RELION® PROTECTION AND CONTROL

Protocol Implementation Conformance Statement (PICS)

REX640 PRP Functionality

PRODUCT	PRODUCT CONNECTIVITY LEVEL	DOCUMENT ID.	REV.	LANG.	PAGE
REX640	PCL4	1MRS759031	C	en	1/6

Contents

1. About this manual

1.1. Read it first!

Before attempting any operation with IED from REX640, read carefully the IED documentation first.

This document is addressed to anyone who needs to interact with REX640 and its IEC 61850 features in more detail.

1.2. Document information

Revision	Date	Note
A	2.3.2018	REX640 PCL1
B	15.1.2020	REX640 PCL1 or higher
C	29.3.2023	REX640 PCL4 or higher

Applicability

This manual is applicable to all REX640 Protection and Control IED versions mentioned in document Revision History above or newer versions if document update is not required.

1.3. Safety Information

There are safety warnings and notes in the following text. They are in a different format to distinguish them from normal text.

Safety warning

The safety warnings should always be observed. Non-observance can result in death, personal injury, or substantial damages to property. Guarantee claims might not be accepted when safety warnings are not respected. They look like below:

Do not make any changes to the REX640 configuration unless you are familiar with the REX640 and its configuration tool. This might result in disoperation and loss of warranty.

Note

A note contains additional information worth noting in the specific context, and looks like below:

The selection of this control mode requires caution, because operations are al-lowed both from the HMI and remotely.

2. Abbreviations and Definitions

2.1. Abbreviations

Abbreviation	Description
PRP	Parallel Redundancy Protocol
HSR	High-availability Seamless Redundancy

2.2. Definitions

Abbreviation	Description
Operational State	The unit is active and it is protecting and controlling the switchgear.
Stand-alone	The unit is not connected to a SCADA system.

3. Reference Documents

Ref	Document id	Rev	Document title
[1]	62439-3	Third Edition 2016-03	Industrial communication networks – High availability automation networks – Part 3: Parallel Redundancy Protocol (PRP) and High-availability Seamless Redundancy (HSR)

4. PRP Conformance

4.1. PRP PICS

Id	Feature	Description/Value
SNMP_MIB	Ability to support the SNMP MIB	N
NTAB_SIZ	Number of entries in the NodesTable (=0 no NodesTable)	0
PRIO_QTY	Number of supported priorities	4
VLAN_QTY	Number of supported VLANS	4095
MULT_QTY	Number of filtered multicast addresses	-
CLK_1588	Support of IEC 61588 synchronization	Y
PRP_SRP	Ability to perform as non-bridging node with no PRP	N
PRP_RSTP	Ability to perform as a RSTP bridge element with designated port role	N

Id	Feature	Description/Value
PRP_MRP	Ability to perform as a MRP bridge element (client or master)	N
HSR_H	Aability to support HSR mode H (default)	Y
HSR_N	Ability to support HSR mode N.	N
HSR_M	Ability to support HSR mode M	N
HSR_T	Ability to support HSR mode T	N
HSR_U	Ability to support HSR mode U	N
RBX_PRP	RedBox with PRP ports	Y
RBX_HSR	RedBox with HSR ports	Y
QBX_HSR	QuadBox integrating two RedBoxes	N
RBX_PNT	Number of entries in the ProxyNodeTable	16 x number of ports

4.2. PIXIT General

Id	Feature	Description
TYPE	Type of Double Attached Node	IED
PROTs	Supported Protocols	61850 (with GOOSE and 9-2LE)

4.3. PIXIT PRP

ID	Feature	Description/Value
VLAN1	Can the device send both frames with and without VLAN? If yes, describe how either case can be obtained	Y, GOOSE frames are always sent with VLAN and unicast frames such as MMS are sent without VLAN.
VLAN2	Can the device send both supervision frames with and without VLAN? If yes, describe how either case can be obtained	N
DUPL1	Is Duplicates Accept supported? (Testing purposes) The handling of duplicates is left to the upper layer of software, each protocol with its own policy	N, device is always discarding duplicates when PRP is enabled.
TABLE1	Does the device offer the possibility (Redundancy management interface) to read/write in real time the data contained in the monitoring data set and the Nodes table?	MIB N Other N

ID	Feature	Description/Value
TABLE2	Does the device give an alarm signal when it detects one LAN is down?	Y, IEC 61850 data: LD0.RCHLCCH1.ChLiv and LD0.RCHLCCH1.RedChLiv.
WIN1	Sliding window size	$t_{\text{resideMin}} = 112\text{ms}$ $t_{\text{resideMax}} = 168\text{ms}$ Frames:…
	Configurable?	N
Monitoring Data Set	What optional attributes does the monitoring data set contain?	CntErrorA/B N CntReceivedA/B N CntErrWrongLanA/B N ActiveA and ActiveB N
NodesTable	What attributes does the NodesTable contain?	MacAddress N CntReceivedA/B N CntErrWrongLanA/B N TimeLastSeenA/B N SanA/B N
NodesTable2	When the NodesTable allow to identify a node as SAN, does the DUT send frames without an RCT over the port of that LAN only?	N
LifeCheckInterval	Typical interval between two successive PRP_Supervision frames sent by the same node.	2000[ms]
	Configurable?	N
NodeForgetTime	Time after which a node entry is cleared from the NodesTable after frames from this node cease to be received.	60000[ms]
	Configurable?	N
EntryForgetTime	Maximum time an entry may reside in the duplicate table, independently from speed.	168[ms]
	Configurable?	N
NodeRebootInterval	Minimum time during which a node that reboots remains silent, independently from speed.	3000[ms] Max depends on configuration size.
	Configurable?	N