Protocol Implementation Conformance Statement for the IEC 61850 interface in SEL-451

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General

The following ACSI conformance statements are used to provide an overview and details about SEL-451 with firmware version R321, LIB61850ID=5FEA494D, and hardware board 4xx MB5E. The following are variants of the SEL-451: SEL-487E with firmware version R315, SEL-487B with firmware version R312, and SEL-421 with firmware version R323. All variants have LIB61850ID=5FEA494D.

— ACSI basic conformance statement,

— ACSI models conformance statement,

— ACSI service conformance statement

The statements specify the communication features mapped to IEC 61850-8-1 Edition 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)	—	Y	
B12	**Client** side of (TWO-PARTY-APPLICATION-ASSOCIATION)		—	
SCSMs supported				
B21	**SCSM**: IEC 61850-8-1 used		Y	
B22	**SCSM**: IEC 61850-9-1 used			Deprecated Ed2
B23	**SCSM**: IEC 61850-9-2 used			
B24	**SCSM**: other			
Generic substation event model (GSE)				
B31	**Publisher** side	—	Y	
B32	**Subscriber** side	Y	—	
Transmission of sampled value model (SVC)				
B41	**Publisher** side			
B42	**Subscriber** side			

– = not applicable
Y = supported
N or empty = not supported

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** side (B11) and/or **Client** side (B12) supported				
M1	**Logical device**		Y	
M2	**Logical node**		Y	
M3	**Data**		Y	
M4	**Data set**		Y	
M5	**Substitution**			
M6	**Setting group control**		Y	
	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			
M9	**Log control**			
M9-1	IntgPd			
M10	**Log**			
M11	**Control**		Y	
M17	**File Transfer**		Y	
M18	**Application association**			
M19	**GOOSE Control Block**		Y	
M20	**Sampled Value Control Block**			

		Client/ Subscriber	Server/ Publisher	Value/ Comments
If **GSE** (B31/32) is supported				
M12	**GOOSE**		Y	
M13	**GSSE**			Deprecated Ed2
If **SVC** (B41/42) is supported				
M14	Multicast SVC			
M15	Unicast SVC			
For all IEDs				
M16	**Time**		Y	Time source with required accuracy shall be available. Only Time Master are SNTP (Mode 4 response) time server. All other Client / Server devices require SNTP (Mode 3 request) clients

Y = service is supported

N or empty = service is not supported

ACSI service conformance statement

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

Table A.4 – ACSI service Conformance statement

	Ed.	Services	AA: TP/MC	Client (C)	Server (S)	Comments
Server						
S1	1,2	GetServerDirectory (LOGICAL-DEVICE)	TP		Y	
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			
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			
S14	1,2	CreateDataSet	TP			
S15	1,2	DeleteDataSet	TP			
S16	1,2	GetDataSetDirectory	TP		Y	
Substitution						
S17	1	SetDataValues	TP			
Setting group control						
S18	1,2	SelectActiveSG	TP		Y	
S19	1,2	SelectEditSG	TP			
S20	1,2	SetEditSGValues	TP			
S21	1,2	ConfirmEditSGValues	TP			
S22	1,2	GetEditSGValues	TP			
S23	1,2	GetSGCBValues	TP		Y	

	Ed.	Services	AA: TP/MC	Client (C)	Server (S)	Comments
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)				
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 (dupd)				
S28	1,2	GetURCBValues	TP		Y	
S29	1,2	SetURCBValues	TP		Y	

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

Generic substation event model (GSE)						
GOOSE						
S35	1,2	SendGOOSEMessage	MC		Y	
GOOSE-CONTROL-BLOCK						
S36	1,2	GetGoReference	TP			
S37	1,2	GetGOOSEElementNumber	TP			
S38	1,2	GetGoCBValues	TP		Y	
S39	1,2	SetGoCBValues	TP			
GSSE						
S40	1	SendGSSEMessage	MC			Deprecated in Edition 2
GSSE-CONTROL-BLOCK						
S41	1	GetReference	TP			Deprecated in Edition 2
S42	1	GetGSSEElementNumber	TP			Deprecated in Edition 2
S43	1	GetGsCBValues	TP			Deprecated in Edition 2
S44	1	SetGsCBValues	TP			Deprecated in Edition 2

	Ed.	Services	AA: TP/MC	Client (C)	Server (S)	Comments
Transmission of sampled value model (SVC)						
Multicast SV						
S45	1,2	SendMSVMessage	MC			
Multicast Sampled Value Control Block						
S46	1,2	GetMSVCBValues	TP			
S47	1,2	SetMSVCBValues	TP			
Unicast SV						
S48	1,2	SendUSVMessage	TP			
Unicast Sampled Value Control Block						
S49	1,2	GetUSVCBValues	TP			
S50	1,2	SetUSVCBValues	TP			

Control						
S51	1,2	Select				
S52	1,2	SelectWithValue	TP		Y	
S53	1,2	Cancel	TP		Y	
S54	1,2	Operate	TP		Y	
S55	1,2	CommandTermination	TP		Y	
S56	1,2	TimeActivatedOperate	TP			

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

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			IRIG-B T4 PTP T4 SNTP T0	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), 15 <= T3 < 18 T5 (µs) (<= 1 µS), T3 >= 20
T3	1,2	Supported TimeStamp resolution	-		IRIGB 18 PTP 18 SNTP 7	Nearest value of 2^{-n} in seconds (number 0 .. 24)