Conformance Statement
IEC 61850-Modul

SINEAX AM/DM, CENTRAX CU, LINAX PQ (2018-08)

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Revision History

Date	Issue	Description	Author
08-12-2018	1.00.3280	Initial version	Roger Rölli, CBM

Contents

1.   Introduction

1.1   Document purpose

The purpose of this document is to provide the **IEC 61850 Edition 2** conformance details for the embedded IEC61850 server implementation in the series of Power Monitoring Devices manufactured by Camille Bauer Metrawatt AG, Switzerland (later referred to as CBM).

The information provided here may be subject to changes due to planned further extensions in the supported IEC61850 functionality.

1.2   Terms and abbreviations

ACSI	Abstract Communication Service Interfaces
BDA	Basic Data Attribute (not structured)
DA	Data Attributes
DO	DATA in IEC 61850-7-2, data object type or instance
FCD	Functionally Constrained Data
FCDA	Functionally Constrained Data Attribute
ID	Identifier
IED	Intelligent Electronic Device
LD	Logical Device
LN	Logical Node
MSV	Multicast Sampled Value
RCB	Report Control Block
GCB	GOOSE Control Block or GSSE Control Block
SCL	Substation Configuration Language
SCSM	Specific Communication Service Mapping
XML	Extensible Markup Language
GSSE	Generic Substation State Events
GOOSE	Generic Object Oriented Substation Events
SCD	Substation Configuration Description File
ICD	IED Configuration Description
CID	Configured IED Description
PICS	Protocol Implementation Conformance Statement
MICS	Model Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
TICS	Tissue Implementation Conformance Statement

2. PICS details

The following ACSI conformance statements are used to provide an overview and details about all supported CBM devices: SINEAX AMx000/DM5000, CENTRAX CUx0000, LINAX PQx000.

- ASCI 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.

Conformance of the IEC61850 server in CBM devices:

Supported models and services	Y
Unsupported	N
Not applicable to Server/publisher	--

2.1 ASCI basic conformance statement

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

Table A.1 – Basic conformance statement

Basic ASCI Conformance		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*
B23	**SCSM**: IEC 61850-9-2 used		N	
B24	**SCSM**: other		--	
Generic substation event model (GSE)				
B31	**Publisher** side		N	
B32	**Subscriber** side	N		
Transmission of sampled value model (SVC)				
B41	**Publisher** side		N	
B42	**Subscriber** side	N		

2.2 ASCI models conformance statement

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

Table A.2 – ACSI models conformance statement

ASCI Model Conformance		Client/ subscriber	Server/ publisher	Value / Comments
If **Server or Client** side (B11/12) supported				
M1	**Logical device**		Y	Multiple LD instances in the server.
M2	**Logical node**		Y	Standard LN types defined in Edition 2 Part 7-4.
M3	**Data**		Y	Only standard object types defined in Part 7-3, 7-4. Mandatory objects and attributes, selected optional objects and attributes.
M4	**Data set**		Y	Supported pre-defined persistent data sets, not configurable via SCL. Supported dynamically created data sets (persistent and non-persistent).
M5	**Substitution**		N	
M6	**Setting group control**		N	
	Reporting		Y	
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	
M10	**Log**		N	

ASCI Model Conformance		Client/ subscriber	Server/ publisher	Value / Comments
Other				
M11	**Control**		N	
M17	**File transfer**		Y	
M18	**Application association**		Y	
M19	**GOOSE Control Block**		N	
M20	**Sampled Values Control Block**		N	
If **GSE** (B31/32) is supported				
M12	**GOOSE**		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	Performance class T1 (1ms accuracy)

2.3   ASCI 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	ASCI Service Conformance	AA: TP/MC	Client/ Sub (C)	Server/ Pub (S)	Comments
Server						
S1	1,2	GetServerDirectory (LOGICAL-DEVICE)	TP		Y	
Application association						
S2		Associate	TP		Y	
S3		Abort	TP		Y	
S4		Release	TP		Y	
Logical device						
S5		LogicalDeviceDirectory	TP		Y	
Logical node						
S6		LogicalNodeDirectory	TP		Y	
S7		GetAllDataValues	TP		Y	
Data						
S8		GetDataValues	TP		Y	
S9		SetDataValues	TP		Y	
S10		GetDataDirectory	TP		Y	
S11		GetDataDefinition	TP		Y	
Data set						
S12		GetDataSetValues	TP		Y	
S13		SetDataSetValues	TP			*Deprecated*
S14		CreateDataSet	TP		Y	
S15		DeleteDataSet	TP		Y	
S16		GetDataSetDirectory	TP		Y	

	Ed	ASCI Service Conformance	AA: TP/MC	Client/ Sub (C)	Server/ Pub (S)	Comments
Substitution						
S17		SetDataValues	TP		N	
Setting group control						
S18		SelectActiveSG	TP		N	
S19		SelectEditSG	TP		N	
S20		SetSGValues	TP		N	
S21		ConfirmEditSGValues	TP		N	
S22		GetSGValues	TP		N	
S23		GetSGCBValues	TP		N	
Reporting						
Buffered report control block (BRCB)						
S24		Report	TP		Y	
S24-1		data-change (dchg)			Y	
S24-2		qchg-change (qchg)			Y	
S24-3		data-update (dupd)			Y	
S25		GetBRCBValues	TP		Y	
S26		SetBRCBValues	TP		Y	
Unbuffered report control block (URCB)						
S27		Report	TP		Y	
S27-1		data-change (dchg)			Y	
S27-2		qchg-change (qchg)			Y	
S27-3		data-update (dupd)			Y	
S28		GetURCBValues	TP		Y	
S29		SetURCBValues	TP		Y	
Logging						
Log control						
S30		GetLCBValues	TP		N	
S31		SetLCBValues	TP		N	
Log						
S32		QueryLogByTime	TP		N	
S33		QueryLogAfter	TP		N	
S34		GetLogStatusValues	TP		N	
Generic substation event model (GSE)						
S35		SendGOOSEMessage	MC		N	
GOOSE Control Block						
S36		GetGoReference	TP		N	
S37		GetGOOSEElementNumber	TP		N	
S38		GetGoCBValues	TP		N	
S39		SetGoCBValues	TP		N	
GSSE (Ed2:61850-7-2 Annex C)						
S40		SendGSSEMessage	MC			*Deprecated*
GSSE Control Block						
S41		GetGsReference	TP			*Deprecated*
S42		GetGSSEElementNumber	TP			*Deprecated*
S43		GetGsCBValues	TP			*Deprecated*

	Ed	ASCI Service Conformance	AA: TP/MC	Client/ Sub (C)	Server/ Pub (S)	Comments
S44		SetGsCBValues	TP			*Deprecated*
Transmission of sampled value model (SVC)						
Multicast SV						
S45		SendMSVMessage	MC		N	Use for 9-2LE or IEC 61869-9
Multicast Sampled Values Control Block						
S46		GetMSVCBValues	TP		N	
S47		SetMSVCBValues	TP		N	
Unicast SV						
S48		SendUSVMessage	TP		N	
Unicast Sampled Values Control Block						
S49		GetUSVCBValues	TP		N	
S50		SetUSVCBValues	TP		N	
Control						
S51		Select	TP		N	
S52		SelectWithValue	TP		N	
S53		Cancel	TP		N	
S54		Operate	TP		N	
S55		Command-Termination	TP		N	
S56		TimeActivated-Operate	TP		N	
File Transfer						
S57		GetFile	TP		Y	
S58		SetFile	TP		N	
S59		DeleteFile	TP		Y	
S60		GetFileAttributeValues	TP		Y	
S61		GetServerDirectory (FILE)	TP		Y	
Time						
T1		Time resolution of internal clock	-		10 bits	
T2		Time accuracy of internal clock	-		T1	1ms
T3		Supported TimeStamp resolution	-		10 ns	

3. MICS details

This model implementation conformance statement is applicable for all supported CBM devices: SINEAX AMx000/DM5000, CENTRAX CUx0000, LINAX PQx000.

This MICS document specifies the modeling extensions compared to IEC 61850 edition 2.

- Clause 3.1 contains the list of implemented logical nodes.
- Clause 3.2 describes the new and extended logical nodes.
- Clause 3.3 describes the new and extended common data classes (if any).

3.1 Classes of Logical Nodes supported in the server

The following table contains the list of logical nodes implemented in the device:

Standard LN classes defined in Edition:

L: System Logical Nodes
LPHD (Physical device information)
LLN0 (Logical node zero)
M: Logical Nodes for metering and measurement
MMXU (Measurement)
MMTR (Metering 3 phase)
MSQI (Sequence and imbalance)
MFLK (Flicker measurement)   *(for LINAX PQx000 only)*
MHAI (Harmonics or interharmonics)
G: Logical Nodes for generic references
GGIO (Generic process I/O)

3.2 Logical Node extensions

3.2.1 New Logical Nodes

No new logical nodes or logical nodes extensions defined.

3.2.2 Extended Logical Nodes

None

3.3 Enum types extensions

3.3.1 New Enum types

Only standard Enum types are used.

3.3.2 Extended Enum types

None

4. PIXIT details

Introduction

This document specifies the protocol implementation extra information for testing (PIXIT) of the IEC 61850 interface in all supported CBM devices: SINEAX AMx000/DM5000, CENTRAX CUx0000, LINAX PQx000.

Together with the PICS and the MICS the PIXIT document forms the basis for a conformance test according to IEC 61850-10. The PIXIT entries contain information which is not available in the PICS, MICS, TICS documents or SCL file.

Each chapter specifies the PIXIT for applicable ACSI service model as structured in IEC 61850-10. The "Ed" column indicates if the entry is applicable for IEC 61850 Edition 1 and/or Edition 2.

ID	Ed	Property Description	Value / Clarification
Do1	2	How to expose required firmware versions not present in the data model	Information included in the ICD file and in the data model (LLN0.NamePlt.swRev)

4.1 PIXIT for Assocation Model

ID	Ed	Property Description	Value / Clarification
As1	1	Maximum number of clients that can set-up an association simultaneously	10
As2	1,2	TCP_KEEPALIVE value	Configurable, default 2s
As3	1,2	Lost connection detection time	By default 22s (cycle of TCP Keep-alive message 2 s, 10 retransmissions)
As4	-	Authentication is not supported yet	
As5	1,2	What association parameters are necessary for successful association	Transport selector N Session selector N Presentation selector N AP Title N AE Qualifier N **Checking is not applied**
As6	1,2	If association parameters are necessary for association, describe the correct values. Association parameters are configurable, default values are	Transport selector 1 Session selector 1 Presentation selector 1 AP Title 1.1.1.999.1 AE Qualifier 12 **Constant values, but not checked.**
As7	1,2	What is the maximum and minimum MMS PDU size	Max: 32kbytes Min: In initiate request required 6100 bytes There is no lower limit of the request size (message syntax must be correct)
As8	1,2	What is the maximum start up time after a power supply interrupt	60s

4.2 PIXIT for Server Model

ID	Ed	Property Description	Value / Clarification
Sr1	1,2	Which analogue value (MX) quality bits are supported (can be set by server)	Validity: Y Good, Y Invalid, N Reserved, N Questionable Y Overflow Y OutofRange N BadReference N Oscillatory N Failure N OldData N Inconsistent N Inaccurate Source: Y Process N Substituted Y Test N OperatorBlocked
Sr2	1,2	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 Y Test N OperatorBlocked
Sr3	-	What is the maximum number of data values in one GetDataValues request *Deprecated*	The stack does not limit the amount of the data values. MMS PDU is the limit.
Sr4	-	What is the maximum number of data values in one SetDataValues request *Deprecated*	The stack does not limit the amount of the data values. MMS PDU is the limit.
Sr5	1	Which Mode / Behavior values are supported	On Y On-Blocked N Test N Test/Blocked N Off N

4.3 PIXIT for Data Set Model

ID	Ed	Property Description	Details
Ds1	1	What is the maximum number of data elements in one data set (compare ICD setting)	100
Ds2	1	How many persistent data sets can be created by one or more clients (this number includes predefined datasets)	32 (with maximum total number of 32 data sets including pre-defined and non-persistent)
Ds3	1	How many non-persistent data sets can be created by one or more clients	32 (with maximum total number of 32 data sets including pre-defined and persistent)
Ds4	1	Maximum number of data elements in GOOSE publisher data set	Not applicable
Ds5	1	Data set members in RCB data set	Any functionally constrained data
Ds6	1	Data set members in GOOSE publisher data set	Not applicable
Ds7	1	Persistent data sets – pre-defined (using configuration tool)	Up to 32
Ds8	1	GOOSE publisher data set	Not applicable
Ds9	1	SetDataSetValues service	Supported but with negative response for all data sets (data sets can be composed of read-only attributes)
Ds10	1	Maximum number of data sets handled by DUT	32

Note

Ds4..Ds10 are given as additional declarations originating from the description of conformance to Edition 1.

4.4 PIXIT for Reporting Model

ID	Ed	Property Description	Details	
Rp1	1	The supported trigger conditions (compare PICS)	integrity	Y
			data change	Y
			quality change	Y
			data update	Y
			general interrogation	Y
Rp2	1	The supported optional fields are	sequence-number	Y
			report-time-stamp	Y
			reason-for-inclusion	Y
			data-set-name	Y
			data-reference	Y
			entryID	Y
			conf-rev	Y
			segmentation	Y

ID	Ed	Property Description	Details
Rp3	1,2	Can the server send segmented reports	Y
Rp4	1,2	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)	Value is overwritten with the new one
Rp5	1	Multi client URCB approach (compare IEC 61850-7-2 $14.2.1)	All RCB instances are visible to clients; client can reserve selected instances and subscribe for reports. 10 BRCB instances 20 URCB instances
Rp6	-	What is the format of EntryID	Octet string 8, four LSB bytes are used as counter.
Rp7	1,2	What is the buffer size for each BRCB or how many reports can be buffered	64 kbytes per report control block
Rp8	-	Pre-configured RCB attributes that are dynamic, compare SCL report settings *Deprecated*	All except RCB name
Rp9	1	May the reported data set contain: - structured data objects? - data attributes?	 Y Y
Rp10	1,2	What is the scan cycle for binary events? Is this fixed, configurable	200 millisecond (data update cycle in comm. card) Fixed
Rp11	1	Does the device support to pre-assign a RCB to a specific client in the SCL	N
Rp12	2	After restart of the server is the value of ConfRev restored from the original configuration or retained prior to restart	Retained prior to restart
Rp13	1,2	Does the server accept any client to configure / enable a BRCB with ResvTms=-1? What fields are used to do the identification?	Y AP-Title na AE-Qualifier na <other field> na
Rp14	1,2	What is default value for BRCB.ResvTms if client does not write or ResvTms not exposed in the control block (must be >= 0)	0 ms

4.5 PIXIT for Time Synchronization

ID	Ed	Description	Value / Clarification
Tm1	1	What time quality bits are supported (may be set by the IED)	Y LeapSecondsKnown Y ClockFailure Y ClockNotSynchronized
Tm2	1,2	Describe the behaviour when the time server(s) ceases to respond What is the time server lost detection time	Time is taken from internal RTC Max 60 seconds
Tm3	1,2	How long does it take to take over the new time from time server	Max 60 seconds
Tm4	1,2	When is the time quality bit "Clock failure" set?	When internal query for time synchronization fails
Tm5	1,2	When is the time quality bit "Clock not synchronized" set?	It is done when the device detects that the configured NTP server does not respond
Tm6	-	Is the timestamp of a binary event adjusted to the configured scan cycle? *Deprecated*	N
Tm7	1	Does the device support time zone and daylight saving?	N
Tm8	1,2	Which attributes of the SNTP response packet are validated?	N Leap indicator not equal to 3 N Mode is equal to SERVER N OriginateTimestamp is equal to value sent by the SNTP client as Transmit Timestamp Y RX/TX timestamp fields are checked for reasonableness Y SNTP version 3 or 4 N other
Tm9	1,2	Do the COMTRADE files have local time or UTC time Is this configurable	Not applicable (no COMTRADE files)

4.6   PIXIT for File Transfer Model

ID	Ed	Description	Value / Clarification
Ft1	1	What is structure of files and directories?	Root/
		Where are the COMTRADE files stored?	Device does not produce COMTRADE files
		Are COMTRADE files zipped and what files are included in each zip file?	N/A
Ft2	1,2	Directory names are separated from the file name by	"/"
Ft3	1	The maximum file name size including path	64 chars
Ft4	1,2	Are directory/file name case sensitive	Case sensitive
Ft5	1,2	Maximum file size for SetFile	Not applicable
Ft6	1	Is the requested file path included in the file name of the MMS fileDirectory respond?	Y
Ft7	1	Is the wild char supported MMS fileDirectory request?	Y, wild card = *, but only allowed as equivalent of all files (i.e. requests with patterns "test*" or "all.*" will be rejected)
Ft8	1,2	Is it allowed that 2 clients get a file at the same time?	Y
Ft9	1,2	Which files can be deleted	All

5. TICS details

5.1 Introduction

This part of the document is based on a template for the tissues conformance statement. According to the UCA IUG QAP the tissue conformance statement is required to perform a conformance test and is referenced on the certificate.

This document is applicable for all supported CBM devices: SINEAX AMx000/DM5000, CENTRAX CUx0000, LINAX PQx000

5.2 Mandatory Intop Tissues

Below tables give an overview of the applicable mandatory Tissues.

Part 6 Tissue	Description	Implemented Y/na
658	Tracking related features	na
663	FCDA element cannot be a "functionally constrained logical node"	Y
668	Autotransformer modeling	na
687	SGCB ResvTms	na
719	ConfDataSet - maxAttributes definition is confusing	Y
721	Log element name	na
768	bType VisString65 is missing	na
779	object references	na
788	SICS S56 from optional to mandatory	na
789	ConfLdName as services applies to both server and client	na
804	valKind and IED versus System configuration	na
806	Max length of log name inconsistent between -6 and -7-2	na
807	Need a way to indicate if "Owner" present in RCB	na
823	ValKind for structured data attributes	na
824	Short addresses on structured data attributes	na
825	Floating point value	na
845	SGCB ResvTms	na
853	SBO and ProtNs	na
855	Recursive SubFunction	na
856	VoltageLevel frequency and phases	na
857	Function/SubFunction for ConductingEquipment	na
886	Missing 8-1 P-types	na
901	tServices as AP or as IED element	Y
936	SupSubscription parameter usage is difficult	na
1168	doName and daName of ExtRef; doName may have one dot (DO.SDO)	na
1175	IPv6 address lowercase only	na

Part 7-1 Tissue	Description	Implemented Y/na
828	Data model namespace revision IEC 61850-7-4:2007[A]	Y
1129	Rules for extending nameplate information (new CDC VSD)	na
1151	simulated GOOSE disappears afteʳ 1st appearance when LPHD.Sim = TRUE	na
1196	Extensions to standardized LN classes made by third parties	na
1468	Re-use DO from other LN	na

Part 7-2 Tissue	Description	Implemented Y/na
778	AddCause values – add value not-supported	na
780	What are unsupported trigger option at a control block?	Y
783	TimOper Resp- ; add Authorization check	na
786	AddCause values 26 and 27 are switched	na
820	Mandatory ACSI services (use for PICS template)	Y
858	typo in enumeration ServiceType	na
861	dchg of ConfRev attribute	na
876	GenLogiclNodeClass and SGCB, GoCB, MsvCB, UsvCB	na
1038	Loss of Info Detection After Resynch	Y
1050	GTS Phycomaddr definition in SCL	Y
1062	Entrytime not used in CDC	na
1071	Length of DO name	Y
1091	The sentence "The initial value of EditSG shall be 0", has to be stated in part 7.2 not in 8.1	na
1127	Missing owner attribute in BTS and UTS	na
1202	GI not optional	Y

Part 7-3 Tissue	Description	Implemented Y/na
697	persistent command / PulseConfig	na
698	Wrong case is BAC.dB attribute	na
722	Units for 'h' and 'min' not in UnitKind enumeration.	Y
919	Presence Condition for sVC	na
925	Presence of i or f attribute - Problem with writing	na
926	Presence Conditions within RangeConfig	na

Part 7-4 Tissue	Description	Implemented Y/na
671	mistake in definition of Mod & Beh	na
674	CDC of ZRRC.LocSta is wrong	na
675	SIML LN	na
676	Same data object name used with different CDC	na
677	MotStr is used with different CDC in PMMS and SOPM LN classes	na
679	Remove CycTrMod Enum	na
680	SI unit for MHYD.Cndct	na
681	Enum PIDAlg	na
682	ANCR.ParColMod	na

Part 7-4 Tissue	Description	Implemented Y/na
683	Enum QVVR.IntrDetMth	na
685	Enum ParTraMod	na
686	New annex H - enums types in XML	na
694	Data object CmdBlk	na
696	LSVS.St (Status of subscription)	na
712	interpretation of quality operatorBlocked	na
713	DO Naming of time constants in FFIL	na
724	ANCR.Auto	na
725	Loc in LN A-group	na
734	LLN0.OpTmh vs. LPHD.OpTmh	na
735	ISAF.Alm and ISAF.AlmReset	na
736	PFSign	na
742	GAPC.Str, GAPC.Op and GAPC.StrVal	na
743	CCGR.PmpCtl and CCGR.FanCtl	na
744	LN STMP, EEHealth and EEName	na
772	LPHD.PwrUp/PwrDn shall be transient	na
773	Loc, LocKey and LocSta YPSH and YLTC	na
774	ITCI.LocKey	na
775	KVLV.ClsLim and OpnLim	na
776	LPHD.OutOv/InOv and LCCH.OutOv/InOv	na
800	Misspelling in CSYN	na
802	CCGR and Harmonized control authority	na
808	Presence condition of ZMOT.DExt and new DOs	na
831	Setting of ConfRevNum in LGOS	na
838	Testing in Beh=Blocked	na
844	MFLK.PhPiMax, MFLK.PhPiLoFil, MFLK.PhPiRoot DEL->WYE	Y
849	Presence conditions re-assessing in case of derived statistical calculation	Y
877	QVUB -settings should be optional	na
909	Remove ANCR.ColOpR and ColOpL	na
920	Resetable Counter is NOT resetable	na
932	Rename AVCO.SptVol to AVCO.VolSpt	na
939	Change CDC for ANCR.FixCol	na
991	LGOS: GoCBRef (as well as LSVS.SvCBRef) should be mandatory	na
1007	PTRC as fault indicator - Update of description required	na
1044	TapChg in AVCO	na
1077	Rename DOnames within LTIM	na

Note

Tissues 675, 735, 772, 775, 776, 878 are not relevant for conformance testing

Part 8-1 Tissue	Description	Implemented Y/na
784	Tracking of control (CTS)	na
817	Fixed-length GOOSE float encoding	na
834	File dir name length 64	na
951	Encoding of Owner attribute	na
1040	More associate error codes	Y
1178	Select Response+ is non-null value	na

Compare the TISSUE database for more details: www.tissues.iec61850.com