

**Protocol Implementation Conformance Statement
for the IEC 61850 interface in SEL-451-5, SEL-487E-3, SEL-
487E-4, SEL-421-4, SEL-421-5, SEL-487V-0, SEL-487V-1,
SEL-487B-1**

**Version 1
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based upon UCAIug PICS Template version 2.3

UCA International Users Group
Testing Sub Committee

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1. General

The following ACSI conformance statements are used to provide an overview and details about
SEL-451-5 with firmware R328,
SEL-487E-3 with firmware R322,
SEL-487E-4 with firmware R322,
SEL-421-4 with firmware R331,
SEL-421-5 with firmware R331,
SEL-487V-0 with firmware R110,
SEL-487V-1 with firmware R110,
SEL-487B-1 with firmware R318:

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

The statements specify the communication features mapped to IEC 61850-8-1 and IEC 61850-9-2.

2. ACSI 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)	N/A	Yes	
B12	Client side of (TWO-PARTY-APPLICATION-ASSOCIATION)	-	N/A	
SCSMs supported				
B21	SCSM: IEC 61850-8-1 used	-	Yes	
B22	SCSM: IEC 61850-9-1 used	N/A	N/A	Deprecated Ed2
B23	SCSM: IEC 61850-9-2 used	-	No	
B24	SCSM: other	-	-	
Generic substation event model (GSE)				
B31	Publisher side	N/A	Yes	
B32	Subscriber side	Yes	N/A	
Transmission of sampled value model (SVC)				
B41	Publisher side	N/A	-	
B42	Subscriber side	-	N/A	
N/A = not applicable Yes = supported No or empty = not supported				

3. ACSI model 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 side (B11) and/or Client side (B12) supported				
M1	Logical device		Yes	
M2	Logical node		Yes	
M3	Data		Yes	
M4	Data set		Yes	
M5	Substitution		-	
M6	Setting group control		Yes	
	Reporting		Yes	
M7	Buffered report control		Yes	
M7-1	sequence-number		Yes	
M7-2	report-time-stamp		Yes	
M7-3	reason-for-inclusion		Yes	
M7-4	data-set-name		Yes	
M7-5	data-reference		Yes	
M7-6	buffer-overflow		Yes	
M7-7	entryID		Yes	
M7-8	BufTm		Yes	
M7-9	IntgPd		Yes	
M7-10	GI		Yes	
M7-11	conf-revision		Yes	
M8	Unbuffered report control		Yes	
M8-1	sequence-number		Yes	
M8-2	report-time-stamp		Yes	
M8-3	reason-for-inclusion		Yes	
M8-4	data-set-name		Yes	
M8-5	data-reference		Yes	
M8-6	BufTm		Yes	
M8-7	IntgPd		Yes	
M8-8	GI		Yes	
M8-9	conf-revision		Yes	
	Logging		No	
M9	Log control		No	
M9-1	IntgPd		No	
M10	Log		No	
M11	Control		Yes	

		Client/Subscriber	Server/Publisher	Value/ Comments
M17	File Transfer		Yes	
M18	Application association		Yes	
M19	GOOSE Control Block		Yes	
M20	Sampled Value Control Block		No	
If GSE (B31/32) is supported				
M12	GOOSE		Yes	
M13	GSSE			Deprecated since Ed2
If SVC (B41/42) is supported				
M14	Multicast SVC	No	-	
M15	Unicast SVC	-	No	
For all IEDs				
M16	Time		Yes	Time source with required accuracy shall be available. Only Time Master are SNTP (Mode 4 response) time server. All other Client / Server devices are SNTP (Mode 3 request) clients
<p>Yes = service is supported</p> <p>No or empty = service is not supported</p>				

The ACSI service conformance statement is defined in Table A.3 (depending on the statements in Table A.1 and in Table A.2).

Table A.3 – ACSI service conformance statement

	Ed.	Services	AA: TP/MC	Client (C)	Server (S)	Comments
Server						
S1	1,2	GetServerDirectory (LOGICAL-DEVICE)	TP		Yes	
Application association						
S2	1,2	Associate	TP		Yes	
S3	1,2	Abort	TP		Yes	
S4	1,2	Release	TP		Yes	
Logical device						
S5	1,2	GetLogicalDeviceDirectory	TP		Yes	
Logical node						
S6	1,2	GetLogicalNodeDirectory	TP		Yes	
S7	1,2	GetAllDataValues	TP		Yes	
Data						
S8	1,2	GetDataValues	TP		Yes	
S9	1,2	SetDataValues	TP		No	
S10	1,2	GetDataDirectory	TP		Yes	
S11	1,2	GetDataDefinition	TP		Yes	
Data set						
S12	1,2	GetDataSetValues	TP		Yes	
S13	1,2	SetDataSetValues	TP		No	
S14	1,2	CreateDataSet	TP		No	
S15	1,2	DeleteDataSet	TP		No	
S16	1,2	GetDataSetDirectory	TP		Yes	
Substitution						
S17	1	SetDataValues	TP		No	

	Ed.	Services	AA: TP/MC	Client (C)	Server (S)	Comments
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Setting group control						
S18	1,2	SelectActiveSG	TP		Yes	
S19	1,2	SelectEditSG	TP		No	
S20	1,2	SetEditSGValues	TP		No	
S21	1,2	ConfirmEditSGValues	TP		No	
S22	1,2	GetEditSGValues	TP		No	
S23	1,2	GetSGCBValues	TP		Yes	

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

	Ed.	Services	AA: TP/MC	Client (C)	Server (S)	Comments
Control						
S51	1,2	Select			No	
S52	1,2	SelectWithValue	TP		Yes	
S53	1,2	Cancel	TP		Yes	
S54	1,2	Operate	TP		Yes	
S55	1,2	CommandTermination	TP		Yes	
S56	1,2	TimeActivatedOperate	TP		No	
File Transfer						
S57	1,2	GetFile	TP		Yes	
S58	1,2	SetFile	TP		Yes	Unique file names are not supported
S59	1,2	DeleteFile	TP		Yes	MMS DeleteFile service is allowed at the protocol level. However, for security purposes, only GetFile and SetFile services are allowed.
S60	1,2	GetFileAttributeValues	TP		Yes	
S61	1,2	GetServerDirectory (FILE-SYSTEM)	TP		Yes	

	Ed.	Services	AA: TP/MC	Client (C)	Server (S)	Comments
Time						
T1	1,2	Time resolution of internal clock			20	Nearest negative power of 2-n in seconds (number 0 .. 24)
T2	1,2	Time accuracy of internal clock			T5	TL (ms) (low accuracy), T3 < 7) (only Ed2) T0 (ms) (<= 10 ms), 7 <= T3 < 10 T1 (μs) (<= 1 ms), 10 <= T3 < 13 T2 (μs) (<= 100 μs), 13 <= T3 < 15 T3 (μs) (<= 25 μs), 15 <= T3 < 18 T4 (μs) (<= 25 μs), 18 <= T3 < 19 T5 (μs) (<= 1 μs), T3 >= 20 Reported time accuracies: <u>IRIG-B</u> T5 <u>PTP</u> T5 <u>SNTP</u> T1
T3	1,2	Supported TimeStamp resolution	-		20	Nearest value n of 2 ⁻ⁿ in seconds (number 0 .. 24)
N/A = not applicable Yes = supported No or empty = not supported						