

IEC 61850 interface in SINEAX CAM	Version: 1.3
Protocol Implementation eXtra Information for Testing (PIXIT)	Date: 5/20/2009
CAM61850.PIXIT.V1.3.090520.DOC <a href="http://www.camillebauer.com">www.camillebauer.com</a>	



## Protocol Implementation eXtra Information for Testing (PIXIT) for the IEC 61850 interface in SINEAX CAM

Version: 1.3

Creation Date: 17.12.2007

Release Date: 20.05.2009

IEC 61850 interface in SINEAX CAM	Version: 1.3
Protocol Implementation eXtra Information for Testing (PIXIT)	Date: 5/20/2009
CAM61850.PIXIT.V1.3.090520.DOC <a href="http://www.camillebauer.com">www.camillebauer.com</a>	

## Revision History

Author	Department	Changes	Version	Date
Alexander Zakharov	<a href="http://www.camillebauer.com">www.camillebauer.com</a>	Initial	0.2	17.12.2007
Alexander Zakharov	<a href="http://www.camillebauer.com">www.camillebauer.com</a>	Update LNodes added	0.4	09.01.2008
Alexander Zakharov	<a href="http://www.camillebauer.com">www.camillebauer.com</a>	LNodes added	0.6	12.03.2008
Alexander Zakharov	<a href="http://www.camillebauer.com">www.camillebauer.com</a>	Data objects added	0.8	21.12.2008
Alexander Zakharov	<a href="http://www.camillebauer.com">www.camillebauer.com</a>	Arrays Das added	1.0	01.02.2009
Alexander Zakharov	<a href="http://www.camillebauer.com">www.camillebauer.com</a>	Update version. Issue	1.2	09.03.2009
Alexander Zakharov	<a href="http://www.camillebauer.com">www.camillebauer.com</a>	Based on the IEC61850_PIXIT_Template_v1p1. Setting group model clause deleted.	1.3	20.05.2009

## Distribution

Name	Department	Location	Telephone

IEC 61850 interface in SINEAX CAM	Version: 1.3
Protocol Implementation eXtra Information for Testing (PIXIT)	Date: 5/20/2009
CAM61850.PIXIT.V1.3.090520.DOC <a href="http://www.camillebauer.com">www.camillebauer.com</a>	

## 1. Introduction

This document specifies the protocol implementation extra information for testing (PIXIT) of the IEC 61850 interface in **IEC 61850 interface in SINEAX CAM** with firmware version **V.2.14**.

Together with the PICS and the MICS the PIXIT forms the basis for a conformance test according to IEC 61850-10.

## 2. Contents of this document

Each chapter specifies the PIXIT for each applicable ACSI service model as structured in IEC 61850-10.

## 3. PIXIT for Association model

Description	Value / Clarification	
Maximum number of clients that can set-up an association simultaneously	At least 6	
TCP_KEEPALIVE value	3 seconds	
Lost connection detection time	10	
Is authentication supported	N	
What association parameters are necessary for successful association	Transport selector	N
	Session selector	N
	Presentation selector	N
	AP Title	N
	AE Qualifier	N
If association parameters are necessary for association, describe the correct values e.g.	Transport selector	0001
	Session selector	0001
	Presentation selector	00000001
	AP Title	na
	AE Qualifier	na
What is the maximum and minimum MMS PDU size	Max MMS PDU size	65535
	Min MMS PDU size	6144
What is the maximum startup time after a power supply interrupt	100 seconds	

## 4. PIXIT for Server model

Description	Value / Clarification	
Which analogue value (MX) quality bits are supported (can be set by server)	Validity:	
	Y	Good,
	Y	Invalid,
	N	Reserved,

IEC 61850 interface in SINEAX CAM	Version: 1.3
Protocol Implementation eXtra Information for Testing (PIXIT)	Date: 5/20/2009
CAM61850.PIXIT.V1.3.090520.DOC <a href="http://www.camillebauer.com">www.camillebauer.com</a>	

	N Questionable N Overflow N OutofRange N BadReference N Oscillatory N Failure N OldData N Inconsistent N Inaccurate Source: Y Process N Substituted N Test N OperatorBlocked
Which status value (ST) quality bits are supported (can be set by server)	Validity: Y Good, Y Invalid, N Reserved, N Questionable N BadReference N Oscillatory N Failure N OldData N Inconsistent N Inaccurate Source: Y Process N Substituted N Test N OperatorBlocked
What is the maximum number of data values in one GetDataValues request	1700
What is the maximum number of data values in one SetDataValues request	200

## 5. PIXIT for Data set model

Description	Value / Clarification
What is the maximum number of data elements in one data set	Data set is fixed
How many persistent data sets can be created by one or more clients	Data set is fixed
How many non-persistent data sets can be created by one or more clients	Data set is fixed
Maximum number of data sets	Could not be defined, it depends on the available memory space. In principle, this information it not necessary from type conformance testing standpoint.

## 6. PIXIT for Reporting model

Description	Value / Clarification
The supported trigger conditions are (compare PICS)	integrity Y data change Y quality change Y data update Y

IEC 61850 interface in SINEAX CAM	Version: 1.3
Protocol Implementation eXtra Information for Testing (PIXIT)	Date: 5/20/2009
CAM61850.PIXIT.V1.3.090520.DOC <a href="http://www.camillebauer.com">www.camillebauer.com</a>	

	general interrogation Y
The supported optional fields are	sequence-number Y report-time-stamp Y reason-for-inclusion Y data-set-name Y data-reference Y buffer-overflow N entryID N conf-rev Y segmentation Y
Can the server send segmented reports	Y
Mechanism on second internal data change notification of the same analogue data value within buffer period (Compare IEC 61850-7-2 \$14.2.2.9)	Send report immediately
Multi client URCB approach (compare IEC 61850-7-2 \$14.2.1)	Each URCB is visible to one client only
What is the format of EntryID	The EntryID is internally generated and is a local server issue. No user significance should be placed on the EntryID except as an opaque handle for the report.
What is the buffer size for each BRCB or how many reports can be buffered	n.a.
Pre-configured RCB attributes that cannot be changed online when RptEna = FALSE (see also the ICD report settings)	none
May the reported data set contain: - structured data objects? - data attributes? - timestamp data attributes?	Y Y Y, will be included in a dchg report
What is the scan cycle for binary events? Is this fixed, configurable	10 Mseconds Fixed

## 7. PIXIT for Control

Description	Value / Clarification
What control modes are supported (compare PICS)	N status-only N direct-with-normal-security N sbo-with-normal-security N direct-with-enhanced-security N sbo-with-enhanced-security
Is the control model fixed, configurable and/or online changeable?	n.a.
Is Time activated operate (operTm) supported	n.a.
Is "operate-many" supported	n.a.
What is the behavior of the DUT when the test attribute is set in the SelectWithValue and/or Operate request	n.a.
What are the conditions for the time (T) attribute in the SelectWithValue and/or Operate request	n.a.
Is pulse configuration supported	n.a.
What is the behavior of the DUT when the check conditions are	DUT ignores the check value

IEC 61850 interface in SINEAX CAM	Version: 1.3
Protocol Implementation eXtra Information for Testing (PIXIT)	Date: 5/20/2009
CAM61850.PIXIT.V1.3.090520.DOC <a href="http://www.camillebauer.com">www.camillebauer.com</a>	

set Is this behavior fixed, configurable, online changeable?	Fixed
What additional cause diagnosis are supported	N Blocked-by-switching-hierarchy N Select-failed N Invalid-position N Position-reached N Parameter-change-in-execution N Step-limit N Blocked-by-Mode N Blocked-by-process N Blocked-by-interlocking N Blocked-by-synchrocheck N Command-already-in-execution N Blocked-by-health N 1-of-n-control N Abortion-by-cancel N Time-limit-over N Abortion-by-trip
How to force a "test-not-ok" respond with SelectWithValue request?	n.a.
How to force a "test-not-ok" respond with Select request?	n.a.
How to force a "test-not-ok" respond with Operate request?	n.a.
Which origin categories are supported?	n.a.
What happens if the orCat is not supported?	n.a.
Does the IED accept an selectwithvalue/operate with the same ctlVal as the current status value?	n.a.
Does the IED accept a select/operate on the same control object from 2 different clients at the same time?	n.a.
Does the IED accept a select/selectwithvalue from the same client when the control object is already selected (tissue 334)	n.a.
Is for SBOes the internal validation performed during the SelectWithValue and/or Operate step?	n.a.
Can a control operation be blocked by Mod=Off or Blocked	Y
Does the IED support local / remote operation?	n.a.

## 8. PIXIT for Time and time synchronization model

Description	Value / Clarification
What quality bits are supported?	N LeapSecondsKnown N ClockFailure Y ClockNotSynchronized (ClockFailure will be changed in the future to require full compliance with IEC 61850 Part 7-2)
Describe the behavior of the IED when the time synchronization signal/messages are lost	The "Clock Not Synchronized" attribute is set to TRUE as long as no time synchronization is lost.
When is the time quality bit "Clock failure" set?	The "Clock Failure" attribute is set to FALSE as long as system operates.
When the time quality is bit "Clock not synchronised" set?	The "Clock Not Synchronized" attribute is set to TRUE as long as no time synchronization is established.
Is the timestamp of a binary event adjusted to the configured scan cycle?	N
Does the device support time zone and daylight	Y

IEC 61850 interface in SINEAX CAM	Version: 1.3
Protocol Implementation eXtra Information for Testing (PIXIT)	Date: 5/20/2009
CAM61850.PIXIT.V1.3.090520.DOC <a href="http://www.camillebauer.com">www.camillebauer.com</a>	

saving?	
Which attributes of the SNTP response packet are validated?	N Leap indicator not equal to 3? N Mode is equal to SERVER Y OriginateTimestamp is equal to value sent by the SNTP client as Transmit Timestamp Y RX/TX timestamp fields are checked for reasonableness N SNTP version 3 and/or 4
What is the behavior at start up time when time synchronization via SNTP is configured?	The "Clock Not Synchronized" attribute is set to TRUE as long as no time synchronization is established.

IEC 61850 interface in SINEAX CAM	Version: 1.3
Protocol Implementation eXtra Information for Testing (PIXIT)	Date: 5/20/2009
CAM61850.PIXIT.V1.3.090520.DOC <a href="http://www.camillebauer.com">www.camillebauer.com</a>	

## 9. PIXIT for File transfer model

Description	Value / Clarification
What is structure of files and directories?	
Is the IETF FTP protocol also implemented	n.a.
Directory names are separated from the file name by	"/" or "\"
The maximum file name size including path (recommended 64 chars)	64 chars
Are directory/file name case sensitive	Case sensitive
Maximum file size	n.a.
Is the requested file path included in the file name of the MMS fileDirectory respond?	N
Is the wild char supported MMS fileDirectory request?	No
Is it allowed that 2 client get a file at the same time?	N

## 10. Parameters Adjustment using Web Server

Some (associate) parameters can be adjusted using the web server interface. If the parameters are changed, they will only take effect after the next manual restart.

These parameters have no relation with settings group.

For more information about using of the web server read document "**Settings Adjustment using Web Server for the IEC 61850 Interface in SINEAX CAM. Quick Guide V1.1**"