

IpConv Protocol Stack

Conformance Statement

**IEC 61850
Server**

IPCOMM GmbH
Gundstrasse 15
D-91056 Erlangen
Germany

Voice: +49 9131 92076 0
Fax: +49 9131 92076 10
Email: info@ipcomm.de

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Document Version

Changed Chapters	Version	Date	Change	Who	Sign
---	1.0	26.06.2008	first release	A. Votteler	
---	1.1	05.03.2012	APC Common Data Class added	A. Votteler	

Contents

1 PICS	4
1.1 NOTATION	4
1.2 PROFILE CONFORMANCE.....	4
1.2.1 PICS for A-Profile support	4
1.2.2 PICS for T-Profile support.....	5
2 MMS CONFORMANCE	6
2.1 INITIATE CONFORMANCE	6
2.1.1 <i>InitiateRequest</i> general parameters	6
2.1.2 <i>InitiateResponse</i> general parameters.....	6
2.2 MMS SERVICE SUPPORTED CONFORMANCE TABLE.....	7
2.3 MMS PARAMETER CBB.....	9
2.4 GETNAMELIST CONFORMANCE	10
2.5 VARIABLE ACCESS CONFORMANCE.....	11
2.5.1 <i>Supporting productions</i>	11
2.5.1.1 <i>AlternateAccessSelection</i>	11
2.5.1.2 <i>VariableAccessSpecification</i>	11
2.5.1.3 <i>VariableSpecification</i>	11
2.5.1.4 <i>Read</i>	12
2.5.1.5 <i>Write</i>	12
2.5.1.6 <i>InformationReport</i>	12
2.5.1.7 <i>GetVariableAccessAttributes</i>	12
2.5.1.8 <i>DefineNamedVariableList</i>	13
2.5.1.9 <i>GetNamedVariableListAttributes</i>	13
2.5.1.10 <i>DeleteNamedVariableList</i>	13
2.5.2 <i>Journal management services</i>	14
2.5.2.1 <i>ReadJournal</i>	14
2.5.2.2 <i>JournalEntry</i> conformance statement	14
2.5.2.3 <i>InitializeJournal</i>	15
2.5.3 <i>File management services</i>	15
2.5.3.1 <i>FileDirectory</i>	15
2.5.3.2 <i>FileOpen</i>	15
2.5.3.3 <i>FileRead</i>	15
2.5.3.4 <i>FileClose</i>	16
2.6 PICS STATEMENT.....	16
2.7 LOGICAL DEVICE	16
2.8 GOOSE CONFORMANCE STATEMENT	16
2.9 GSSE CONFORMANCE STATEMENT.....	16
3 SCL CONFORMANCE	18
4 ACSI	19
4.1 ACSI BASIC CONFORMANCE STATEMENT	19
4.2 ACSI MODELS CONFORMANCE STATEMENT	20
4.3 ACSI SERVICE CONFORMANCE STATEMENT	21
5 LOGICAL NODE CONFORMANCE STATEMENT	25
5.1 LN: PHYSICAL DEVICE INFORMATION NAME: LPHD	28
5.2 LN: LOGICAL NODE ZERO NAME: LLN0	28
5.3 LN: SWITCH CONTROLLER NAME: CSWI.....	29
5.4 LN: GENERAL PROCESS I/O NAME: GGIO	29
5.5 LN: NON PHASE RELATED MEASUREMENT NAME: MMXN	30
5.6 LN: MEASUREMENT NAME: MMXU.....	30
5.7 LN: CIRCUIT BREAKER NAME: XCBR.....	31
5.8 LN: CIRCUIT SWITCH NAME: XSWI.....	31
6 COMMON DATA CLASS CONFORMANCE STATEMENT	32

6.1 SPS: SINGLE POINT STATUS	32
6.2 DPS: DOUBLE POINT STATUS.....	32
6.3 INS: INTEGER STATUS	33
6.4 MV: MEASURED VALUE	33
6.5 CMV: COMPLEX MEASURED VALUE.....	34
6.6 WYE: PHASE TO GROUND RELATED MEASURED VALUES OF A THREE PHASE SYSTEM	34
6.7 DEL: PHASE TO PHASE RELATED MEASURED VALUES OF A THREE PHASE SYSTEM	35
6.8 SPC: CONTROLLABLE SINGLE POINT	35
6.9 DPC: CONTROLLABLE DOUBLE POINT.....	36
6.10 INC: CONTROLLABLE INTEGER STATUS	36
6.11 APC: CONTROLLABLE ANALOGUE SET POINT INFORMATION.....	37
6.12 DPL: DEVICE NAME PLATE.....	37
6.13 LPL: LOGICAL NODE NAME PLATE	37

1 PICS

1.1 Notation

For the following Clause, the following definitions apply:

- m: mandatory support. The item shall be implemented.
- c: conditional support. The item shall be implemented if the stated condition exists.
- o: optional support. The implementation may decide to implement the item.
- x: excluded. The implementation shall not implement this item.
- i: out-of-scope. The implementation of the item is not within the scope of this standard.
- F/S: Functional Standard. Should be applied.
- Base: Shall be applied in any application claiming conformance to this standard.

1.2 Profile conformance

1.2.1 PICS for A-Profile support

A-Profile shortcut	Profile Description	Client		Server		Value/comment
		F/S		F/S		
A1	Client/server A-Profile	c1		c1	<input checked="" type="checkbox"/>	Refer to 8.2
A2	GOOSE/GSE management A-Profile	c2		c2		Refer to 8.3
A3	GSSE A-Profile	c3		c3		Refer to 8.4
A4	TimeSync A-Profile	c4	<input checked="" type="checkbox"/>	c4	<input checked="" type="checkbox"/>	Refer to 8.5
c1	Shall be 'm' if support for any service specified in Table 2 are declared within the ACSI basic conformance statement.					
c2	Shall be 'm' if support for any service specified in Table 8 are declared within the ACSI basic conformance statement.					
c3	Shall be 'm' if support for any service specified in Table 9 are declared within the ACSI basic conformance statement.					
c4	Support for at least one other A-Profile shall be declared (e.g. in A1-A3) in order to claim conformance to IEC 61850-8-1.					

1.2.2 PICS for T-Profile support

T-Profile	Profile Description	Client		Server		Value/Comment
		F/S		F/S		
T1	TCP/IP T-Profile	c1		c1	<input checked="" type="checkbox"/>	Refer to 8.2
T2	OSI T-Profile	c2		c2		Refer to 8.2
T3	GOOSE/GSE T-Profile	c3		c3		Refer to 8.3
T4	GSSE T-Profile	c4		c4		Refer to 8.4
T5	TimeSync T-Profile	o	<input checked="" type="checkbox"/>	o	<input checked="" type="checkbox"/>	Refer to 8.5
<p>c1 Shall be 'm' if support for A1 is declared. Otherwise, shall be 'i'.</p> <p>c2 Shall be 'o' if support for A1 is declared. Otherwise, shall be 'i'.</p> <p>c3 Shall be 'm' if support for A2 is declared. Otherwise, shall be 'i'.</p> <p>c4 Shall be 'm' if support for A3 is declared. Otherwise shall be 'i'.</p>						

2 MMS Conformance

2.1 Initiate conformance

2.1.1 InitiateRequest general parameters

InitiateRequest	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
InitiateRequest						
localDetailCalling	m	m		m	m	
proposedMaxServOutstandingCalling	m	m	1 or greater	m	m	1 or greater
proposedMaxServOustandingCalled	m	m	1 or greater	m	m	1 or greater
initRequestDetail	m	m		m	m	
InitiateRequestDetail						
proposedVersionNumber	m	m	Shall be 2.1	m	m	Shall be 2.1
proposedParameterCBB	m	m	See 24.2.2.2.1.1	m	m	See 24.2.2.2.1.1
servicesSupportedCalling	m	m		m	m	
additionalSupportedCalling	c1	x		c1		
additionalCbbSupportedCalling	c1	x		c1		
privilegeClassIdentityCalling	c1	x		c1		
c1 Conditional upon Parameter CBS CSPI — see Table 90.						

2.1.2 InitiateResponse general parameters

InitiateResponse	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
InitiateResponse						
localDetailCalled	m	m		m	m	
negotiatedMaxServOutstandingCalling	m	m	1 or greater	m	m	1 or greater
negotiatedMaxServOustandingCalled	m	rn	1 or greater	m	m	1 or greater
initResponseDetail	m	rn		m	m	
InitiatedResponseDetail						
negotiatedVersionNumber	m	m	Shall be 2.1	m	m	Shall be 2.1
negotiatedParameterCBB	m	m	See 24.2.2.2.1.2	m	m	See 24.2.2.2.1.2
servicesSupportedCalled	m	m	See 2.2	m	m	See 2.2
additionalSupportedCalled	c1	x		c1	x	
additionalCbbSupportedCalled	c1	x		c1	x	
privilegeClassIdentityCalled	c1	x		c1	x	
c1 Conditional upon Parameter CBS CSPI— see Table 90.						

2.2 MMS service supported conformance table

MMS service supported CBB	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
status	o	o		o	m	☑
getNamelist	o	o		o	c1	☑
identify	o	o		m	m	☑
rename	o	o		o	0	
read	o	o		o	c2	☑
write	o	o		o	c3	☑
getVariableAccessAttributes	o	o		o	c4	☑
defineNamedVariable	o	o		o	o	
defineScatteredAccess	o	i		o	i	
getScatteredAccessAttributes	o	i		o	i	
deleteVariableAccess	o	o		o	o	
defineNamedVariableList	o	o		o	o	☑
getNamedVariableListAttributes	o	o		o	c5	☑
deleteNamedVariableList	o	o		o	c6	☑
defineNamedType	o	i		o	i	
getNamedTypeAttributes	o	i		o	i	
deleteNamedType	o	i		o	i	
input	o	i		o	i	
output	o	i		o	i	
takeControl	o	i		o	i	
relinquishControl	o	i		o	i	
defineSemaphore	o	i		o	i	
deleteSemaphore	o	i		o	i	
reportPoolSemaphoreStatus	o	i		o	i	
reportSemaphoreStatus	o	i		o	i	
initiateDownloadSequence	o	i		o	i	
downloadSegment	o	i		o	i	
terminateDownloadSequence	o	i		o	i	
initiateUploadSequence	o	i		o	i	
uploadSegment	o	i		o	i	
terminateUploadSequence	o	i		o	i	
requestDomainDownload	o	i		o	i	
requestDomainUpload	o	i		o	i	
loadDomainContent	o	i		o	i	
storeDomainContent	o	i		o	i	
deleteDomain	o	i		o	i	
getDomainAttributes	o	o		o	c14	☑
createProgramInvocation	o	i		o	i	

MMS service supported CBB	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
deleteProgramInvocation	o	i		o	i	
start	o	i		o	i	
stop	o	i		o	i	
resume	o	i		o	i	
reset	o	i		o	i	
kill	o	i		o	i	
getProgramInvocationAttributes	o	i		o	i	
obtainFile	o	c9		o	c9	
defineEventCondition	o	i		o	i	
deleteEventCondition	o	i		o	i	
getEventConditionAttributes	o	i		o	i	
reportEventConditionStatus	o	i		o	i	
alterEventConditionMonitonnng	o	i		o	i	
triggerEvent	o	i		o	i	
defineEventAction	o	i		o	i	
deleteEventAction	o	i		o	i	
alterEventEnrollment	o	i		o	i	
reportEventEnrollmentStatus	o	i		o	i	
getEventEnrollmentAttributes	o	i		o	i	
acknowledgeEventNotification	o	i		o	i	
getAlarmSummary	o	i		o	i	
getAlarmEnrollmentSummary	o	i		o	i	
readJournal	o	c13		o	c13	
writeJournal	o	o		o	o	
initializeJournal	o	o		o	c12	
reportJournalStatus	o	i		o	i	
createJournal	o	i		o	i	
deleteJournal	o	i		o	i	
fileOpen	o	c8		o	c8	
fileRead	o	c8		o	c8	
fileClose	o	c8		o	c8	
fileRename	o	i		o	i	
fileDelete	o	c9		o	c9	
fileDirectory	o	c11		o	c11	
unsolicitedStatus	o	i		o	i	
informationReport	o	c7		o	c7	<input checked="" type="checkbox"/>
eventNotification	o	i		o	i	
attachToEventCondition	o	i		o	i	
attachToSemaphore	o	i		o	i	
conclude	m	m		m	m	<input checked="" type="checkbox"/>

MMS service supported CBB	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
cancel	o	o		o	m	<input checked="" type="checkbox"/>
getDataExchangeAttributes	o	c10		o	c10	
exchangeData	o	c10		o	c10	
defineAccessControllist	o	c10		o	c10	
getAccessControlListAttributes	o	c10		o	c10	
reportAccessControlledObjects	o	c10		o	c10	
deleteAccessControllist	o	c10		o	c10	
alterAccessControl	o	c10		o	c10	
reconfigureProgramInvocation	o	c10		o	c10	
<p>c1 Shall be 'm' if logical device or logical node model support 3 declared in ACSI basic conformance statement.</p> <p>c2 Shall be 'm' if logical node model support 3 declared in ACSI basic conformance statement or if support for the MMS write service is declared.</p> <p>c3 Shall be 'm' if ACSI support for SetDataValues service 3 declared or implied.</p> <p>c4 Shall be 'm' if logical node model support 3 declared m ACSI basic conformance statement.</p> <p>c5 Shall be 'm' if data set support 3 declared in the ACSI basic conformance statement.</p> <p>c6 Shall be 'm' if support for defineNamedVariableList 3 declared.</p> <p>c7 Shall be 'm' if support for ACSI Report or ACSI command termination is declared.</p> <p>c8 Shall be 'm' if support for ACSI GetFile 3 declared.</p> <p>c9 Shall be 'm' if support for ACSI SetFile 3 declared.</p> <p>c10 Shall not be present since MMS minor version 3 declared to be 1.</p> <p>c11 Shall be 'm' if support for ACSI GetFileAttributeValues 3 declared.</p> <p>c12 Shall be 'm' if support for the ACSI log model is declared.</p> <p>c13 Shall be 'm' if support for the ACSI OuerylogByTime or OueryLogAfter is declared.</p> <p>c14 Shall be 'm' if support for the ACSI logical device model is declared.</p>						

2.3 MMS Parameter CBB

MMS parameter CBB	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
STR1	o	o		o	c1	<input checked="" type="checkbox"/>
STR2	o	o		o	o	
NEST	1	1 or greater		1	c2	<input checked="" type="checkbox"/>
VNAM	o	o		o	c1	<input checked="" type="checkbox"/>
VADR	o	o		o	o	
VALT	o	o		o	c1	<input checked="" type="checkbox"/>
bit 5	x			x	x	
TPY	o	o		o	o	
VLIS	o	c1		o	c3	<input checked="" type="checkbox"/>
bit 8	x	x		x	x	
bit 9	x	x		x	x	
CEI	o	i		o	i	

ACO	o	c4		o	c4	
SEM	o	c4		o	c4	
CSR	o	c4		o	c4	
CSNC	o	c4		o	c4	
CSPLC	o	c4		o	c4	
CSPI	o	c4		o	c4	
<p>c1 Shall be 'm' if ACSI logical node model support declared.</p> <p>c2 Shall be five(5) or greater if ACSI logical node model support 5 declared.</p> <p>c3 Shall be 'm' if ACSI data set, reporting, GOOSE, or logging model support is declared</p> <p>c4 Shall not be present. Receiving implementations shall assume not supported.</p>						

2.4 GetNameList conformance

GetNameList	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
Request						
ObjectClass	m	m		m	m	<input checked="" type="checkbox"/>
ObjectScope	m	m		m	m	<input checked="" type="checkbox"/>
DomainName	o	o		m	m	<input checked="" type="checkbox"/>
ContinueAfter	o	m		m	m	<input checked="" type="checkbox"/>
Response+						
List Of Identifier	m	m		m	m	<input checked="" type="checkbox"/>
MoreFollows	m	m		m	m	<input checked="" type="checkbox"/>
Response-						
Error Type	m	m		m	m	<input checked="" type="checkbox"/>
<p>NOTE Object class 'vmd' (for meny VMDSpecific in MAIS V1.0) shall not appear. If a request contains this ObjectClass, an MMS Reject shall be issued.</p>						

2.5 Variable access conformance

2.5.1 Supporting productions

2.5.1.1 AlternateAccessSelection

AlternateAccessSelection	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
accessSelection	o	o		o	m	<input checked="" type="checkbox"/>
component	o	i		o	m	<input checked="" type="checkbox"/>
index	o	i		o	i	
indexRange	o	i		o	i	
allElements	o	i		o	x	
alternateAccess	o	o		o	m	<input checked="" type="checkbox"/>
selectAccess	o	o		o	m	<input checked="" type="checkbox"/>
component	o	o		o	m	<input checked="" type="checkbox"/>
index	o	i		o	i	
indexRange	o	i		o	i	
allElements	o	i		o	x	

2.5.1.2 VariableAccessSpecification

VariableAccessSpecification	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
listOfVariable	o	o		o	c1	<input checked="" type="checkbox"/>
variableSpecification	o	o		o	c1	<input checked="" type="checkbox"/>
alternateAccess	o	o		o	c1	<input checked="" type="checkbox"/>
variablelistName	o	o		o	c1	<input checked="" type="checkbox"/>

c1 Shall be 'm' if ACSI support for Logical Node Model is declared.
c2 Shall be 'm' if ACSI support for ACSI DataSets, reporting, or logging is declared.

2.5.1.3 VariableSpecification

VariableSpecification	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
name	o	o		o	m	<input checked="" type="checkbox"/>
address	o	o		o	i	
variableDescription	o	a		o	i	
scatteredAccessDescription	o	x		o	x	
invalidated	o	x		o	x	

2.5.1.4 Read

Read	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
Request						
specificationWithResult	o	o		o	m	<input checked="" type="checkbox"/>
variableAccessSpecification	m	m	See 2.5.1.2	m	m	<input checked="" type="checkbox"/> See 2.5.1.2
Response						
variableAccessSpecification	o	o		o	m	<input checked="" type="checkbox"/>
listOfAccessResult	m	m		m	m	<input checked="" type="checkbox"/>

2.5.1.5 Write

Write	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
Request						
variableAccessSpecification	m	m	See 2.5.1.2	m	m	<input checked="" type="checkbox"/> See 2.5.1.2
listOfData	m	m		m	m	<input checked="" type="checkbox"/>
Response						
failure	m	m		m	m	<input checked="" type="checkbox"/>
success	m	m		m	m	<input checked="" type="checkbox"/>

2.5.1.6 InformationReport

InformationReport	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
Request						
variableAccessSpecification	m	m	See 2.5.1.2	m	m	<input checked="" type="checkbox"/> See 2.5.1.2
listOfAccessResult	m	m		m	m	<input checked="" type="checkbox"/>

2.5.1.7 GetVariableAccessAttributes

GetVariableAccessAttributes	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
Request						
name	o	o		m	m	<input checked="" type="checkbox"/>
address	o	o		m	x	
Response						
mmsDeletable	m	m		m	m	<input checked="" type="checkbox"/>
address	o	x		o	x	
typeSpecification	m	m		m	m	<input checked="" type="checkbox"/>

2.5.1.8 DefineNamedVariableList

DefineNamedVariableList	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
Request						
variableListName	m	m		m	m	<input checked="" type="checkbox"/>
listOfVariable	m	m		m	m	<input checked="" type="checkbox"/>
variableSpecification	m	m		m	m	<input checked="" type="checkbox"/>
alternateAccess	o	i		o	m	<input checked="" type="checkbox"/>
Response	m	m		m	m	<input checked="" type="checkbox"/>

2.5.1.9 GetNamedVariableListAttributes

GetNamedVariableListAttributes	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
Request						
ObjectName	m	m		m	m	<input checked="" type="checkbox"/>
Response						
mmsDeletable	m	m		m	m	<input checked="" type="checkbox"/>
listOfVariable	m	m		m	m	<input checked="" type="checkbox"/>
variableSpecification	m	m		m	m	<input checked="" type="checkbox"/>
alternateAccess	o	m		o	i	

2.5.1.10 DeleteNamedVariableList

DeleteNamedVariableList	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
Request						
Scope	m	m		m	m	<input checked="" type="checkbox"/>
listOfVariableListName	m	m		m	m	<input checked="" type="checkbox"/>
domainName	o	m		o	m	<input checked="" type="checkbox"/>
Response						
numberMatched	m	m		m	m	<input checked="" type="checkbox"/>
numberDeleted	m	m		m	m	<input checked="" type="checkbox"/>
DeleteNamedVariableList-Error	m	m		m	m	<input checked="" type="checkbox"/>

2.5.2 Journal management services

2.5.2.1 ReadJournal

ReadJournal	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
Request						
invokeID	m	m		m	m	
JournalName	m	m		m	m	
rangeStartSpecification	o	m		o	m	
startingTime	o	c1		o	m	
EntrytoStartAfter	o	o		o	m	
rangeStopSpecification	o	m		o	m	
endingTime	o	c2		o	m	
numberOfEntries	o	o		o	m	
EntryToStartAfter	o	c2		o	m	
TimeSpecification	m	m		m	m	
EntrySpecification	m	m		m	m	
Response						
invokeID	m	m		m	m	
listOfJournalEntry	m	m		m	m	
entryIdentifier	o	m		m	m	
originatingApplication	m	m		m	m	
entryContent	m	m		m	m	
moreFollows	m	m		o	m	
c1 At least one shall be present.						
c2 At least one shall be present.						

2.5.2.2 JournalEntry conformance statement

Ref	Parameter	Client-CR			Server-CR		
		Base	F/S	Value/range	Base	F/S	Value/range
1	occurrenceTime	m	m		m	m	
2	additionalDetail	x	x		x	x	
3	entryForm	m	m		m	m	
4	data	o	m		o	c1	
5	event	o	m		o	o	
8	currentState	o	m		o	c2	
7	listofVariable	o	m		o	c3	
8	variableTag	o	m		o	c4	
9	valueSpecification	o	m		o	c4	
10	annotation	o	m		o	c1	

- c1 Either data or annotation shall be present.
 c2 If event is present, then m.
 c3 If data is present, then m.
 c4 If listOfVariable present, then m.

2.5.2.3 InitializeJournal

InitializeJournal	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
Request						
journalName	m	m		m	m	
limitSpecification	m	m		m	m	
limitingTime	m	m		m	m	
limitingEntry	o	o		o	m	
Response+						
entriesDeleted	m	m		m	m	

2.5.3 File management services

2.5.3.1 FileDirectory

FileDirectory	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
Request						
filespecification	o	o		m	m	
continueAfter	o	o		m	m	
Response+						
listOfDirectoryEntry	m	m		m	m	
MoreFollows	m	m		m	m	

2.5.3.2 FileOpen

FileOpen	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
Request						
filename	m	m		m	m	
initialPosition	o	o		m	m	
Response+						
frsmID	m	m		m	m	
fileAttributes	m	m		m	m	

2.5.3.3 FileRead

FileRead	Client-CR	Server-CR
----------	-----------	-----------

	Base	F/S	Value/range	Base	F/S	Value/range
Request						
frsmID	m	m		m	m	
Response+						
fileData	m	m		m	m	
moreFollows	m	m		m	m	

2.5.3.4 FileClose

FileClose	Client-CR			Server-CR		
	Base	F/S	Value/range	Base	F/S	Value/range
Request						
frsmID	m	m		m	m	
Response+	m	m		m	m	

2.6 PICS Statement

This Subclause describes the Protocol Implementation Conformation Statement Proforma (PICS). Every implementor shall complete the entire PICS. Refer to IEC 61850-7-2 ACSI basic conformance statement. The PICS, in the following Subclauses, shall also be completed.

2.7 Logical device

The following PICs represents the conformance requirements if support for the logical device model is declared within the ACSI basic conformance statement.

2.8 GOOSE conformance statement

	Subscriber	Publisher	Value / comment
GOOSE Services	c1	c1	
SendGOOSEMessage	m	m	
GetGoReference	o	c3	
GetGOOSEElementNumber	o	c4	
GetGoCBValues	o	o	
SetGoCBValues	o	o	
GSENotSupported	c2	c5	
GOOSE Control Block (GoCB)	o	o	

c1 Shall be 'm' if support is declared within ACSI basic conformance statement.
c2 Shall be 'm' if ACSI basic conformance support for either GetGoReference or GetGOOSEElementNumber is declared.
c3 Shall be 'm' if support for ACSI basic conformance of GetGoReference is declared.
c4 Shall be 'm' if support for ACSI basic conformance of GetGOOSEElementNumber.
c5 Shall be 'm' if no support for ACSI basic conformance of GetGOOSEElementNumber is declared.

2.9 GSSE conformance statement

	Subscriber	Publisher	Value / comment
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GSSE Services	c1	c1	
SendGSSEEMessage	m	m	
GetGsReference	o	c3	
GetGSSEDataOffset	o	c4	
GetGsCBValues	o	o	
SetGsCBValues	c	o	
GSENotSupported	c2	c5	
GSSE Control Block (GsCB)	o	o	

c1 Shall be 'm' if support is declared within ACSI basic conformance statement.

c2 Shall be 'm' if ACSI basic conformance support for either GetGsReference or GetGSSEDataOffset is declared.

c3 Shall be 'm' if support for ACSI basic conformance of GetGsReference is declared.

c4 Shall be 'm' if support for ACSI basic conformance of GetGSSEDataOffset.

c5 Shall be 'm' if no support for ACSI basic conformance of GetGSSEDataOffset is declared.

3 SCL Conformance

	SCL Conformance	Client-CR			Server-CR		
		Base	F/S	Value/range	Base	F/S	Value/range
SCL.1	SCL file for implementation available (offline)				m	m	<input checked="" type="checkbox"/>
SCL.2	SCL file available from implementation (online)	o	o		o	O	
SCL.3	SCL implementation reconfiguration supported online	o	o		o	o	

4 ACSI

4.1 ACSI basic conformance statement

		Client/ subscriber	Server/ publisher	Value/ comments
Client-server roles				
B11	Server side (of TWO-PARTY- APPLICATION-ASSOCIATION)	–	c1	<input checked="" type="checkbox"/>
B12	Client side of (TWO-PARTY- APPLICATION-ASSOCIATION)	c1	–	
SCSMs supported				
B21	SCSM : IEC 61850-8-1 used			<input checked="" type="checkbox"/>
B22	SCSM : IEC 61850-9-1 used			
B23	SCSM : IEC 61850-9-2 used			
B24	SCSM : other			
Generic substation event model (GSE)				
B31	Publisher side	–	o	
B32	Subscriber side	o	–	
Transmission of sampled value model (SVC)				
B41	Publisher side	–	o	
B42	Subscriber side	o	–	
<p>c1 – shall be 'm' if support for LOGICAL-DEVICE model has been declared. o – Optional m – Mandatory</p>				

4.2 ACSI models conformance statement

		Client/ subscriber	Server/ publisher	Value/ comments
If Server side (B11) supported				
M1	Logical device	c2	c2	<input checked="" type="checkbox"/>
M2	Logical node	c3	c3	<input checked="" type="checkbox"/>
M3	Data	c4	c4	<input checked="" type="checkbox"/>
M4	Data set	c5	c5	<input checked="" type="checkbox"/>
M5	Substitution	o	o	
M6	Setting group control	o	o	
	Reporting			<input checked="" type="checkbox"/>
M7	Buffered report control	o	o	<input checked="" type="checkbox"/>
M7-1	sequence-number			<input checked="" type="checkbox"/>
M7-2	report-time-stamp			<input checked="" type="checkbox"/>
M7-3	reason-for-inclusion			<input checked="" type="checkbox"/>
M7-4	data-set-name			<input checked="" type="checkbox"/>
M7-5	data-reference			<input checked="" type="checkbox"/>
M7-6	buffer-overflow			<input checked="" type="checkbox"/>
M7-7	entryID			<input checked="" type="checkbox"/>
M7-8	BufTm			<input checked="" type="checkbox"/>
M7-9	IntgPd			<input checked="" type="checkbox"/>
M7-10	GI			<input checked="" type="checkbox"/>
M8	Unbuffered report control	o	o	<input checked="" type="checkbox"/>
M8-1	sequence-number			<input checked="" type="checkbox"/>
M8-2	report-time-stamp			<input checked="" type="checkbox"/>
M8-3	reason-for-inclusion			<input checked="" type="checkbox"/>
M8-4	data-set-name			<input checked="" type="checkbox"/>
M8-5	data-reference			<input checked="" type="checkbox"/>
M8-6	BufTm			<input checked="" type="checkbox"/>
M8-7	IntgPd			<input checked="" type="checkbox"/>
M8-8	GI			<input checked="" type="checkbox"/>
	Logging	o	o	
M9	Log control	o	o	
M9-1	IntgPd			
M10	Log	o	o	
M11	Control	m	m	<input checked="" type="checkbox"/>
If GSE (B31/ B32) is supported				
	GOOSE	o	o	
M12-1	entryID			
M12-2	DataRefInc			
M13	GSSE	o	o	

		Client/ subscriber	Server/ publisher	Value/ comments
If SVC (B41/B42) is supported				
M14	Multicast SVC	o	o	
M15	Unicast SVC	o	o	
M16	Time	m	m	<input checked="" type="checkbox"/> Time source with required accuracy shall be available
M17	File Transfer	o	o	
<p>c2 – shall be 'm' if support for LOGICAL-NODE model has been declared.</p> <p>c3 – shall be 'm' if support for DATA model has been declared.</p> <p>c4 – shall be 'm' if support for DATA-SET, Substitution, Report, Log Control, or Time model has been declared.</p> <p>c5 – shall be 'm' if support for Report, GSE, or SV models has been declared.</p> <p>m – Mandatory</p>				

4.3 ACSI service conformance statement

	Services	AA: TP/MC	Client/ subscriber	Server/ publisher	Comments
Server (Clause 6)					
S1	ServerDirectory	TP		m	<input checked="" type="checkbox"/>

Application association (Clause 7)					
S2	Associate		m	m	<input checked="" type="checkbox"/>
S3	Abort		m	m	<input checked="" type="checkbox"/>
S4	Release		m	m	<input checked="" type="checkbox"/>

Logical device (Clause 8)					
S5	LogicalDeviceDirectory	TP	m	m	<input checked="" type="checkbox"/>

Logical node (Clause 9)					
S6	LogicalNodeDirectory	TP	m	m	<input checked="" type="checkbox"/>
S7	GetDataValues	TP	o	m	<input checked="" type="checkbox"/>

Data (Clause 10)					
S8	GetDataValues	TP	m	m	<input checked="" type="checkbox"/>
S9	SetDataValues	TP	o	o	<input checked="" type="checkbox"/>
S10	GetDataDirectory	TP	o	m	<input checked="" type="checkbox"/>
S11	GetDataDefinition	TP	o	m	<input checked="" type="checkbox"/>

	Services	AA: TP/MC	Client/ subscriber	Server/ publishe	Comments
Data set (Clause 11)					
S12	GetDataSetValues	TP	o	m	<input checked="" type="checkbox"/>
S13	SetDataSetValues	TP	o	o	
S14	CreateDataSet	TP	o	o	<input checked="" type="checkbox"/>
S15	DeleteDataSet	TP	o	o	<input checked="" type="checkbox"/>

S16	GetDataSetDirectory	TP	o	o	<input checked="" type="checkbox"/>
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Substitution (Clause 12)

S17	SetDataValues	TP	m	m	
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Setting group control (Clause 13)

S18	SelectActiveSG	TP	o	o	
S19	SelectEditSG	TP	o	o	
S20	SetSGValues	TP	o	o	
S21	ConfirmEditSGValues	TP	o	o	
S22	GetSGValues	TP	o	o	
S23	GetSGCBValues	TP	o	o	

Reporting (Clause 14)

Buffered report control block (BRCB)

S24	Report	TP	c6	c6	<input checked="" type="checkbox"/>
S24-1	data-change (dchg)				<input checked="" type="checkbox"/>
S24-2	qchg-change (qchg)				<input checked="" type="checkbox"/>
S24-3	data-update (dupd)				<input checked="" type="checkbox"/>
S25	GetBRCBValues	TP	c6	c6	<input checked="" type="checkbox"/>
S26	SetBRCBValues	TP	c6	c6	<input checked="" type="checkbox"/>

Unbuffered report control block (URCB)

S27	Report	TP	c6	c6	<input checked="" type="checkbox"/>
S27-1	data-change (dchg)				<input checked="" type="checkbox"/>
S27-2	qchg-change (qchg)				<input checked="" type="checkbox"/>
S27-3	data-update (dupd)				<input checked="" type="checkbox"/>
S28	GetURCBValues	TP	c6	c6	<input checked="" type="checkbox"/>
S29	SetURCBValues	TP	c6	c6	<input checked="" type="checkbox"/>

c6 – shall declare support for at least one (BRCB or URCB).

Logging (Clause 14)

Log control block

S30	GetLCBValues	TP	m	m	
S31	SetLCBValues	TP	o	m	

Log

S32	QueryLogByTime	TP	c7	m	
S33	QueryLogAfter	TP	c7	m	
S34	GetLogStatusValues	TP	m	m	

c7 – shall declare support for at least one (QueryLogByTime or QueryLogAfter).

	Services	AA: TP/MC	Client/ subscriber	Server/ publisher	Comments
Generic substation event model (GSE) (14.3.5.3.4)					
GOOSE-CONTROL-BLOCK					
S35	SendGOOSEMessage	mc	c8	c8	
S36	GetGoReference	TP	o	c9	
S37	GetGOOSEElementNumber	TP	o	c9	
S38	GetGoCBValues	TP	o	o	
S39	SetGoCBValues	TP	o	o	
GSSE-CONTROL-BLOCK					
S40	SendGSSEMessage	mc	c8	c8	
S41	GetGsReference	TP	o	c9	
S42	GetGSSEElementNumber	TP	o	c9	
S43	GetGsCBValues	TP	o	o	
S44	SetGsCBValues	TP	o	o	
c8 – shall declare support for at least one (SendGOOSEMessage or SendGSSEMessage). c9 – shall declare support if TP association is available.					

Transmission of sampled value model (SVC) (Clause 16)					
Multicast SVC					
S45	SendMSVMessage	mc	c10	c10	
S46	GetMSVCBValues	TP	o	o	
S47	SetMSVCBValues	TP	o	o	
Unicast SVC					
S48	SendUSVMessage	TP	c10	c10	
S49	GetUSVCBValues	TP	o	o	
S50	SetUSVCBValues	TP	o	o	
c10 – shall declare support for at least one (SendMSVMessage or SendUSVMessage).					

Control (17.5.1)					
S51	Select		m	o	<input checked="" type="checkbox"/>
S52	SelectWithValue	TP	m	o	<input checked="" type="checkbox"/>
S53	Cancel	TP	o	o	<input checked="" type="checkbox"/>
S54	Operate	TP	m	m	<input checked="" type="checkbox"/>
S55	Command-Termination	TP	m	o	<input checked="" type="checkbox"/>
S56	TimeActivated-Operate	TP	o	o	

File transfer (Clause 20)					
S57	GetFile	TP	o	m	
S58	SetFile	TP	o	o	
S59	DeleteFile	TP	o	o	
S60	GetFileAttributeValues	TP	o	m	

Services		AA: TP/MC	Client/ subscriber	Server/ publisher	Comments
Time (5.5)					
T1	Time resolution of internal clock			-10 (1ms)	Nearest negative power of 2 in seconds
T2	Time accuracy of internal clock			-11 (+/-0,5ms)	T0
					T1
					T2
					T3
					T4
					T5
T3	Supported TimeStamp resolution			-10 (1ms)	Nearest value of 2^{*-n} in seconds

5 Logical Node conformance statement

Logical Node	Supported
Logical Nodes for management functions LN Group: L	
LN: Physical device information Name: LPHD	<input checked="" type="checkbox"/>
LN: Logical node zero Name: LLN0	<input checked="" type="checkbox"/>
Logical Nodes for protection functions LN Group: P	
LN: Differential Name: PDIF	
LN: Direction comparison Name: PDIR	
LN: Distance Name: PDIS	
LN: Directional overpower Name: PDOP	
LN: Directional underpower Name: PDUP	
LN: Rate of change of frequency Name: PFRC	
LN: Harmonic restraint Name: PHAR	
LN: Ground detector Name: PHIZ	
LN: Instantaneous overcurrent Name: PIOC	
LN: Motor restart inhibition Name: PMRI	
LN: Motor starting time supervision Name: PMSS	
LN: Over power factor Name: POPF	
LN: Phase angle measuring Name: PPAM	
LN: Protection scheme Name: PSCH	
LN: Sensitive directional earthfault Name: PSDE	
LN: Transient earth fault Name: PTEF	
LN: Time overcurrent Name: PTOC	
LN: Over frequency Name: PTOF	
LN: Overvoltage Name: PTOV	
LN: Protection trip conditioning Name: PTRC	
LN: Thermal overload Name: PTTR	
LN: Undercurrent Name: PTUC	
LN: Undervoltage Name: PTUV	
LN: Under power factor Name: PUPF	
LN: Under frequency Name: PTUF	
LN: Voltage controlled time overcurrent Name: PVOC	
LN: Volts per Hz Name: VPH	
LN: Zero speed or underspeed Name: PZSU	
Logical Nodes for protection related functions LN Group: R	
LN: Disturbance recorder function Name: RDRE	
LN: Disturbance recorder channel analogue Name: RADR	
LN: Disturbance recorder channel binary Name: RBDR	
LN: Disturbance record handling Name: RDRS	
LN: Breaker failure Name: RBRF	
LN: Directional element Name: RDIR	
LN: Fault locator Name: RFLO	
LN: Power swing detection/blocking Name: RPSB	
LN: Autoreclosing Name: RREC	
LN: Synchronism-check or synchronising Name: RSYN	

Logical Node	Supported
Logical Nodes for control LN Group: C	
LN: Alarm handling Name: CALH	
LN: Cooling Group Control Name: CCGR	
LN: Interlocking Name: CILO	
LN: Point-on-wave switching Name: CPOW	
LN: Switch controller Name: CSWI	<input checked="" type="checkbox"/>
Logical nodes for generic references LN Group: G	
LN: Generic automatic process control Name: GAPC	
LN: Generic process I/O Name: GGIO	<input checked="" type="checkbox"/>
LN: Generic security application Name: GSAL	
Logical Nodes for interfacing and archiving LN Group: I	
LN: Archiving Name: IARC	
LN: Human machine interface Name: IHMI	
LN: Telecontrol interface Name: ITCI	
LN: Telemonitoring interface Name: ITMI	
Logical Nodes for automatic control LN Group: A	
LN: Neutral current regulator Name: ANCR	
LN: Reactive power control Name: ARCO	
LN: Automatic tap changer controller Name: ATCC	
LN: Voltage control Name: AVCO	
Logical Nodes for metering and measurement LN Group: M	
LN: Differential measurements Name: MDIF	
LN: Harmonics or interharmonics Name: MHAI	
LN: Non phase related harmonics or interharmonics Name: MHAN	
LN: Metering Name: MMTR	
LN: Non phase related Measurement Name: MMXN	<input checked="" type="checkbox"/>
LN: Measurement Name: MMXU	<input checked="" type="checkbox"/>
LN: Sequence & imbalance Name: MSQI	
LN: Metering Statistics Name: MST A	
Logical Nodes for sensors and monitoring LN Group: S	
LN: Monitoring and diagnostics for arcs Name: SARC	
LN: Insulation medium supervision (gas) Name: SIMG	
LN: Insulation medium supervision (liquid) Name: SIML	
LN: Monitoring and diagnostics for partial discharges Name: SPDC	
Logical Nodes for switchgear LN Group: X	
LN: Circuit breaker Name: XCBR	<input checked="" type="checkbox"/>
LN: Circuit switch Name: XSWI	<input checked="" type="checkbox"/>
Logical Nodes for instrument transformers LN Group: T	
LN: Current transformer Name: TCTR	
LN: Voltage transformer Name: TVTR	
Logical Nodes for power transformers LN Group: Y	
LN: Earth fault neutralizer (Petersen coil) Name: YEFN	
LN: Tap changer Name: YLTC	
LN: Power shunt Name: YPSH	
LN: Power transformer Name: YPTR	

Logical Node	Supported
Logical Nodes for Further Power System Equipment LN Group: Z	
LN: Auxiliary network Name: ZAXN	
LN: Battery Name: ZBAT	
LN: Bushing Name: ZBSH	
LN: Power cable Name: ZCAB	
LN: Capacitor bank Name: ZCAP	
LN: Converter Name: ZCON	
LN: Generator Name: ZGEN	
LN: Gas insulated line Name: ZGIL	
LN: Power overhead line Name: ZLIN	
LN: Motor Name: ZMOT	
LN: Reactor Name: ZREA	
LN: Rotating reactive component Name: ZRRC	
LN: Surge arrester Name: ZSAR	
LN: Thyristor controlled frequency converter Name: ZTCF	
LN: Thyristor controlled reactive component Name: ZTCR	

5.1 LN: Physical device information Name: LPHD

LPHD class				
Attribute Name	Attr. Type	Explanation	M/O	supported
LNNName		Shall be inherited from Logical-Node Class (see7-2).		
Data				
PhyName	DPL	Physical device name plate	m	<input checked="" type="checkbox"/>
PhyHealth	INS	Physical device health	m	<input checked="" type="checkbox"/>
OutOv	SPS	Output communications buffer overflow	o	
Proxy	SPS	Indicates if this LN is a proxy	m	<input checked="" type="checkbox"/>
InOv	SPS	Input communications buffer overflow	o	
NumPwrUp	INS	Number of Power ups	o	
WrmStr	INS	Number of Warm Starts	o	
WacTrg	INS	Number of watchdog device resets detected	o	
PwrUp	SPS	Power Up detected	o	
PwrDn	SPS	Power Down detected	o	
PwrSupAlm	SPS	External power supply alarm	o	
RsStat	SPC	Reset device statistics	o	

5.2 LN: Logical node zero Name: LLN0

LLN0 class				
Attribute Name	Attr. Type	Explanation	M/O	supported
LNNName		Shall be inherited from Logical-Node Class (see-7-2).		
Data				
Common Logical Node Information				
LN shall inherit all Mandatory Data from Common Logical Node Class.			m	<input checked="" type="checkbox"/>
Loc	SPS	Local operation for complete logical device	o	<input checked="" type="checkbox"/>
OpTmh	INS	Operation time	o	
Controls				
Diag	SPC	Run Diagnostics	o	
LEDRs	SPC	LED reset	o	

5.3 LN: Switch controller Name: CSWI

LLNO class				
Attribute Name	Attr. Type	Explanation	M/O	supported
LNName		Shall be inherited from Logical-Node Class (see-7-2).		
Data				
<i>Common Logical Node Information</i>				
LN shall inherit all Mandatory Data from Common Logical Node Class.			m	<input checked="" type="checkbox"/>
Loc	SPS	Local operation for complete logical device	o	<input checked="" type="checkbox"/>
OpCntRs	INC	Resetable operation counter	o	
<i>Controls</i>				
Pos	DPC	Switch, general	m	<input checked="" type="checkbox"/>
PosA	DPC	Switch L1	o	<input checked="" type="checkbox"/>
PosB	DPC	Switch L2	o	<input checked="" type="checkbox"/>
PosC	DPC	Switch L3	o	<input checked="" type="checkbox"/>
OpOpn	ACT	Operation "Open Switch"	o	
OpCls	ACT	Operation "Close Switch"	o	

5.4 LN: General process I/O Name: GGIO

LLNO class				
Attribute Name	Attr. Type	Explanation	M/O	supported
LNName		Shall be inherited from Logical-Node Class (see-7-2).		
Data				
<i>Common Logical Node Information</i>				
LN shall inherit all Mandatory Data from Common Logical Node Class.			m	<input checked="" type="checkbox"/>
EEHealth	INS	External equipment health (external sensor)	o	<input checked="" type="checkbox"/>
EEName	DPL	External equipment name plate	o	<input checked="" type="checkbox"/>
Loc	SPS	Local operation for complete logical device	o	<input checked="" type="checkbox"/>
OpCntRs	INC	Resetable operation counter	o	
<i>Measured values</i>				
AnIn	MV	Analogue input	o	<input checked="" type="checkbox"/>
<i>Controls</i>				
SPCSO	SPC	Single point controllable status output	o	<input checked="" type="checkbox"/>
DPCSO	DPC	Double point controllable status output	o	<input checked="" type="checkbox"/>
ISCSO	INC	Integer status controllable status output	o	<input checked="" type="checkbox"/>
<i>Status information</i>				
IntIn	INS	Integer status input	o	<input checked="" type="checkbox"/>
Alm	SPS	General single alarm	o	<input checked="" type="checkbox"/>
Ind	SPS	General indication (binary input)	o	<input checked="" type="checkbox"/>

5.5 LN: Non phase related measurement Name: MMXN

LLNO class				
Attribute Name	Attr. Type	Explanation	M/O	supported
LNName		Shall be inherited from Logical-Node Class (see-7-2).		
Data				
<i>Common Logical Node Information</i>				
LN shall inherit all Mandatory Data from Common Logical Node Class.			m	<input checked="" type="checkbox"/>
EEHealth	INS	External equipment health (external sensor)	o	<input checked="" type="checkbox"/>
EENAME	DPL	External equipment name plate	o	<input checked="" type="checkbox"/>
<i>Measured values</i>				
Amp	MV	Current I (rms) not allocated to a phase	o	<input checked="" type="checkbox"/>
Vol	MV	Voltage V (rms) not allocated to a phase	o	<input checked="" type="checkbox"/>
Watt	MV	Power (P) not allocated to a phase	o	<input checked="" type="checkbox"/>
VolAmpr	MV	Reactive Power (Q) not allocated to a phase	o	<input checked="" type="checkbox"/>
VolAmp	MV	Apparent Power (S) not allocated to a phase	o	<input checked="" type="checkbox"/>
PwrFact	MV	Power factor not allocated to a phase	o	<input checked="" type="checkbox"/>
Imp	CMV	Impedance	o	<input checked="" type="checkbox"/>
Hz	MV	Frequency	o	<input checked="" type="checkbox"/>

5.6 LN: Measurement Name: MMXU

LLNO class				
Attribute Name	Attr. Type	Explanation	M/O	supported
LNName		Shall be inherited from Logical-Node Class (see-7-2).		
Data				
<i>Common Logical Node Information</i>				
LN shall inherit all Mandatory Data from Common Logical Node Class.			m	<input checked="" type="checkbox"/>
EEHealth	INS	External equipment health (external sensor)	o	<input checked="" type="checkbox"/>
<i>Measured values</i>				
TotW	MV	Total active power (Total P)	o	<input checked="" type="checkbox"/>
TotVAr	MV	Total reactive power (Total Q)	o	<input checked="" type="checkbox"/>
TotVA	MV	Total apparent power (Total S)	o	<input checked="" type="checkbox"/>
TotPF	MV	Average power factor (Total PF)	o	<input checked="" type="checkbox"/>
Hz	MV	Frequency	o	<input checked="" type="checkbox"/>
PPV	DEL	Phase to phase voltages (VL1VL2,...)	o	<input checked="" type="checkbox"/>
PhV	WYE	Phase to ground voltages (VL1ER,...)	o	<input checked="" type="checkbox"/>
A	WYE	Phase currents (IL1, IL2, IL3)	o	<input checked="" type="checkbox"/>
W	WYE	Phase active power (P)	o	<input checked="" type="checkbox"/>
VAr	WYE	Phase reactive power (Q)	o	<input checked="" type="checkbox"/>
VA	WYE	Phase apparent power (S)	o	<input checked="" type="checkbox"/>
PF	WYE	Phase power factor	o	<input checked="" type="checkbox"/>
Z	WYE	Phase impedance	o	<input checked="" type="checkbox"/>

5.7 LN: Circuit breaker Name: XCBR

LLNO class				
Attribute Name	Attr. Type	Explanation	M/O	supported
LNName		Shall be inherited from Logical-Node Class (see-7-2).		
Data				
Common Logical Node Information				
LN shall inherit all Mandatory Data from Common Logical Node Class.			m	<input checked="" type="checkbox"/>
Loc	SPS	Local operation	m	<input checked="" type="checkbox"/>
EEHealth	INS	External equipment health (external sensor)	o	<input checked="" type="checkbox"/>
EEName	DPL	External equipment name plate	o	<input checked="" type="checkbox"/>
OpCnt	INS	Operation counter	m	<input checked="" type="checkbox"/>
Controls				
Pos	DPC	Switch position	m	<input checked="" type="checkbox"/>
BlkOpn	SPC	Block opening	m	<input checked="" type="checkbox"/>
BlkCls	SPC	Block closing	m	<input checked="" type="checkbox"/>
ChaMotEna	SPC	Charger motor enabled	o	<input checked="" type="checkbox"/>
Measured values				
SumSwARs	BCR	Sum of Switched Amperes, resetable	o	
Status information				
CBOpCap	INS	Circuit breaker operating capability	o	<input checked="" type="checkbox"/>
POWCap	INS	Point on wave switching capability	o	<input checked="" type="checkbox"/>
MaxOpCap	INS	Circuit breaker operating capability when fully charged	o	<input checked="" type="checkbox"/>

5.8 LN: Circuit switch Name: XSWI

LLNO class				
Attribute Name	Attr. Type	Explanation	M/O	supported
LNName		Shall be inherited from Logical-Node Class (see-7-2).		
Data				
Common Logical Node Information				
LN shall inherit all Mandatory Data from Common Logical Node Class.			m	<input checked="" type="checkbox"/>
Loc	SPS	Local operation	m	<input checked="" type="checkbox"/>
EEHealth	INS	External equipment health (external sensor)	o	<input checked="" type="checkbox"/>
EEName	DPL	External equipment name plate	o	<input checked="" type="checkbox"/>
OpCnt	INS	Operation counter	m	<input checked="" type="checkbox"/>
Controls				
Pos	DPC	Switch position	m	<input checked="" type="checkbox"/>
BlkOpn	SPC	Block opening	m	<input checked="" type="checkbox"/>
BlkCls	SPC	Block closing	m	<input checked="" type="checkbox"/>
ChaMotEna	SPC	Charger motor enabled	o	<input checked="" type="checkbox"/>
Status information				
SwTyp	INS	Switch type	o	<input checked="" type="checkbox"/>
SWOpCap	INS	Switch operating capability	o	<input checked="" type="checkbox"/>
MaxOpCap	INS	Circuit breaker operating capability when fully charged	o	<input checked="" type="checkbox"/>

6 Common data class conformance statement

6.1 SPS: Single point status

SPS class						
Attribute name	Attribute type	FC	TrgOp	Value/value range	m/o/c	supported
DataName	Inherited from Data Class (see IEC 61850-7-2)					
DataAttribute						
<i>status</i>						
stVal	BOOLEAN	ST	dchg	FALSE TRUE	M	<input checked="" type="checkbox"/>
q	Quality	ST	qchg		M	<input checked="" type="checkbox"/>
t	TimeStamp	ST			M	<input checked="" type="checkbox"/>
<i>Substitution</i>						
subEna	BOOLEAN	SV			PICS_SUBST	
subVal	BOOLEAN	SV		TRUE FALSE	PICS_SUBST	
subQ	Quality	SV			PICS_SUBST	
subID	VISIBLE STRING64	SV			PICS_SUBST	
<i>configuration, description and extension</i>						
d	VISIBLE STRING255	DC		Text	o	<input checked="" type="checkbox"/>
dU	UNICODE STRING255	DC			o	
cdcNs	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
cdcName	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
dataNs	VISIBLE STRING255	EX			AC_DLN_M	<input checked="" type="checkbox"/>

6.2 DPS: Double point status

DPS class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value Range	m/o/c	supported
DataName	Inherited from Data Class (see IEC 61850-7-2)					
DataAttribute						
<i>status</i>						
stVal	CODED ENUM	ST	dchg	intermediate-state off on bad-	m	<input checked="" type="checkbox"/>
q	Quality	ST	qchg		m	<input checked="" type="checkbox"/>
t	TimeStamp	ST			m	<input checked="" type="checkbox"/>
<i>substitution</i>						
subEna	BOOLEAN	SV			PICS_SUBST	
subVal	CODED ENUM	SV		intermediate-state off on bad-	PICS_SUBST	
subQ	Quality	SV			PICS_SUBST	
subID	VISIBLE STRING64	SV			PICS_SUBST	
<i>configuration, description and extension</i>						
d	VISIBLE STRING255	DC		Text	o	<input checked="" type="checkbox"/>
dU	UNICODE STRING255	DC			o	
cdcNs	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
cdcName	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
dataNs	VISIBLE STRING255	EX			AC_DLN_M	<input checked="" type="checkbox"/>

6.3 INS: Integer status

INS class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value Range	M/O/C	supported
DataName	Inherited from Data Class (see IEC 61850-7-2)					
DataAttribute						
<i>status</i>						
stVal	INT32	ST	dchg		m	<input checked="" type="checkbox"/>
q	Quality	ST	qchg		m	<input checked="" type="checkbox"/>
t	TimeStamp	ST			m	<input checked="" type="checkbox"/>
<i>substitution</i>						
subEna	BOOLEAN	SV			PICS_SUBST	
subVal	INT32	SV			PICS_SUBST	
subQ	Quality	SV			PICS_SUBST	
subID	VISIBLE STRING64	SV			PICS_SUBST	
<i>configuration, description and extension</i>						
d	VISIBLE STRING255	DC		Text	o	<input checked="" type="checkbox"/>
dU	UNICODE STRING255	DC			o	
cdcNs	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
cdcName	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
dataNs	VISIBLE STRING255	EX			AC_DLN_M	<input checked="" type="checkbox"/>

6.4 MV: Measured value

MV class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value Range	m/o/c	supported
DataName	Inherited from Data Class (see IEC 61850-7-2)					
DataAttribute						
<i>measured attributes</i>						
instMag	AnalogueValue	MX			o	
mag	AnalogueValue	MX	dchg		m	<input checked="" type="checkbox"/>
range	ENUMERATED	MX	dchg	normal high low high-high low-	o	
q	Quality	MX	qchg		m	<input checked="" type="checkbox"/>
t	TimeStamp	MX			m	<input checked="" type="checkbox"/>
<i>substitution</i>						
subEna	BOOLEAN	SV			PICS_SUBST	
subMag	AnalogueValue	SV			PICS_SUBST	
subQ	Quality	SV			PICS_SUBST	
subID	VISIBLE STRING64	SV			PICS_SUBST	
<i>configuration, description and extension</i>						
units	Unit	CF		see Annex A	o	
db	INT32U	CF		0 ... 100 000	o	
zeroDb	INT32U	CF		0 ... 100 000	o	
sVC	ScaledValueConfig	CF			AC_SCAV	<input checked="" type="checkbox"/>
rangeC	RangeConfig	CF			GC_CON	
smpRate	INT32U	CF			o	
d	VISIBLE STRING255	DC		Text	o	<input checked="" type="checkbox"/>
dU	UNICODE STRING255	DC			o	
cdcNs	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
cdcName	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
dataNs	VISIBLE STRING255	EX			AC_DLN_M	<input checked="" type="checkbox"/>

6.5 CMV: Complex measured value

MV class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value Range	m/o/c	supported
DataName	Inherited from Data Class (see IEC 61850-7-2)					
DataAttribute						
<i>measured attributes</i>						
instCVal	Vector	MX			o	
cVal	Vector	MX	dchg		m	<input checked="" type="checkbox"/>
range	ENUMERATED	MX	dchg	normal high low high-high low-	o	
q	Quality	MX	qchg		m	<input checked="" type="checkbox"/>
t	TimeStamp	MX			m	<input checked="" type="checkbox"/>
<i>substitution</i>						
subEna	BOOLEAN	SV			PICS_SUBST	
subCVal	Vector	SV			PICS_SUBST	
subQ	Quality	SV			PICS_SUBST	
subID	VISIBLE STRING64	SV			PICS_SUBST	
<i>configuration, description and extension</i>						
units	Unit	CF		see Annex A	o	
db	INT32U	CF		0 ... 100 000	o	
zeroDb	INT32U	CF		0 ... 100 000	o	
rangeC	RangeConfig	CF			GC_CON	
magSVC	ScaledValueConfig	CF			AC_SCAV	<input checked="" type="checkbox"/>
angSVC	ScaledValueConfig	CF			AC_SCAV	
angRef	ENUMERATED	CF		V A other ...	o	
smpRate	INT32U	CF			o	
d	VISIBLE STRING255	DC		Text	o	<input checked="" type="checkbox"/>
dU	UNICODE STRING255	DC			o	
cdcNs	VISIBLE STRING255	EX			AC_DLND_A_M	<input checked="" type="checkbox"/>
cdcName	VISIBLE STRING255	EX			AC_DLND_A_M	<input checked="" type="checkbox"/>
dataNs	VISIBLE STRING255	EX			AC_DLN_M	<input checked="" type="checkbox"/>

6.6 WYE: Phase to ground related measured values of a three phase system

MV class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value Range	m/o/c	supported
DataName	Inherited from Data Class (see IEC 61850-7-2)					
Data						
phsA	CMV				GC_1	<input checked="" type="checkbox"/>
phsB	CMV				GC_1	<input checked="" type="checkbox"/>
phsC	CMV				GC_1	<input checked="" type="checkbox"/>
neut	CMV				GC_1	<input checked="" type="checkbox"/>
net	CMV				GC_1	<input checked="" type="checkbox"/>
res	CMV				GC_1	<input checked="" type="checkbox"/>
DataAttribute						
<i>configuration, description and extension</i>						
angRef	ENUMERATED	CF		Va Vb Vc Aa Ab Ac Vab Vbc Vca Vother Aother	o	
d	VISIBLE STRING255	DC		Text	o	<input checked="" type="checkbox"/>
dU	UNICODE STRING255	DC			o	
cdcNs	VISIBLE STRING255	EX			AC_DLND_A_M	<input checked="" type="checkbox"/>
cdcName	VISIBLE STRING255	EX			AC_DLND_A_M	<input checked="" type="checkbox"/>
dataNs	VISIBLE STRING255	EX			AC_DLN_M	<input checked="" type="checkbox"/>

6.7 DEL: Phase to phase related measured values of a three phase system

MV class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value Range	m/o/c	supported
DataName	Inherited from Data Class (see IEC 61850-7-2)					
Data						
phsAB	CMV				GC_1	<input checked="" type="checkbox"/>
phsBC	CMV				GC_1	<input checked="" type="checkbox"/>
phsCA	CMV				GC_1	<input checked="" type="checkbox"/>
DataAttribute						
<i>configuration, description and extension</i>						
angRef	ENUMERATED	CF		Va Vb Vc Aa Ab Ac Vab Vbc Vca Vother Aother	o	
d	VISIBLE STRING255	DC		Text	o	<input checked="" type="checkbox"/>
dU	UNICODE STRING255	DC			o	
cdcNs	VISIBLE STRING255	EX			AC_DLND_A_M	<input checked="" type="checkbox"/>
cdcName	VISIBLE STRING255	EX			AC_DLND_A_M	<input checked="" type="checkbox"/>
dataNs	VISIBLE STRING255	EX			AC_DLND_M	<input checked="" type="checkbox"/>

6.8 SPC: Controllable single point

SPC class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value Range	m/o/c	supported
DataName	Inherited from Data Class (see IEC 61850-7-2)					
DataAttribute						
<i>control and status</i>						
ctlVal	BOOLEAN	CO		off (FALSE) on (TRUE)	AC_CO_M	<input checked="" type="checkbox"/>
operTm	TimeStamp	CO			AC_CO_O	
origin	Originator	CO, ST			AC_CO_O	<input checked="" type="checkbox"/>
ctlNum	INT8U	CO, ST		0..255	AC_CO_O	<input checked="" type="checkbox"/>
stVal	BOOLEAN	ST	dchg	FALSE TRUE	AC_ST	<input checked="" type="checkbox"/>
q	Quality	ST	qchg		AC_ST	<input checked="" type="checkbox"/>
t	TimeStamp	ST			AC_ST	<input checked="" type="checkbox"/>
stSeld	BOOLEAN	ST	dchg		AC_CO_O	<input checked="" type="checkbox"/>
<i>substitution</i>						
subEna	BOOLEAN	SV			PICS_SUBST	
subVal	BOOLEAN	SV		FALSE TRUE	PICS_SUBST	
subQ	Quality	SV			PICS_SUBST	
subID	VISIBLE STRING64	SV			PICS_SUBST	
<i>configuration, description and extension</i>						
pulseConfig	PulseConfig	CF			AC_CO_O	
ctlModel	CtlModels	CF			m	<input checked="" type="checkbox"/>
sboTimeout	INT32U	CF			AC_CO_O	<input checked="" type="checkbox"/>
sboClass	SboClasses	CF			AC_CO_O	
d	VISIBLE STRING255	DC		Text	o	<input checked="" type="checkbox"/>
dU	UNICODE STRING255	DC			o	
cdcNs	VISIBLE STRING255	EX			AC_DLND_A_M	<input checked="" type="checkbox"/>
cdcName	VISIBLE STRING255	EX			AC_DLND_A_M	<input checked="" type="checkbox"/>
dataNs	VISIBLE STRING255	EX			AC_DLND_M	<input checked="" type="checkbox"/>

6.9 DPC: Controllable double point

SPC class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value Range	m/o/c	supported
DataName	Inherited from Data Class (see IEC 61850-7-2)					
DataAttribute						
<i>control and status</i>						
ctlVal	BOOLEAN	CO		off (FALSE) on (TRUE)	AC_CO_M	<input checked="" type="checkbox"/>
operTm	TimeStamp	CO			AC_CO_O	
origin	Originator	CO, ST			AC_CO_O	<input checked="" type="checkbox"/>
ctlNum	INT8U	CO, ST		0..255	AC_CO_O	<input checked="" type="checkbox"/>
stVal	CODED ENUM	ST	dchg	intermediate-state off on bad-	AC_ST	<input checked="" type="checkbox"/>
q	Quality	ST	qchg		AC_ST	<input checked="" type="checkbox"/>
t	TimeStamp	ST			AC_ST	<input checked="" type="checkbox"/>
stSeld	BOOLEAN	ST	dchg		AC_CO_O	<input checked="" type="checkbox"/>
<i>substitution</i>						
subEna	BOOLEAN	SV			PICS_SUBST	
subVal	CODED ENUM	SV		intermediate-state off on bad-	PICS_SUBST	
subQ	Quality	SV			PICS_SUBST	
subID	VISIBLE STRING64	SV			PICS_SUBST	
<i>configuration, description and extension</i>						
pulseConfig	PulseConfig	CF			AC_CO_O	
ctlModel	CtlModels	CF			m	<input checked="" type="checkbox"/>
sboTimeout	INT32U	CF			AC_CO_O	<input checked="" type="checkbox"/>
sboClass	SboClasses	CF			AC_CO_O	
d	VISIBLE STRING255	DC		Text	o	<input checked="" type="checkbox"/>
dU	UNICODE STRING255	DC			o	
cdcNs	VISIBLE STRING255	EX			AC_DLND_A_M	<input checked="" type="checkbox"/>
cdcName	VISIBLE STRING255	EX			AC_DLND_A_M	<input checked="" type="checkbox"/>
dataNs	VISIBLE STRING255	EX			AC_DLND_M	<input checked="" type="checkbox"/>

6.10 INC: Controllable integer status

SPC class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value Range	m/o/c	supported
DataName	Inherited from Data Class (see IEC 61850-7-2)					
DataAttribute						
<i>control and status</i>						
ctlVal	INT32	CO			AC_CO_M	<input checked="" type="checkbox"/>
operTm	TimeStamp	CO			AC_CO_O	
origin	Originator	CO, ST			AC_CO_O	<input checked="" type="checkbox"/>
ctlNum	INT8U	CO, ST		0..255	AC_CO_O	<input checked="" type="checkbox"/>
stVal	INT32	ST	dchg		AC_ST	<input checked="" type="checkbox"/>
q	Quality	ST	qchg		AC_ST	<input checked="" type="checkbox"/>
t	TimeStamp	ST			AC_ST	<input checked="" type="checkbox"/>
stSeld	BOOLEAN	ST	dchg		AC_CO_O	<input checked="" type="checkbox"/>
<i>substitution</i>						
subEna	BOOLEAN	SV			PICS_SUBST	
subVal	INT32	SV			PICS_SUBST	
subQ	Quality	SV			PICS_SUBST	
subID	VISIBLE STRING64	SV			PICS_SUBST	
<i>configuration, description and extension</i>						
ctlModel	CtlModels	CF			m	<input checked="" type="checkbox"/>
sboTimeout	INT32U	CF			AC_CO_O	<input checked="" type="checkbox"/>
sboClass	SboClasses	CF			AC_CO_O	

minVal	INT32	CF			o	
maxVal	INT32	CF			o	
stepSize	INT32U	CF		1 ... (maxVal – minVal)	o	
d	VISIBLE STRING255	DC		Text	o	<input checked="" type="checkbox"/>
dU	UNICODE STRING255	DC			o	
cdcNs	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
cdcName	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
dataNs	VISIBLE STRING255	EX			AC_DLN_M	<input checked="" type="checkbox"/>

6.11 APC: Controllable analogue set point information

SPC class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value Range	m/o/c	supported
DataName	Inherited from Data Class (see IEC 61850-7-2)					
DataAttribute						
<i>control and status</i>						
setMag	AnalogueValue	SP, MX	dchg		M	<input checked="" type="checkbox"/>
origin	Originator	SP, MX			O	<input checked="" type="checkbox"/>
operTm	TimeStamp	SP			O	
q	Quality	MX	qchg		M	<input checked="" type="checkbox"/>
t	TimeStamp	MX			M	<input checked="" type="checkbox"/>
<i>configuration, description and extension</i>						
ctlModel	CtlModels	CF			M	<input checked="" type="checkbox"/>
units	Unit	CF			M	
sVC	ScaledValueConfig	CF			AC_SCAV	<input checked="" type="checkbox"/>
minVal	AnalogueValue	CF			O	
maxVal	AnalogueValue	CF			O	
stepSize	AnalogueValue	CF		1 ... (maxVal – minVal)	O	
d	VISIBLE STRING255	DC		Text	o	<input checked="" type="checkbox"/>
dU	UNICODE STRING255	DC			o	
cdcNs	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
cdcName	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
dataNs	VISIBLE STRING255	EX			AC_DLN_M	<input checked="" type="checkbox"/>

6.12 DPL: Device name plate

DPL class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value Range	m/o/c	supported
DataName	Inherited from Data Class (see IEC 61850-7-2)					
DataAttribute						
<i>configuration, description and extension</i>						
vendor	VISIBLE STRING255	DC			m	<input checked="" type="checkbox"/>
hwRev	VISIBLE STRING255	DC			o	<input checked="" type="checkbox"/>
swRev	VISIBLE STRING255	DC			o	<input checked="" type="checkbox"/>
serNum	VISIBLE STRING255	DC			o	<input checked="" type="checkbox"/>
model	VISIBLE STRING255	DC			o	<input checked="" type="checkbox"/>
location	VISIBLE STRING255	DC			o	<input checked="" type="checkbox"/>
cdcNs	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
cdcName	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
dataNs	VISIBLE STRING255	EX			AC_DLN_M	<input checked="" type="checkbox"/>

6.13 LPL: Logical node name plate

LPL class						
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Attribute Name	Attribute Type	FC	TrgOp	Value/Value Range	m/o/c	
DataName	Inherited from Data Class (see IEC 61850-7-2)					
DataAttribute						
<i>configuration, description and extension</i>						
vendor	VISIBLE STRING255	DC			m	<input checked="" type="checkbox"/>
swRev	VISIBLE STRING255	DC			m	<input checked="" type="checkbox"/>
d	VISIBLE STRING255	DC			m	<input checked="" type="checkbox"/>
dU	UNICODE STRING255	DC			o	
configRev	VISIBLE STRING255	DC			AC_LN0_M	<input checked="" type="checkbox"/>
ldNs	VISIBLE STRING255	EX		shall be included in LLNO only; for example "IEC 61850-7-4:2003"	AC_LN0_EX	<input checked="" type="checkbox"/>
lnNs	VISIBLE STRING255	EX			AC_DLD_M	<input checked="" type="checkbox"/>
cdcNs	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
cdcName	VISIBLE STRING255	EX			AC_DLNDA_M	<input checked="" type="checkbox"/>
dataNs	VISIBLE STRING255	EX			AC_DLN_M	<input checked="" type="checkbox"/>