

7SR210 Non-Directional Relay

7SR220 Directional Relay

IEC 61850 PICS

(Protocol Implementation Conformance Statement)

(Software Version 2435H85008R7a-7a) (7SR210)

(Software Version 2435H85009R7a-7a) (7SR220)

Description of the IEC61850 supported communication services.

The copyright and other intellectual property rights in this document, and in any model or article produced from it (and including any registered or unregistered design rights) are the property of Siemens Protection Devices Limited. No part of this document shall be reproduced or modified or stored in another form, in any data retrieval system, without the permission of Siemens Protection Devices Limited, nor shall any model or article be reproduced from this document unless Siemens Protection Devices Limited consent.

While the information and guidance given in this document is believed to be correct, no liability shall be accepted for any loss or damage caused by any error or omission, whether such error or omission is the result of negligence or any other cause. Any and all such liability is disclaimed.

## Document Release History

This document is issue 2011/05. The list of revisions up to and including this issue is:

2011/05	First issue
---------	-------------

## Software Revision History

2011/05	2435H85008R7a-7a (7SR210) 2435H85009R7a-7a (7SR220)	First Release
---------	--	---------------

**CONTENTS**

DOCUMENT RELEASE HISTORY .....2

SOFTWARE REVISION HISTORY .....2

1. DEFINITION OF THE COMMUNICATION SERVICES ACC. TO STANDARD (PICS) .....4

    1.1 Profile Compliance .....4

    1.2 MMS Conformance.....6

## 1. DEFINITION OF THE COMMUNICATION SERVICES ACC. TO STANDARD (PICS)

The tables in the sections below appear in the same sequence as in standard IEC 61850, Part 8-1, Section 24. They refer to Part 7 of the standard and the corresponding information must be contained in the PICS. This section describes the conformance statements. The standard groups them together under the term Protocol Implementation Conformance Statement (PICS).

Mandatory services.

Please note that a number of services are prescribed and must be implemented to comply with the standard. Only the optional services and protocols are listed here because they constitute freedom of implementation. None of the mandatory services is explicitly explained here. Please refer to the standard IEC 61850, Part 8-1.

The descriptions below refer to implementation in the Reyrolle device range.

The tables give the names stated in the standard.

### 1.1 Profile Compliance

#### Application profile support

Profile		Client	Server	Comments
A1	Client/server	N	Y	
A2	GOOSE/GSE Management	Y	Y	Only GOOSE, not GSE management
A3	GSSE	N	N	
A4	Time sync	Y	N	Time accuracy: 1 ms (performance class T1)

#### T profile support

Profile		Client	Server	Comments
T1	TCP/IP profile	N	Y	
T2	OSI T profile	N	N	
T3	GOOSE/GSE T profile	Y	Y	Only GOOSE, not GSE
T4	GSSE T profile	N	N	
T5	Time sync T profile	Y	N	

**Client/server  
services supported**

IEC 61850-7-2 model	IEC 61850-7-2 services	Implemented (Y/N)
Server	GetServerDirectory	Y
Association	Associate	Y
	Cancel	Y
	Release	Y
Logical Device	GetLogicalDeviceDirectory	Y
Logical Node	GetLogicalNodeDirectory	Y
	GetAllDataValues	Y
Data	GetDataValues	Y
	SetDataValues	Y
	GetDataDirectory	Y
Dataset	GetDataDefinition	Y
	GetDataSetValues	Y
	SetDataSetValues	N
	CreateDataSet	Y
	DeleteDataSet	Y
Substitution	GetDataSetDirectory	Y
	GetDataValues	N
	SetDataValues	N
Settings group ControlBlock	SelectActiveSG	Y
	SelectEditSG	N
	SetSGValues	N
	ConfirmEditSGValues	N
	GetSGValues	N
	GetSGCBValues	N
Report Control Block	Report	Y
	GetBRCBValues	Y
	SetBRCBValues	Y
	GetURCBValues	Y
	SetURCBValues	Y
Log Control Block	GETLCBValues	N
	SETLCBValues	N
	GetLogStatusValues	N
	QueryLogByTime	N
	QueryLogAfter	N
GOOSE	GetCoCBValues	Y
	SetGoCBValues	N
GSSE	GetGsCBValues	N
	SetGsCBValues	N
Control	Select	N
	SelectWithValue	Y
	Cancel	Y
	Operate	Y
	Command termination	Y
	TimeActivatedOperate	N
File transfer	GetFile	N
	SetFile	N
	DeleteFile	N
	GetFileAttributeValues	N

**Services and protocols  
for client/ server,  
application profile**

These services are all identified as mandatory and are therefore implemented in compliance with the standard.

**Services and protocols  
for client/ server, TCP/IP  
profile**

Services and protocols must be provided in compliance with the standard. There is no choice about implementation. \_KEEPALIVE was permanently set to 3 seconds although not recommended by the standard.

## 1.2 MMS Conformance

Parts of the services of the IEC 61850 protocol are based on the MMS<sup>2</sup> stack. This provides the relevant MMS services. The MMS services implemented are listed below. Some services whose implementation isn't mandatory are not shown. Please refer to the standard IEC 61850 for more information (see IEC 61850 Part 8-1)

### MMS Initiate request general Parameters

MMS Service Supported CBB	Client-CR		Server-CR	
	realized	value/ range	realized	value/ range
status			Y	
getNameList			Y	
notify			Y	
rename			N	
read			Y	

- 1 The standard permits setting in the range 1 to 20 seconds. The 3 second permanent setting was selected to achieve the same response as with T103.
- 2 MMS. Manufacturing Message Specification is defined in standard ISO 9506 and was defined for industrial automation systems ranging from simple to complex.

MMS Service Supported CBB	Client-CR		Server-CR	
	realized	value/ range	realized	value/ range
write			Y	
getVariableAccessAttributes			Y	
defineNamedVariable			N	
defineScatteredAccess			N	
getScatteredAccessAttributes			N	
deleteVariableAccess			N	
defineNamedVariableList			Y	
getNamedVariableListAttributes			Y	
deleteNamedVariableList			Y	
defineNamedType			N	
getNamedTypeAttributes			N	
deleteNamedType			N	
input			N	
output			N	
takeControl			N	
relinquishControl			N	
defineSemaphore			N	
deleteSemaphore			N	
reportPoolSemaphoreStatus			N	
reportSemaphoreStatus			N	
initiateDownloadSequence			N	
downloadSegment			N	
terminateDownloadSequence			N	
initiateUploadSequence			N	

MMS Service Supported CBB	Client-CR		Server-CR	
	realized	value/ range	realized	value/ range
uploadSegment			N	
terminateUploadSequence			N	
requestDomainDownload			N	
requestDomainUpload			N	
loadDomainContent			N	
storeDomainContent			N	
deleteDomain			N	
getDomainAttributes			Y	
createProgramInvocation			N	
deleteProgramInvocation			N	
start			N	
stop			N	
resume			N	
reset			N	
kill			N	
getProgramInvocationAttributes			N	
obtainFile			N	
devineEventCondition			N	
deleteEventCondition			N	
getEventConditionAttributes			N	
getEventConditionStatus			N	
getEventConditionMonitoring			N	
triggerEvent			N	
defineEventAction			N	
deleteEventAction			N	
alterEventEnrollment			N	
reportEventEnrollmentstatus			N	
getEventEnrollmentAttributes			N	
acknowledgeEventNotification			N	
getAlarmSummary			N	
getAlarmEnrollmentSummary			N	
readJournal			N	
writeJournal			N	
initializeJournal			N	
reportJournalStatus			N	
createJournal			N	
deleteJournal			N	
fileOpen			Y	
fileRead			Y	
fileClose			Y	
fileRename			N	
fileDelete			N	
fileDirectory			Y	
unsolicitedStatus			N	
informationReport			Y	
eventNotification			N	
attachToEventCondition			N	

MMS Service Supported CBB	Client-CR		Server-CR	
	realized	value/ range	realized	value/ range
attachToSemaphore			N	
conclude			Y	
cancel			Y	
getDataExchangeAttributes			N	
exchangeData			N	
defineAccessControlList			N	
getAccessControlListAttributes			N	
reportAccessControlledObjects			N	
deleteAccessControlList			N	
alterAccessControl			N	
reconfigureProgramInvocation			N	

#### MMS Parameter Conformance Building Block (CBB)

MMS Service Supported CBB	Client-CR		Server-CR	
	realized	value/ ranged	realized	value/ range
STR1			Y	
STR2			Y	
VNAM			Y	
VALT			Y	
VADR			Y	
VSCA			N	
TPY			Y	
VLIS			Y	
REAL			N	
CEI			N	



**Alternate Access Selection Conformance Statement**

AlternateAccessSelection	Client-CR		Server-CR	
	realized	value/ ranged	realized	value/ range d
accessSelection			N	
component			N	
index			N	
indexRange			N	
allElements			N	
alternateAccess			Y	
selectAccess			N	
component			N	
index			N	
indexRange			N	
allElements			N	

**Variable Access Conformance Statement**

VariableAccessSpecification	Client-CR		Server-CR	
	realized	value/ range	realized	value/ range
listOfVariable			Y	
variableSpecification			Y	
alternateAccess			Y	
variableListName			Y	

**Variable Conformance Statement**

VariableSpecification	Client-RC		Server-CR	
	realized	value/ range	realized	value/ range
name			Y	
address			N	
variableDescription			Y	
scatteredAccessDescription			N	
invalidated			N	

**Read Conformance Statement**

Read	Client-CR		Server-CR	
	realized	value/ range	realized	value/ range
Request				
specificationWithResult			Y	
variableAccessSpecification			Y	
Response				
variableAccessSpecification			Y	
listOfAccessResult			Y	

**GetVariableAccess Attributes Conformance statement**

GetVariableAccessAttributes	Client-CR		Server-CR	
	realized	value/ range	realized	value/ range
Request				
name			Y	
address			N	
Response				
mmsDeletable			Y	
address			N	
typeSpecification			Y	

**Define Variable Access Attributes Conformance Statement**

DefineVariableAccessAttributes	Client-CR		Server-CR	
	realized	value/ range	realized	value/ range
Request				
variableListName			Y	
listOfVariable			Y	
variableSpecification			Y	
alternateAccess			N	
Response			Y	

**Get Named Variable List Attributes Conformance Statement**

GetNamedVariableListAttributes	Client-CR		Server-CR	
	realized	value/ range	realized	value/ range
Request				
IObjectName			Y	
Response				
mmsDeletable			Y	
listOfVariable			Y	
variableSpecification			Y	
alternateAccess			N	

**DeleteNamedVariableList Conformance Statement**

DeleteNamedVariableList	Client-CR		Server-CR	
	realized	value/ range	realized	value/ range
Request				
Scope			Y	
listOfVariableListName			Y	
domainName			Y	
Response				
numberMatched			Y	
numberDeleted			Y	
DeleteNamedVariableList-Error			Y	

**GOOSE Conformance Statement**

<b>GOOSE</b>	<b>Participants</b>	<b>Publisher</b>	<b>Value/Comment</b>
GOOSE Services	Y	Y	
SendGOOSEMessage	Y	Y	
GetGoReference	N	N	
GetGOOSEElementNumber	N	N	
GetGoCBValue	N	N	
SetGoCBValue	N	N	
GSENotSupported	N	N	
GOOSE Control Block	N	Y	ReadOnly