REF542plus SCL Tool Ver. 3.1a	ABB.PCM.REF542Plus.CP.Wiz	72 KB	Application Extension	5/29/2009 3:45 PM
🖅 🦳 Adobe	ABB.SCLTool.CIDExport.dll	52 KB	Application Extension	5/29/2009 2:20 PM
Analog Devices	ABB.SCLTool.CIDExportForSC	52 KB	Application Extension	5/29/2009 2:20 PM
ATI Technologies	ABB.SCLTool.Core.dll	24 KB	Application Extension	5/29/2009 2:20 PM
AutoPatcher	ABB.SCLTool.DatasetEdit.dll	44 KB	Application Extension	5/29/2009 2:18 PM
Business Objects	ABB.SCLTool.DOEdit.dl	36 KB	Application Extension	5/29/2009 2:18 PM
E CE Remote Tools	ABB.SCLTool.DongleCIDImpor	80 KB	Application Extension	5/29/2009 2:19 PM
Cisco Systems	ABB.SCLTool.DongleSCDImpo	64 KB	Application Extension	5/29/2009 2:19 PM
E Common Files	ABB.SCLTool.DOWizard.dll	48 KB	Application Extension	5/29/2009 2:18 PM
ComPlus Applications	ABB.SCLTool.ECM Utilities.dll	172 KB	Application Extension	5/29/2009 2:20 PM
E CONEXANT	ABB.SCLTool.LNWizard.dl	44 KB	Application Extension	5/29/2009 2:19 PM
Cipse Cipse	ABB.SCLTool.SCLGenerate.dl	200 KB	Application Extension	5/29/2009 2:20 PM
EDMS	ABB.SCLTool.SCLGenerator.dll	1,540 KB	Application Extension	5/29/2009 2:20 PM
TTML Help Workshop	ABB.SCLTool.SLDGenerate.dl	56 KB	Application Extension	5/29/2009 2:19 PM
E 🛅 IBM	ABB.SCLTool.TreeNodes.dll	260 KB	Application Extension	5/29/2009 2:20 PM
InstallShield Installation Information	ABB.SCLTool.TreeNodesForS	180 KB	Application Extension	5/29/2009 2:20 PM
🗉 🧰 Intel	ABB.SCLTool.Utilities.dll	168 KB	Application Extension	5/29/2009 2:17 PM
🗄 🫅 Internet Explorer	DotNetMagic.DLL	988 KB	Application Extension	12/16/2008 3:49 PM
E 🛅 InterVideo	Interop.PC128Encrypter.dl	4 KB	Application Extension	5/29/2009 2:19 PM
🗉 🧰 Java	ObjectTypes.xml	1 KB	XML Document	1/2/2008 7:32 PM
E 🛅 Lenovo	PC128Encrypter.dl	28 KB	Application Extension	11/22/2007 10:52 AM
Cocal	PC128Encrypter.dll.xml	1 KB	XML Document	5/19/2009 7:13 PM
🗄 🚞 lotus	REF542plus.ico	3 KB	Icon	1/2/2008 7:32 PM
E Dotus_old	Supported	1 KB	File	1/2/2008 7:32 PM
Common Messenger	WeifenLuo.WinFormsUI.dll	140 KB	Application Extension	12/21/2007 10:04 AM

Fig. 3.1.-1 Installed REF 542plus ConnPack files and folders

#### 3.1.1. Standard ConnPack folders

The standard folders contain the type data files and other required configuration files and folders for REF 542plus Connectivity Packages. These folders are standard folders of any Connectivity Package.

#### 3.1.1.1. Parameters

This folder contains the XML files corresponding to the protection functions that are available in REF 542plus. These files are PST type data, which is used to display the parameters for a particular protection function.

Each protection function has a corresponding resource file that is used to pick up parameter details, like name, as per language. This folder contains sub-folders for resource files as per language that is been supported by REF 542plus.

ers	×	Name 🔺	Size	Туре	Date Modified
🖃 🦳 Program Files	-	Canguage Support		File Folder	4/21/2009 7:13 PM
	_	🔮 Asym Load_	8 KB	XML Document	6/23/2008 1:44 PM
E CET SPAZCAOV		P Autoreclose_	23 KB	XML Document	6/23/2008 1:44 PM
E Connectivity Backager		Block Rotor_	6 KB	XML Document	6/23/2008 1:44 PM
ELIED Common		Control Settings_	2 KB	XML Document	6/23/2008 1:44 PM
I Constant		Differential_	26 KB	XML Document	6/23/2008 1:44 PM
DEEE42ohr		Dir Power_	5 KB	XML Document	6/23/2008 1:44 PM
		Directional EarthFault HighSet_	10 KB	XML Document	6/23/2008 1:44 PM
		Directional EarthFault LowSet_	10 KB	XML Document	6/23/2008 1:44 PM
	CLProgram Files/ABB(Connectivity Packages/REF542 Program Files ABB CT_SPAZC40X COnnectivity Packages CCT_SPAZC40X Connectivity Packages CCT_SPAZC40X Connectivity Packages CCT_SPAZC40X CONNECTIVITY Packages CCT_SPAZC40X CCT_SPAZC	Directional Overcurrent HighSet_	7 KB	XML Document	6/23/2008 1:44 PM
		Directional Overcurrent LowSet_	7 KB	XML Document	6/23/2008 1:44 PM
		Directional Overcurrent Stg1_	21 KB	XML Document	12/22/2008 4:12 P
		Directional Overcurrent Stg2_	21 KB	XML Document	12/22/2008 4:13 P
		Pirectional Overcurrent Stg3_	21 KB	XML Document	12/22/2008 4:13 P
E Canguage Support		Directional Overcurrent Stg4_	21 KB	XML Document	12/22/2008 4:13 P
		Directional Overcurrent Stg5_	21 KB	XML Document	12/22/2008 4:14 P
		Pirectional Overcurrent Stg6_	21 KB	XML Document	12/22/2008 4:12 Pf
		Directional Overcurrent Stg7_	21 KB	XML Document	12/22/2008 4:14 Pf
E SPACOM		Directional Overcurrent Stg8_	21 KB	XML Document	12/22/2008 4:14 P
Working nies		Directional Sensitive EarthFault_	11 KB	XML Document	6/23/2008 1:44 PM
E Cribatacollector		Distance_	21 KB	XML Document	6/23/2008 1:44 PM
E PCM600_2		EarthFault Directional Sector Stg1_	17 KB	XML Document	6/23/2008 1:44 PM
E C REPORTED SCL Tool Ver2.1g		EarthFault Directional Sector Stg2_	17 KB	XML Document	6/23/2008 1:44 PM
m im Kenovapius SCL Tool ver. 3.1 Beta	(Program Files)_ABB(Connectivity Packages)REF542         Program Files         ABB         GenterWith Packages         F1 IED CommPackCheetah         IEDComPackCheetah         IEDComPackCheetah         IED Communication         IED Comments         Ions         Intit Image         Image<	the second second second second			

Fig. 3.1.1.1.-1 Contents of the Parameter folder

Table 3.1.1.1.-1Protection function names and their corresponding xmlfiles

SNo	Туре	File name	Functional group
		Inrushxml	Inrush blocking
		Inrush Harmonicxml	Inrush harmonic
		Overcurrent Isntantaneousxml	Overcurrent instantaneous
		Overcurrent HighSetxml	Overcurrent definite time, high set
		Overcurrent LowSetxml	Overcurrent definite time, low set
		Directional Overcurrent HighSetxml	Overcurrent directional, high set
		Directional Overcurrent LowSetxml	Overcurrent directional, low set
		IDMTxml	Overcurrent IDMT normally inverse
		IDMTxml	Overcurrent IDMT very inverse
		IDMTxml	Overcurrent IDMT extremely inverse
		IDMTxml	Overcurrent IDMT long- time inverse
		Directional EarthFault HighSetxml	Earth fault non-directional, high set
		Directional EarthFault LowSetxml	Earth fault non-directional, low set
		IDMT EarthFaultxml	Earth fault IDMT normal inverse
		IDMT EarthFaultxml	Earth fault IDMT very inverse
		IDMT EarthFaultxml	Earth fault IDMT extremely inverse
		IDMT EarthFaultxml	Earth fault IDMT long-time inverse

## Connectivity Package Configuration manual

SNo	Туре	File name	Functional group
		EarthFault HighSetxml	Earth fault directional, high set
		EarthFault LowSetxml	Earth fault directional, low set
		Directional Sensitive	Sensitive earth fault
		EarthFaultxml	directional
		Earthfault Directional Sectorxml	Earth fault directional sector
		Directional Overcurrent Stg1	Directional overcurrent
		Directional Overcurrent Stg2	Directional overcurrent
		Directional Overcurrent Stg3	Directional overcurrent
		Directional Overcurrent Stg4	Directional overcurrent
		Directional Overcurrent Stg5	Directional overcurrent
		Directional Overcurrent Stg6	Directional overcurrent
		Directional Overcurrent Stg7	Directional overcurrent
		Directional Overcurrent Stg8	Directional overcurrent
		EarthFault Directional Stg1	Earth fault directional
		EarthFault Directional Stg2	Earth fault directional
		EarthFault Directional Stg3	Earth fault directional
		EarthFault Directional Stg4	Earth fault directional
		EarthFault Directional Stg5	Earth fault directional
		EarthFault Directional Stg6	Earth fault directional
		EarthFault Directional Stg7	Earth fault directional
		EarthFault Directional Stg8	Earth fault directional
		Non Directional overcurrent Stg1	Non-directional overcurrent
		Non Directional overcurrent Stg2	Non-directional overcurrent
		Non Directional overcurrent Stg3	Non-directional overcurrent
		Non Directional overcurrent Stg4	Non-directional overcurrent
		Non Directional overcurrent Stg5	Non-directional overcurrent
		Non Directional overcurrent Stg6	Non-directional overcurrent
		Non Directional overcurrent Stg7	Non-directional overcurrent
		Non Directional overcurrent Stg8	Non-directional overcurrent
		EarthFault Non Directional Stg1	Earth fault non-directional
		EarthFault Non Directional Stg2	Earth fault non-directional
		EarthFault Non Directional Stg3	Earth fault non-directional

## **REF 542plus**

## Connectivity Package

Configuration manual

SNo	Туре	File name	Functional group
		EarthFault Non Directional Stg4	Earth fault non-directional
		EarthFault Non Directional Stg5	Earth fault non-directional
		EarthFault Non Directional Stg6	Earth fault non-directional
		EarthFault Non Directional Stg7	Earth fault non-directional
		EarthFault Non Directional Stg8	Earth fault non-directional
2	Voltage protection functions	Overvoltage Instantaneousxml	Overvoltage instantaneous
		Overvoltage HighSetxml	Overvoltage definite time, high set
		Overvoltage LowSetxml	Overvoltage definite time, low set
		Undervoltage Instantaneousxml	Undervoltage instantaneous
		Undervoltage DefiniteTime HighSetxml	Undervoltage definite time, high set
		Undervoltage DefiniteTime LowSetxml	Undervoltage definite time, low set
		Residual undervoltage HighSetxml	Residual overvoltage definite time high
		Residual undervoltage HighSetxml	Residual overvoltage definite time low
	Motor protection function	Thermal Overloadxml	Thermal Overload
		Motor Startxml	Motor start protection
		Block Rotorxml	Blocked rotor protection
		Nr Startsxml	Number of Starts
		Differentialxml	Differential protection
		Res Differentialxml	Restricted differential protection
		Asym Loadxml	Unbalanced load II
		Dir Powerxml	Directional power protection
		Low Loadxml	Low load protection
		Thermal Spvxml	Thermal supervision
		Frequency Spvxml	Frequency supervision
		Syn Checkxml	Synchrocheck
		Sw Resonancexml	Switching resonance
		Hi Harmonicxml	High harmonic
		Frequency Protection Net1 Stg1xml	Frequency protection Net 1/Stg 1
		Frequency Protection Net1 Stg2xml	Frequency protection Net 1/Stg 2

Configuration manual

SNo	Туре	File name	Functional group
		Frequency Protection Net1 Stg3xml	Frequency protection Net 1/Stg 3
		Frequency Protection Net1 Stg4xml	Frequency protection Net 1/Stg 4
		Frequency Protection Net1 Stg5xml	Frequency protection Net 1/Stg 5
		Frequency Protection Net1 Stg6xml	Frequency protection Net 1/Stg 6
		Frequency Protection Net2 Stg1xml	Frequency protection Net 2/Stg 1
		Frequency Protection Net2 Stg2xml	Frequency protection Net 2/Stg 2
		Frequency Protection Net2 Stg3xml	Frequency protection Net 2/Stg 3
		Frequency Protection Net2 Stg4xml	Frequency protection Net 2/Stg 4
		Frequency Protection Net2 Stg5xml	Frequency protection Net 2/Stg 5
		Frequency Protection Net2 Stg6xml	Frequency protection Net 2/Stg 6
		Autoreclosexml	Autoreclose

#### 3.1.1.2. Documents

This folder includes document(s) related to REF 542plus. At the moment, the folder has the file "REF542plus-ProtectionManual."



Fig. 3.1.1.2.-1 Documents folder

#### 3.1.1.3. Icons

This folder has the REF 542plus icon that is used as REF 542plus Object Type Icon in PCM600 and the SplashScreen1 icon that is used as a display image in the Add or Remove Program function.

Folders	×	Name 🔺	Size	Туре
🗔 🦳 Program Files		REF542plus	3 KB	Icon File
		SplashScreen1	16 KB	Windows Bitmap Im
🖃 🚞 Connectivity Packages				
포 🧰 FI IED Common				
T C Trochestel				

Fig. 3.1.1.3.-1 Icons folder

A100202

REF 542plus	1MRS756387 Connectivity Package Configuration manual
3.1.1.4.	Communication description
	This folder has the files that are needed for the IEC 61850 communication.
3.1.2.	SCL tool
	This folder has all the files and folders that are required to create SCL files. Please refer to the SCL Tool user manual for further details.
3.2.	REF 542plus object type creation
	After the installation of REF 542plus Connectivity Packages, the REF 542plus object type is created in PCM 600. This REF 542plus object type is required to invoke the standard tools of PCM600.
3.2.1.	Configuring REF 542plus ConnPack in Connectivity Package Manager
	REF 542plus Connectivity package can be configured in Connectivity Package Manager to work with REF 542plus object type in PCM 600.
	• Close PCM600 if it is open.
	• Open Connectivity Package Manager by double-clicking the shortcut on the desktop or by first clicking <b>Programs</b> , then clicking <b>ABB</b> , then clicking <b>Connectivity Package Manager</b> and then clicking <b>Connectivity Package Manager</b> .
	Connectivity Package
	Fig. 3.2.11 Connectivity Package Manager desktop icon
	Wy Bluetooth Places



A100206

Fig. 3.2.1.-2 Connectivity Package Manager on the Programs menu

Connectivity Package Manager appears.

Configuration manual



Fig. 3.2.1.-3 REF 542plus ConnPack in Connectivity Package Manager

- Expand the REF 542plus Connectivity Package node by clicking it.
- Select the 2.1 version check box to enable REF 542plus Connectivity Package in PCM600. If it is not enabled, the REF 542plus object type cannot be created in PCM600.
- On the File menu, click Close menu to close Connectivity Package Manager.

#### 3.2.2. Managing projects in PCM600

An existing or a new PCM600 project can be used to create the REF 542plus object type in PCM600. A project can be managed in PCM600.

• Open PCM600 by double-clicking the PCM600 shortcut on the desktop.



- Fig. 3.2.2.-1 PCM600 desktop icon
  PCM600 can also be opened by clicking Programs the second seco
- PCM600 can also be opened by clicking **Programs**, then clicking **ABB**, then clicking **PCM600** and then clicking **PCM600**.



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A100210

Fig. 3.2.2.-2 PCM600 on the Programs menu

PCM600 window opens. If PCM600 has any open projects, the tree structure of that project is shown. Otherwise, the window is empty.

### **REF 542plus**

#### **Connectivity Package**

Configuration manual

Folk View Tools Window Help		
	Thursday, Neuraphyr 22, 2005 13 50 30 PM	

Fig. 3.2.2.-3 PCM600 window without the tree structure of a project

• On the File menu, click **Open/Manage project** to create a new or manage an existing project.

2	PCN 🗠	1600					
	File	Edit	View	Tools	Window	Help	_
	<b>2</b>	Open/M	lanage P	roject	Ctr	1+0	
İ		Close P	roject				
		Save			Cti	rl+S	
		Exit					

A100216

Fig. 3.2.2.-4 Open/Manage project

The Open/Manage Project dialog appears. It is used to do the following operations:

- creating a new project
- deleting a project
- importing a project
- exporting a project
- opening a project

Connectivity Package Configuration manual

× Open/Manage Project Currently available projects: Projects on my computer
 Projects on network টি New Project D. Delete Project R Import Project Gh Export Project Project name: 5 Close Project description: SQL Server Service Manager

A100218

Fig. 3.2.2.-5 Open/Manage Project dialog

### 3.2.2.1. Creating new projects

- Click New Project in the Open/Manage Project dialog to create a new project.
- Enter the project name and the description of the project in the New Project dialog.

	Currently available projects:	
	New Project	
<b>U</b>	Server name:	
New Project	IN-L-ITXI006015\PCMSERVER	
R.	Project name:	
ωų Lu Daisi	REF542Plus	
elete Projeci	Description	
noort Project		
Lan		
xport Project		
a	Create Cancel	Open Project
0	Project description:	Close
SQL Server		
Convine		

A100220

Fig. 3.2.2.1.-1 New Project dialog

• Click Create to create a new project.

When the project is created, it is displayed in the "Projects on my computer" tree structure.

### **REF 542plus**

#### **Connectivity Package**

Configuration manual



A100222

A100224

Fig. 3.2.2.1.-2 Open/Manage Project dialog with a created project

#### 3.2.2.2. Opening existing projects

• Open a created project by first clicking the project name to select the project and then clicking **Open Project**. The selected project can also be deleted or exported here.

PCM600 shows the tree structure of the opened project. The tree structure is empty in new projects.



Fig. 3.2.2.2.-1 Tree structure with REF 542plus

• Create a Substation or Region node by right-clicking the project and then selecting **New**, then **General** and then **Substation**. The Substation node is created as a child node of the project in the tree structure.

Configuration manual

Plant Str	ucture				
<b>0 B</b>	New 🕨	Create from Template			
	Properties	General	•	IED Group	٦
			रहर	Substation	
			111		-

Fig. 3.2.2.2.-2 Menu navigation for creating the Region or Substation nodes

• Create the Voltage Level node by right-clicking the Substation node and then selecting **New**, then **General** and then **Voltage Level**.

Project Explorer			<b>→</b> ₽ X				
Plant Structure							
777 JUD80		Import Export					
		New	•	Create from Template			
	*	Cut		General	► ₩	Voltage Level	
1	1. Here	-					A1002

Fig. 3.2.2.2.-3 Menu navigation for creating the Voltage Level node

• Create the Bay node by right-clicking the Voltage Level node and then selecting New, then General and then Bay.

Project Explorer		<b>→</b> 中 ×						
Plant Structure								
BEF     Substation								
KY Voltage	Level							
		New	•	Create from Template				
	*	Cut		General	•	큠	Bay	٦
	D							_

Fig. 3.2.2.2.4 Menu navigation for creating the Bay node

• Right-click the Voltage Level node to view the shortcut menu.

### **REF 542plus**

### Connectivity Package

Configuration manual



A100232

Fig. 3.2.2.-5 Voltage Level shortcut menu

• Select Properties to access the Voltage Level properties. In the properties, Voltage Range is transferred to SCL Tool when SCL Tool is invoked through "SCL Configuration Wizard."

10	bject Properties					
	[ <b>]</b> 2↓ [ <b>[</b> ]]					
Ξ	[000] Appearance					
	Caption	Voltage Level				
	Description	Voltage Level				
Ξ	Connection					
	Connection type	Fixed				
	Misc					
	SCL Technical Key	J1				
	Voltage Range	From 20 to 30 kV				
Ξ	RAS Dial-Up Configuration					
	Connect to					
	Connection configuration	(Collection)				

Fig. 3.2.2.2.-6 Voltage Level properties

A100234

#### Creating REF 542plus objects in PCM600

The REF 542plus Object type can be created either through the Bay node's shortcut menu or in the Object type window.

- Right-click the Bay node in the tree structure.
- Select New, then select Feeder Terminals and then REF 542plus. The REF 542plus Object type is created under the Bay node.

3.2.3.
Configuration manual



Fig. 3.2.3.-1 Menu navigation for creating REF 542plus

• Open the Object Type window by clicking Object Type on the View menu.



Fig. 3.2.3.-2 Object Type window

• Click Feeder Terminals to view the REF 542plus object.

# **REF 542plus**

# Connectivity Package

Configuration manual

Local Server\REF542plu	s - PCM 600		and the second se	X
File Edit View Took	i Window Help			
s 🛛 🗶 🖬 🖏 🖏				
hject Types 🛛 🔻 🕸 🗙	Project Explorer	* ÷ X		
General	Plant Structure			
Feeder Teminals	-E B REF542plus			
e REPSER	90 — t <sup>4</sup> Substation 90 — JX Volage Level — II Biel			
		1.00	Threader New Arts 20, 2002 B 07 F1 B	

Fig. 3.2.3.-3 Object Type window for feeder terminal

• Drag and drop the REF 542plus object to the Bay node to create the object type in the tree structure.



Fig. 3.2.3.-4 Tree structure with the REF 542plus object type

### 3.3. Communication Wizard

IP Address, IED protocol and communication provider, which all are required to make a communication with REF 542plus, have to be configured. Communication wizard helps configure the IP address of the REF 542plus.

### 3.3.1. Working with Communication Wizard

• Right-click the REF 542plus object type and select Communication Wizard.

Project Explorer	oject Explorer				
Plant Structure					
<ul> <li>□ ● ● ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■</li></ul>	Level				
		Parameter Setting Disturbance Handling			
		Communication Wizard			
		Import ECM SCL Configuration Wizard FTP Upload/Download Create Template Import Export Read from IED Write to IED			
	*	Documentation  Cut Conv			
		Delete Rename			
		Properties			

Fig. 3.3.1.-1 REF 542plus shortcut menu – Communication Wizard

The Communication Wizard dialog opens. It shows "IED protocol" for communication and "Communication Provider." REF 542plus uses "IEC61850" as the IED protocol, and the communication provider is "PCM600." The fields are displayed as user information but their values cannot be changed.

A100246

A100248

### **Connectivity Package**

#### Configuration manual

REF542plus - Communication protoco REF542plus Communication Wiza Communication protocol selection page			
IED protocol:	IEC 61850		
Communication provider:	PCM600	Y	
	Cancel	Next >	

Fig. 3.3.1.-2 Communication protocol selection page

• Click **Next** to continue, or click **Cancel** at any stage to close the Communication Wizard. The following dialog appears.

Configuration manual

REF542plus - IEC61850 communication protocol
PCM600 communication Port: Rear port IP address: SPA address: 1
Cancel < Back Next>

Fig. 3.3.1.-3 IEC 61850 Communication protocol configuration

Enter the IP address, for example, 10.140.79.125. REF 542plus uses 99 as Transparent SPA Address, so the information is displayed.

A100252

### Connectivity Package

Configuration manual

🔜 REF542plus - IEC61850	communication protocol	×
REF542plus Communi IEC 61850 communication	ication Wizard protocol	
PCM600 communication —		
Port:	Rear port	<b>•</b>
IP address:	10 .140 . 79 .133	
SPA address:	99 🛨	
	Cancel <	Back Next >

Fig. 3.3.1.-4 IEC 61850 Communication protocol configuration

• Click Next to continue. The following dialog appears.

Configuration manual

REF542plus - Communication configuration complete	×
<b>REF542plus Communication Wizard</b> Communication configuration complete	
Communication configuration is now defined.	
Cancel < Back	Finish

*Fig. 3.3.1.-5 Communication configuration completed* 

• Click **Finish** to complete the configuration wizard, or click **Back** to navigate back to change the IP address, for example.

3.3.2. V

#### Working with communication structure

After the communication configuration has been finished, PCM600 automatically creates the required communication structure for the selected REF 542plus object type. The communication structure can be viewed in PCM600 as follows:

A100254

Configuration manual

• Right-click on the Project Explorer field and select **Communication** to open the communication wizard.



A100256

A100258

Fig. 3.3.2.-1 Project Explorer shortcut menu

• Navigate to the SubNetwork node from the REF 542plus project node in the IEC 61850 OPC Server tree structure.

Project Explorer	•	<b></b>	×
Plant Structure Communication			
- 🖃 📋 REF542plus			
🖃 🖳 Computer Node			
EC61850 OPC Server			
🗄 🤮 Event Definitions			
🗄 🛶 🖉 Scale Definitions			
E Subnetwork			

*Fig. 3.3.2.-2 Communication structure with Subnetwork* 

• Expand Subnetwork by clicking the subnetwork node. The object type named as REF542plus that was chosen when created with the communication wizard is also displayed in the Communication tree.



A100260

Fig. 3.3.2.-3 Communication structure with the REF 542plus object

### 3.4. SCL configuration wizard

The details of the SCL file can be configured in the SCL configuration wizard and the SCL file can then be created.

The user manual of REF 542plus explains in detail how to enter or edit the parameters and create the SCL file in SCL Tool.

This section briefly explains the user interaction required to create the SCL file in the SCL configuration wizard and also how the created SCL file can be imported into PCM600 for using the protection function in PST.

Configuration manual

3.4.1.

### Creating SCL files in SCL Tool

• Right-click the REF 542plus object in the tree structure and select SCL Configuration Wizard.



A100262

Fig. 3.4.1.-1 REF 542plus shortcut menu – SCL Configuration Wizard

SCL Tool opens. The purpose of SCL Configuration Wizard is to create an SCL file, so the SCL Generation tab is open when displaying the SCL Tool from the REF 542plus Object type. Additionally, navigation to other tabs is restricted by making them unavailable.

### Connectivity Package Configuration manual

542plus SEL Tool Ver. 3.1a View Tools Window Help eneration CID/ICD Import SCD Import FTF	Download or Upload Firmware Download		
s and Folders Substation Relationship and Comm	Files and Folders	tection Measurement Primary Switches Genera	I I/Os Peport Control Blocks
	Configuration Tool RCA File Device Raference (File Name)		Import Import GUI Data
REFAQUUS	SCL File Type	•.CID	Import SV/G
		Exit Date: 2009/10/2	3 Tme: 10:13:53 AM

Fig. 3.4.1.-2 SCL Tool with only the SCL Generation tab available

• See the SCL Tool user manual about the use of the Files and Folders tab. When the required fields in the Files and Folders tab have been filled, navigation to other tabs under the SCL Generation tab is allowed.

The configured substation details from the PCM600 are transferred into SCL Tool when SCL Configuration Wizard is invoked.

The substation, voltage range, bay name and IED name in the PCM600 tree structure are imported to SCL Tool automatically. The imported substation information is displayed in the Substation Relationship and Time Settings tab. The transferred fields' data cannot be edited in SCL Tool.

# **REF 542plus**

### **Connectivity Package**

#### Configuration manual



Fig. 3.4.1.-3 Mapping of substation information between PCM600 and the Substation Relationship and Time Settings tab

Voltage Range property of the Voltage Level node in PCM600 is converted into equivalent designation as per IEC 61346.

Voltage designation	Voltage range
В	Over 420 kV
С	From 380 to 420 kV
D	From 220 to 380 kV
E	From 110 to 220 kV
F	From 60 to 110 kV
G	From 45 to 60 kV
Н	From 30 to 45 kV
J	From 20 to 30 kV
κ	From 10 to 20 kV
L	From 6 to 10 kV
Μ	From 1 to 6 kV
Ν	Under 1 kV

• See the SCL tool user manual to create and test an SCL file in REF 542plus SCL Tool.

• After entering the value for creating the SCL file (click "SCL Generation," then "Report Control Block"), click Generate SCL & ECM to create the SCL file.

Configuration manual



A dialog window prompts to save the entered data.

REF542pl	us SCL Tool		×
i)	Do you want t	o save GUI	data?
	Yes	No	]

A100270

A100272

A100268

Fig. 3.4.1.-5 Dialog for user confirmation to save the GUD data

- Click Yes to save the entered data in GUI.
- Enter the file name in the text box when another dialog window appears and prompts to name the file (\*.GUD).

🔤 REF542plus SCL To	ool	x
GUI Data Folder	C:\Documents and Settings'	Browse
FileName		
	OK Cancel	

*Fig. 3.4.1.-6 GUD file name input dialog* 

49

Configuration manual

Click OK to save the user data. A progress bar is shown, indicating that the SCL • file preparation is in progress.

IEFS42plus SCL Tool Yer. 3.1a - SCR2901A01.r ile View Tools Window Help L Generation CID/ICD Import SCD Import F	<b>ca</b> TP Downlo	ad or Upload Firr	nware Download	1			<u>X</u>
les and Folders Substation Relationship and Com	munication	Settings Sensor	r Configuration a	nd Protection Mea	surement Primary Switches	General I/Os Report Control Block	(5
		Report Control : Na	ame Report C	ontrol : Buffer Enable	Report Control : Buffer Time	RptEnabled : Number of Subscribing C	lient
	•	rcb_C		V	100	4	
ABB		rcb_F		V	100	4	
Dates I Startinger		rcb_B*		V	100	4	
0 mm 1 1 100		rcb_A*		V	100	4	
Contraction of the second seco	4	·					Þ
REF542plus		Client IED Name	IP	IP Subnet	IP Gateway		
ion o huiuur	•	Client1	127.0.0.1	265.255.255.0	127.0.0.1		
Committee O Internation		Client2	127.0.0.1	265.255.255.0	127.0.0.1		
T managements of structures		Client3	127.0.0.1	265.255.255.0	127.0.0.1		
Durits Durits		Client4	127.0.0.1	265.255.266.0	127.0.0.1		
Control O							
*							
						Generate SCL & E	CM
				Exit			
					Date:	2009/10/23 Time: 10:20:27 AM	abb

Fig. 3.4.1.-7 Progress bar for the creation of the SCL file

A dialog window appears when the progress bar is full, indicating that the SCL file has been generated and validated against the SCL.xsd and CommonSA.xsd schemas.



Fig. 3.4.1.-8 Dialog window for the completion of the SCL file generation

Another dialog window with options appears.

Configuration manual

REF542Plus SCL Tool	×
<ul> <li>View SCL File to edit</li> <li>Import SCL File</li> </ul>	OK Cancel

A100278

Fig. 3.4.1.-9 Option dialog window for viewing or importing the SCL file

• Select Import SCL File and click **OK** to import the SCL file into PCM600.

3.4.2.

Configuration manual

# Editing SCL files

The SCL file can be viewed also in the tree structure to add or edit DOI or LN.

• Select View SCL File to edit to view the generated SCL file in the tree view.



A100280

Fig. 3.4.2.-1 Option dialog window for viewing or importing the SCL file

• Click **OK**. The created SCL file is automatically imported and shown in the tree view.



Fig. 3.4.2.-2 SCL File Import tab

- See the SCL Tool user manual for details about working with the SCL Import tab. When all the wanted modifications have been made, the SCL file can be exported.
- Right-click the first node to open the shortcut menu.

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#### **Connectivity Package**

Configuration manual



Fig. 3.4.2.-3 REF 542plus node shortcut menu

• Select Export SCL File to Hard Disk.



Fig. 3.4.2.-4 REF 542plus node shortcut menu

The SCL File Export tab appears on the right side of Project Explorer.

<u>File View Tools Wi</u> r	idow <u>H</u> elp	
SCL Generation SCD Import	CID/ICD Import	TP Download or Upload Firmware Download
Project Explorer ■ REF542plus ■ UP_OverCurr_56 ⊕ LD LD0 ⊕ LD LD1	<b>₽</b> ×.	SCL File Export

Fig. 3.4.2.-5 SCL File Export tab in the SCL tool

• Click Write to open the folder selection and file definition window.

### **REF 542plus**

# Connectivity Package Configuration manual

REF542plus SCL Tool Ver. 3.1a - SCR2901	401.CID
File View Tools Window Help	
CL Generation CID/ICD Import SCD Impo	FTP Download or Upload Firmware Download
Project Explorer 🛛 🗘	SCL File Export
■         ■	Write Save As Save in: PFR_200305275L Save in: Sch2001A01.CLD Wy Recent Documents Wy Documents Wy Documents Wy Documents Wy Documents Wy Documents Wy Documents Wy Documents Wy Documents Save as jupe: CD files ("cid]
	Exit Date: 2009/10/23 Time: 10:37:39 AM

Fig. 3.4.2.-6 SCL (Export) File Name save dialog in SCL Tool

• Click **Save** to start generation of the ICD/CID file. When completed, a dialog window appears, informing that the SCL file is exported and validated against the SCL schema.

REF542plus SCL Tool Ver. 3.1a - SER2901A0	LCID	4
File View Tools Window Help		
CL Generation CID/ICD Import SCD Import	FTP Download or Upload Firmware Download	1
Ject Explorer 4 ×	SCL File Export	
	SCL File Export	
E LI RELOGIOSE E LI RELOGIOSE E LI GROPICZEO E LI GROPICZEO E LI GROPICZEO E LI UIGGIOI	REF542plus SCL Tool       X         SCL File has been validated according to IEC 61850/2003 version 2.0 schema and exported.	
	Exit Date: 2009/10/23 Time: 10.40.06 AM ABB	

Fig. 3.4.2.-7 SCL File Export progress bar in SCL Tool

• Click **OK**. The opening dialog window has five options. Selecting "Don't import IEDs of unknown types" lets PCM600 ignore the file types, whereas "Replace unknown IED types with generic IEC 61850 object type" lets PCM600 display them as generic IEC 61850 IEDs in the tree structure. Selecting "Ignore Substation section" lets PCM600 ignore the section while updating the tree structure, whereas "Import Short Addresses" lets PCM600 import the short addresses in the file that is being imported. More information can be found in the corresponding PCM600 Tool manual.

SCL Import (	Dptions		×	4
ED Types				
On't	import IEDs ol	f unknown type	,	
<ul> <li>Replace unknown IED types with generic IEC 61850 object type</li> </ul>				
Ignore PCM Object Type				
Import Type	e —			
🗌 Ignore	e Substation S	ection		
Import Short Addresses				
		Import	Cancel	

Fig. 3.4.2.-8 SCL File Import option dialog in PCM600

• Select any of the options and click Import.

Import SCL C:\Documents and Settings\i	×
Reading the SCL file	
	_
Progressing 0%	_
Progressing 0%	_

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A100294

Fig. 3.4.2.-9 SCL File Import progress in PCM600

The protection functions are imported to PCM600. PST can be used for reading and writing the parameters of the protection functions.



Fig. 3.4.2.-10 Imported protection functions in PCM600

100298

3.4.3.

### Viewing logical devices in the communication structure

• Click the Communication tab in Project Explorer. Logical Device nodes are created under REF 542plus in the Communication tab.



Fig. 3.4.3.-1 Communication structure with the imported logical devices

• Right-click "LD0" or "LD1" for the shortcut menu.

### Connectivity Package Configuration manual



A100302

Fig. 3.4.3.-2 Logical device shortcut menu

• Click Properties to see the object properties. The SPA address is 99.

F	(010) Basic						
	OPCObiectType	IEC61850 LD					
Ξ	[030] Transparent	10301 Transparent SPA					
	SPA Address	99					
	SPA TCP Port	7001					
	SPA TCP Timeout	15					
Ξ	[060] Control Authorization						
	Station/Remote Switc	hi					
Ξ	Identification						
	SCL Technical Key	LD0					
Ξ	Misc						
	Caption	LDO					
	Description	A logical device					

A100304

Fig. 3.4.3.-3 Logical device properties

### 3.5. SCL File import and export

SCL files' Import and Export functions are used to import the SCL files to PCM600 or export REF 542plus object type attributes and properties to the SCL file.

Configuration manual

### 3.5.1. Importing SCL files

Available SCL file can be imported directly to PCM600. The SCL configuration wizard helps create and import the SCL file to PCM600.

If the SCL file has already been created, the SCL file import can be used to create the protection function in the REF 542plus object in PCM600.

• Right-click the REF 542plus object type in Project Explorer and select Import.

Project Explorer		<b>→</b> 中 X	
Plant Structure	Communication		
ा ि REF ति रहेर Substa ति स्थि V	tion oltage Level Bay REI	Parameter Setting	
		Disturbance Handling Communication Wizard Import ECM SCL Configuration Wizard FTP Upload/Download Create Template	
		Import	
		Export Read from IED Write to IED	
		Documentation	•
	*	Cut Copy	
		Delete Rename	
		Properties	

A100306

Fig. 3.5.1.-1 REF 542plus shortcut menu

A dialog window explaining the details of the SCL file type is shown.

#### Configuration manual

nformation			
File type description			
.ICD files - Describes the capabilities of an IED by m Nodes etc.	eans of Logical Devi	ices, Logical	
.CID files + Describes an instantiated IED within a pr	oject.		
-		-	
J Do not show this dialog next time		Uk	
			A10

Fig. 3.5.1.-2 File type information dialog in the SCL file import

• Click **OK** to continue. The "Do not show this dialog next time" option can be selected.

ort					<u>? ×</u>
Look jn:	🗀 Final RCA FII	e	•	0000	<b></b> •
	dataset.ICD				
ly Recent					
Desktop					
<b>&gt;</b>					
Documents					
Computer:					
	ļ				
Network	File <u>n</u> ame:	-		•	<u>O</u> pen
Places	Files of type:	IED Capability (	Description (*.icd)	•	Cancel
Places	Files of type:	IED Capability [	Description (*.icd)	•	Cancel

A dialog opens for selecting the SCL file.

Fig. 3.5.1.-3 Import dialog

• Select \*.icd, \*.cid or any other supported file type from this dialog box.

Configuration manual

File <u>n</u> ame:		•
Files of type:	IED Capability Description (*.icd)	•
	IED Capability Description (*.icd)	
	Configured IED Description (*.cid) All supported files	

A100312

Fig. 3.5.1.-4 Possible import file types

• After selecting the file, click **Open** to import the file contents to PCM600.



Fig. 3.5.1.-5 Import file dialog with File name

PCM600 displays a dialog window with two options. The Update option only updates the existing functions with the SCL file contents. The Append option appends the new protection into the REF 542plus object type.

Configuration manual

SCL Import Options	×
Import Type	
C Update PCM Structure from SCL	
Append SCL to PCM Structure	
Ignore Substation Section	
Advanced Options Import Cancel	

A100316

A100318

Fig. 3.5.1.-6 SCL file import options in PCM600

• Click Import.

The SCL file contents are imported and displayed as a tree structure in the REF 542plus object type according to the selection. The importing progress is displayed in a dialog window.

Import SCL C:\Documents and Settings\s 🗙
Updating PCM SCL-model
Progressing 98%

Fig. 3.5.1.-7 SCL file import progress

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3.5.1.1.

### Viewing logical devices in the communication structure

• Click the Communication tab in Project Explorer. Logical Device nodes are created under REF 542plus in the Communication tree structure.



Fig. 3.5.1.1.-1 Communication structure with the logical devices

• Right-click "LD0" or "LD1" for the shortcut menu.

### Connectivity Package Configuration manual

E	us X B	Expand Cut Copy Delete Rename New • Export
		Properties
	_	

A100302

Fig. 3.5.1.1.-2 Logical device shortcut menu

• Click **Properties** to see the object properties. Type SPA address value "99" if it is not already given.

	(010) Davia						
		15C010501.D					
_	IO201 Transment	CDA	14				
	[USU] Transparent	00					
	SPA Address SPA TCP Part	7001					
	SPATCP Timeout	15					
	INFO Control Authorization						
-	Station/Bemote Switc	hl					
F	Identification						
	SCL Technical Key	LDO					
Ξ	Misc	dede filis					
=	Caption	LDO					
	Description	A logical device					

*Fig. 3.5.1.1.-3 Logical device properties* 

A100304

A100326

### 3.5.2. Exporting REF 542plus attributes to SCL files

SCL File export is used to export the REF 542plus object type attributes and properties to the SCL file.

• Right-click REF 542plus object type in the Project Explorer field and select **Export**.

Project Explorer		•	<b>₽ ×</b>
Plant Structure	Communication		
ा <mark>ि</mark> REF त्रिंद Substa जि. स्प्रिंग	tion foltage Level Bay		
		EI	Parameter Setting
			Disturbance Handling
			Communication Wizard Import ECM SCL Configuration Wizard FTP Upload/Download Create Template
			Import
			Export
			Read from IED Write to IED
			Documentation +
		Ж	Cut
		8	Сору
			Delete Rename
			Properties

Fig. 3.5.2.-1 REF 542plus shortcut menu

A dialog window appears that explains the file types of the formats in which the PCM600 structure can be exported.

#### Configuration manual

Information		
File type description		
.PCMI files - PCM IED file contains all IED data stored by different tool components. T IED objects in this application.	) related data. It contai This file type can only b	ins both SCL data and be used when importing
.ICD files - Describes the capabilities of a Nodes etc.	n IED by means of Log	gical Devices, Logical
.CID files - Describes an instantiated IED	within a project.	
Do not show this dialog next time		Ok

Fig. 3.5.2.-2 File type description in the SCL file type export

• Click **OK**. Also the "Do not show this dialog next time" option can be selected. The export dialog window opens.



Fig. 3.5.2.-3 Export dialog in the SCL file export

Any of the file types, \*.pcm, \*.icd or \*.cid, can be selected.

Configuration manual

File <u>n</u> ame:		-
Save as type:	PCM IED file (*.pcmi)	•
	PCM IED file (*.pcmi)	
	IED Capability Description (*.icd)	

A100332

Fig. 3.5.2.-4Possible export file types

- Enter the file name in the "File name" text box.
- Click **Save** to save the file.

The object contents are exported to the file.

t			<u>?</u> ×
Save jn: 🔀 New Fold	er	💽 🗿 🗊 🖸	<b></b> .
Recent			
lesktop			
-			
Computer: IT×10060			
100			
Network File name:	REF542plus	<u> </u>	Save

Fig. 3.5.2.-5 Export dialog with file name

### 3.6. Para

### Parameter Setting Connectivity Package

Parameter Setting Connectivity Package can be used for reading parameters from the IED and writing parameters to the IED.

Once the SCL file is imported, the available protection functions are listed in PCM600. PST can then be used for reading and writing the parameters of the protection functions.

### Connectivity Package Configuration manual

Fig. 3.6.-1 Tree structure with protections functions

3.6.1.

Configuration manual

### **Opening Parameter Setting Tool**

• Right-click the REF 542plus object type in Project Explorer and select **Parameter Setting**.



A100338

Fig. 3.6.1.-1 REF 542plus shortcut menu

Parameter Setting Tool opens.



Fig. 3.6.1.-2 Parameter Setting Tool

• Expand the Protection node in Project Explorer to view the available protection functions.



Fig. 3.6.1.-3 Parameter Setting Tool

• Select any of the protection functions, for example Overcurrent Instantaneous I>>>, in Project Explorer. The parameters for that function are automatically shown.

Project Explorer 🔹 🔻	REF542pluseter Setting						
Plant Structure Communication	Group / Parameter Name	IED Value	PC Value	Unit	Min	Max	
🗉 📵 REF	V I>>>, Overcurrent Instantaneous						ā
<del> </del>	✓ Parameter Set 1 (Overcurrent	Insta					
i⊟ I Bay	✓ Overcurrent value		0.500	In	0.100	40.000	
E → REF542plus	✓ Overcurrent op. time		0.080	s	0.010	30.000	
	✓ Parameter Set 2 (Overcurrent	Insta					
	✓ Overcurrent value		0.500	In	0.100	40.000	
Dirl>>	✓ Overcurrent op. time		0.080	s	0.010	30.000	

Fig. 3.6.1.-4 Inrush Blocking Parameters – Parameter Setting Tool

• Navigate through all other protection functions. The parameters for the functions are automatically shown.

### 3.6.2. Reading parameters from IED

Irush blocking is here taken as an example to explain the reading of a parameter from IED.

• Change the parameter in PC Value.

	Inrush - Parameter Setti					<b>-</b> 4 ▷ <b>x</b>
	Group / Parameter Name	IED Value	PC Value	Unit	Min	Max
	Inrush, Inrush Blocking					
	Parameter					
۲	Max. current value n		2.0		2.0	8.0
	Starting time		0.250	s	0.200	100.000
	Activate value m		3.0		3.0	4.0

A100346

Fig. 3.6.2.-1 Selected Max current value in the Inrush blocking parameters

• Select Read parameters from IED on the IED menu.

Configuration manual



A100348

Fig. 3.6.2.-2 Submenus of the IED main menu

The Read parameters dialog window appears

• Choose the required options under "Parameter range" and select "Parameter options."

If all the parameters of a protection function (Inrush Blocking) are to be read, Inrush, Inrush Blocking can be selected. Otherwise, only the parameter name which is to be read from the IED can be selected.

💼 Read parameters from IEDName	×
Parameter range	
C Inrush, Inrush Blocking	
<ul> <li>Parameter</li> </ul>	
C Selected parameter	
Parameter options	
Copy IED values to PC value field	
	OK Cancel

A100350

Fig. 3.6.2.-3 Dialog window for Read parameters

- Click **OK**.
- Wait until the communication has finished, that is, the progress bar has disappeared.
- Check that the PC and IED values have been modified in the Parameter View window.

### 3.6.3. Writing parameters to IED

- In Inrush Blocking, change the parameter value in the PC Value field.
- Click Write parameters to IED on the IED menu.

A100352

# Connectivity Package

Configuration manual



Fig. 3.6.3.-1 IED menu

Write parameters to REF 542plus dialog window opens.

📺 Write parameters to REF542Plu	s X
Parameter range	
Inrush, Inrush Blocking	
C Selected group	
C Selected parameter	
Parameter options	
<ul> <li>Changed parameters</li> </ul>	🔽 Read back
C All parameters	
	OK Cancel

*Fig. 3.6.3.-2 Write parameters window dialog* 

A100354

- Select the required options under "Parameter range" and "Parameters options."
- Click OK.
- Wait until the communication has finished, that is, the progress bar has disappeared.
- Check that the changed PC Values and IED parameter values are identical.

#### 3.6.4.

#### **Closing Parameter Setting Tool**

• Close Parameter Setting Tool by clicking the Close button.

1	REF542Plus - Parameter						<b>-</b> 4 ₽
	Group / Parameter Name	IED Value	PC Value	Unit	Min	Max	
•	Inrush, Inrush Blocking						C
	Parameter						
	Max. current value n		2.0	1	2.0	8.0	
	Starting time		0.250	s	0.200	100.000	
	Activate value m		3.0		3.0	4.0	

A100356

Fig. 3.6.4.-1 PST – close button

If a value has been changed, a dialog window is shown.

Configuration manual



A100358

1MRS756387

Fig. 3.6.4.-2 PST – saving dialog

• Click Yes to save the changes. Otherwise, click No.

# 3.7. Importing ECM

ECM import is used to set the FTP user name as "abb." The service password is set from the imported ECM file.
• Right-click the REF542plus node and select Import ECM.



Fig. 3.7.-1 ECM import

The ECM import dialog for selecting the ECM file appears.

A100364

## **REF 542plus**

### Connectivity Package

Configuration manual

port ECM Wizard	
ECM File	Browse
ОК	Cancel



• Select the ECM file and click **OK** to be able to set the user name and password.

🔤 Import ECM Wizard			×
ECM File	:\Documents and Setting	gs\ingagut	Browse
	_	Cancel	
	File is imported suc	ccessfully.	
	ОК		

Fig. 3.7.-3 ECM file imported

### 3.8.

## Disturbance Handling Connectivity Package

Disturbance Handling Connectivity Package is used to read the disturbance record information from REF 542plus. It is also used to display the disturbance record details in GridView and the graph.

### 3.8.1. Opening Disturbance Handling Tool

• Right-click an object type in Project Explorer and select Disturbance Handling.

	Import
	Export
EII	Parameter Setting
<b>E</b>	Disturbance Handling

A100366

Fig. 3.8.1.-1 REF 542plus shortcut menu with Disturbance Handling

Disturbance Handling Tool opens. The DR tool has two sections: "Available Recordings in IED" shows the available recordings of the IED. The "Recordings" section shows the detailed information of a record.



*Fig. 3.8.1.-2 Disturbance Handling Tool* 

3.8.2. Getting recordings information

• Right-click the view area of "Available Recordings in IED" and select Get Recordings Information.

Get Recordings Information         Execute Manual Trig         Clear LEDs         Settings	tn Name	Obj Name	IED Name	DRP Id	Trig Date Time	Rec No	Trig Ch
Get Recordings Information Execute Manual Trig Clear LEDs Settings							
Execute Manual Trig Clear LEDs Settings			Get Recordings Inform	mation			
Clear LEDs Settings			Execute Manual Trig				
Settings			Clear LEDs				
			Settings	_			

Fig. 3.8.2.-1 Shortcut menu of the "Available Recordings in IED" section

A list of the available recordings appears in the view, including the new, manually trigged recording.

	Stn Name	Obj Name	IED Name	DRP Id	Trig Date Time	Rec No	~
•		RE010008	REF542Plus		09-02-2070 22:25:		
		RE010009	REF542Plus	1	09-02-2070 22:30:		100
		RE010010	REF542Plus		09-02-2070 22:31:		
		RE010011	REF542Plus		09-02-2070 22:31:		
		RE010012	REF542Plus		09-02-2070 22:31:		
		RE010000	REF542Plus		10-02-2070 00:39:		~
<				10.00			>

Fig. 3.8.2.-2 Available DR records in IED

	Stn Name	Obj Name	IED Name	DRP Id	Trig Date Time	Rec No	^
	6	RE010008	REF542Plus		09-02-2070 22:25:		
		RE010009	REF542Plus	1	09-02-2070 22:30:		110
		RE010010	REF542Plus		09-02-2070 22:31:		
	1.1	RE010011	REF542Plus		09-02-2070 22:31:		
		RE010012	REF542Plus		09-02-2070 22:31:		
		RE010000	REF542Plus		10-02-2070 00:39:		~
<						)	

Fig. 3.8.2.-3 Available DR records in IED

• Right-click somewhere in the shown recordings and click **Select All Rows**. All available recordings are selected.

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A100378

### Connectivity Package Configuration manual

	Stn Name	Obj Name	IED Name	DRP Id	Trig Date Time	F
		RE010008	REF542Plus		09-02-2070 22:25:	F
	_	RE010009	REF542Plus		09-02-2070 22:30:	T
2	-	RE010010	REF542Plus		09-02-2070 22:31:	t
	_	RE010011	REF542Plus		09-02-2070 22:31:	T
		RE010012	REF542Plus		09-02-2070 22:31:	t
	_	RE010000	REF542Plus		10-02-2070 00:39:	T

Fig. 3.8.2.-4 Available DR records in IED

### 3.8.3. Read record from IED

### 3.8.3.1. Reading selected records

- Right-click somewhere in the Available Recordings in IED section and click **Select Row**. The row is selected.
- Right-click the selected recording and select Read Selected Recording in IED.
- After the operation has finished, right-click the Recordings section and select **Refresh List**. Information about the selected record is displayed.

	Stn Name	DRPId	Trig Date	Trig Time	Channels No	B
T	Test Feeder	0	09-02-2070	22:31:18.694	40	

Fig. 3.8.3.1.-1 DR record details of the selected record

#### 3.8.3.2.

### **Reading selected recordings**

- Right-click somewhere in the shows recordings in the Available Recordings in IED section.
- Select two rows.
- Right-click the selected recording and click Read selected Recording in IED.
- When the upload is finished, right-click the Recordings section and select **Refresh List**.

A100382

## **REF 542plus**

### **Connectivity Package**

Configuration manual

ardinaa					
coraings					
Stn Name	DRP Id	Trig Date	Trig Time	Channels No	Rec No
			Defrech Lict		
			Refresh List		
			Refresh List Template Editor		
			Refresh List Template Editor		
			Refresh List Template Editor Import Recordings.		
			Refresh List Template Editor Import Recordings. Settings		
			Refresh List Template Editor Import Recordings. Settings		

Fig. 3.8.3.2.-1 Shortcut menu in the Recordings section

Information about the uploaded recordings is shown.

### 3.8.3.3. Reading all records or selected recordings

- Right-click the shown recordings list in the Available Recordings in IED section.
- Select all rows.
- Right-click the selected recordings and click Read Selected Recording in IED.
- Click the refresh button when the uploading has been completed. Information about the two selected records is shown.

	Stn Name	DRPId	Trig Date	Trig Time	Channels No	R
•	OEM_OUTG_FIX_	0	10-02-2070	00:39:30.269	40	
	OEM_OUTG_FIX_	0	10-02-2070	00:40:05.958	40	
	OEM_OUTG_FIX_	0	10-02-2070	01:02:32.564	40	
1	Test Feeder	0	09-02-2070	22:25:08.727	40	
	Test Feeder	0	09-02-2070	22:30:39.173	40	
1	Test Feeder	0	09-02-2070	22:31:11.540	40	
1	Test Feeder	0	09-02-2070	22:31:18.694	40	
	Test Feeder	0	09-02-2070	22:31:25.228	40	
<	pri					

Fig. 3.8.3.3.-1 DR record details of all selected records

### 3.8.4. Deleting records from IED

### 3.8.4.1. Deleting record lists from IED

• Right-click somewhere in the shown recordings in the Available Recordings in IED and select **Clear List**. The records are cleared from the view.

S	Stn Name	Obj Name		Get Recordings Information	Time	B
		RE010008	F	Select Row	0 22:25:	
		RE010009	F	Select All Rows	0 22:30:	
		RE010010	F	Clear List	0 22:31:	
		RE010011	F	Dead All	0 22:31:	
		RE010012	F	Read All	0 22:31:	
		DE010000	4	Read Selected Recording in 120	0 00.20	
12 Jan			21	Delete All Recordings in IED	=	

*Fig.* 3.8.4.1.-1 *DR* – *Clear List* 

#### 3.8.4.2. Deleting selected recordings from IED

- Click Select Row.
- Right-click somewhere in the shown recordings in the Available Recordings in IED section.
- Right-click any of the selected recordings and select **Delete Selected Recordings in IED**. The record is cleared from the view.

### 3.8.4.3. Deleting all recordings from IED

- Right-click the shown recordings in the Available Recordings in IED section and click **Select All Rows**.
- Right-click the selected recordings and click **Delete All Recordings in IED...**. The recordings are cleared from the view.

#### 3.8.5. Viewing DR graphs

- Right-click any row on the Recordings section in the DR tool.
- Click the Create Report button on the toolbar.





A dialog window appears.

• Select the xml file and click View Report to see the DR graph.

## 3.8.6. Closing DR tool

• Click the **Close** button of the DR tool to close the tool.

Disturba	ance Handling				_ (×)	
ngs					$\sim$	
lamo	רוססע	Tria Dista	Tria Timo	Channele No.	Peo Mr A	

Fig. 3.8.6.-1 DR Tool closing button

The window closes. There is no error or warning message in the output window.

## 3.9. FTP upload/download

FTP upload/download is used to upload CID files to the IED and download the files from the IED.

## 3.9.1. Opening FTP Upload or Download tab in SCL Tool

• Right-click the REF 542plus object type and select FTP Upload/Download.



Fig. 3.9.1.-1 REF 542plus shortcut menu – FTP Upload/Download

SCL Tool opens with the FTP Upload or Download tab shown. The other tabs of the tool are unavailable.

## **REF 542plus**

## Connectivity Package

Configuration manual

REF542plus SCL Tool ile View Tools Window Help				
L Generation SCL Import FTP Download or Upload	3			
	C Downlos	id C Uplo	ad	
Ann	Folder	C:\Documents and Se	Browse	
States	Device Reference(File Name)	-		
TT Commands	IP Address	<b>_</b>		
An and An Andrew	FTP User ID		Download	
Local - a.	FTP Password			
REF542piros	- Upload			
T commit	Folder		Browse	
T Remarker Remarker Production Total	IP Address			
Tests O	FTP User ID			
	FTP Password		Upload	
	E	xit Dat	e: 2007/6/1 Time: 3:46:55 PM	ABB

Fig. 3.9.1.-2 FTP Download or Upload tab in SCL tool

## 3.9.2. Downloading with FTP

- Ensure the **Download** option is selected.
- Select the SCL folder where the REF 542plus SCL Tool generated CID files are to be stored by clicking **Browse**.



Fig. 3.9.2.-1 Dialog for browsing for folder

## Connectivity Package Configuration manual

After selecting the required CID file, the IP addresses 1 and 2 appear automatically in the IP address drop-down box.

REF542plus SCL Tool - P_Motor_PCM.CID     Elle <u>Mew Tools Window Help</u>				×
SCE Generation   SCE Import   TP Download of Opload				
	Downlos     Downlos	ad C Uploa	d	
	Download			
ABB	Folder	C1Documents and Se	Browse	
and antes antes antes Bastreet	Device Reference(File Name)	P_Motor_PCM.CI		
TT Community	IP Address	10.140.79.77		
Den Rithan Provide Internation	FTP User ID	10.140.79.77 10.140.79.77	Download	
Control Service	FTP Password			
REF6424	- Upload			
T Committee 0 10 10	Folder		Browse	
T Annata O Tanata Andrea	IP Address			
Tanka Tanka C- 10 ami	FTP User ID			
	FTP Password		Upload	
	E	Date	: 2007/6/1 Time: 3:49:47 PM	B

A100396

Fig. 3.9.2.-2 FTP download – displaying the IP addresses

• Select an IP address, either primary or secondary.

REF542plus SCL Tool - P_Motor_PCM.CID				
<u>File View T</u> ools <u>W</u> indow <u>H</u> elp				
SCL Generation SCL Import FTP Download or Upload				
	Cownload Folder Device Reference(File Name IP Address FTP User ID	Download     C1Documents and S(     P_Motor_PCM.Cl     101407977     v	C Upload Browse Download	
REFAZOUS REFAZOUS	FTP Password		Browse	
	IP Address FTP User ID FTP Password		Upload	
		Exit	Date: 2007/6/1 Time: 3:50:58 PM	ABB

Fig. 3.9.2.-3 FTP download – displaying the IP address

A100400

- Enter user name and password ("abb" for REF 542plus EB).
- Click **Download** to initiate an FTP connectivity and start the CID file transfer from hard disk to the REF 542plus EB.

Dialog window appears after a successful file transfer to indicate that SCL Tool is resetting the REF 542plus EB to recognize the newly loaded file.



*Fig. 3.9.2.-4 Confirmation of the FTP download* 

## Uploading with FTP

- Select the Upload option in the FTP Download or Upload tab.
- Select the destination folder for the file to be uploaded in the hard disk by clicking **Browse**.
- Enter the IP address of the REF 542plus EB.
- Enter user name and password (abb for the REF 542plus EB).

Dialog window appears after a successful file transfer to the selected destination folder.



Fig. 3.9.3.-1 Confirmation of the FTP upload

### 3.10. REF 542plus Connectivity Package error and exception handling

### 3.10.1. PCM 600

PCM 600 detects the configured Communication and IED connectivity packages when PCM 600 is starting.

3.9.3.

• If neither of the Communication and IED connectivity packages is available, the following notification appears.

Connectiv	ity Package Updater	×
(پ	PCM 600 has no Communication or IED Connectivity Packages defined in Connectivity Package Manager. Do you want to start Connectivity Package Manager?	
	Do not show this dialog again.     Yes No	

A100404

A100406

Fig. 3.10.1.-1 Notification about unavailable communication and IED connectivity packages

• If the Communication connectivity packages are not available or configured in Connectivity Manager, the following notification appears.



Fig. 3.10.1.-2 Notification about unavailable Communication connectivity packages

• If the IED connectivity packages are not available or configured in Connectivity Manager, the following notification appears.

## **REF 542plus**

### **Connectivity Package**

Configuration manual



Fig. 3.10.1.-3 Notification about unavailable IED connectivity packages

#### 3.10.2.

### Parameter Setting Connectivity Package

• Parameter Setting Connectivity Package does not allow the deletion of protection functions. The following error message appears if a protection function is tried to be deleted.



Fig. 3.10.2.-1 Deletion not allowed

A100410

A100408

• If PST does not enable connection to REF 542plus, the following error message is shown.



A100412

Fig. 3.10.2.-2 Time-out error message

• If data is entered in a wrong format, the following error message is shown.

### **Connectivity Package**

Configuration manual



A100414

Fig. 3.10.2.-3 Invalid data format error message

• If the entered value is not within the specified range, the following error message is shown.



A100416

Fig. 3.10.2.-4 Value not within range error message

• If the entered IDMT curve parameter mode is not IDMT IEEE Custom, the following error message is shown.



*Fig. 3.10.2.-5 IDMT curve parameter error message* 

• If communication is broken between reading or writing the parameter from the IED, the following error message is shown.



Fig. 3.10.2.-6 Breaking of communication error message

3.10.3. Disturbance Handling Connectivity Package

• DR tool displays the following error message when communication fails with REF 542plus.



A100422

Fig. 3.10.3.-1 Communication error in DR

• DR tool displays the following error message when communication is broken during uploading of file from the IED.

Paramet	er Setting					×
8	The Underlying Conn	ection was closed	: An Unexpected	error occurred o	n a receive	
		[	OK			
						A1004

Fig. 3.10.3.-2 Broken communication error in DR

## 4. COM600 support

### 4.1. REF 542plus object type creation

After the installation of the REF 542plus Connectivity Packages, the creation of the REF 542plus object type must be enabled in COM600. The REF 542plus object type is required to invoke the standard tools of COM600.

# 4.1.1. Configuring REF 542plus ConnPack in Connectivity Package Manager

The REF 542plus connectivity package must be configured and enabled in Connectivity Package Manager to work with the REF 542plus object type in COM600.

- Close COM600 if it is open.
- Open Connectivity Package Manager by double-clicking the shortcut on the desktop or by clicking **Programs**, then selecting **ABB** and then **Connectivity Package Manager**.



Fig. 4.1.1.-1 Connectivity Package Manager desktop icon

<b>*</b>			
My Bluetooth Places			
Set Program Access and Defa	aults 🚔 ABB	) 🛅 IET 🔹	
DCM1.1	•	🛗 Connectivity Package Manager 🔸 ன Connectivity Package Manage	r
Best Buy Rhapsody		PCM 600 +	
Programs	*		
Documents	•		

Fig. 4.1.1.-2 Connectivity Package Manager on the Programs menu

Connectivity Package Manager opens.

🕞 C	onnec	tivity Pack	age Manager
File	View	Set Latest	Help
+		ABB Commun PCM600 2.0.	iication Engineering Tool for COM600 3.2 1

A100430

A100426

Fig. 4.1.1.-3 Connectivity Package Manager

• Click the REF 542plus Connectivity Package node to expand it.

Configuration manual



A100432

1MRS756387

Fig. 4.1.1.-4 REF 542plus Connectivity Package Manager

• Select the version 2.1 check box to enable the REF 542plus connectivity package in COM600. If it is not selected, the REF 542plus object type cannot be created in COM600.



A100434

Fig. 4.1.1.-5 Enabling of the REF 542plus connectivity package

• Close Connectivity Package Manager by clicking File and then Close menu.

## 4.1.2. Managing projects in COM 600

Existing COM600 projects or a new project can be used to create the REF 542plus object type in COM 600.

• Open COM 600 by double-clicking the COM 600 shortcut on the desktop or by clicking **Programs**, then **ABB**, then **Communication Engineering Tool for COM 600** and then **COM 600**.



Fig. 4.1.2.-1 COM 600 desktop icon

## Connectivity Package

Configuration manual





The COM 600 screen appears.



Fig. 4.1.2.-3 COM 600

• Click **Open/Manage Project...** on the **File** menu to create a new or manage an existing project.

🔀 Lo	cal Server\R	EF - Com	municati	on Engin	eering Tool for	СОМ600
File	Edit View	Tools	Window	Help		
<b>2</b>	Open/Manage	Project	Cti	rl+0		
	Close Project					
	Save		Ct	rl+S		
	Exit					
	1: Local Server	\REF				

Fig. 4.1.2.-4 Open/Manage Project menu

The Open/Manage dialog window appears. In this window, new projects can be created or existing projects can be opened, imported, exported or deleted.

## **REF 542plus**

## **Connectivity Package**

Configuration manual

Open/Manage	Project	
	Currently available projects:	L
<b>P</b>	Frojects on my computer     Frojects on network	
New Project		
٦,		
Delete Project		
R		
Import Project		
R		
Export Project	Project name:	
	Project description: Close	
SQL Server Service		
manager		

Fig. 4.1.2.-5 Open/Manage Project dialog

### 4.1.2.1. Creating new projects

• Click **New Project** in the Open/Manage Project window to create a new project. Enter the project name and a description of the project in the appearing New Project dialog window.

New Project	×
Server name:	
IN-L-ITXI3012\PCMSERVER	
Project name:	
REF542plus	
Description:	
Create Cancel	5

Fig. 4.1.2.1.-1 New project

A100446

• Click Create to create a new project.

### Connectivity Package Configuration manual

Once the project is created, it is displayed in the **Project on my computer** tree structure.

Open/Manage	Project	
	Currently available projects:	
New Project	Projects on my computer     REF542plus     Projects on network	
7		
Delete Project		
R		
Import Project		
R		
Export Project	Project name:	inct
	IN-L-ITXI3012\PCMSERVER\REF542plus	
	Project description: Close	
SQL Server Service Manager		

Fig. 4.1.2.1.-2 Open/Manage Project with a created project

### 4.1.2.2. Opening existing projects

Existing project can be opened from My Computer or Network through the Open/ Manage Project dialog.

• To open a created project, click the project name to select the project and then click **Open Project**. Projects can also be exported or deleted here.

COM 600 then opens the communication structure of the project. The structure is empty for new projects.



*Fig. 4.1.2.2.-1 Communication structure with project name* 

• Create a gateway by opening the shortcut menu of the "REF 542plus" project. Select New, then Communication and then Gateway.

## **REF 542plus**

### **Connectivity Package**

Configuration manual

Communication	Substation Structure			
BEE54	ACCOUNTER .		_	
	2nhust			
1	Expand			
	New 🕨	New	1	
	Properties	Communication 🕨		Gateway

Fig. 4.1.2.2.-2 Shortcut menu navigation for gateway creation

The Gateway node is created in the REF 542plus communication structure.

• Create the IEC 61850 OPC Server node in the communication structure through the shortcut menu of the Gateway node.

Communication       Substation Structure         REF542plus       Collapse         Collapse       initions         Collapse       initions         Collapse       initions         Collapse       initions         Collapse       initions         Collapse       initions         Delete       Rename         New       New         Collapse       DNP Slave         Management       External         SCL Export       IEC101         Properties       IEC104	Project Explorer		<b>→</b> ₽ X		
■       ●       Collapse         ■       ●       Collapse         ■       ●       Collapse         ■       ●       Collapse         ■       ●       Copy         Delete       Rename         New       New         ©       Data object diagnostics         ©       Management         ©       SCL Export         Properties       IEC101         IEC104       NEC61850 OPC Server	Communication Sul	bstation Structure			
Image: Science of the second seco		Collapse			
New       New         Image: Contained of the second	in	Cut Copy Delete	- nitions		
Image: Science of the sector of the secto		New	New		
IEC104  IEC61850  IEC61850 OPC Server		Data object diagnostics Management SCL Export Properties	DNP Slave External IEC101 IEC103	> > >	
			IEC104 IEC61850	IEC61850 OPC Ser	ver

Fig. 4.1.2.2.-3 Menu navigation for the IEC61850 OPC Server creation

• Create the IEC 61850 Subnetwork node through the shortcut menu of the IEC 61850 OPC Server node in the tree structure.

4.1.3.

## Connectivity Package

Configuration manual



Fig. 4.1.2.2.-4 Menu navigation for IEC 61850 Subnetwork

## Creating REF 542plus object in COM 600

The REF 542plus object can be created in two ways: either through the IEC 61850 Subnetwork's shortcut menu or through the object type window.

• Right-click the IEC 61850 Subnetwork node in the tree structure and select New, then Feeder Terminals and then REF 542plus to create the object type.

Communication       Substation Structure         REF       Saleway 3.1.x         Stateway 3.1.x       Stateway 3.1.x <th>oject explorer</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	oject explorer						
Image: State of the state	Ommunication     Substation St       REF     Gateway 3.1.x       B     Sateway 3.1.x       B     Sateway 3.1.x       Communication     Stateway 3.1.x       Communication     Sateway 3.1.x       Sateway 3.1.x     Sateway 3.1.x	nucture ent Definitions ion Diagnostic Event ent Settings tions PC Server					
New     New       ℅ Cut     IEC61850       哈 Copy     Feeder Terminals		Online diagnostics	r				
K     Cut     IEC61850       Copy     Feeder Terminals     Image: REF542plus		New 🕨	New		1		
Copy Feeder Terminals    REF542plus		X Cut	IEC61850	•			
		Сору	Feeder Terminals	•		REF542plus	

Fig. 4.1.3.-1 Menu navigation for the REF 542plus creation

The REF 542plus object type is created under the IEC 61850 Subnetwork tree node.

• For another way of opening the REF 542plus object type, open the Object Type window by clicking **Object Type** in the **View** menu. The Object Type window opens.

## **REF 542plus**

## Connectivity Package

Configuration manual



Fig. 4.1.3.-2 Object Type window

• Click Feeder Terminals to see the REF 542plus object.



Fig. 4.1.3.-3 Object type window for Feeder terminal

• Drag the REF 542plus object to Bay to create the object type in the communication structure.

Connectivity Package Configuration manual



Fig. 4.1.3.-4 Communication structure with the REF 542plus object type

### 4.2. Working with COM 600 for REF 542plus

SCL files are imported to COM 600 with the SCL Files import. Also parameters can be set, DR can be uploaded and events and alarms can be viewed in COM 600.

### 4.2.1. Importing SCL files in COM 600

• To directly import the available SCL file to COM 600, right-click the REF 542plus object type in the Communication tab in Project Explorer and select **SCL Import**.



Fig. 4.2.1.-1 REF 542plus shortcut menu – SCL Import

The SCL Import dialog window appears.

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## **REF 542plus**

### **Connectivity Package**

Configuration manual

Edit Yew Loois Window Help		
ect Explorer + 4 X	REFS42plus - SCL Import	* 4 Þ *
mmunication Substation Structure	TO REAL	
B BEF	IN UDECE	
Gateway 31.x      Ban Process Event Definitions	File:	Select File
E Communication Diagnostic Event     E		
Scale Definitions	Selected IED:	Import
B IEC61850 OPC Server	Selected Accesspoint:	
E TEC61850 Subnetwork		
the neroscipus	Electronic fibri dorà beloncio DataSet	

Fig. 4.2.1.-2 SCL Import dialog window

• Click **Select File** to open the Choose File dialog window for choosing the SCL file to import.



Fig. 4.2.1.-3 SCL file selection

• Click **Import** to start the importing. The progress bar is displayed during the import.

## Connectivity Package

Configuration manual

L B B R B B B B B			
akreer     • 0 ×       REFSA204       REFSA204       Communication Diagnotic Event Definitions       • 10 Southerstreet       • 10 Southerstreet <t< th=""><th>REF542plus - SCL Import</th><th>Dipects</th><th>• 4 b ×</th></t<>	REF542plus - SCL Import	Dipects	• 4 b ×

Fig. 4.2.1.-4 File import information in the SCL file import

• Enter the substation name in the dialog window that appears during the import and click **OK**.

Select Subst	ation For Import	-
Substation	sub	
Select correct s 'AA1J1Q1A1'. 0 'AA1'.	substation where to impo Driginal substation name i	rt this IED in the file is
	ОК	Cancel

A100474

Fig. 4.2.1.-5 Substation name dialog

• Enter the voltage level in the dialog window that appears during the import and click **OK**.

## **REF 542plus**

## **Connectivity Package**

Configuration manual

I Select Voltage	Level For Impo	rt [
Voltage Level	В	~
Select correct volt this IED 'AA1J1Q1 in the file is 'J1'.	age level where to ir A1'. Original voltage	mport (part of) level name
	ОК	Cancel

A100476

Fig. 4.2.1.-6 Voltage level dialog

• Enter the bay name in the dialog window that appears during the import and click **OK**.

Select Bay I	For Import
Bay	Bay1
Select correct 'AA1J1Q1A1'.	bay where to import (part of) this IED Original bay name in the file is 'Q1'.
	OK Cancel

A100478

Fig. 4.2.1.-7 Bay name dialog

• Right-click the "ref" node and select **Properties** to view the REF 542plus properties.

## Connectivity Package

Configuration manual

ŧ

	Expand	
CET	SCL Import	
CET	Online diagnostics	
CET	Parameter Filtering Tool	
	CID Export	
	New	•
ж	Cut	
₿ <b>a</b>	Сору	
	Delete	
	Rename	
	Properties	

Fig. 4.2.1.-8 REF 542plus shortcut menu – Properties

- Set the IP address of REF 542plus.
- Set the SPA Access properties as follows:
  - "SPA Parameter for Close Password" as V151
  - "SPA Parameter for Open Password" as S198
  - "SPA store parameter name"
  - "SPA store parameter value" as 1
  - "SPA Value for Close Password" as 1
  - "SPA Value for Open Password" as 0



A100482

Fig. 4.2.1.-9 REF 542plus Object Properties

• Right-click the "ref" node and select Parameter Filtering Tool.

Explorer + 4 X	AAIJIQIAI - SCL Import AAIJIQ	1A1	ilterin	g Tool					* 4 b ×
nunication   Substation Structure	C A41110141								
HEP Catagory 21 a			Select	LD LN	FunctionID	Parameter	Parameter Description	Parameter Caption	Setting Group
B Decess Fund Definitions		)		LD1 IOIPIOC51	Overcurrent Instantaneous	0515001	Current threshold for overcurrent condition detection	Overcurrent value	Parameter Set 1 (Divercurrent Ins
Ba Communication Diagnostic Event			~	LD1 IOIPIOC51	Overcurrent Instantaneous	0515002	Time delay for overcurrent trip condition detection	Overcurrent op. time	Parameter Set 1 (Dvercurrent Ins
B Common Event Settings			~	LD1 I0IPI0C51	Overcurrent Instantaneous	0515021	Current threshold for overcurrent condition detection	Overcurrent value	Parameter Set 2 (Overcurrent Ins
Scale Definitions			~	LD1 IOIPIOC51	Overcurrent Instantaneous	051S022	Time delay for overcurrent trip condition detection	Overcurrent op. time	Parameter Set 2 (Dvercurrent Ins
E Lookup Table Scale			4	LD1 DTHPTOC52	Overcurrent HighSet	0525001	Current threshold for overcurrent condition detection	Overcurrent value	Parameter Set 1 (Overcurrent Hig
Stepwise Linear Scale			4	LD1 DTHPTOC52	Overcurrent HighSet	0525002	Time delay for overcurrent trip condition detection	Overcurrent op. time	Parameter Set 1 (Overcurrent Hig
Beh_scale			~	LD1 DTHPTOC52	Overcurrent HighSet	0525021	Current threshold for overcurrent condition detection	Overcurrent value	Parameter Set 2 (Overcurrent Hig
EBstatus_scale			~	LD1 DTHPTOC52	Overcurrent HighSet	0525022	Time delay for overcurrent trip condition detection	Overcurrent op. time	Parameter Set 2 (Overcurrent Hig
BOOL_iw_r			4	LD1 INVPTOC56	IDMT Normal Inverse	0565001	Current threshold for overcurrent condition detection	Overcurrent value	Parameter Set 1 (Overcurrent ID)
PhyHeath_scale			4	LD1 INVPTOC56	IDMT Normal Inverse	0565002	Parameter to vary time delay for trip condition	Time multiplier	Parameter Set 1 (Overcurrent ID)
Mod_scale			~	LD1 INVPTOC56	IDMT Normal Inverse	0565021	Current threshold for overcurrent condition detection	Overcurrent value	Parameter Set 2 (Overcurrent ID)
Heath_scale			~	LD1 INVPTOC56	IDMT Normal Inverse	0565822	Parameter to vary time delay for trip condition	Time multiplier	Parameter Set 2 (Overcurrent ID)
ECC_SCAR			4	LD1 INVPTOC56	IDMT Normal Inverse	0575001	Current threshold for overcurrent condition detection		
TT JECE1950 Subsetund			4	LD1 INVPTOC56	IDMT Normal Inverse	0575002	Parameter to vary time delay for trip condition		
AALIIDIAI			~	LD1 INVPTOC56	IDMT Normal Inverse	0575021	Current threshold for overcurrent condition detection		
			~	LD1 INVPTOC56	IDMT Normal Inverse	057\$022	Parameter to vary time delay for trip condition		
			4	LD1 INVPTOC56	IDMT Normal Inverse	0585001	Current threshold for overcurrent condition detection		
			4	LD1 INVPTOC56	IDMT Normal Inverse	0585002	Parameter to vary time delay for trip condition		
			~	LD1 INVPTOC56	IDMT Normal Inverse	0585021	Current threshold for overcurrent condition detection		
				LD1 INVPTOC56	IDMT Normal Inverse	0585022	Parameter to vary time delay for trip condition		
			4	LD1 INVPTOC56	IDMT Normal Inverse	0595001	Current threshold for overcurrent condition detection		
			4	LD1 INVPTOC56	IDMT Normal Inverse	0595002	Parameter to vary time delay for trip condition		
			~	LD1 INVPTOC56	IDMT Normal Inverse	0595021	Current threshold for overcurrent condition detection		
			4	LD1 INVPTOC56	IDMT Normal Inverse	0595022	Parameter to vary time delay for trip condition		
			4	LD1 SETGGI099	Control Settings	000V150	Protection parameter Set selection	Parameter Set selection	General Parameter
			~	LD1 DIRLPTOCSS	Directional Overcurrent LowSet	555001	Current threshold for fault detection	Overcurrent value	Parameter Set 1 (Directional Dive
			~	LD1 DIRLPTOC55	Directional Overcurrent LowSet	55S002	Operating time between start and trip	Overcurrent op. time	Parameter Set 1 (Directional Ove
				LD1 DIRLPTOC55	Directional Overcurrent LowSet	555003	Direction criteria	Direction	Parameter Set 1 (Directional Dve
			V	LD1 DIRLPTOC55	Directional Overcurrent LowSet	555021	Current threshold for fault detection	Overcurrent value	Parameter Set 2 (Directional Dve
			14	LD1 DIRLPTOC55	Directional Overcurrent LowSet	555022	Operating time between start and trip	Overcurrent op. time	Parameter Set 2 (Directional Ove
			1	LD1 DIRLPTOC55	Directional Overcurrent LowSet	555023	Direction criteria	Direction	Parameter Set 2 (Directional Dve
			14	LD1 DTLPT0C53	Overcurrent LowSet	0535001	Current threshold for overcurrent condition detection	Overcurrent value	Parameter Set 1 (Overcurrent Lov
			14	LD1 DTLPTOC53	Overcurrent LowSet	0535002	Time delay for overcurrent trip condition detection	Overcurrent op. time	Parameter Set 1 (Overcurrent Lov
			V	LD1 DTLPT0C53	Overcurrent LowSet	0535021	Current threshold for overcurrent condition detection	Overcurrent value	Parameter Set 2 (Övercurrent Lov
			14	LD1 DTLPTOC53	Overcurrent LowSet	0535022	Time delay for overcurrent trip condition detection	Overcurrent op. time	Parameter Set 2 (Overcurrent Lov
			V	LD1 DIRHPTOC5	Directional Directment HighSet	545001	Current threshold for fault detection	Overcurrent value	Parameter Set 1 (Directional Ove
			14	LD1 DIRHPTOC5	Directional Overcurrent HighSet	545002	Operating time between start and trip	Overcurrent op. time	Parameter Set 1 (Directional Ove
		<							>
								in a laun a	
							Import Select All Deselect All Exce	Add Parameter	Apply Lancel

Fig. 4.2.1.-10 Parameter selection

- Select the parameters and click **Apply**.
- Set SPA Address as 99 for the LD0 and LD1 nodes by using the properties.

Ob	ject Properties	×
	21 🔤	
Ξ	[010] Basic	
	OPCObjectType	IEC61850 LD
	[030] Transparent SPA	
	SPA Address	99
	SPA TCP Port	7001
	SPA TCP Timeout	3
Ð	[060] Control Authorizatio	n
Ξ	[080] SPA Access	
	SPA Parameter for Close Pass	
	SPA Parameter for Open Pass	
	SPA store parameter name.	
	SPA store parameter value.	1
	SPA Value for Close Password	0
	SPA Value for Open Password	1
Ξ	Misc	
	Caption	LDO
	Description	A logical device
<b>S</b> TI (0	PA Address he SPA address of the device c 999)	onnected via TCP/IP.

Fig. 4.2.1.-11 Set SPA Address

• Right-click the Gateway node and select Properties.



Fig. 4.2.1.-12 COM 600 (Gateway) shortcut menu – Properties

• Set the IP address for Gateway.

## Connectivity Package

Configuration manual

B Local Server\RE	F542plus - Communica	tion Engineering Tool for CO	M600
File Edit View	Tools Window Help		
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Project Explorer		<b>→</b> # <b>X</b>	
Communication St	ubstation Structure		
- 🖃 - 🧊 REF542plus	3		
(coo) (c	Collapse		
÷	Cut	efinitions	
	Сору		
	Delete		
	Rename		
	New	•	
<b>G</b>	Data object diagnostics		
<b>CET</b>	Management		
	SCL Export		
	Properties		

Fig. 4.2.1.-13 Set IP address for Gateway

• Right-click the Gateway node and select Management.

### Connectivity Package

Configuration manual



Fig. 4.2.1.-14 Gateway shortcut menu – Management

The Gateway - Management tab opens.



Fig. 4.2.1.-15 Gateway – Management tab

Configuration manual

• Click Update configuration. A progress bar is displayed.

K Gateway - Management     Configuration control     Cancel     Reload configuration     Update & reload configuration
X      Gateway - Nanagement     Cancel     Cancel     Reset     Reload configuration     Update & reload configuration
Centiguration control Cancel Reset Reload configuration Update & reload configuration
Change password Remove WebHIII users License information Update License Customer: SVC Revision: 3.0 Supported protocols: - LON LAG 1.4 Master - SPA But Master - IEC 60870-5103 Master - IEC 60870-5103 Master - IEC 60870-5103 Slave - IEC 60870-5103 Slave - IEC 60870-5103 Slave - DNP 3.0 LAN/VAM Slave - SPA But et
Morthus Serial Master
- External OPC Client

Fig. 4.2.1.-16 Update configuration using the Management tab

• Click Reload configuration. A progress bar is displayed.

le Cd yw Wodd Weby	Edit Yew Tools Window Help	
Image: Substation Substa	2   2   2   2   2   2   2   2   2   2	
ect Explorer       • • • • • • • • • • • • • • • • • • •		
momunication       Substation Structure         Image: PFTFetf       Image: PFTFetf         Image: PFTFetf       Image:	Explorer 👻 🕂 🗙 Gateway - Management	$\bullet \diamond \triangleright \times$
Panda ECC1950 OPC Server	Sadorer	4 + + +
	Ready Copy of IEC61850 OPC Server	

Fig. 4.2.1.-17 Reload configuration using the Management tab

• Click Update and reload configuration. A progress bar is displayed.

## Connectivity Package

Configuration manual

₩ Local Server\PFTTest - Communication Engineering Tool	for COM600	
File Edit View Tools Window Help		
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Project Explorer 🗸 🗸 🗙	ref - Parameter Filtering Tool Gateway - Management	$\bullet \land \flat \times$
Communication     Substation Structure     Communication     Substation Structure     Communication     First et     First     First et     First et     First et     Fi	Ide - readmander Friedming 1001       Latterway - Pranagement         Configuration       Reset         Update configuration       Reset         Change password       Change password         Remove WebHMI users       Update License         Custome: SVC       Revision: 3.0         Supported protocods:       -         - IDI LGG 14 Marter       -         - IEC 60870-5101 Slave       -         - IEC 60870-5101 Slave       -         - DNP 3.0 Serial Slave       -         - NNP 3.0 LANL/WAN Slave       -         - SPA Route       -         - Modula Sinial Master       -         - External OPC Client       -         Updaing	
	Monday, April 09, 200	7 3:38:43 PM

Fig. 4.2.1.-18 Update and reload configuration using the Management tab

### 4.2.1.1. Parameter setting in COM 600

• Open the web page, for example http://10.140.79.108 if the IP address of COM 600 is that, by using Internet Explorer.

A login page opens for the COM 600 authentication.



Fig. 4.2.1.1.-1 COM 600 web HMI

Configuration manual

• Enter user name and password and click Login to log in to COM 600.

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dress 🛃 https://10.140.7	9.108/k.ynv/login.aspir/Returnkitl=%21Lynu%21Def.ault.aspir	🖌 🔂 Go Links 🍟
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	Welcome - Please login: Usemame Admin Password Login	
		10

Fig. 4.2.1.1.-2 User name and password information

The COM 600 web HMI has the selected parameters from the COM 600 CET.

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e 📅 ref	Parameter Setting						<u>^</u>
🖻 🔜 REF542Plus	rarameter setting	Current					
Measurements	Group/Parameter Name	Value				Max.	
}	Block Rotor, Blocking Rotor						
	General Parameter(Block Rotor)						
	Nominal motor current		1,000	In	0,2	2	0
	Parameter Set 1(Block Rotor)						
	Overcurrent value Set 1		1,000	Ie	1	20	0
	Overcurrent op. time 1		10,000	s	0,04	30	0
	Parameter Set 2(Block Rotor)						
-	Overcurrent value Set 2		1,000	Ie	1	20	0
	Overcurrent op. time Set 2		10,000	s	0,04	30	0
	Thermal Overload, Thermal Overlo	ad Protection					
	Parameter Set 1(Thermal Overload	d)					
	Maximum temperature		100	oC	50	400	0
	Nominal temperature		100	oC	50	400	0
					0.00		<u> </u>

Fig. 4.2.1.1.-3 COM 600 HMI

• Click Enable Write to write the parameters.
Configuration manual

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B-B ref	Parameter Setting							^
E REF542Plus	Group/Parameter Name	Current Value			Min.			
Measurements	Block Rotor, Blocking Rotor							
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	Parameter Set 1(Block Rotor)							
	Overcurrent value Set 1		1,000	Ie	1	20	0	
	Overcurrent op. time 1		10,000	s	0,04	30	0	
	Parameter Set 2(Block Rotor)							
	Overcurrent value Set 2		1,000	Ie	1	20	0	
	Overcurrent op. time Set 2		10,000	s	0,04	30	0	
	Thermal Overload, Thermal Overload Protection							
	Parameter Set 1(Thermal Overload)							
	Maximum temperature		100	oC	50	400	0	
	Nominal temperature		100	oC	50	400	0	
	Nominal ourrent		1.0	In	0.1	c	0	~

Fig. 4.2.1.1.-4 Writing enabled

• Enter the value of the parameter to be written in REF 542plus in the "New Value" column. Valied values are marked in green and invalid in red.

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e B ref		Parameter Setting						
O Paramete	rs ients	Group/Parameter Name	Current Value	New Value	Unit	Min.		
		Block Rotor, Blocking Rotor						
		General Parameter(Block Rotor)						
		Nominal motor current	1,000	1,000	In	0,2	2	0
		Parameter Set 1(Block Rotor)						
		Overcurrent value Set 1	2,000	3,000	Ie	1	20	0
		Overcurrent op. time 1	0,200	0,200	s	0,04	30	0
		Parameter Set 2(Block Rotor)						
		Overcurrent value Set 2	2,000	2,000	Ie	1	20	0
		Overcurrent op. time Set 2	0,200	0,200	s	0,04	30	0
		Thermal Overload, Thermal Overloa	d Protection					
		Parameter Set 1(Thermal Overload	)					
		Maximum temperature	130	130	oC	50	400	0
		Nominal temperature	100	100	oC	50	400	0
						0 63		

*Fig. 4.2.1.1.-5 Set parameter values* 

• Click Write to IED to write the parameter in the IED (REF 542plus).

### **REF 542plus**

### Connectivity Package

Configuration manual

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	Parameter Setting						^
	Group/Parameter Name	Current Value	New Value	Unit	Min.	Max.	
	Block Rotor, Blocking Rotor						
	General Parameter(Block Rotor)						
	Nominal motor current	1,000	1,000	In	0,2	2	0
	Parameter Set 1(Block Rotor)		-				
	Overcurrent value Set 1	3,000	3,000	Ie	1	20	0
	Overcurrent op. time 1	0,200	0,200	s	0,04	30	0
	Parameter Set 2(Block Rotor)						
	Overcurrent value Set 2	2,000	2,000	Ie	1	20	0
	Overcurrent op. time Set 2	0,200	0,200	s	0,04	30	0
	Thermal Overload, Thermal Overlo	ad Protection					
	Parameter Set 1(Thermal Overload	d)					
	Maximum temperature	130	130	oC	50	400	0
	Newigel temperature	100	100	00	50	400	0

Fig. 4.2.1.1.-6 Write to IED

• Click **Refresh Values** to read all the current values of the parameters in the IED. The values appear in the "New Value" column.

Microso	ft Internet Explorer 🛛 🛛 🔯
♪	Parameter values refreshed successfully!
	ОК

Fig. 4.2.1.1.-7 Values refreshed notification

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Configuration manual

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\BB				0	2007	<b>Su</b> 7-04-10,	bstation 14:31:11
General Single Line Diagram	Events Alarms Help L	oqout					
Substation +	ABB > B > ref > REF542Plus						
🚓 ABB	🛛 💥 Enable Write 🛛 🍫 Refresh Val	ues					
KB     Fref     REF542Plus     DParameters     VMeasurements	Parameter Setting Write succeeded!						^
	Group/Parameter Name	Current		Unit			
	Block Rotor, Blocking Rotor						
	General Parameter(Block Rotor)						i
	Nominal motor current	1,000	1,000	In	0,2	2	0
	Parameter Set 1(Block Rotor)						1
	Overcurrent value Set 1	3,000	3,000	Ie	1	20	0
	Overcurrent op. time 1	0,200	0,200	s	0,04	30	0
	Parameter Set 2(Block Rotor)						
	Overcurrent value Set 2	2,000	2,000	Ie	1	20	0
	Overcurrent op. time Set 2	0,200	0,200	s	0,04	30	0
	Thermal Overload, Thermal Overlo	ad Protection					
	Parameter Set 1(Thermal Overload	)					1
	Maximum temperature	130	130	oC	50	400	0

Fig. 4.2.1.1.-8 Parameters

### 4.2.2. Uploading DR files

DR files can be uploaded through COM 600.

• Right-click the REF 542plus object type in the Communication tab in Project Explorer of the COM 600 CET and select **Properties**.

÷	Collapse	
÷ 🐰	Cut	
	Сору	
	Delete	
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<b>(E)</b>	SCL Import	
	Online diagnostics	
	Parameter Filtering Tool	
	Properties	

Fig. 4.2.2.-1 REF 542plus object type properties

The property grid is shown.

• Enter the following DR related properties in the property grid:

A100518

#### Configuration manual

[096] Disturbance Recording	
Disturbance Recorder Delete Recordings	False
Disturbance Recorder Enabled	True
Disturbance Recorder Local Directory	c:\COMTRADE\IED
Disturbance Recorder Maximum Total File Size	0
Disturbance Recorder Polling Period	120
Disturbance Recorder Remote Directory	COMTRADE
🗆 [096] Disturbance Recording via FTP	
Disturbance Recorder FTP Password	
Disturbance Recorder FTP User Name	
Disturbance Recordings Read Via FTP	True

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Fig. 4.2.2.-2 DR related properties

- Enter the user name and password for FTP in the Disturbance Recording via FTP section in the property grid.
- Right-click the Gateway node and select Properties.



A100522

Fig. 4.2.2.-3 COM 600 shortcut menu – Properties

• Set the IP address for Gateway (COM 600).

Configuration manual

Ob	ject Properties	8
	[010] Basic	
	COM 600 Audio Alarm	True
	Event File Path	
	Event List Capacity	1000
	Station/remote IP Address Filt	
	Watch Dog Enabled	True
	Web Client Audio Alarm	True
	DCOM	
	IP Address	10.140.79.108
	Misc	
	Caption	Gateway
	Description	Gateway
	User Level	
	User Level	Engineer
IF IF	P Address P address of COM 600 computer	r.

A100524

Fig. 4.2.2.-4 Setting the IP address for Gateway

• Right-click the Gateway node and select Management.

Configuration manual



Fig. 4.2.2.-5 Gateway shortcut menu – Management

The Gateway - Management tab opens.

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2 E   1 B B B   10 B E E				
roject Explorer 🗸 👎 🗙	Gateway - Management	$* \triangleleft \triangleright \times$	Object Properties	<b>→</b> ₽ X
Communication Substation Structure	Configuration control		21 21 E	
-      REFEVENT			E [010] Basic	
😑 💮 🛗 Gateway	Update configuration		COM 600 Audio Alarm	True
Process Event Definitions			Event File Path	
E Communication Diagnostic Event Definition	Reload configuration		Event List Capacity	1000
E Common Event Settings			Station/remote IP Address F	ilter
B Scale Definitions	Update & reload configuration		Watch Dog Enabled	True
E IEC61850 OPC Server	Characterized and the second s		Web Client Audio Alarm	True
ELEI850 Subnetwork	Change password		DCOM	
SUBMBay	Remove WebHMI users		IP Address	10.140.79.108
			Misc	
	Linear information		Caption	Galeway
	License information		Description	Liateway
	Undate License			Factoria
			User Level	Engineer
	Customer: SVC			
	Basirian 3.0			
	Supported protocols:			
	LON LAG 1.4 Master			
	- CDA Due Maxim			
	- STA Das Master			
	- IEC 60870-5-103 Master			
	- IEC 61850-8 Master			
	IEC 00970 E 101 Claux			
	*1EC 00070-5*101 51898			
	- IEC 60870-5-104 Slave			
	- DNP 3.0 Serial Slave			
	DUD 2 01 AU M (M ) (M )			
	· DNP 3.0 LAN7WAN Slave			
	- SPA Router			
	- Modhus Serial Master			
	F			
	External UPL Litent			
	Max Servers: 3			
	May Cliente: 2			
	WebHMI Enabled: True			
			Caption	
	Beadu			

Fig. 4.2.2.-6 Gateway – Management tab

- Click Update configuration. A progress bar is displayed.
- Click Reload configuration. A progress bar is displayed.
- Click Update & reload configuration. A progress bar is displayed.
- Open the web page, for example http://10.140.79.180 if the IP address for COM 600 is that, by using Internet Explorer.

The login page is displayed for the COM 600 authentication.



Fig. 4.2.2.-7 Opening of the COM 600 web HMI

- Enter user name and password.
- Click Login to log in to COM 600.

### **REF 542plus**

### **Connectivity Package**

Configuration manual

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	Welcome - Please login: Username Admin Password Logn	

The COM 600 web HMI opens if the login is successful.

• Click the Disturbances node.

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General Single Line Diagram	Events Alarms Help Logout			
A A	Save X Delete			
	Disturbance Recordings			
Disturbances	Selected Description	Date	Time	
Parameters	DR_2007_05_18_SUBMBay_16_19_15_0000_desc.xml	2007-05-18	16_19_15_0000	<u>~</u>
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Fig. 4.2.2.-8 COM 600 HMI

The DR files are displayed.

- Select the record from the check box.
- Click Save.

• In the appearing dialog window, click Save.

A dialog window appears, prompting for the saving location and file name for the DR file.



Fig. 4.2.2.-9 Dialog window for saving DR files

• Save the file by clicking Save.

The file is compressed and saved as a .zip file, containing the .dat and .cfg files.

Configuration manual

4.2.3.

### Viewing alarms, events and measurements in COM 600

• In the COM 600 web page, click **Alarms** in the title bar. The Alarms page is shown.

							Substation 2007-05-10, 16:41:39
le Line Diagram	Events	Alarms	Help Logo	out			
Ack 😥 Ack A	1 2z View Ever	nts					
Date	Time	Bay	Device	Object Text	State	Status	
1970-03-09	00:19:31.777	A	3	Switch Position	Intermediate	Active	1
1970-03-09	00:19:29.337	A	1	Switch Position	Intermediate	Active	
1970-03-09	00:19:32.737	A	6	Switch Position	Intermediate	Active	
1970-03-09	00:19:32.097	A	4	Switch Position	Intermediate	Active	
1970-03-09	00:19:34.453	A.	CB_2-2-0	Switch Position	Intermediate	Active	
1970-03-09	00:19:34.334	A	2	Switch Position	Intermediate	Active	
1970-03-09	00:19:32.417	A	5	Switch Position	Intermediate	Active	
							8
rms							
Date	Time	Bay	Device	Object Text	State	Status	
							10
	Ack Diagram Ack Act		Ack         Events         Alarno;           Ack         122 Ack Al         ±p view Events           Date         Time         Bay           1970-03-09         00:19:13,1777         A           1970-03-09         00:19:29:2337         A           1970-03-09         00:19:23:2.097         A           1970-03-09         00:19:23:4.453         A           1970-03-09         00:19:13:4.334         A           1970-03-09         00:19:13:24.177         A           1970-03-09         00:19:13:4.334         A           1970-03-09         00:19:13:24.177         A           Time         Bay         Max	e Line Dilagram Events Alarms Help Log Ack	A Lune Diagram         Events         Alarms         Help         Logout           Ack         127 Ack Al         127 View Events             Date         Time         Bay         Device         Object Text           1970-03-09         00:19:31.777         A         3         Switch Position           1970-03-09         00:19:29.337         A         1         Switch Position           1970-03-09         00:19:27.7         A         6         Switch Position           1970-03-09         00:19:32.097         A         4         Switch Position           1970-03-09         00:19:34.453         A         CB_2*2*0         Switch Position           1970-03-09         00:19:34.454         2         Switch Position           1970-03-09         00:19:32.427         A         5         Switch Position           1970-03-09         00:19:32.427         A         5         Switch Position           1970-03-09         00:19:32.427         S         Switch Position	ALune Diagram         Events         Alarmo         Help         Logout           Ack         12 View Events             Date         Time         Bay         Device         Object Text:         State           1970-03-09         00:19:31.777         A         3         Switch Position         Intermediate           1970-03-09         00:19:29.337         A         1         Switch Position         Intermediate           1970-03-09         00:19:22.77         A         6         Switch Position         Intermediate           1970-03-09         00:19:23.2097         A         4         Switch Position         Intermediate           1970-03-09         00:19:32.4453         A         CB_2-2-0         Switch Position         Intermediate           1970-03-09         00:19:32.417         A         S         Switch Position         Intermediate <td< td=""><td>Ack 102 Ack Al 22 View Events  Ack 102 Ack Al 22 View Events  TMS  Date Time Bay Device Object Text State Status  1970-03-09 00:19:23,377 A 3 Switch Position Intermediate Active  1970-03-09 00:19:23,2077 A 4 Switch Position Intermediate Active  1970-03-09 00:19:24,453 A CB_2-2+0 Switch Position Intermediate Active  1970-03-09 00:19:24,234 A 2 Switch Position Intermediate Active  1970-03-09 00:19:24,177 A 5 Switch Position Intermediate Active  ms  Date Time Bay Device Object Text State Status</td></td<>	Ack 102 Ack Al 22 View Events  Ack 102 Ack Al 22 View Events  TMS  Date Time Bay Device Object Text State Status  1970-03-09 00:19:23,377 A 3 Switch Position Intermediate Active  1970-03-09 00:19:23,2077 A 4 Switch Position Intermediate Active  1970-03-09 00:19:24,453 A CB_2-2+0 Switch Position Intermediate Active  1970-03-09 00:19:24,234 A 2 Switch Position Intermediate Active  1970-03-09 00:19:24,177 A 5 Switch Position Intermediate Active  ms  Date Time Bay Device Object Text State Status

Fig. 4.2.3.-1 COM 600 HMI for Alarms

• Click Events in the title bar. The Events page is shown.

Configuration manual

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Events						
Date	Time	Bay	Device	Object Text	Event	
1070-02-13	06:46:22.001			Local Operation	Pemote	0
1970-02-13	06:46:22.901	~		Thermal Overload Protection: Warning	Not active	12
1070-02-13	06-46-22 081	4		Thermal Overload Protection: Warning	Not active	
1070-02-13	06:46:22.001	2		Thermal Overload Protection: Warning	Not active	
1970-02-13	06:46:22.001	A		Thermal Overload Protection: Warning	Not active	
1070-02-13	06:46:23.061	Å		Thermal Overload Protection: Paset	off	
1970-02-13	06:46:23.141	A		Thermal Overload Protection: Sensor Error	off	
1970-02-13	05:46:23.841	A	00	Switch Position	Intermediate	
1970-02-13	06:46:23.841	A	00	Switch Position	Intermediate	
1970-02-13	06:46:23.041	A	00	Switch Position	Intermediate	
1970-02-13	06:46:23.841	A	00	Switch Position	Intermediate	
1970-02-13	06:46:24.101	A		Thermal Overload Protection: Number of trips	off	
1970-03-06	07:14:47.099	A		Local Operation	Remote	
1970-03-06	07:14:47.099	A		Local Operation	Remote	
1970-03-06	07:14:47.219	A		Overcurrent Definite Time, High set Protection: Start	General Off	
1970-03-06	07:14:47.219	٨		Overcurrent Definite Time, High set Protection: Start	General Off	
1970-03-06	07:14:48.529	A	Q15	Switch Position	Intermediate	
1970-03-06	07:14:48.529	Α	Q15	Switch Position	Intermediate	
1070-02-06	07:14:49 760	٨	025	Switch Docition	Intermediate	

Fig. 4.2.3.-2 COM 600 HMI for Events

- A100542
- Click the Measurements subnode which is located under the IED node on the web page.

The measurement description and value are shown.

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eneral Single Line Diagram	Events Alarms Help Logout		
ubstation 🕶	Q A > A > A > SUBMBay		
D MA	Measurements		
BUA	Description	Value	
B IIII SUBMBAY	Phase to phase voltages in Volts phsA8	0	
O Parameters	Phase to phase voltages in Volts phsBC	0	
Measurements	Phase to phase voltages in Volts phsCA	0	
	Phase to ground voltages in Volts phsA	0	
	Phase to ground voltages in Volts phs8	0	
	Phase to ground voltages in Volts phsC	0	
	Phase and Neutral currents in Amperes phsA	0	
	Phase and Neutral currents in Amperes phs8	0	
	Phase and Neutral currents in Amperes phsC	0	
	Phase and Neutral currents in Amperes neut	0	
	Frequency in Hz	0	
	Neutral current in Amperes neut	0	
	Frequency in H2 Neutral current in Amperes neut	0	

Fig. 4.2.3.-3 COM 600 HMI for measurements

Configuration manual

5.

# Terminology

Term	Description
IED	Intelligent Electronic Device
SA	Substation Automation
COMTRADE – IEEE C37.111–1991 or IEC 60255–24	Specified format for disturbance-related recordings
SCL	Substation Configuration Language
PCM 600	Protection and Control IED Manager 600
PST	Parameter Setting Tool
DR	Disturbance Record
ConnPack	



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