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**ProLinx<sup>®</sup>**  
**PLX IEC 61850**  
**PICS Statement**  
Version 1.4

March 27, 2017

**PICS STATEMENT**

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# 1 PICS – Protocol Implementation Conformance Statement

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This section presents the Protocol Implementation Conformance Statement (PICS) for the ProSoft IEC 61850 Protocol Drivers.

The following ACSI Conformance Statements shall be used to provide an overview and details about the 61850 drivers' claiming conformance with ACSI. Conformance is to Edition 1 of IEC 61850, though some Edition 2 features are supported.

This PICS describes two separate lines of ProSoft products:

- (1) The ProLinx gateway products (PLX81-MNET-61850, PLX82-MNET-61850, PLX81-EIP-61850, and PLX82-EIP-61850), that implement only the client/subscriber side of the protocol.
- (2) The InRax MVI56E-61850S module, that implements only the server/publisher side of the protocol.

For brevity and convenience, both product lines are described in this single PICS. It shall be understood, however, that in these tables:

- (a) The "Client/subscriber" column describes only product line (1) and the "Server/publisher" column describes only product line (2), for which the opposite column for the product line shall be read as "not applicable"; and
- (b) In lines M1 through M11 of the Models Conformance Statement that are captioned "If Server side (B11) supported", the "Client/subscriber" column interprets that caption to refer to the support that is present on the servers being called and to be unrelated to the B11 line in the Basic Conformance Statement given here.

Legend:

- "Y" – Supported.
- "N" – Not supported.
- "-" – Not applicable, due to prerequisite features or conditions that are not supported or not present.

### 1.1 ACSI Basic Conformance Statement

		Client / Subscriber	Server / Publisher	Value / Comments
<b>Client-server roles</b>				
B11	<b>Server</b> side (of TWO-PARTY-APPLICATION-ASSOCIATION)	-	Y	
B12	<b>Client</b> side (of TWO-PARTY-APPLICATION-ASSOCIATION)	Y	-	
<b>SCSMs supported</b>				
B21	<b>SCSM:</b> IEC 61850-8-1 used	Y	Y	
B22	<b>SCSM:</b> IEC 61850-9-1 used	N	N	
B23	<b>SCSM:</b> IEC 61850-9-2 used	N	N	
B24	<b>SCSM:</b> other	N	N	
<b>Generic substation event model (GSE)</b>				
B31	<b>Publisher</b> side	-	N	
B32	<b>Subscriber</b> side	Y	-	
<b>Transmission of sampled value model (SVC)</b>				
B41	<b>Publisher</b> side	-	N	
B42	<b>Subscriber</b> side	N	-	

## 1.2 ACSI Models Conformance Statement

		Client / Subscriber	Server / Publisher	Value / Comments
If <b>Server</b> side (B11) supported				
M1	Logical device	Y	Y	
M2	Logical node	Y	Y	
M3	Data	Y	Y	
M4	Data set	Y	Y	
M5	Substitution	N	N	
M6	Setting group control	N	N	
	<b>Reporting</b>	Y	Y	
M7	<b>Buffered report control</b>	Y	Y	
M7-1	Sequence-number	Y	Y	
M7-2	Report-time-stamp	Y	Y	
M7-3	Reason-for-inclusion	Y	Y	
M7-4	Data-set-name	Y	Y	
M7-5	Data-reference	Y	Y	
M7-6	Buffer-overflow	Y	Y	
M7-7	entryID	Y	Y	
M7-8	BufTm	Y	Y	
M7-9	IntgPd	Y	Y	
M7-10	GI	Y	Y	
M8	<b>Unbuffered report control</b>	Y	Y	
M8-1	Sequence-number	Y	Y	
M8-2	Report-time-stamp	Y	Y	
M8-3	Reason-for-inclusion	Y	Y	
M8-4	Data-set-name	Y	Y	
M8-5	Data-reference	Y	Y	
M8-6	BufTm	Y	Y	
M8-7	IntgPd	Y	Y	
M8-8	GI	Y	Y	
	<b>Logging</b>			
M9	<b>Log control</b>	N	N	
M9-1	IntgPd	-	-	
M10	<b>Log</b>	N	N	
M11	<b>Control</b>	Y	Y	
If <b>GSE</b> (B31/B32) is supported				
M12	<b>GOOSE</b>	Y	-	
M12-1	entryID			Ed1 unclear; Ed2 removed
M12-2	DataRefInc			Ed1 unclear; Ed2 removed
M13	GSSE	N	-	
If <b>SVC</b> (B41/B42) is supported				
M14	Multicast SVC	-	-	
M15	Unicast SVC	-	-	
M16	Time	Y	Y	
M17	File Transfer	N	N	

### 1.3 ACSI Service Conformance Statement

	Services	AA: TP / MC	Client / Subscriber	Server / Publisher	Comments
<b>Server (Clause 6)</b>					
S1	ServerDirectory	TP	N	Y	
<b>Application association (Clause 7)</b>					
S2	Associate		Y	Y	
S3	Abort		Y	Y	
S4	Release		Y	Y	
<b>Logical device (Clause 8)</b>					
S5	Logical Device Directory	TP	N	Y	Client: see SCL.1
<b>Logical node (Clause 9)</b>					
S6	Logical Node Directory	TP	N	Y	Client: see SCL.1
S7	Get All Data Values	TP	N	Y	
<b>Data (Clause 10)</b>					
S8	GetDataValues	TP	Y	Y	
S9	SetDataValues	TP	Y	Y	
S10	GetDataDirectory	TP	Y	Y	
S11	GetDataDefinition	TP	Y	Y	
<b>Data set (Clause 11)</b>					
S12	GetDataSetValues	TP	N	Y	
S13	SetDataSetValues	TP	N	Y	
S14	CreateDataSet	TP	N	N	
S15	DeleteDataSet	TP	N	N	
S16	GetDataSetDirectory	TP	N	Y	
<b>Substitution (Clause 12)</b>					
S17	SetDataValues	TP	-	-	
<b>Setting group control (Clause 13)</b>					
S18	SelectActiveSG	TP	-	-	
S19	SelectEditSG	TP	-	-	
S20	SetSGValues	TP	-	-	
S21	ConfirmEditSGValues	TP	-	-	
S22	GetSGValues	TP	-	-	
S23	GetSGCBValues	TP	-	-	
<b>Reporting (Clause 14)</b>					
<b>Buffered report control block (BRCB)</b>					
S24	Report	TP	Y	Y	
S24-1	data-change (dchg)		Y	Y	
S24-2	qchg-change (qchg)		Y	Y	
S24-3	data-update (dupd)		Y	N	
S25	GetBRCBValues	TP	Y	Y	
S26	SetBRCBValues	TP	Y	Y	
<b>Unbuffered report control block (URCB)</b>					
S27	Report	TP	Y	Y	
S27-1	data-change (dchg)		Y	Y	
S27-2	qchg-change (qchg)		Y	Y	
S27-3	data-update (dupd)		Y	N	
S28	GetURCBValues	TP	Y	Y	



	Services	AA: TP / MC	Client / Subscriber	Server / Publisher	Comments
S29	SetURCBValues	TP	Y	Y	
<b>Logging (Clause 14)</b>					
<b>Log control block</b>					
S30	GetLCBValues	TP	-	-	
S31	SetLCBValues	TP	-	-	
<b>Log</b>					
S32	QueryLogByTime	TP	-	-	
S33	QueryLogAfter	TP	-	-	
S34	GetLogStatusValues	TP	-	-	
<b>Generic substation event model (GSE) (14.3.5.3.4)</b>					
<b>GOOSE-CONTROL-BLOCK</b>					
S35	SendGOOSEMessage	MC	Y	-	
S36	GetGoReference	TP	N	-	
S37	GetGOOSEElementNumber	TP	N	-	
S38	GetGoCBValues	TP	Y	-	Client reads confRev only
S39	SetGoCBValues	TP	N	-	
<b>GSSE-CONTROL-BLOCK</b>					
S40	SendGSSEMessage	MC	-	-	
S41	GetGsReference	TP	-	-	
S42	GetGSSEElementNumber	TP	-	-	
S43	GetGsCBValues	TP	-	-	
S44	SetGsCBValues	TP	-	-	
<b>Transmission of sampled value model (SVC) (Clause 16)</b>					
<b>Multicast SVC</b>					
S45	SendMSVMessage	MC	-	-	
S46	GetMSVCBValues	TP	-	-	
S47	SetMSVCBValues	TP	-	-	
<b>Unicast SVC</b>					
S48	SendUSVMessage	TP	-	-	
S49	GetUSVCBValues	TP	-	-	
S50	SetUSVCBValues	TP	-	-	
<b>Control (17.5.1)</b>					
S51	Select	TP	Y	Y	
S52	SelectWithValue	TP	Y	Y	
S53	Cancel	TP	N	Y	
S54	Operate	TP	Y	Y	Client does not support sboClass operate-many
S55	Command-Termination	TP	Y	Y	
S56	TimeActivated-Operate	TP	N	N	
<b>File transfer (Clause 20)</b>					
S57	GetFile	TP	-	-	
S58	SetFile	TP	-	-	
S59	DeleteFile	TP	-	-	
S60	GetFileAttributeValues	TP	-	-	
<b>Time (5.5)</b>					
T1	Time resolution of internal clock		0.1s (3b)	0.1s (3b)	"b" means "significant bits of fractional part"
T2	Time accuracy of internal clock		+/- 0.1s	+/- 0.1s	Not intended for high-accuracy messaging
T3	Supported TimeStamp resolution		1ms (10b)	1ms (10b)	of storage, not source

### 1.4 Profile Conformance

		Client / Subscriber	Server / Publisher	Value / Comments
<b>PICS for A-Profile Support</b>				
A1	Client/Server A-Profile	Y	Y	
A2	GOOSE/GSE Management A-Profile	Y	N	
A3	GSSE A-Profile	N	N	
A4	TimeSync A-Profile	Y	Y	Server obtains time from PLC, assumes that the PLC's TimeSync is compliant
<b>PICS for T-Profile Support</b>				
T1	TCP/IP T-Profile	Y	Y	
T2	OSI T-Profile	N	N	
T3	GOOSE/GSE T-Profile	Y	N	
T4	GSSE T-Profile	N	N	
T5	TimeSync T-Profile	Y	Y	Server's TimeSync connectivity is over the PLC backplane

## 1.5 SCL Conformance

		Client / Subscriber	Server / Publisher	Value / Comments
<b>SCL Conformance Degrees</b>				
SCL.1	SCL File for Implementation Available (offline)	Y	Y	Client configured from separate CIDs for each server, available only separately. Server configured by validating a non-SCL “CFG” file, generating a CID from it, and downloading both to the server via a non-61850 protocol.
SCL.2	SCL File available from implementation online	N	N	
SCL.3	SCL implementation reconfiguration supported online	N	N	This removed Ed 2
<b>Supported ACSI services for SCL.2 and SCL.3</b>				
	<b>ACSI Services</b>			
	GetFileAttributeValues	-	-	
	GetFile	-	-	
	SetFile	-	-	This removed Ed 2
	DeleteFile	-	-	This removed Ed 2
	GetDataValues	-	-	
	SetDataValues	-	-	This and all below removed Ed 2
	SCL Control Block	-	-	
	SCL File Structure	-	-	
	Remote Creation of SCL File	-	-	
<b>Additional MMS services for SCL.2 and SCL.3</b>				
	<b>MMS Services</b>			
	GetCapabilityList	-	-	
	GetDomainAttributes	-	-	
	LoadDomainContent	-	-	
	StoreDomainContent	-	-	
<b>Definition of SCL control block</b>				
	Validate	-	-	
	ValState	-	-	
	Activate	-	-	Server reconfiguration causes the actions of 61850-8-1 D.2.3 to be performed.

### 1.6 Logical Nodes Conformance

		Client / Subscriber	Server / Publisher	Value / Comments
<b>IEC61850-7-4 Logical Nodes Required for Servers</b>				
<b>(L) System Logical Nodes</b>				
LLNO	Common Logical Node Zero	Y	Y	
LPHD	Physical Device	Y	Y	
<b>(P) Protection Functions</b>				
PDIF	Differential	Y	N	
PDI	Directional	Y	N	
PDOP	Directional Over Power	Y	N	
PDUP	Directional Under Power	Y	N	
PFRC	Rate of Frequency Change	Y	N	
PHAR	Harmonic Constraint	Y	N	
PHIZ	Ground Detection	Y	N	
PIOC	Instantaneous Over Current	Y	N	
PMRI	Motor Restart Inhibition	Y	N	
PMSS	Motor Starting Time Supervision	Y	N	
POPF	Over power Factor	Y	N	
PPAM	Phase Angle Measuring	Y	N	
PSC	Protection Scheme	Y	N	
PSDE	Sensitive Directional Earth Fault	Y	N	
PTEF	Transient Earth Fault	Y	N	
PTOC	Time Over Current	Y	N	
PTOF	Over Frequency	Y	N	
PTOV	Over Voltage	Y	N	
PTRC	Protection Trip Conditioning	Y	N	
PTTR	Thermal Overload	Y	N	
PTUC	Under Current	Y	N	
PTUV	Under Voltage	Y	N	
PUPF	Under Power Factor	Y	N	
PTUF	Under Frequency	Y	N	
PVOC	Voltage Controlled Time Over Current	Y	N	
PVPH	Volts per Hertz	Y	N	
PZSU	Zero Speed or Under Speed	Y	N	
<b>(R) Protection Related Functions</b>				
RDRE	Disturbance Recorder Function	Y	N	
RADR	Disturbance Recorder Channel Analogue	Y	N	
RBDR	Disturbance Recorder Channel Binary	Y	N	
RDRS	Disturbance Record Handling	Y	N	
RBRF	Breaker Failure	Y	N	
RDIR	Directional Element	Y	N	
RFLO	Fault Locator	Y	N	
RPSB	Power Swing Detection/Blocking	Y	N	
RREC	Auto Reclosing	Y	N	
RSYN	Synchronism Check or Synchronizing	Y	N	
<b>(C) Control</b>				

		Client / Subscriber	Server / Publisher	Value / Comments
CALH	Alarm Handling	Y	N	
CCGR	Cooling Group Control	Y	N	
CILO	Interlocking	Y	N	
CPOW	Point on Wave Switching	Y	N	
CSWI	Switch Controller	Y	N	
<b>(G) Generic References</b>				
GAPC	Generic Automatic Process Control	Y	N	
GGIO	Generic Process I/O	Y	Y	
GSAL	Generic Security Application	Y	N	
<b>(I) Interfacing and Archiving</b>				
IARC	Archiving	Y	N	
IHMI	Human Machine Interface	Y	N	
ITCI	Telecontrol Interface	Y	N	
ITMI	Telemonitoring Interface	Y	N	
<b>(A) Automatic Control</b>				
ANCR	Neutral Current Regulator	Y	N	
ARCO	Reactive Power Control	Y	N	
ATCC	Automatic Tap Changer Controller	Y	N	
AVCO	Voltage Control	Y	N	
<b>(M) Metering and Measurement</b>				
MDIF	Differential Measurements	Y	N	
MHAI	Harmonics or Interharmonics	Y	N	
MHAN	Non-Phase Related Harmonics or Interharmonics	Y	N	
MMTR	Metering	Y	N	
MMXU	Measurement	Y	N	
MSQI	Sequence and Imbalance	Y	N	
MSTA	Metering Statistics	Y	N	
<b>(S) Sensors and Monitoring</b>				
SARC	Monitoring and Diagnostics for arcs	Y	N	
SIMG	Insulation Medium Supervision (gas)	Y	N	
SIML	Insulation Medium Supervision (liquid)	Y	N	
SPDC	Monitoring and Diagnostics for Partial Discharges	Y	N	
<b>(X) Switchgear</b>				
XCBR	Circuit Breaker	Y	N	
XSWI	Circuit Switch	Y	N	
<b>(T) Instrument Transformers</b>				
TCTR	Current Transformer	Y	N	
TVTR	Voltage Transformer	Y	N	
<b>(Y) Power Transformers</b>				
YEFN	Earth Fault Neutralizer	Y	N	
YLTC	Tap Changer	Y	N	
YPSH	Power Shunt	Y	N	
YPTR	Power Transformer	Y	N	
<b>(Z) Further Power System Equipment</b>				

		Client / Subscriber	Server / Publisher	Value / Comments
ZAXN	Auxilliary Network	Y	N	
ZBAT	Battery	Y	N	
ZBSN	Bushing	Y	N	
ZCAB	Cable	Y	N	
ZCAP	Capacitor Bank	Y	N	
ZCON	Converter	Y	N	
ZGEN	Generator	Y	N	
ZGIL	Gas Insulated Line	Y	N	
ZLIN	Power Overhead Line	Y	N	
ZMOT	Motor	Y	N	
ZREA	Reactor	Y	N	
ZTCF	Thyristor Controlled Frequency Converter	Y	N	
ZTCR	Thyristor Controlled Reactive Component	Y	N	
<b>Logical Nodes for Hydro Power Plants</b> <b>(LNs specific for Hydro are in bold text)</b>				
<b>Hydro Power: Logical nodes for control functions</b>				
CALH	Alarm handling	Y	N	
CSWI	Switch controller	Y	N	
<b>Hydro Power: Logical nodes representing functional blocks</b>				
<b>FCNT</b>	Counter function	Y	N	
<b>FCSD</b>	Curve shape description	Y	N	
<b>FFIL</b>	Filter function	Y	N	
<b>FLIM</b>	Limiter function	Y	N	
<b>FPID</b>	Proportional, integral and derivative regulator function	Y	N	
<b>FRMP</b>	Ramp control function	Y	N	
<b>FSPT</b>	Setpoint control function	Y	N	
<b>FXOT</b>	Action at over threshold	Y	N	
<b>FXUT</b>	Action at under threshold	Y	N	
<b>Hydro Power: Hydropower specific logical nodes</b>				
<b>HBRG</b>	Turbine – generator shaft bearing	Y	N	
<b>HBRK</b>	Braking system for the generator shaft	Y	N	
<b>HCOM</b>	Combinator (3D-CAM or 2D-CAM)	Y	N	
<b>HDAM</b>	Hydropower dam, water reservoir	Y	N	
<b>HDLS</b>	Dam leakage supervision	Y	N	
<b>HGPI</b>	Gate position indicator	Y	N	
<b>HGTE</b>	Dam gate	Y	N	
<b>HITG</b>	Intake gate	Y	N	
<b>HJCL</b>	Power plant joint control function	Y	N	
<b>HLKG</b>	Leakage supervision	Y	N	
<b>HLVL</b>	Dam water level indicator	Y	N	
<b>HNDL</b>	Needle control	Y	N	
<b>HNHD</b>	Net head data	Y	N	
<b>HOTP</b>	Dam overtopping protection	Y	N	
<b>HSEQ</b>	Start / stop sequencer	Y	N	
<b>HSPD</b>	Speed monitoring	Y	N	

		Client / Subscriber	Server / Publisher	Value / Comments
<b>HUNT</b>	Hydropower production unit	Y	N	
<b>HWCL</b>	Water control function	Y	N	
<b>Hydro Power: Logical nodes for interface and archiving</b>				
<b>IARC</b>	Generic archiving function	Y	N	
<b>IHMI</b>	Generic human – machine interface	Y	N	
<b>ISAF</b>	Generic safety device	Y	N	
<b>Hydro Power: Logical nodes for mechanical and non-electric primary equipment</b>				
<b>KFAN</b>	Fan	Y	N	
<b>KFIL</b>	Filter	Y	N	
<b>KPMP</b>	Pump	Y	N	
<b>KTNK</b>	Tank	Y	N	
<b>KVLV</b>	Valve or aperture gate	Y	N	
<b>Hydro Power: Logical nodes for metering and measurement</b>				
<b>MDIF</b>	Differential current measurement	Y	N	
<b>MENV</b>	Environmental data	Y	N	
<b>MHAI</b>	Harmonics measurement	Y	N	
<b>MHYD</b>	Hydrological measurement	Y	N	
<b>MMDC</b>	DC current and voltage measurement	Y	N	
<b>MMET</b>	Meteorological measurement	Y	N	
<b>MMXN</b>	Single-phase measurement	Y	N	
<b>MMXU</b>	Three-phase measurement	Y	N	
<b>Hydro Power: Protection functions</b>				
<b>PDIF</b>	Generator differential, restricted earth-fault	Y	N	
<b>PDOP</b>	Reverse power	Y	N	
<b>PDUP</b>	Loss of field (excitation system failure)	Y	N	
<b>PHIZ</b>	Residual over-voltage	Y	N	
<b>PIOC</b>	Phase over-current	Y	N	
<b>PPAM</b>	Phase angle, out-of-step	Y	N	
<b>PRTR</b>	Rotor protection	Y	N	
<b>PSDE</b>	Directional earth-fault	Y	N	
<b>PTHC</b>	Thyristor failure protection	Y	N	
<b>PTOC</b>	Time over-current, rotor earth-fault, bearing current, stator earth-fault	Y	N	
<b>PTOF</b>	Over-frequency	Y	N	
<b>PTOV</b>	Over- / under-voltage	Y	N	
<b>PTUF</b>	Under-frequency	Y	N	
<b>PTTR</b>	Overload	Y	N	
<b>PVOC</b>	Under impedance	Y	N	
<b>PVPH</b>	Over-fluxing	Y	N	
<b>PZSU</b>	Energising at stand-still	Y	N	
<b>Hydro Power: Logical nodes for protection related functions</b>				
<b>RBRF</b>	Breaker-fail protection	Y	N	
<b>RPSB</b>	Power swing detection	Y	N	
<b>RSYN</b>	Synchronizing	Y	N	
<b>Hydro Power: Logical nodes for supervision and monitoring</b>				
<b>SPDC</b>	Partial discharge sensor	Y	N	

		Client / Subscriber	Server / Publisher	Value / Comments
STMP	Temperature supervision	Y	N	
SVBR	Vibration supervision	Y	N	
<b>Hydro Power: Logical nodes for sensors</b>				
<b>TANG</b>	Angle	Y	N	
<b>TAXD</b>	Axial displacement	Y	N	
TCTR	Current transformer	Y	N	
<b>TDIS</b>	Distance	Y	N	
<b>TFLW</b>	Liquid flow	Y	N	
<b>TFRQ</b>	Frequency	Y	N	
<b>THUM</b>	Humidity	Y	N	
<b>TLEV</b>	Media level	Y	N	
<b>TMGF</b>	Magnetic field	Y	N	
<b>TPOS</b>	Position indicator	Y	N	
<b>TPRS</b>	Pressure	Y	N	
<b>TRTN</b>	Rotation	Y	N	
<b>TSND</b>	Sound pressure	Y	N	
<b>TTMP</b>	Temperature	Y	N	
<b>TTNS</b>	Mechanical tension / stress	Y	N	
<b>TVBR</b>	Vibration sensor	Y	N	
TVTR	Voltage transformer	Y	N	
<b>TWPH</b>	Water acidity	Y	N	
<b>Hydro Power: Logical nodes for power system equipment</b>				
ZAXN	Auxiliary network (power plant supply)	Y	N	
ZBAT	DC battery	Y	N	
ZMOT	Motor	Y	N	
ZREA	Reactor	Y	N	
<b>ZRES</b>	Neutral resistor	Y	N	
<b>ZSCR</b>	Semi-conductor controlled rectifier	Y	N	
<b>ZSMC</b>	Synchronous machine	Y	N	
<b>Logical Nodes for Wind Power Plants (LNs specific for Wind Power are in bold text)</b>				
<b>Wind Power specific logical nodes</b>				
<b>WTUR</b>	Wind turbine general information	Y	N	
<b>WALM</b>	Wind power plant alarm information	Y	N	
<b>WMET</b>	Wind power plant meteorological information	Y	N	
<b>WAPC</b>	Wind power plant active power control information	Y	N	
<b>WRPC</b>	Wind power plant reactive power control information	Y	N	
<b>Wind Turbine specific logical nodes</b>				
<b>WTUR</b>	Wind turbine general information	Y	N	
<b>WROT</b>	Wind turbine rotor information	Y	N	
<b>WTRM</b>	Wind turbine transmission information	Y	N	
<b>WGEN</b>	Wind turbine generator information	Y	N	
<b>WCNV</b>	Wind turbine converter information	Y	N	
<b>WTRF</b>	Wind turbine transformer information	Y	N	
<b>WNAC</b>	Wind turbine nacelle information	Y	N	



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		<b>Client / Subscriber</b>	<b>Server / Publisher</b>	<b>Value / Comments</b>
<b>WYAW</b>	Wind turbine yawing information	Y	N	
<b>WTOW</b>	Wind turbine tower information	Y	N	
<b>WALM</b>	Wind power plant alarm information	Y	N	
<b>WSLG</b>	Wind turbine state log information	Y	N	
<b>WALG</b>	Wind turbine analogue log information	Y	N	
<b>WREP</b>	Wind turbine report information	Y	N	



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