

SIEMENS

SICAM AK 3

PICS for IEC 61850 Ed. 2 Server

Protocol Implementation Conformance
Statement for the
IEC 61850 Ed.2 Server Interface in
Siemens SICAM AK 3

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Disclaimer of Liability

Although we have carefully checked the contents of this publication for conformity with the hardware and software described, we cannot guarantee complete conformity since errors cannot be excluded. The information provided in this manual is checked at regular intervals and any corrections that might become necessary are included in the next releases. Any suggestions for improvement are welcome.

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Preface

This document is applicable to the following product(s):

- SICAM AK 3

Purpose of this manual

This manual describes the Protocol Implementation Conformance Statement for the IEC 61850 Ed. 2 Server interface in:

- Siemens SICAM AK 3 using firmware "ETA5 Rev. 03.04"

Note:

PICS "Protocol Implementation Conformance Statement" contains additional information about supported IEC 61850 communication services.

Target Group

The document you are reading right now is addressed to users, who are in charge of the following engineering tasks:

- Customers
- Sales engineering and technical clarification
- Conceptual activities, as for example design and configuration
- Technical system maintenance

Notes

This document is based on:

- UCA International Users Group
Testing Sub Committee
Template version 1.2*
Date: December 18, 2014

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1 General

The following ACSI conformance statements are used to provide an overview and details about **Siemens SICAM AK 3** using firmware "ETA5 Rev. 03.04":

- ACSI basic conformance statement,
- ACSI models conformance statement,
- ACSI service conformance statement

The statements specify the communication features mapped to IEC 61850-8-1 First Edition and/or Edition 2.

1.1 SICAM AK 3 “Device Under Test” (DUT)

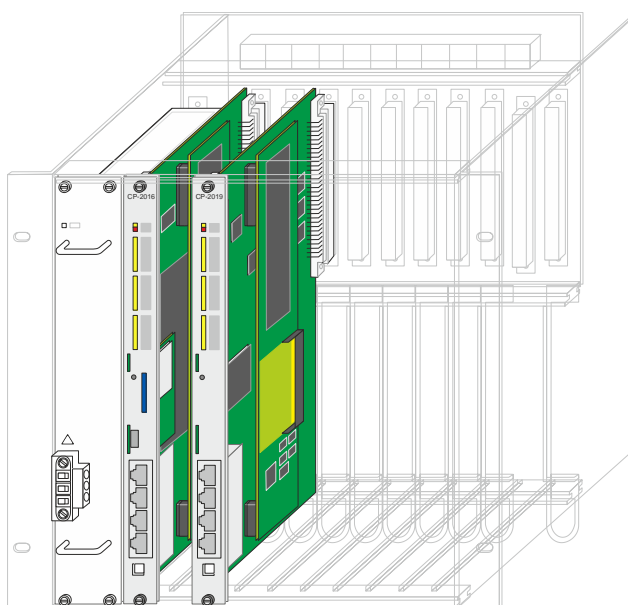
Board	MLFB	Description
PS-2632	6MF11130CG320AA0BB	Power Supply 110-220VDC, 230VAC AK 3
CP-2016	6MF10130CA160AA0BB	Central Processor AK 3
CP-2019	6MF10132CA100AA0BB	Communication/Processing AK 3
SM-2558 ¹⁾	6MF10130CF580AA0BB	Ethernet-Interf. 1x100TX,(+1SI)

¹⁾ SM-2558 Ethernet interface with **ETA5 Rev. 03.04 firmware** will be plugged on CP-2019 board.



Notes:

- the red marked interface connector is assigned to IEC61850 Ed. 2 Server with ETA5 firmware.
- the red marked interface connector is also used for WEB Browser interface for IEC61850 Ed. 2 Server.
- the blue marked interface connector is used for SICAM AK3 engineering software TOOLBOX II.



Note: SM-2558 is used as a SUB-board on CP-2019 (system internally)

Firmware Revisions

	System element	HW#	FW#	Rev	TBill-Update	SetRev	P	SSE#	Task	Supportof system elements
M	CP-2016/CPCX26	2016	2016	02	02 [02]					Supported
M-Bus0/PBA-0	PE-641X/USIO66	6410	6410	05.03	05.03 [05.03]			0		Supported
C2	CP-2019/PCCX26	2019	2019	02	02 [02]					Supported
C2-PRE/3	SM-2558/ETA5	2558	1590	03.04	03.04 [03.04]			131		Supported

Note: IEC61850 Ed.2 functionality is included in firmware ETA5 Rev. 03.04

Power Supply / CPU-Boards / Interface Cards

	Designation	Item-Number/MLFB
	PS-2632 Power supply 110-220 VDC, 230 VAC AK 3	GC2-632 6MF11130CG320AA0
	CP-2016 Central module AK 3	BC2-016 6MF10130CA160AA0
	CP-2019 Communication/Processing AK 3	BC2-019 6MF10132CA100AA0
	SM-2558 Ethernet-Interf. 1x100TX, +1 serial interface optional	BC2-558 6MF10130CF580AA0

2 ASCI basic conformance statement

The basic conformance statement is defined in Table A.1.

Table A.1 – Basic conformance statement

		Client/ Subscriber	Server/ Publisher	Value/ Comments
Client-Server roles				
B11	Server side (of TWO-PARTY-APPLICATION-ASSOCIATION)		Y	
B12	Client side of (TWO-PARTY-APPLICATION-ASSOCIATION)		¾	
SCSMs supported				
B21	SCSM: IEC 6185-8-1 used		Y	
B22	SCSM: IEC 6185-9-1 used			Ed2: Deprecated
B23	SCSM: IEC 6185-9-2 used			
B24	SCSM: other			
Generic substation event model (GSE)				
B31	Publisher side		Y	
B32	Subscriber side	Y	¾	
Transmission of sampled value model (SVC)				
B41	Publisher side	¾	N	
B42	Subscriber side	N	¾	
– Y = supported N or empty = not supported				

3 ACSI models conformance statement

The ACSI models conformance statement is defined in Table A.2.

Table A.2 – ACSI models conformance statement

		Client/ Subscriber	Server/ Publisher	Value/ Comments
If Server or Client side (B11/12) supported				
M1	Logical device		Y	
M2	Logical node		Y	
M3	Data		Y	
M4	Data set		Y	
M5	Substitution		N	
M6	Setting group control		N	
	Reporting			
M7	Buffered report control		Y	
M7-1	sequence-number		Y	
M7-2	report-time-stamp		Y	
M7-3	reason-for-inclusion		Y	
M7-4	data-set-name		Y	
M7-5	data-reference		Y	
M7-6	buffer-overflow		Y	
M7-7	entryID		Y	
M7-8	BufTm		Y	
M7-9	IntgPd		Y	
M7-10	GI		Y	
M7-11	conf-revision		Y	
M8	Unbuffered report control		Y	
M8-1	sequence-number		Y	
M8-2	report-time-stamp		Y	
M8-3	reason-for-inclusion		Y	
M8-4	data-set-name		Y	
M8-5	data-reference		Y	
M8-6	BufTm		Y	
M8-7	IntgPd		Y	
M8-8	GI		Y	
M8-9	conf-revision		Y	
	Logging		N	
M9	Log control		N	
M9-1	IntgPd		N	
M10	Log		N	
M11	Control		Y	
M17	File Transfer		N	
M18	Application association		N	

		Client/ Subscriber	Server/ Publisher	Value/ Comments
M19	GOOSE Control Block		N	
M20	Sampled Value Control Block		N	
If GSE (B31/32) is supported				
M12	GOOSE	N	N	
M13	GSSE		N	Deprecated
If SVC (B41/B42) is supported				
M14	Multicast SVC		N	
M15	Unicast SVC		N	
For all IEDs				
M16	Time		Y	
Y = service is supported N or empty = service is not supported				

4 ACSI service conformance statement

The ACSI service conformance statement is defined in Table A.3 (depending on the statements in Table A.1).

Table A.3 – ACSI service Conformance statement

	Ed	ACSI Service	AA: TP/MC	Client Sub(C)	Server Pub(S)	Comments
Server						
S1	1,2	GetServerDirectory(LOGICAL-DEVICE)	TP		Y	
Application association						
S2	1,2	Associate			Y	
S3	1,2	Abort			Y	
S4	1,2	Release			Y	
Logical device						
S5	1,2	GetLogicalDeviceDirectory	TP		Y	
Logical node						
S6	1,2	GetLogicalNodeDirectory	TP		Y	
S7	1,2	GetAllDataValues	TP		Y	
Data						
S8	1,2	GetDataValues	TP		Y	
S9	1,2	SetDataValues	TP		Y	
S10	1,2	GetDataDirectory	TP		Y	
S11	1,2	GetDataDefinition	TP		Y	
Data set						
S12	1,2	GetDataSetValues	TP		Y	
S13	1,2	SetDataSetValues	TP		N	
S14	1,2	CreateDataSet	TP		N	
S15	1,2	DeleteDataSet	TP		N	
S16	1,2	GetDataSetDirectory	TP		Y	
Substitution						
S17	1	SetDataValues	TP		N	Ed1 only
Setting group control						
S18	1,2	SelectActiveSG	TP		Y	
S19	1,2	SelectEditSG	TP		N	
S20	1,2	SetEditSGValues	TP		N	
S21	1,2	ConfirmEditSGValues	TP		N	
S22	1,2	GetEditSGValues	TP		N	

	Ed	ACSI Service	AA: TP/MC	Client Sub(C)	Server Pub(S)	Comments
S23	1,2	GetSGCBValues	TP		Y	

Reporting						
Buffered report control block (BRCB)						
S24	1,2	Report	TP		Y	
S24-1	1,2	data-change (dchg)			Y	
S24-2	1,2	quality-change (qchg)			Y	
S24-3	1,2	data-update (dupd)			Y	Only counters with same value
S25	1,2	GetBRCBValues	TP		Y	
S26	1,2	SetBRCBValues	TP		Y	
Unbuffered report control block (URCB)						
S27	1,2	Report	TP		Y	
S27-1	1,2	data-change (dchg)			Y	
S27-2	1,2	quality-change (qchg)			Y	
S27-3	1,2	data-update (dup)			Y	Only counters with same value
S28	1,2	GetURCBValues	TP		Y	
S29	1,2	SetURCBValues	TP		Y	

Logging						
Log control						
S30	1,2	GetLCBValues	TP		N	
S31	1,2	SetLCBValues	TP		N	
Log						
S32	1,2	QueryLogByTime	TP		N	
S33	1,2	QueryLogAfter	TP		N	
S34	1,2	GetLogStatusValues	TP		N	

Generic substation event model (GSE)						
GOOSE						
S35	1,2	SendGOOSEMessage	MC		N	
GOOSE Control Block						
S36	1,2	GetGoReference	TP		N	
S37	1,2	GetGOOSEElementNumber	TP		N	
S38	1,2	GetGoCBValues	TP		N	
S39	1,2	SetGoCBValues	TP		N	
GSSE (Ed2:61850-7-2 Annex C)						
S40	1,2	SendGSSEMessage	MC		N	Deprecated
GSSE Control Block (Ed2:61850-7-2 Annex C)						
S41	1,2	GetGsReference	TP		N	Deprecated
S42	1,2	GetGSSEDataOffset	TP		N	Deprecated
S43	1,2	GetGsCBValues	TP		N	Deprecated

	Ed	ACSI Service	AA: TP/MC	Client Sub(C)	Server Pub(S)	Comments
S44	1,2	SetGsCBValues	TP		N	Deprecated

Transmission of sampled value model (SVC)						
Multicast SV						
S45	1,2	SendMSVMessage	MC		N	Use for 9-2LE or IEC 61869-9
Multicast Sampled Value Control Block						
S46	1,2	GetMSVCBValues	TP		N	
S47	1,2	SetMSVCBValues	TP		N	
Unicast SV						
S48	1,2	SendUSVMessage	TP		N	
Unicast Sampled Value Control Block						
S49	1,2	GetUSVCBValues	TP		N	
S50	1,2	SetUSVCBValues	TP		N	

Control						
S51	1,2	Select	TP		N	SBO Normal Security
S52	1,2	SelectWithValue	TP		Y	SBO Enhanced Security
S53	1,2	Cancel	TP		Y	
S54	1,2	Operate	TP		Y	
S55	1,2	Command-Termination	TP		Y	For direct with enhanced security and SBO with enhanced security
S56	1,2	TimeActivated-Operate	TP		N	

File transfer						
S57	1,2	GetFile	TP		N	
S58	1,2	SetFile	TP		N	
S59	1,2	DeleteFile	TP		N	
S60	1,2	GetFileAttributeValues	TP		N	
S61	1,2	GetServerDirectory (FILE)	TP		N	

Time						
T1	1,2	Time resolution of internal clock	-		10	nearest negative power of 2 in seconds
T2	2	Time accuracy of internal clock	-			TL (ms) (low accuracy), T3 < 7) (only Ed2)
	1,2		-		Y	T0 (ms) (<= 10 ms), 7 <= T3 < 9)
	1,2		-			T1 (μs) (<= 1 ms), 10 <= T3 < 13
	1,2		-			T2 (μs) (<= 100 μs), 13 <= T3 < 15
	1,2		-			T3 (μs) (<= 25 μs), 15 <= T3 < 18
	1,2		-			T4 (μs) (<= 4 μs), 18 <= T3 < 20
	1,2		-			T5 (μs) (<= 1 μs), T3 >= 20)
T3	1,2	Supported TimeStamp resolution	-		10	nearest negative power of 2 in seconds

