



www.siemens.com/protection

SIPROTEC 5 Application Note

SIP5-APN-020: PIXIT – generation for SIPROTEC 5

Answers for infrastructure and cities.

SIPROTEC 5 - Application: PIXIT – generation for SIPROTEC 5

Content

1	Application: PIXIT – generation for SIPROTEC 5	3
1.1	Summary	3
1.2	General	3
1.3	Download PICS – description from the Internet	3
1.4	Create MICS – file from DIGSI 5	5

1 Application: PIXIT – generation for SIPROTEC 5

1.1 Summary

MICS / PICS description of a SIPROTEC 5 device result in the PIXIT document. This application describes how to download the PICS - documentation from the Internet Download Pool and how to create the MICS – description for a specific device with DIGSI 5. The PIXIT - document was used from Siemens through the Edition 1 and Edition 2 certification process of SIPROTEC 5 devices and was accepted well by the test institute KEMA. It replaces the written SIPROTEC 4 PIXIT documents.

1.2 General

PIXIT – files are required for the IEC 61850 description of a device or a device family. PIXIT includes

- PICS (protocol conformance statement) which gives an overview of all supported communication features of a device regarding the implemented IEC 61850 communication services defined in chapter 8-1 of the standard.
- MICS (model implementation conformance statement) which show the IEC 61850 data modeling of a device (e.g. Logical devices, Logical nodes) with its data objects and data attributes defined in chapter 7-1 to 7-4 of the standard.

PIXIT files are required for the certification process of a device according IEC 61850 part 10 which check the PIXIT content (IEC 61850 device description) against that what is published from the device Online to a test client (e.g. KEMA test tool). PIXIT are required from experts which want to have a deeper view into the IEC 61850 structure of a device.

For SIPROTEC 4 devices for each device a written PIXIT – documentation exist. If functions are added this description must be manually adopted by the documentation department.

For SIPROTEC 5 another errorless procedure has been defined. The PICS is a written document which can be downloaded from the Internet (see chapter 1.3). MICS is created by DIGSI 5 from the real IEC 61850 data model of a device actually defined for this device with DIGSI 5. Due to that we can add or remove functions (Logical Devices and Logical Nodes) with DIGSI 5 and add new data objects, the MICS always show the real situation of a device regarding its actual IEC 61850 data replica.

1.3 Download PICS – description from the Internet

The IEC 61850 protocol features of the whole SIPROTEC 5 device family are described in a PICS – document which is provided for download in the SIPROTEC 5 Download Pool. If protocol features are added or changed, this document will be altered. This document is valid for Edition 1 and Edition 2 of IEC 61850.

For download the document open the URL <u>www.siprotec5.com</u> .On the left side inside your browser you will find the SIPROTEC 5 devices.

SIPROTEC 5 Application

PIXIT – generation for SIPROTEC 5

Protection



Figure 1: Link from the SIPROTEC main page to the SIPROTEC 5 device information or the SIPROTEC 5 Download Pool



Figure 2: Link to the SIPROTEC 5 Download Pool from the SIPROTEC 5 main page

In order to find the PIXIT file (PICS – file) easier, give in the values according figure 3 into the search masks. PIXIT / PICS document is provided in English language only.

SIPROTEC 5 Application

PIXIT – generation for SIPROTEC 5

🗧 Siemens Energ	у	▶ Deutsch	► Contact ▼	Download Pool	► Sit	te Explorer		se
roducts & Systems	Search Key	words						
Pr	oduct Family	SIPROTEC 5			•			
Prod	uct / Version	SIPROTEC 5 Genera	al Information	•	Product Version 👻			
	Downloads	Documents	•	English	•			
F	Release Date	2 2						
					Reset Search	r i		
						-		
Туре	Descri	ption	Dr	ownloads	Language	Version	Release Date	Size
pject 31 to 40 of 42 (p	page 4 of 5)							
• ► н							Objects per page	-
PROTEC 5 Gen	eral Inform	nation						
Manuals								
.V1.1								

Figure 3: Search mask for documents in the SIPROTEC 5 Download Pool

Download this 'Manual PIXIT, PICS, TICS' in the actual version (here 1.1) from the Download Pool. It's a PDF – file. TICS (Technical issue conformance statement) are the technical issues discussed and solved in the standardization committee and realized from Siemens before a new version of the standard have been published. They are also included in the document and required for a certification process to describe the actual implementation state of a device regarding that IEC 61850 tissues.

1.4 Create MICS – file from DIGSI 5

The next step is to export the MICS files from DIGSI 5. As stated in chapter 1.2 (General) this IEC 61850 modeling is valid for this specific device which you have assigned in DIGSI 5. If you choose an unchanged template e.g. for a 1,5 breaker line protection, the MICS file is valid for this template with all preconfigured functions provided by Siemens. If you add functions and data objects with DIGSI 5, this values will be part of the MICS description straight away.

The MICS – file export is only available if an Ethernet interface as Port J (Integrated Ethernet interface) or an Ethernet module is configured with the IEC 61850 protocol. Click with right mouse on a device from the project and the property page will be opened. Go to *Export* and click this entry.

Select the data format **MICS** as shown in figure 5. Select a destination as marked in figure 5 and the formatting files. The MICS – file is an XML – file which includes the complete IEC 61850 structure of the device. Two other files will be exported which afterwards allow to format the MICS XML-file with a Browser (e.g. Internet Explorer) to visualize or print out the file without the need to use an XML-editor. It is therefore recommended to export the files into a separate folder (Here as an example c:/Temp/MICS).

SIPROTEC 5 Application

PIXIT – generation for SIPROTEC 5

🛨 🔄 7SL87_	Digsi		
🕂 Sing	le-line configuration		
📑 Add	new device		
📥 Devi	ices and networks		
🛨 🔚 75' (0 1 1 11	1
	K cut	Ctrl+X	
	📋 Copy	Ctrl+C	
	Paste	Ctrl+V	
	🗙 Delete	Del	
*	Rename	F2	
Ţ.	+ Export		
	H Import		
۱.	Upgrade configuration v	ersion	
• -	Compare devices		
171	Connect to device	Ctrl+Alt+O	
	Disconnect device	Ctrl+Alt+F	
• 🔓	Check for IEC 61850 cont	iguration update	
• • <mark>-</mark>	Load configuration to de	vice	

Figure 4: Export features for a selected device in DIGSI 5

7SL87_Digsi/7SL87_1 Data formats: SED - System Exchange Description ICD - IED Capability Description ID - IStantiated IED Description ID - Instantiated IED Description ID - DNP3 protocol settings for SICAM PAS ID GDNP - DNP3 protocol settings for SICAM PAS ID GDNP - DNP3 protocol settings for SICAM PAS ID EC 61850 device description Image: Comment: Image: Comment: Image: Select all Image: The Top Protocol Protocol Setting Image: The Top Protocol Comment Protocol Pr	Exporting	×						
Data formats: SED - System Exchange Description ICD - IED Capability Description ID - IED Capability Description IID - Instantiated IED Description IIID - Instantiated IED Description IIII - Instantiated IED Description IIII - Instantiated IED Description IIIII - Instantiated IED Description IIIII - Instantiated IED Description IIIII - Instantiated IED Description IIIIII - Instantiated IED Description IIIII - Instantiated IED Description IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	7SL87_Digsi/7SL87_1							
SED - System Exchange Description ICD - IED Capability Description CD - Configured IED Description IID - Instantiated IED Description SICAM PAS DIGT103 - IEC 60870-5-103 protocol settings for SICAM PAS DIGDNP - DNP3 protocol settings for SICAM PAS IIEC COMMENT File: C!Projects!DIGSI5!7SL87_Digsi!Siprotec_7SL87_1 xml Comment: V Export contents V Export contents V Select all V 7SL87_1 Use international character set Use limited character set	Data formats:							
ICD - IED Capability Description CD - Configured IED Description IID - Instantiated IED Description MICS - Model Implementation Conformance Statement Protocol-related data formats: DIGT103 - IEC 60870-5-103 protocol settings for SICAM PAS DIGDNP - DNP3 protocol settings for SICAM PAS File: C\Projects\DIGSIS\75L87_Digsi\Siprotec_75L87_1.xml Comment: ▼ Export contents IEC 61850 device description Image: Select all Image: 75L87_1 Use limited character set Use limited character set	SED - System Exchange Description	<u> </u>						
CID - Configured IED Description IID - Instantiated IED Description MICS - Model Implementation Conformance Statement Protocol-related data formats: DIGT103 - IEC 60870-5-103 protocol settings for SICAM PAS DIGDNP - DNP3 protocol settings for SICAM PAS File: C:Projects/DIGSI5/75L87_Digsi/Siprotec_75L87_1.xml Comment: V Export contents Devices to export Select all P75L87_1 Use international character set Use limited character set	ICD - IED Capability Description							
MICS - Model Implementation Conformance Statement Protocol reduced data formats: DIGT103 - IEC 60870-5-103 protocol settings for SICAM PAS DIGDNP - DNP3 protocol settings for SICAM PAS File: C:Projects/DIGSI5\75L87_Digsi/Siprotec_75L87_1.xml Comment:	CID - Configured IED Description							
Protocol-related data formats: DIGT103 - IEC 60870-5-103 protocol settings for SICAM PAS DIGDNP - DNP3 protocol settings for SICAM PAS File: CiProjects/DIGSIS/75L87_Digsi/Siprotec_75L87_1.xml Comment: • Export contents Ø Select all • 75L87_1 • TSL87_1	IID - Instantiated IED Description	ance Statement						
DIGT103 - IEC 60870-5-103 protocol settings for SICAM PAS DIGDNP - DNP3 protocol settings for SICAM PAS File: C:Projects'DIGSI5\75L87_DigsilSiprotec_75L87_1.xml Comment:	Protoco-related data formats:							
DIGDNP - DNP3 protocol settings for SICAM PAS File: C'Projects'DIGSI5\75L87_DigsilSiprotec_75L87_1.xml Comment: • Export contents Devices to export • Select all • 75L87_1 • Use international character set • Use limited character set	DIGT103 - IEC 60870-5-103 protocol se	ettings for SICAM PAS						
File: C:\Projects\DIGSI5\75L87_Digsi\Siprotec_75L87_1.xml Comment: ▼ Export contents IEC 61850 device description ✓ Select all ④ Use international character set ♥ 75L87_1 Use limited character set	DIGDNP - DNP3 protocol settings for SI	CAM PAS						
Comment: ▼ Export contents Devices to export ♥ Select all ♥ 75L87_1 Use limited character set ● Use limited character set	File: C/Projects/DIGSI5/7SL87. Dic	rsi)Sinrotec 7SL87 1 yml						
 ✓ Export contents Devices to export Select all TSL87_1 Use limited character set Use limited character set 								
 ✓ Export contents Devices to export Select all ✓ 7SL87_1 Use limited character set ✓ Use limited character set 	Comment:							
 ▼ Export contents Devices to export Select all ♥ 75L87_1 Use limited character set Use limited character set 								
 ✓ [Export contents] Devices to export ✓ Select all ✓ 7SL87_1 ✓ Use limited character set ✓ Use limited character set 								
Devices to export IEC 61850 device description Select all Image: Select all 75L87_1 Use limited character set Use limited character set Select all	Export contents							
Select all TSL87_1 Use limited character set Use limited character set	Devices to export	IEC 61850 device description						
Use limited character set	Select all	 Use international character set 						
	✓7SL87_1	O Use limited character set						
Email								
Export Cancel		Export Cancel						

Figure 5: MICS – file export selection and folder selection for the MICS – files

MICS			
atei Bearbeiten Ansicht Favoriten	Extras ?		
🌏 Zurück 👻 🔘 – 🎓 🔊 Suc	then 🝺 Ordner 📊 🕌		
dresse 🛅 C:\Temp\MICS	Alexandre and a second se		
	Name 🔺	Größe Typ	Geändert am
Datei- und Ordneraufgaben	MICS	2 KB Kaskadierendes Stylesheet-Dokument	28.02.2012 13:10
	MICS.xslt	29 KB XSLT-Datei	28.02.2012 13:10
	Siprotec_75L87_1	1.246 KB XML-Dokument	16.07.2013 13:10
ordner im Web veröffentlichen			
😡 Ordner freigeben			

Figure 6: MICS – file (XML – format) and files for formatting the MICS in a Browser (e.g. Internet Explorer)

Open your Internet Explorer. Select a ´file open entry´ and search for the folder where you have stored the MICS file before. For data type use ´All Data´. Otherwise you will only see the HTML – files only and not the MICS XML file. Open the XML – file with the Internet Explorer (recommended).

🙆 Die Webseite kann nicht angezeigt werden - Windows Internet Explorer					
00 - 0	http://www.anypa	ge.com/			
Datei Bearbeiten	Ansicht Favori	ten Extras ?	🗙 🛄 Snagit 🧮 (1	
🚖 Favoriten) Verbindung wird h	nergestellt			
Öffnen Geben Si von Inter Öffnen:	e die Internetadresse net Explorer geöffnet	eines Dokuments ein, das werden soll.	zeigt werden.		
Windows Inter	net Explorer			? 🛛	
Suchen in:	C MICS		💌 🧿 🖻 🖽 -		
Zuletzt verwendete D Desktop	MIC5 MIC5.xslt				
Eigene Dateien					
Arbeitsplatz					
	Dateiname:	Siprotec_7SL87_1	~	Öffnen	
Netzwerkumgeb	Dateityp:	Alle Dateien	~	Abbrechen	

Figure 7: Selection of the MICS – file in the Internet Explorer

Afterwards the start page of the MICS – file will be displayed in the Browser (Figure 8). The following pages show all IEC 61850 Logical Devices and Logical Nodes of this device. From there you can browse into more details by Hyper Links. You can really browse through the complete IEC 61850 data structure of the device and see also all definitions of data objects in the data type template section. The configured GOOSE – connections are also shown. This HTLM – pages can be printed out (e.g. as a PDF – document). Anyway, using the Browser view is much more convenient.

SIPROTEC							
Model Implementation Conformance Statement (MICS)							
	According to IEC 61850						
Device	1	SIP					
Product	Product code 75L87-DAAA-AA0-0AAAA0-AZ3212-23112B-AAE000-000AA0-CB1BA2-CB1						
Mapping version V03.00.00							
Applica	tion I	LineProt_Device_Empty					
Publica	tion date	Tuesday, July 16, 2013, 1:10:03 PM					

Figure 8: Start page of the MICS - file in the Internet Explorer

Finally, the PIXIT / PICS description from the Internet and a print out of the formatted MICS file provide the PIXIT content required for a certification process or requested by customers.

Published by and copyright © 2012: Siemens AG Infrastructure & Cities Sector Smart Grid Division Humboldtstr. 59 90459 Nuremberg, Germany Siemens AG

Infrastructure & Cities Sector Smart Grid Division Energy Automation Humboldtstr. 59 90459 Nuremberg, Germany www.siemens.com/protection

Printed on elementary chlorine-free bleached paper.

All rights reserved.

If not stated otherwise on the individual pages of this catalog, we reserve the right to include modifications, especially regarding the stated values, dimensions and weights. Drawings are not binding.

All product designations used are trademarks or product names of Siemens AG or other suppliers. If not stated otherwise, all dimensions in this catalog are given in mm.

Subject to change without prior notice.

The information in this document contains general descriptions of the technical options available, which may not apply in all cases. The required technical options should therefore be specified in the contract.

For more information, please contact our Customer Support Center. Tel.: +49 180 524 8437 Fax: +49 180 524 24 71 (Charges depending on provider) E-mail: support.ic@siemens.com

Application note: SIP5-APN-020