

IEC 61850 Settings via IED Configurator

This chapter lists all IEC 61850-specific settings, that are carried out with the configuration tool “IED Configurator”.

The sequence in which the settings are listed and described in this chapter corresponds to their sequence in the menu tree of the “IED Configurator”.

However, only those setting parameters are described that are mandatory for establishing the IEC 61850 communication.

Further setting parameters are listed in the “Settings” chapter under the function groups IEC, GOOSE, GSSE. A list of all available *Logical Nodes* can be found in a separate document.

Manage IED

The menu item “Manage IED” allows for establishing a connection between the “IED Configurator” and the device.

The P132 features two memory “banks” one of which includes the active setting parameters. The other memory bank is used with the configuration procedure for parameters via “IED Configurator” or operating program.

Toggling between active and inactive memory bank is carried out either by executing the parameter IEC: Switch Config. Bank or via “IED Configurator” (after the connection has been established) by pressing the “Switch Banks” button.

Active Bank

Parameter	Default Value	Address
SCL File ID		
Name of the configuration bank currently valid. Setting is carried out with the <i>IED Configurator</i> , after a connection with the device has been established (via menu item “Manage IED”).		
SCL File Version		
Version number of the configuration bank currently valid. Setting is carried out with the <i>IED Configurator</i> , after a connection with the device has been established (via menu item “Manage IED”).		

Inactive Bank

Parameter	Default Value	Address
SCL File ID		
Name of the inactive configuration bank. Setting is carried out with the <i>IED Configurator</i> , after a connection with the device has been established (via menu item “Manage IED”).		
SCL File Version		
Version number of the inactive configuration bank. Setting is carried out with the <i>IED Configurator</i> , after a connection with the device has been established (via menu item “Manage IED”).		

IED Details

The category “IED Details” contains several settings that characterize the device as well as the SCL file, which identifies the IEC 61850 configuration.

		Parameter	Default Value	Address
SCL Details		SCL File ID	PX 132	
	Identification of the .MCL configuration file. If required, this preset value may be modified by, for example, entering a bay name.			
		SCL File Version	233.2.01	
Specific value to identify the IEC 61850 data model and configuration. If required, this preset value may be modified by, for example, identifying the revision states during engineering.				

		Parameter	Default Value	Address
IED Details		Name		104 057
	Explicitly assigned device name for the function in the system (IED); is part of the Logical Device Name. Important note: According to the IEC standard the name must consist of only letters (A..Z, a..z), digits (0..9) and underscore characters (_), and the name must start with a letter. Note that a non-standard name causes problems with the IEC 61850 communication.			

		Parameter	Default Value	Address
Template Details		ICD Template		
		SCL Schema Version		
		Description		
		Type		
		Configuration Revision		
Supported Models				
The values listed in the column “Template Details” only provide information. They are preset and cannot be modified.				

Communications

The category “Communications” contains the general network-related settings.

	Parameter	Default Value	Address
Connected Sub-Network	Connected Sub-Network	NONE	
	Optional name available to identify the Ethernet network.		
	Access Point	AP1	
Part of the communications control; preset, cannot be modified.			

	Parameter	Default Value	Address
Address Configuration	IP Address	0.0.0.0	104 001
	Assigned IP address of the P132 for the server function in the system.		
	SubNet Mask	0.0.0.0	104 005
	The subnet mask defines which part of the IP address is addressed by the sub-network and which part by the device that is logged-on to the network.		
	Gateway Address	0.0.0.0	104 011
This parameter shows the IPv4 address of the network gateway for communication links to clients outside of the local network.			

	Parameter	Default Value	Address
General Configuration	Media	Fibre	
	Network hardware provided as fiber optics (“Fibre”) or twisted pair copper wires (“Copper”).		
	TCP Keepalive	5 seconds	
	Communication monitoring at TCP level.		
	Database Lock Timeout	2 minutes	
Return time period for setting procedures that have commenced. (The default value above is in seconds. The <i>IED Configurator</i> , however, displays converts this to minutes.)			

SNTP

The category “SNTP” contains the clock synchronization settings.

General Config

	Parameter	Default Value	Address
Client Operation	Poll Rate (seconds)	64	
	Polling interval for clock synchronization.		
	Accepted Stratum Level	All levels (0 - 15)	
	Quality criterion to accept an SNTP server for clock synchronization; preset, cannot be modified.		

External Server 1

Settings for the primary clock synchronization server.

Note that all values except IP Address and the “Use Anycast” button are usually disabled and may be accepted only when imported from an XML configuration file.

	Parameter	Default Value	Address
External Server Parameters	IP Address	0.0.0.0	104 202
	IP address of the preferred server used for clock synchronization. Clicking the “Use Anycast” button in the <i>IED Configurator</i> changes the value such that any server in the local network is appointed to provide clock synchronization.		

External Server 2

Settings for the primary clock synchronization server.

Note that all values except IP Address and the “Use Anycast” button are usually disabled and may be accepted only when imported from an XML configuration file.

	Parameter	Default Value	Address
External Server Parameters	IP Address	0.0.0.0	104 210
	IP address of the backup server used for clock synchronization. Clicking the “Use Anycast” button in the <i>IED Configurator</i> changes the value such that any server in the local network is appointed to provide clock synchronization.		

Dataset Definitions

	Parameter	Default Value	Address
Dataset Definitions	Name		
	Explicitly (and uniquely) assigned name for the dataset.		
	Location		
	Saving datasets at System/LLN0 is compulsory.		
	Contents		
	Content (data objects, data attributes) of a dataset.		
	The "GOOSE Capacity" display allows for checking the length of a dataset for less than 1500 bytes to permit transmission in GOOSE messages. The display is irrelevant when the dataset is only used in reports.		
	Note: It is not possible to read the IEC configuration back from the P132 if the "Dataset" sizes exceed the GOOSE size limit significantly. Therefore it is recommended to limit the "Dataset" size(s) to max. 120% of the GOOSE capacity.		

GOOSE Publishing

System/LLN0

Parameter	Default Value	Address
Multicast MAC Address	01-0C-CD-01-00-00	
Virtual MAC address that the sending device provides as the destination; preset.		
Application ID (hex)	0000	
Explicitly (and uniquely) assigned ID-number of the GOOSE.		
VLAN Identifier (hex)	0	
ID-number of the virtual LAN with which the GOOSE is sent; preset.		
VLAN Priority	4	
Priority with which the GOOSE is sent in the virtual LAN; preset.		

Parameter	Default Value	Address
Minimum Cycle Time	10 ms	
First send repetition of the GOOSE occurring after the set time period; preset.		
Maximum Cycle Time	1 s	
Continuous send repetition of the GOOSE occurring after the set time period; preset.		
Increment	900	
Specification factor for the transition of time intervals for GOOSE send repetitions from the first to the continuous repetition.		

Parameter	Default Value	Address
GOOSE Identifier	TEMPLATESystem/ LLN0\$GO\$gcb01	
GOOSE ID consisting of the Device Name and the GOOSE Control Block.		
Dataset Reference		
Name of the dataset assigned to the GOOSE.		
Configuration Revision	1	
Revision status of the configuration.		

GOOSE Subscribing

Mapped Inputs

Source Network Parameters	Parameter	Default Value	Address	
	Multicast MAC Address	01-0C-CD-01-00-00		
	Virtual MAC address used as a receive filter; preset.			
	Application ID (hex)	0		
ID-number of the GOOSE.				
GOOSE Source Parameters	Parameter	Default Value	Address	
	Source Path			
	Information data attribute in the transmitting device.			
	GOOSE Identifier			
	ID of the GOOSE in the transmitting device.			
	Dataset Reference			
	Name of the dataset assigned to the GOOSE in the transmitting device.			
	Configuration Revision	0		
	Configuration revision status of the transmitting device.			
	Data Obj Index	1		
Position index of the data object within the GOOSE.				
Data Obj Type	Unknown			
Structure of the data object; possible settings:				
<ul style="list-style-type: none"> • <i>Unknown</i> • <i>Boolean</i> (logical value) • <i>Int8</i> (Integer, with 8 digits) • <i>Int16</i> (Integer, with 16 digits) • <i>Int32</i> (Integer, with 32 digits) • <i>UInt8</i> (Positive integer, with 8 digits) • <i>UInt16</i> (Positive integer, with 16 digits) • <i>UInt32</i> (Positive integer, with 32 digits) • <i>Float</i> (Floating-point number) • <i>BStr2</i> (Binary state, with 2 digits) • <i>SPS</i> (Single-pole signal) • <i>DPS</i> (Two-pole signal) 				
Quality Obj Index	1			
Distance of the quality descriptor to the data object if not preset. The quality of the received information is to be tested if such has been configured.				
Destination Parameters	Parameter	Default Value	Address	
	Evaluation Expression	Equal to		
	Criteria to check the received information content by comparing it with a set integer value; the parameter is not supported in the device.			
<ul style="list-style-type: none"> • <i>Equal to</i> (Compared to: equal) • <i>Not equal to</i> (Compared to: unequal) • <i>Greater than</i> (Compared to: greater) • <i>Less than</i> (Compared to: less) • <i>Pass through</i> (Do not compare) 				
Default Input Value	False			
Default value for the information in case GOOSE receipt has failed.				
<ul style="list-style-type: none"> • <i>False</i> - not set • <i>True</i> - set • <i>Last Known Value</i> - retain last value received 				

Parameter	Default Value	Address
<ul style="list-style-type: none"> • <i>Double Point: intermediate (00)</i> – switching device in intermediate position • <i>Double Point: Off (01)</i> – switching device open • <i>Double Point: On (10)</i> – switching device closed • <i>Double Point: Bad state (11)</i> – switching device in intermediate position 		
Invalidity Quality bits		
Quality criterion, which is to be tested.		
<ul style="list-style-type: none"> • <i>Invalid / Questionable</i>: Invalid / questionable • <i>Source</i>: Information source is faulty • <i>Relay test</i>: Sending device is set to test mode • <i>OperatorBlocked</i>: Blocked by operator 		
and		
<ul style="list-style-type: none"> • <i>Overflow</i>: Measured value has exceeded its capacity • <i>OutOfRange</i>: Measured value has exceeded its range • <i>BadReference</i>: Referenced value is faulty • <i>Oscillatory</i>: Value is volatile • <i>Failure</i>: Faulty • <i>OldData</i>: Information is out-of-date • <i>Inconsistent</i>: Information is unreliable • <i>Inaccurate</i>: Information is inaccurate 		

Report Control Blocks

System/LLN0

Report Parameters

Parameter	Default Value	Address
Report Type		
Report type:		
<ul style="list-style-type: none"> • <i>Unbuffered</i> (updating) • <i>Buffered</i> (saving) 		
Report ID	TEMPLATESystem/ LLN0\$RP\$urcbA, ..., TEMPLATESystem/ LLN0\$RP\$urcbP, ..., TEMPLATESystem/ LLN0\$BR\$brcbA, ..., TEMPLATESystem/ LLN0\$BR\$brcbH	
Report ID consisting of the Device Name and the Report Control Block.		
Dataset Reference		
Name of the dataset assigned to the report.		
Configuration Revision	1	
Revision status of the configuration.		

Controls

Control Objects

Control Object Parameters

Parameter	Default Value	Address
ctlModel	sbo-with-enhanced-security	
To control external devices the following operating modes can be set: <ul style="list-style-type: none"> • <i>Status only</i> (manually operated switching device) • <i>Direct control with enhanced security</i> (direct command issue with extended monitoring of command effecting) • <i>SBO (Select before operate) with enhanced security</i> (switching device selection procedure with extended monitoring of command effecting) 		
sboTimeout	120000	
Return time period after selection without issuing a command.		

Uniqueness of Control

Source Network Parameters

Parameter	Default Value	Address
Multicast MAC Address	01-0C-CD-01-00-00	
Virtual MAC address used as a receive filter; preset.		
Application ID (hex)	0	
ID-number of the GOOSE.		

GOOSE Source Parameters

Parameter	Default Value	Address
Source Path		
Information data attribute in the transmitting device.		
GOOSE Identifier		
ID of the GOOSE in the transmitting device.		
Dataset Reference		
Name of the dataset assigned to the GOOSE in the transmitting device.		
Configuration Revision	0	
Configuration revision status of the transmitting device.		
Data Obj Index	1	
Position index of the data object within the GOOSE.		
Default Input Value	True	
Default value for the information in case GOOSE receipt has failed: <ul style="list-style-type: none"> • <i>False</i> - not set • <i>True</i> - set • <i>Last Known Value</i> - retain last value received • <i>Double Point: intermediate (00)</i> - switching device in intermediate position • <i>Double Point: Off (01)</i> - switching device open • <i>Double Point: On (10)</i> - switching device closed • <i>Double Point: Bad state (11)</i> - switching device in intermediate position 		

Measurements

Scaling	Parameter	Default Value	Address	
	Unit Multiplier			
	Multiplication factor; not supported.			
Range configuration	Parameter	Default Value	Address	
	Scaled Measurement Range: Min			
	Scaled Measurement Range: Max			
	Lower / Upper measuring range limit value; not supported.			
Deadband Configuration	Parameter	Default Value	Address	
	Deadband	100		
	Multiplier for the smallest display value of the measured value. In order to have the current measured value sent when it has changed from the value last sent the result of the set dead band value multiplied by the smallest display value must exceed the smallest display value.			

Configurable Data Attributes

System/LLN0

Mod.measCyc	Parameter	Default Value	Address
	Value	5	
	Transmission of measured values: Time interval in seconds between two dead band evaluations.		
Mod.enCyc	Parameter	Default Value	Address
	Value	65535	
	Cyclic transmission of measured values without dead band check: Time interval in seconds between transmissions of two energy count values.		
Mod.comtrade	Parameter	Default Value	Address
	Value	BINARY	
	Transmission of COMTRADE fault files formatted either as ASCII or binary files.		
Mod.distExtr	Parameter	Default Value	Address
	Value	true	
	Cancelling fault transmission or including it in the configuration.		