Operating instructions	Version: 1	.01
SINEAX CAM Parameterization of IEC61850 bus card	Date: 3	0.08.2011
CAM61850.PAR-E.V1.0.110830.DOC		
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# SINEAX CAM Parameterization of IEC61850 bus card

Version: 1.01

Creation Date: 15.02.2011 Release Date: 30.08.2011

Specification
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# **Revision History**

Author	Department	Changes	Version	Date
R. Rölli	Camille Bauer / TMA		1.00	15.02.2011
R. Rölli	Camille Bauer / TMA	Correction of example on page 15	1.01	30.08.2011

## Distribution

Name	Department	Location	Telephone

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#### Specification

# 1. Introduction

## 1.1 Parameterization via web server

In the first part of this document the limited options of the web server in conjunction with the CAM are described. Only the *online* configuration via TCP/IP is shown and those functions described in more detail which serve for parameterization and commissioning of the CAM IEC61850 bus card. The *offline* parameterization by means of a local web server, called TeleConfig, is not shown.

By means of the web server all parameters may be set which allow the data exchange between measurement device and and IEC61850 bus card. Be aware, a subsequent changing of these data may lead to the situation that measurements are not correctly mapped to the bus card and therefore requests via IEC interface will not provide correct measurement results. Note the appropriate warnings in the following chapters.

## 1.2 Parameterization via ICD editor

In the second part some hints are given, what you have to consider when changing the ICD file by means of a manufacturer independent ICD editor resp. SCL tool. The consistency of the data must be maintained in any case. Otherwise the bus card may not start correctly.

Term	Definition
IED	Intelligent Electronic Device. Common description for a device which supports the IEC61850 protocol.
ICD	IED Capability Description. This is the configuration file in XML format, which describes the complete functionality of an IEC61850 device. It is initially loaded in the work and may be modified by the user to fit his specific needs. The original file is also stored on the CD or may be downloaded via <u>www.camillebauer.com</u> .
CID	Configured IED Description. This file is an adapted version of the ICD file to fit the user needs for a specific IED. It has the same data format than the ICD.
Logical node	This is a substation function predefined by the standard, which has a number of measurements, possibly with user specific extensions.
Logical device	The sum of all logical nodes which are part of an IED.
Client	An IEC61850 control system or receiver device, which may receive data from the connected IEDs.
Server	The device, here the SINEAX CAM, which sends reports to the control system (client) or answers system requests.
Reporting	The SINEAX CAM supports an unbuffered reporting, by which spontaneously the complete information of a node is sent to the IEC61850 client when measurement data has changed.

## 1.3 Used terms

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## 2. Web server

#### 2.1 Starting the web server

To start the web server in the browser (Internet Explorer, Firefox etc.) just enter the IP address of the SINEAX CAM, e.g.:

🍘 http://192.168.57.216/ 🖉

Hint: The setting of the network parameters IP address, subnet mask and gateway address can be performed by means of the CB-Manager software only using one of the local interfaces (Modbus or USB) od the device.



## 2.2 General information

The successful launch of the web server assumes that the device is accessible via network. This requires that the network settings of the PC allow a direct addressing of the IP address of the CAM or establishing a connection via gateway.

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#### 2.3 Tree structure of the menu



In the left part a tree structure is shown. By opening and selecting a tree item in the right part an associated parameter form is displayed, similar to the *Windows File Explorer*.

Most of the parameter forms have an "*Ok*" and a "*Cancel*" button.

- Using "*Ok*" possible changes will be accepted, but will be valid not until a subsequent reset. More precise information is given in the appropriate chapter below.
- "Cancel" discards all previous entries.

The description of the user management in the web server is not part of this document. You may use the existing user with full access rights.

#### Attention

The web server replaces other processes and should be operated only if there is no active IEC connection.

The tree structure corresponds to the **delivery status** of the device. If e.g. the node structure of the device is reduced to optimize the application to the requirements on-site, the displayed structure may differ from what is shown here.

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#### 2.4 Parameters overview

**Hint:** All parameters which may be modified via web interface will be stored in the ICD file of the device. Thereby the name of the ICD file will not be changed. In order to make clear that the original file is no longer active, you have to store the active ICD file, rename it and then reload it to the device (see 2.4.4).

#### 2.4.1 Common parameters

Neither change any of the predefined parameters, nor confirm them by means of "Ok". The system may be damaged !

SINEAX CAM Common Common Common Parameters Sinear Service	IEC61850 interface SINEAX CAM
금-Ga SINEAX CAM 	Common Parameters Configuration
Export and Import ICD-file     RFC1006 Configuration     Server	(change of common parameters for TK-860)
	Parameter set identification: CAMx61850@MPC5200ddd
Backup and Restore Firmware     Der management	Parameter set version: V.2.10-090519
	Ok Cancel

## 2.4.2 Firmware version

The form "Firmware Version" shows information about the version of the application software. This information is accessible via web server of the IEC61850 bus card only.



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## 2.4.3 CAM-Interface Configuration

These parameters control the data exchange of the interface of the CAM IEC61850 bus card to the CAM basic unit. They can't be changed by the user, because otherwise the data exchange would not work anymore.



## 2.4.4 Export and import of the ICD file

The export and import of the ICD file can be performed using the appropriate menu item. The ICD (IED **C**apability **D**escription) describes the possible functionality of the device.

SINEAX CAM Common SINEAX CAM SINEAX CAM Common SINEAX CAM SINEAX	IEC61850 interface SINEAX CAM
Export and Import ICD-file     RFC1006 Configuration     Server	Export and Import ICD-file
	(export/import 61850 SCL configuration from/to the parameters)
MMX01 MMXN1 MHAI1 MHAN1 MHAN1 MHAN1 MMTR1	1. Export ICD-File from:       CAM.V2.10.090519.icd (right-click to save)         2. Import ICD-File from:       Durchsuchen         Upload       Cancel

The delivery state of this file is part of the supplied software CD. Modifications to this file may be performed via web page or by experienced users using specialized configuration tools. After loading (Import) an improperly modified ICD file, the communication with the device may no longer be possible.

Hint: When exporting an ICD file the extension ".ICD" is replaces by ".XML". To use the file in an ICD editor the extension possibly has to be changed to ".ICD". To import an ICD file the extension ".ICD" is a must.

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#### 2.4.5 RFC1006 configuration

RFC1006 is a protocol extension for the TCP protocol to allow a message oriented communication. The RFC1006 configuration is specially designed for the IEC61850 stack. The description of the parameters is not part of this document.

The	predefined	values	should	be	changed	on rec	uest only	/!
	producinica	values	Should	20	unungeu	011100		y .

#### 2.4.6 IED-Server Configuration

In the "IED-Server Configuration" the IED name and its description can be changed.



Only by means of an ICD or SCL configuration tool you can change the description of the instance as well, in the above example "CAM\_PMon" instead of "CAM1". See also **3.1**.

Via Browser only the description text can be changed. The name of the instance is shown in gray and can't be modified.



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## 2.4.7 Save and Reset

After changes you have to select *"Save configuration"* and *"Reset interface SINEAX CAM"* in the menu *"Save and Reset"*. By selecting *"OK"* the activation of the modification is initiated.



## 2.4.8 Logical Node Configuration

Presently only the description of the logical nodes may be modified. Depending on the ICD file all nodes with parametrizable attributes will be shown. Some nodes may have multiple instances. So in MMTR1 high tariff meters are mapped and in MMTR2 low tariff meters, which requires an active tariff switching. GGIO1 up to GGIO12 map the data of possible analog or digital inputs 1 up to 12, which are optional and therefore possibly do not exist.

You have to activate modifications by means of "Save and Reset".

INEAX CAM 한국을 Common 한국을 SINEAX CAM 한국을 IEC61850		IEC61850 int	erface SINEAX CAM	
Export and Import ICD-file     RFC1006 Configuration     Server     G-G CAM1     G-G LLN0     G-G LPHD1     G-G MMXU1	Logical N (CAM1/M (change se	Node Configuration IMTR) ttings for the Logical Node)	)	
MILAN1     MHAI1     MHAI1     MHAI1     MITR1     MITR2     MITR2     MITR2     GGI01     GGI02     GGI03     GGI03     GGI04     GGI05     GGI05     GGI06     GGI07     GGI08     GGI09     GGI010     GGI011     GGI011     GGI012     Save and Reset     Misc     Misc     Gackup and Restore Firmware     User management	Class: Instance: 2 Description: S Ok Car	itandard meters low tariff i		
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## 2.4.9 Data Attribute Configuration

The parametrizable data attributes are defined by the ICD file. These attributes have a private data approach of type "*sAddr*" in the area of the IED DOI. This data set defines e.g. if an IEC61850 state value / measurement or an IEC61850 control value has been defined.

Common       IEC61850 interface SINEAX CAM         IEC61850       IEC61850 interface SINEAX CAM         IEC61850       Interface SINEAX CAM         IEC61850       Interface SINEAX CAM         IEC61850       Interface SINEAX CAM         IEC61850       Interface SINEAX CAM         IEC61850       Interface SINEAX CAM         IEC61850       Interface SINEAX CAM         IEC61850       Interface SINEAX CAM         IEC61850       Interface SINEAX CAM         IEC61850       Interface SINEAX CAM         IEC61850       Interface SINEAX CAM         IEC61850       Interface SINEAX CAM         IEC61850       Interface SINEAX CAM         IEC61850       Interface Sineax         Interface Type:       IEC61850	SINEAX CAM	and a second sec	
BINEAX CAM       IECOTOSOUTITEPTICE SINEAX CAM         Behstval       Data Attribute Configuration (CAM1/MMXU.PPV.phsAB.cVal.mag.f)         Behstval       Behstval         Behstvalamag1       Deaband [%]:       D1 <td>🕀 🛄 Common 👘 👘</td> <td></td> <td>1950 interfece CINEAV CAM</td>	🕀 🛄 Common 👘 👘		1950 interfece CINEAV CAM
<ul> <li>IEC61850</li> <li>RFC1006 Configuration</li> <li>Server</li> <li>CAM1</li> <li>LLN0</li> <li>LLN0</li> <li>LLN0</li> <li>LLN0</li> <li>LLN0</li> <li>Change parameters of data attribute)</li> </ul> Status configuration Value IEC61850 data type: <ul> <li>FLOAT32</li> <li>CAM data type:</li> <li>FLOAT32</li> <li>CAM data type:</li> <li>FLOAT32</li> <li>CAM data type:</li> <li>FLOAT32</li> <li>CAM data type:</li> <li>CYC •</li> <li>Offset:</li> <li>32</li> <li>Dead-band [%]:</li> <li>O.1</li> <li>Scale [float factor]:</li> <li>O</li> <li>Timestamp from FRAM:</li> <li>Offset in FRAM for timestamp:</li> <li>Ok Cancel</li> </ul>		IECC	51850 Interface SINEAX CAM
Data Attribute Configuration   Server   CAult   Cault <td></td> <td>1</td> <td></td>		1	
Data Attribute Configuration   CAM1   LLN0   LLPHD1   Mod.stVal   Beh.stVal   Health.stVal   Configuration   Value   EC61850 data type:   FLOAT32 •   CAM data type:   FLOAT32 •   Data is mapped in inputs:   PPV.phsAcVal.mag1   Dead-band [%]:   Diffeet:   PPV.phsC.cval.mag1   AphsAcVal.mag1   AphsAcVal.mag1   AphsAcVal.mag1   AphsAcVal.mag1   Mot stval   Cok   Cancel	Export and Import ICD-file		
CAM1 CAM1/MMXU.PPV.phsAB.cVal.mag.f) Change parameters of data attribute) MMXU1 Mod.stVal Beh.stVal Heath.stVal TotVA.mag.f TotVA.mag.f TotVA.mag.f PPV.phsAB.cVal.mag.f PPV.phsAB.cVal.mag.f PPV.phsAB.cVal.mag.f PPV.phsAB.cVal.mag.f PPV.phsA.cVal.mag.f PPV.phsA.cVal.mag.f PhV.phsA.cVal.mag.f PhV.phsA.cVal.mag.f PhV.phsA.cVal.mag.f PhV.phsA.cVal.mag.f PhV.phsA.cVal.mag.f PhV.phsC.cVal.mag.f PhV.phSC.cVal.m		Data Attribute Con	figuration
Image: Construction of the second		(CAM4/MMYLL BBV	nhoAD ol/ol more f)
Image: Constraint of the second s		(CAMI/MINAU.PPV.	prisab.cvai.mag.i)
MMXU1   Mod.stVal   Beh.stVal   Health.stVal   Health.stVal   ICC1850 data type:   TotW.mag.f   TotVA.mag.f   TotVA.mag.f   CAM data type:   FLOAT32 •   CAM data type:   FLOAT32 •   Data is mapped in inputs:   PPV.phsAB.cVal.mag.f   PPV.phsAB.cVal.mag.f   Offset:   PPV.phsA.cVal.mag.f   PhV.phsA.cVal.mag.f   Offset in FRAM for timestanp:		A PROPERTY AND A PARTY OF A PARTY	
Mod.stVal   Beh.stVal   Health.stVal   TotW.mag.f   TotW.mag.f   TotVA.mag.f   CAM data type:   FLOAT32   TotPF.mag.f   Data is mapped in inputs:   Hz.mag.f   PPV.phsBC.cval.mag.f   Offset:   PPV.phsC.cval.mag.f   Offset:   PV.phsC.cval.mag.f   Offset:   Phv.phsC.cval.mag.f   Offset in FRAM for timestanp:   AphsC.cval.mag.f   Ok		(change parameters of da	ata attribute)
Beh.stVal   Health.stVal   TotW.mag.f   TotVA.mag.f   TotVA.mag.f   CAM data type:   FLOAT32   TotVA.mag.f   CAM data type:   FLOAT32   FLOAT32    FLOAT32    FLOAT32  FLOAT32     FLOAT32  FLOAT32     FLOAT32 FLOAT32  FLOAT32 FLOAT32  FLOAT32 FLOAT32  FLOAT32 FLOAT32  FLOAT32 FLOAT32 FLOAT32 FLOAT32  FLOAT32	Mod.stVal		
Health stVal   TotW.mag.f   TotVArmag.f   TotVArmag.f   CAM data type:   FLOAT32 •      TotVArmag.f   CAM data type:   FLOAT32 •         TotVArmag.f   CAM data type:   FLOAT32 •         PPV.phsAB.cval.mag.f   Data is mapped in inputs:   PPV.phsAB.cval.mag.f   Data is mapped in inputs:   PPV.phsAB.cval.mag.f   Offset:   PV.phsB.cval.mag.f   PhV.phsB.cval.mag.f   PhV.phsB.cval.mag.f   PhV.phsB.cval.mag.f   PhV.phsB.cval.mag.f   Scale [float factor]:   PhV.phsB.cval.mag.f   AphsB.cval.mag.f   Offset in FRAM for timestanp:	Beh.stVal	Status configuration	Value
TotW.mag.f       IEC6 1650 data type:       FLOA 132         TotVAr.mag.f       CAM data type:       FLOA T32         TotVA.mag.f       Data is mapped in inputs:       Imag.f         TotPF.mag.f       Data is mapped in inputs:       Imag.f         PPV.phsAB.cVal.mag.f       Interface Type:       CYC         PPV.phsAB.cVal.mag.f       Offset:       32         PPV.phsCA.cVal.mag.f       Dead-band [%]:       0.1         PhV.phsC.cVal.mag.f       Scale [float factor]:       0         PhV.phsB.cVal.mag.f       Scale [float factor]:       0         PhV.phsB.cVal.mag.f       Offset in FRAM:       Imag.f         AphsB.cVal.mag.f       Offset in FRAM for timestanp:       0         AphsC.cVal.mag.f       Offset in FRAM for timestanp:       0         AphsC.cVal.mag.f       Offset in FRAM for timestanp:       0	Health.stVal		FLOAT22
TotVAr.mag.f CAM data type:   TotVA.mag.f   TotVA.mag.f   TotVA.mag.f   Data is mapped in inputs:   Hz.mag.f   PPV.phsAB.cVal.mag.f   PPV.phsBC.cVal.mag.f   PPV.phsBC.cVal.mag.f   Offset:   PV.phsB.cVal.mag.f   Dead-band [%]:   Other for FRAM:   PhV.phsC.cVal.mag.f   PhV.phsB.cVal.mag.f   Dead-band [%]:   PhV.phsB.cVal.mag.f   Dead-band [%]:   PhV.phsB.cVal.mag.f   Dead-band [%]:   PhV.phsC.cVal.mag.f   Dead-band [%]:   PhV.phsC.cVal.mag.f   Offset in FRAM:   AphsC.cVal.mag.f   Offset in FRAM for timestanp:   AphsC.cVal.mag.f   Ok   Cancel	TotW.mag.f	IEC61850 data type:	FLOAT32
Interface Type:     PPV.phsAB.cVal.mag.f     Interface Type:     PPV.phsBC.cVal.mag.f     Interface Type:     CYC •     PPV.phsC.cVal.mag.f     Offset:     32     PhV.phsC.cVal.mag.f        PhV.phsC.cVal.mag.f     Dead-band [%]:     0     PhV.phsC.cVal.mag.f        PhV.phsC.cVal.mag.f        Dead-band [%]:     0        PhV.phsC.cVal.mag.f        PhV.phsC.cVal.mag.f        PhV.phsC.cVal.mag.f        PhV.phsC.cVal.mag.f           PhV.phsC.cVal.mag.f <td>TotVAr.mag.f</td> <td>CAM data type:</td> <td>FLOAT32 -</td>	TotVAr.mag.f	CAM data type:	FLOAT32 -
Hzmag,f       Data is mapped in inputs:       V         Hzmag,f       Interface Type:       CYC •         PPV.phsAB.cVal.mag,f       Offset:       32         PPV.phsAC.cVal.mag,f       Dead-band [%]:       0.1         PV.phsB.cVal.mag,f       Dead-band [%]:       0         PV.phsB.cVal.mag,f       Dead-band [%]:       0         PV.phsB.cVal.mag,f       Scale [float factor]:       0         PV.phsA.cVal.mag,f       Timestamp from FRAM:       Image: Comparison of the stamp form from from from from from from from	TotVA.mag.r		
PPV.phsAB.cVal.mag.f   PPV.phsAB.cVal.mag.f   PPV.phsBC.cVal.mag.f   PV.phsCA.cVal.mag.f   PV.phsCA.cVal.mag.f   PV.phsB.cVal.mag.f   PV.phsB.cVal.mag.f <td< td=""><td>Tourr.mag.r</td><td>Data is mapped in inputs:</td><td></td></td<>	Tourr.mag.r	Data is mapped in inputs:	
PPV, phsBC.cVal.mag.f       Offset:       32         PPV, phsCA.cVal.mag.f       Dead-band [%]:       0.1         PhV.phsB.cVal.mag.f       Dead-band [%]:       0         PhV.phsC.cVal.mag.f       Scale [float factor]:       0         PhV.phsC.cVal.mag.f       Timestamp from FRAM:       Image: Comparison of the stand for timestand for	PPV.phsAB.cVal.maq.f	Interface Type:	CYC -
PPV.phsCA.cVal.mag.f       Offset:       32         PhV.phsA.cVal.mag.f       Dead-band [%]:       0.1         PhV.phsB.cVal.mag.f       Scale [float factor]:       0         PhV.phsA.cVal.mag.f       Scale [float factor]:       0         PhV.phsA.cVal.mag.f       Timestamp from FRAM:       Image: Comparison of the stand for timestand	PPV.phsBC.cVal.mag.f	07	20
PhV.phsA.cVal.mag.f       Dead-band [%]:       0.1         PhV.phsB.cVal.mag.f       Scale [float factor]:       0         PhV.phsC.cVal.mag.f       Timestamp from FRAM:       Image: Comparison of the stamp from FRAM:         A.phsA.cVal.mag.f       Offset in FRAM for timestamp:       0         A.phsC.cVal.mag.f       Offset in FRAM for timestamp:       0         Withsbe Over the stamp from free timestamp:       0       0	PPV.phsCA.cVal.mag.f	Offset:	32
PhV.phsB.cVal.mag.f       Scale [float factor]:       0         PhV.phsC.cVal.mag.f       Scale [float factor]:       0         PhV.neut.cVal.mag.f       Timestamp from FRAM:       Image: Comparison of the stamp from FRAM:         AphsB.cVal.mag.f       Offset in FRAM for timestamp:       0         AphsC.cVal.mag.f       Offset in FRAM for timestamp:       0         AphsC.cVal.mag.f       Offset in FRAM for timestamp:       0         WiphsA.cVal.mag.f       Ok       Cancel	PhV.phsA.cVal.mag.f	Dead-band [%]:	0.1
PhV.phsC.cVal.mag.f       Scale [float factor]:       0         PhV.neut.cVal.mag.f       Timestamp from FRAM:       Image: Comparison of the stamp from FRAM:         AphsB.cVal.mag.f       Offset in FRAM for timestamp:       0         AphsC.cVal.mag.f       Offset in FRAM for timestamp:       0         AphsC.cVal.mag.f       Offset in FRAM for timestamp:       0         WiphsA.cVal.mag.f       Ok       Cancel	PhV.phsB.cVal.mag.f		
PhV.neut.cVal.mag.f       Timestamp from FRAM:         AphsA.cVal.mag.f       Offset in FRAM for timestamp:         AphsC.cVal.mag.f       Offset in FRAM for timestamp:         AphsC.cVal.mag.f       Offset in FRAM for timestamp:         W.phsA.cVal.mag.f       Ok	PhV.phsC.cVal.mag.f	Scale [float factor]:	0
AphsAcVal.mag.f AphsB.cVal.mag.f AphsC.cVal.mag.f Aneut.cVal.mag.f WphsA.cVal.mag.f WphsA.cVal.mag.f WphsA.cVal.mag.f WphsA.cVal.mag.f WphsA.cVal.mag.f WphsA.cVal.mag.f WphsA.cVal.mag.f	PhV.neut.cVal.mag.f	Timestamp from FRAM:	
AphsB.cval.mag.f AphsC.cVal.mag.f W.phsA.cVal.mag.f W.phsA.cVal.mag.f W.phsA.cVal.mag.f W.phsA.cVal.mag.f Ok Cancel	AppsA.cval.mag.t		
Aneut.cVal.mag.f W.phsA.cVal.mag.f W.phsA.cVal.mag.f	A phsB.cval.mag.r	Offset in FRAM for timestanp:	0
W.phsA.cVal.mag.f Ok Cancel	Aneut cVal.mag.f		
D Water D Waters (	W.phsA.cVal.mag.f	Ok Cancel	
	The Works DeVelmont	Our Our Our	



The data attributes almost exclusively define the data interface between CAM measurement device and IEC61850 bus card. A modification may cause that measurements are no longer correctly mapped to the IEC61850 interface!

#### **Dead band for Reporting**

The only parameter which should be modified in the data attribute configuration is **"Dead-band**". This parameter defines the value a measured quantity has to change to initiate a corresponding reporting.

Each Report Control Block contains multiple measurement quantities whose changing is monitored in parallel. If at least one of these values leaves the dead band, a complete report containing all measurements is sent to the client.

The specification of the dead-band is performed in [%] and this value is applied to the instantaneous value of the measured quantity. As a result, the sensitivity decreases the greater the value is. If the measurement leaves the dead-band, the subsequent reported value will be used as the new reference value for the symmetrical dead band.

Modifications to the settings must be activated "Save and Reset" (see 2.4.7).

The dead band can also be changed by means of an ICD configuration tool, see 3.4

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#### Mode / Behavior / Health

For each node the status values Mode, Behavior and Health are available. These values will be inherited from the identical values of the Common Logical Nodes LLN0.

The corresponding data attribute values are fixed and should not be changed by the user.

SINEAX CAM Common SINEAX CAM SINEAX CAM C G C G IEC61850	IECe	61850 interface SINEAX CAM
Export and Import ICD-file RFC1006 Configuration Server CM1 CM1 CM1	Data Attribute Con (CAM1/MMXU.Mod.	figuration stVal)
Mod.stVal Beh.stVal Health.stVal ■	(change parameters of da	ata attribute)
EPHD1	Status configuration	Value
	IEC61850 data type:	ENUM -
Beh.stVal	CAM data type:	ENUM -
TotVA mag.f	Data is mapped in inputs: Interface Type:	n.a. 🔻
TotPF.mag.f	Offset:	0
Hz.mag.f     PPV.phsAB.cVal.mag.f     PPV.phsAB.cVal.mag.f	Dead-band [%]:	0
PPV.phsBC.cval.mag.	Scale [float factor]:	0
PhV.phsA.cVal.mag.f	Timestamp from FRAM:	
PhV.phsC.cVal.mag.f	Offset in FRAM for timestanp:	0
AphsA.cVal.mag.f	Ok Cancel	

Object	Description
Mod	The Mode is not changeable. Initially the value is 5 (OFF) and when the communication is successfully established 1 (ON).
Beh	Initially the value for Behavior is 5 (OFF) and when the communication is successfully established 1 (ON).
Health	Initially the value for Health is 3 (BAD) and when the communication is successfully established 1 (GOOD).

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#### 2.4.10 Miscellaneous

#### **Network Configuration**

The network configuration shows the success of reading the network parameters from the CAM basic unit during start-up. If addresses are displayed as "0.0.0.0" reading of the parameters from the CAM unit was not successful. Other addresses than "0.0.0.0" are valid addresses.

The values can only be set by means of the CB-Manager Software via one of the local interfaces. A modification via web interface or via ICD file is not possible.

	IEC61850 interface SINEAX CAM			
→ L Save and Reset → → Misc → → Network Configuration	Network Configuration			
SNTP Configuration     TCP Configuration     (Actual setting of IP-address, Networkmask and Getway     Upload Settings				
Supervision     Supervision     Backup and Restore Firmware	IP-address of device: 192 . 168 . 57 . 217			
🗄 🧰 User management	Subnet mask: 255 . 255 . 252 . 0			
	IP-address of Gateway: 192 . 168 . 56 . 4			

#### **SNTP Configuration**

The SNTP configuration controls the time synchronization via NTP time reference source (server). It is defined by means of an IP Address. At least a preferred time source must be specified, in addition a backup source can be defined which is used when the preferred time source fails. The values can only be set by means of the CB-Manager Software via one of the local interfaces. A modification via web interface or via ICD file is not possible.

If the IP address defines a real existing device in the network, the SNTP process assumes that the device with this IP address has a running NTP server process which can be accessed.



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#### **TCP Configuration**

Die TCP configuration allows the modifications of settings which are required for a fast detection of a TCP level disconnect. Of course this monitoring does work only if it is supported by the client.

When selecting "Ok" modifications will be directly written to the files "*tcp\_keepalive\_\*.meta*" and are valid after a restart.

	IEC61850 interface SINEAX CAM
Save and Reset  Save and Reset  Signature Misc  SNTP Configuration  TCP Configuration	TCP Configuration (change TCP timeout for fast detection)
<ul> <li>□ Upload Settings</li> <li>□ Supervision</li> <li>□ Backup and Restore Firmware</li> <li>□ User management</li> </ul>	Keep alive interval: 2 Keep alive probes: 4 Keep alive time: 10 Ok Cancel

Parameter	Default	Description
Keep alive time	10s	If during this time there is no communication between client and server, the device sends a TCP keep-alive request to the client and expects to receive an acknowledge from it that the connection is still active.
Keep alive probes	4	The number "Keep alive probes" (default: 4) defines how many unacknowledged keep-alive requests are accepted until the connection is considered "dead" and will be closed by server initiative.
Keep alive interval	2s	The repetition of unacknowledged keep-alive requests is performed separated by the "Keep alive interval".

#### **Upload Settings / Supervision**

These functions should be used on manufacturer request only.

#### 2.4.11 Backup and Restore Firmware

These functions should be used on manufacturer request only.

#### 2.4.12 User management

The description of the user management via web server is not part of this document. You can use the existing user with all access rights.

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# 3. Modification of the ICD using a IEC61850 configuration tool

The images used in this chapter have been created using the Substation Configuration Tool of the company H&S (Hard & Software Technology GmbH), Dortmund (Germany).

## 3.1 Modifying IED name and device instance description



The default of the **IED** name corresponds to the ICD file name (CAM.V2.10.090519). It can be changed as desired. The changing can be performed via web page of the device as well (see **2.4.6**).

The name of the **Device instance** (default: CAM1) can be modified by changing the name of the instance as desired. This modification is applied to all data objects, except the Report Control Blocks. There is no way to change the description via web interface.

For all **Report Control Blocks** the device instance has to be changed **manually** by overwriting the Report-ID, because this is not done automatically. These are one to five modifications, depending on the node.



IED name and instance description must be set that way, that the length of the concatenated string (here " Substation.North.Feeder\_1 ") is not larger than 25 Characters !

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#### 3.2 Removing node instances



A reduction of the functionality of the device to the functions really needed has a few advantages:

- Reduction of the server start-up time
- Reduction of complexity

In the example on the left the server has been reduced to the nodes MMXU and MSTA. LLN0 and LPHD are not allowed to be removed, because they contain data which are valid for all nodes.

Nodes can be removed very easy using appropriate tools, normally one click per node is sufficient. Normally the nodes are not really removed from the ICD file but the instruction to build the corresponding instances during start-up.

Hint: There is no way to remove nodes via web server of the device.

#### 3.3 Removing measurements from node instances

The SINEAX CAM sends, if activated, data reports on a regular base to the IEC61850 client. The transmission occurs spontaneously, if at least one of the measurements of the appropriate nodes has changed a definable percentage value. Depending on the configuration of the measurement functionality of the CAM this may occur after each cycle of the system frequency, in addition for each individual node monitored. This can produce large amount of data, which possibly cannot be processed by the control system. There are two methods for limiting the data volume.

- A) Extending the dead bands for the Reporting (see 3.4)
- B) Reduction of data reports by removing quantities from the nodes

For reducing a data report you just have to delete the undesired values from the appropriate nodes. As for deleting complete nodes, deleting measurements will normally remove the instruction to build the associated measurement instance only.



Reduced MMXU node, with remaining measurements voltages, currents and frequency only

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⊟~ te P1		
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20 CAM1		

💡 Authentication
E 🙆 CAM1
E 🔶 LLN0 : CAM/LLN0
📋 🗟 LNNOST
🔗 CAM1/LLN0.Mod : ST
···· 🔶 CAM1/LLN0.Beh : ST
CAM1/LLN0.Health : ST
🛱 🖓 DsMea1
CAM1/MMXU1.TotW : MX
🔗 CAM1/MMXU1.TotVAr : MX
🔶 CAM1/MMXU1.TotVA : MX
🔗 CAM1/MMXU1.TotPF : MX
🔶 CAM1/MMXU1.Hz : MX
🔗 CAM1/MMXU1.PPV : MX
🔗 CAM1/MMXU1.PhV : MX
🔶 CAM1/MMXU1.A : MX
🔗 CAM1/MMXU1.W : MX
🔗 CAM1/MMXU1.VAr : MX
🔗 CAM1/MMXU1.VA : MX
🔗 CAM1/MMXU1.PF : MX
🔗 CAM1/MMXU1.IB : MX
🔗 CAM1/MMXU1.TotQF : MX
🔗 CAM1/MMXU1.QF : MX
🔗 CAM1/MMXU1.TotLF : MX
🔗 CAM1/MMXU1.LF : MX
🔶 CAM1/MMXU1.Umean : MX
CAM1/MMXU1.Imean : MX
🖨 🖓 DsMea2
🔗 CAM1/MMXN1.Amp : MX
🔗 CAM1/MMXN1.Vol : MX
🔗 CAM1/MMXN1.PwrFact : MX
🔶 CAM1/MMXN1.Hz : MX
🔗 CAM1/MMXN1.QF : MX
🤣 CAM1/MMXN1.LF : MX
CAM1/MMXN1.IB : MX
i → 🗟 urcbST > LNN0ST



The **node LLN0** contains for **test purposes** data sets of the nodes MMXN and MMXU. If quantities of MMXN / MMXU or even the complete node is deleted, these quantities must be removed from the data sets DSMea1 and/or DsMeas2 as well.

For the above example the node LLN0 results as follows:

DataSets	Controls
LNN0ST 2	Reports
CAM_PMon/LLN0.Mod : ST	urcbST > LNN0ST
CAM_PMon/LLN0.Beh : ST	RptEnabled 🥒
CAM_PMon/LLN0.Health : ST	urcbMea1 > DsMea1 💌
DsMea1 🧳	RptEnabled 🥒
CAM_PMon/MMXU1.Hz : MX	
CAM_PMon/MMXU1.PPV : MX	Logs
CAM_PMon/MMXU1.PhV : MX	GSE
CAM PMon/MMXU1.A : MX	SampledValues

## 3.4 Setting dead bands for the Reporting

The dead band for the reporting can be modified via we b interface as well. As described in **2.4.9**, the dead band can be selected for each measurement individually. In the following example for V12 you can see which parameter contains the appropriate information (here 0.1%).

<ul> <li>MMXU1: CAM/MMXU1</li> <li>MMXU1ST</li> <li>MMXU1MX</li> <li>WrebST &gt; MMXU1ST</li> <li>WrebST &gt; MMXU1ST</li> <li>WrebMX &gt; MMXU1MX</li> <li>Mod</li> <li>Mad</li> <li>Mad</li> <li>TotVA</li> <li>TotVA</li> <li>TotVA</li> <li>TotVF</li> <li>TotVA</li> <li>TotVF</li> <li>Yes</li> <li>PopsAB</li> <li>Valid</li> <li>SIUnit</li> </ul>	₽ X F	CAM_PowerMonitor/CAM_PMon/LLN0 : CAM DataSets CAM_PMon/LLN0.Mod : ST CAM_PMon/LLN0.Beh : ST CAM_PMon/LLN0.Health : ST DSMea1 CAM_PMon/MMXU1.Hz : MX CAM_PMon/MMXU1.PPV : MX CAM_PMon/MMXU1.PhV : MX CAM_PMon/MMXU1.A : MX	MLLN0     Image: Constraint of the second seco	Eigenschaften tDAI SCL desc ix name sAddr Text Val valKind	bibliothek geladen > 2.10Red.icd
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