DA-PRP-HSR-I210 Expansion Module Installation Guide

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DA-PRP-HSR-I210 Expansion Module Installation Guide

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Table of Contents

Introduction	4
Overview	4
Appearance	4
Dimensions	5
Hardware Installation	6
Handling Static-sensitive Components	6
Installing the DA-PRP-HSR-I210 Expansion Card	6
Removing the DA-PRP-HSR-I210 Expansion Card	8
LED Indicators	8
Installing the DA-PRP-HSR-I210 Driver and Utility	9
Installing the Driver and Utility	9
Changing the Default Name of the Expansion Cards	12
Configuring the Operation Mode	14
Redefining the Ethernet Information	15
PRP/HSR Supervision Frame	17
	Introduction Overview Appearance Dimensions Hardware Installation Handling Static-sensitive Components Installing the DA-PRP-HSR-I210 Expansion Card LED Indicators Installing the DA-PRP-HSR-I210 Driver and Utility Installing the Driver and Utility Changing the Default Name of the Expansion Cards Configuring the Operation Mode Redefining the Ethernet Information PRP/HSR Supervision Frame

Thank you for purchasing Moxa's DA-PRP-HSR-I210 expansion card for the DA-820C Series industrial computer. This manual includes information on installation the hardware and driver for the expansion card.

Overview

The DA-PRP-HSR-I210 expansion card is compliant with IEC 62439-3 Clause 4 (PRP) and IEC 62439-3 Clause 5 (HSR) standards to ensure the highest system availability and data integrity for mission-critical applications that require zero-time recovery and redundancy.

With its dual Gigabit Ethernet port design, the DA-PRP-HSR-I210 provides high performance for redundant network systems. In addition, the DA-PRP-HSR-I210 features a built-in native PRP/HSR management middleware with MMS server that allows SCADA systems to collect IEC 62439-3 registers from multiple devices for easy network diagnosis, troubleshooting, device management, and monitoring.

Moxa's DA-820C Series industrial computer with the DA-PRP-HSR-I210 expansion card is the ideal solution for power substation automation and process automation systems.

Appearance



Dimensions



This chapter describes the basic hardware installation of the DA-PRP-HSR-I210 expansion card.

Handling Static-sensitive Components

Static electricity can damage electronic components. To avoid damage, keep electronic components in their anti-static bags until you are ready to use them.

To reduce the possibility of damage to an electronic component from electrostatic discharge, take the following precautions:

- Wear a wrist strap to ground yourself while working with electronic components.
- Limit your movement; movement can create static electricity around you.
- Hold the component by its edges or frame.
- Avoid touching solder joints, pins, or exposed printed circuitry.
- Do not place the component directly onto a metal surface.
- While the component is still in its anti-static bag, place it in contact with an unpainted metal part for at least two seconds to discharge any static electricity from the package and from your body.
- After you remove the component from its package, install it directly. If you need to put the component down, place it on its anti-static bag.
- Take additional care when handling components in air-conditioned rooms and in cold weather because air conditioning and heating reduce indoor humidity and increase static electricity.

Installing the DA-PRP-HSR-I210 Expansion Card



NOTE

The DA-PRP-HSR-I210 expansion card can only be installed in a DA-820C computer. You can install up to three DA-PRP-HSR-I210 expansion cards in the PCI slots 2 to 4 of a DA-820C computer. Start with slot 3 and then install expansion cards in other slots if you are installing more than one.

To install the DA-PRP-HSR-I210, complete the following steps:

- 1. Turn off the DA-820C computer and disconnect it from the power source.
- 2. Loosen the screws on the rear of the DA-820C computer and remove the top cover.

 Remove the PCI slot cover on the rear panel and install the DA-PRP-HSR-1210 expansion card(s). The DA-PRP-HSR-I210 expansion card can be installed on PCI slots 2 to 4 of the DA-820C computer. If you need to install more than one expansion card, install the cards next to each other continuously in PCI slots 2 to 4.

The following figure indicates the PCI connectors on the system board.



Similarly, turn the card index selection switch to **1** for the second DA-PRP-HSR-I210 card and turn the card index selection switch to **2** for the third DA-PRP-HSR-I210 installed. The following figure shows the location of the card index selection switch on the DA-PRP-HSR-I210.



- 6. Replace the PCI slot cover and fasten the screw to secure the DA-PRP-HSR-I210 to the computer chassis.
- 7. Put back the top cover on the DA-820C.
- 8. Install the driver and configure the PRP/HSR settings to start using the DA-PRP-HSR-I210.

9. For details on modifying the Ethernet settings or reassigning the system information for a DA-PRP-HSR-I210 card, see "*3. Installing the Driver and Utility*".

Removing the DA-PRP-HSR-I210 Expansion Card

To remove a DA-PRP-HSR-I210 from a DA-820C computer, complete the following steps:

- 1. Turn off the computer and disconnect the power source.
- 2. Loosen the screws on the rear of the DA-820C computer and remove the top cover.
- 3. Loosen the screw that secures the DA-PRP-HSR-I210 to the computer chassis.
- 4. Pull to remove the DA-PRP-HSR-I210 from the system board.
- 5. Replace the PCI slot cover and the top cover of the DA-820C computer.

LED Indicators

LED Name	Color	Function
1G_A	Yellow steady/blinking	1000 Mbps (Gigabit) Ethernet mode
1G_A	Off	No link
100M_A	Green steady/blinking	100 Mbps Ethernet mode
100M_A	Off	No link
1G_B	Yellow steady/blinking	1000 Mbps (Gigabit) Ethernet mode
1G_B	Off	No link
100M_B	Green steady/blinking	100 Mbps Ethernet mode
100M_B	Off	No link
PRP	Green	The DA-PRP-HSR-I210 is operating in PRP mode
HSR	Green	The DA-PRP-HSR-I210 is operating in HSR mode
Fault	Red	No Ethernet connection on LAN A or LAN B

3. Installing the DA-PRP-HSR-I210 Driver and Utility

Installing the Driver and Utility

The DA-PRP-HSR-I210 driver and utility are supported on Windows 10.

- Connect a monitor, keyboard, and a mouse to the DA-820C computer.
 For more information, see the DA-820C Series Embedded Computer User's Manual.
- 2. Turn on the computer.
- 3. Download the DA-PRP-HSR-I210 driver from Moxa's support website at https://www.moxa.com/en/support to the DA-820C computer.
- 4. Double-click the **DA-PRP-HSR-I210_MxPrpSetup_x64.msi** file to start the installation process. The installation wizard will show the welcome page.
- 5. Click Next.

k MxPrpSetup	_		Х
Welcome to the MxPrpSetup Setup Wizard	1	[
The installer will guide you through the steps required to install MxPrpSe	tup on your	computer.	
WARNING: This computer program is protected by copyright law and in Unauthorized duplication or distribution of this program, or any portion of or criminal penalties, and will be prosecuted to the maximum extent poss	ternational ti it, may resu ible under tł	reaties. It in severe ne law.	e civil
Cancel < B	ack	<u>N</u> ext	>

6. Accept the default installation directory or click **Browse** to select one and click **Next**.

🛃 MxPrpSetup		_	-	×
Select Installation Folde)r			
The installer will install MxPrpSetup to the	e following folder.			
To install in this folder, click "Next". To in	nstall to a different folder,	enter it below	or click "Bro	wse''.
<u>F</u> older: C:\Program Files\M0XA\MxPrpSetup			Browse.	
1 2			<u>D</u> isk Cos	·
Install MxPrpSetup for yourself, or for a	myone who uses this con	nputer:		
• <u>E</u> veryone				
⊖ Just <u>m</u> e				
	Cancel	< <u>B</u> ack	<u>N</u> e	(t >

7. Click **Next** to continue.

儼 MxPrpSetup			_		×
Confirm Installation					5
The installer is ready to install MxPrpSetup or	n your computer.				
Click "Next" to start the installation.					
	Cancel	< <u>B</u> ack		<u>N</u> e	ext >

8. Click **Close** to complete the installation.

₩ MxPrpSetup	_			×
Installation Complete				
MxPrpSetup has been successfully installed.				
Click "Close" to exit.				
Please use Windows Update to check for any critical updates to the .NET	Frame	work.		
Cancel < <u>B</u> ack			<u>C</u> I	ose

The Moxa PRP Service is installed on the computer.

9. In the message box that pops up, click **Yes**.

🖟 MxPrpSetup	\times
You must restart your system for the configuration effect. Click Yes to restart now or No if you plane	on changes made to MxPrpSetup to take h to manually restart later.
<u>Y</u> es	No

The Moxa PRP Ethernet Information utility will run automatically when you restart the computer.

© Moxa PPR Ethernet Information − □ >										
	PRP Ethernet (Connection Settings								
	PRP Index 0	Name Ethernet 6	Location PCI bus 8, device 0, function 0	New Name						
	New Ethernet (Connection Name								
			Apply							

Changing the Default Name of the Expansion Cards

NOTE

If a new PRP card in installed on the computer or removed from the computer, the **Moxa PRP Ethernet Information utility** will run automatically when the computer reboots. Use the utility to configure the new card.

The utility sets a default name for each card, which can be changed. In the example below, the **PRP Index** represents the PRP index switch selection and the location of the PRP expansion card, which can be obtained from the device manager.

To change the default name for an expansion card, click on the entry for the card in the utility window, change the default name, and click **Apply**.

💿 Moxa PPR Ethernet Information - 🗆 🗙									
PRP Ethernet	Connection Settings								
PRP Index	Name	Location	New Name						
0	Ethernet 6	PCI bus 8, device 0, function 0	PRPEthernet #1						
New Ethernet Connection Name PRPEthernet #1									
Apply									

You will be prompted to restart the computer.

After the computer is restarted, the Moxa PRP Service will run.

Eile Action View Help ← →	
Services (Local)	
Moxa PRP Service Name Description Status Startup Type Log On As	^
Stop the service Microsoft Storage Spaces S Host service Manual Network Service Restart the service Microsoft Windows SMS Ro Routes mes Running Manual (Trig Local System	
Restart the service Minito Site Windows SMS Koll, Note SMS Koll,	
Image: Standard / Standard / Image: Standard / Standard /	~

The DA-PRP-HSR-I210 card uses the same Intel® Ethernet driver as the onboard Ethernet adapters. All expansion cards installed on the computer are shown as individual Ethernet adapters.

😰 Network Connections								×
~	\leftarrow \rightarrow \checkmark \bigstar Control Panel \Rightarrow Network and Internet \Rightarrow Network Connections \checkmark \circlearrowright						k Conn	<i>.</i> , <i>.</i> ,
Or	ganize 🔻							?
Na	me	Status	Device Name			Conne	ctivity	
,	Ethernet	Network cable unplugged	Intel(R) Ethernet Connection (2) I219-LM					
, P	Ethernet 2	Network cable unplugged	Intel(R) I210 Gigabit Network Connection #3					
, P	Ethernet 3	Network cable unplugged	Intel(R) I210 Gigabit Network Connection #2					
, P	Ethernet 4	Network cable unplugged	Intel(R) I210 Gigabit Network Connection					
Q	PRPEthernet #1	Unidentified network	Intel(R) I210 Gigabit Network Connection #6 (PRI	PEthernet	#1)	No net	work ac	cess
<								>
5 ite	ems							==

You can also confirm the name change of the expansion card by checking the Ethernet adapter names in the Device Manager.

🗂 Device Manager
File Action View Help
⇔ ⇒ द 🛛 🖬 晃
> 🏣 Display adapters
> 📔 Firmware
> 🛺 Human Interface Devices
> 📹 IDE ATA/ATAPI controllers
> 🔤 Keyboards
> III Mice and other pointing devices
> 🛄 Monitors
> 🚽 MOXA Embedded Drivers
🗸 🚍 Network adapters
🖵 Intel(R) Ethernet Connection (2) I219-LM
🚍 Intel(R) I210 Gigabit Network Connection
🖵 Intel(R) I210 Gigabit Network Connection #2
🚍 Intel(R) I210 Gigabit Network Connection #3
🖵 Intel(R) I210 Gigabit Network Connection #6 (PRPEthernet #1)
🚽 WAN Miniport (IKEv2)
🚽 WAN Miniport (IP)
🚽 WAN Miniport (IPv6)
🚽 WAN Miniport (L2TP)
🚍 WAN Miniport (Network Monitor)
🚍 WAN Miniport (PPPOE)
🚍 WAN Miniport (PPTP)
🚽 WAN Miniport (SSTP)
> 🛱 Ports (COM & LPT)
> 💼 Print queues
> Processors
Security devices

Configuring the Operation Mode

You can use the **Moxa PRP Settings** utility to set the operating mode (PRP or HSR) for a DA-PRP-HSR_I210 expansion card.

- 1. Run the Moxa PRP Settings utility from the Start menu.
- 2. Select the expansion card.

If more than one DA-PRP-HSR-I210 expansion cards are installed on the computer, use the Module Index (0 to 2) drop-down menu to select the card that you want to configure.

🖶 MOXA PRP/HSR S	—		×
Module Index]		
PRP/HSR Mode PRP ~]	Apply	

3. From the **PRP/HSR Mode** drop-down list, select an option and click **Apply**.

🖶 MOXA PRP/HSR S	_		×
Module Index 0 ~			
PRP/HSR Mode PRP PRP		Apply	

Redefining the Ethernet Information

The **Moxa PRP Ethernet Information** utility can be used to redefine the DA-PRP-HSR-I210 Ethernet information in the system.

1. Run the Moxa PRP Ethernet Information utility from the Start Menu.



2. In the utility screen, select the expansion card.

PRP Index: Select the target PRP card index (the index set by the switch in the expansion card) **Location:** PCI bus location of the target PRP card.

Name: Type the network connection name of target PRP card.

In this example, we are redefining the name of the card.

New Name: The new name to set.

Moxa PPR Et	hernet Information			-		×
PRP Index	Name	3	Location	New Name		
0	Ethernet 6		PCI bus 8, device 0, function 0	PRPEtherne	et #1	
New Ethernet	Connection Name	PRPEth	Apply			

After the Ethernet information has been successfully redefined, a message is shown. Click OK.

Moxa PPR Etl	hernet	t Informatio				-		1
PRP Ethernet	Conn	ection Setti	gs					
PRP Index 0	Na Eth	me nernet 6	Locat PCI be	ion us 8, device 0, function (New Na	ame nernet #	1	
New Ethernet	Conn	Setting Inf	ormation Change Network Co Device Manager Suc	nnection Name and Firer	ndly Name o	× f		
					ОК			

3. Restart the computer.

C	Moxa PPR Eth	ernet Information		- 🗆 ×
P	RP Ethernet C	Connection Settings		
F	PRP Index)	Name Ethernet 6	Location PCI bus 8, device 0, function 0	New Name PRPEthernet #1
			Setting Information	×
N	lew Ethernet (Connection Name PRPEth	Please Restart the Com	nputer.
		L		ОК

PRP/HSR Supervision Frame

The supervision frame of DA-PRP-HSR-I210 expansion card is based on WinPcap. Before you start sending the PRP/HSR supervision frame, you must download and install the WinPcap tool from https://www.winpcap.org/ and check the supervision frame.

To check the PRP/HSR supervision frame, do the following:

- 1. Install the WinPcap tool on the DA-820C.
- 2. Install DA-PRP-HSR-I210_MxPrpSetup_x64.msi
- 3. Wait for the Moxa PRP Service to initialize.
- 4. The Moxa PRP/HSR Supervision Sender service will start running.

🕎 Task M	lanager								-	
<u>File</u> Optio	ons <u>V</u> iew									
Processes	Performance	App history	Startup	Users	5 Details	Service	s			
	-	\[09	6	13%	3%	0%	
Name					CP	J M	emory	Disk	Network	
🛆 Mi	crosoft OneDriv	ve (32 bit)			09	6 3	3.6 MB	0 MB/s	0 Mbps	^
> 🔳 Mi	crosoft Softwar	re Protection P	latform S	er	09	6 3	8.5 MB	0 MB/s	0 Mbps	
> 🔒 Mi	crosoft Windov	vs Search Inde	xer		09	6 4	4.7 MB	0 MB/s	0 Mbps	
🔳 Me	oxa PRP/HSR Su	upervision Sen	der		05	6 1	1.0 MB	0.1 MB/s	0 Mbps	
> 🔳 M	(PrpSvc				09	6 7	7.0 MB	0 MB/s	0 Mbps	
🗖 Pic	on startup utili	ty (32 bit)			09	6 ().8 MB	0 MB/s	0 Mbps	
> 🔳 Pre	esentationFont	Cache.exe			0	6 3	3.2 MB	0 MB/s	0 Mbps	
🔳 Ru	ntime Broker				0	6 6	5.9 MB	0 MB/s	0 Mbps	
🔎 Sei	arch				0	6 27	7.9 MB	0 MB/s	0 Mbps	
🔎 Sei	arch Backgroun	nd Task Host			0	6 7	7.6 MB	0 MB/s	0 Mbps	
🔳 Sm	nartScreen				0	6 3	8.1 MB	0 MB/s	0 Mbps	
> 🖶 Sp	ooler SubSyster	m App			09	6 4	4.2 MB	0 MB/s	0 Mbps	
🕕 🕀 Wi	ndows Defende	er notification	icon		09	6 2	2.3 MB	0 MB/s	0 Mbps	
> 🔳 Wi	ndows Module	s Installer			09	6 1	1.0 MB	0 MB/s	0 Mbps	
🔳 Wi	ndows Module	s Installer Wor	ker		09	6 1	I.4 MB	0 MB/s	0 Mbps	~
Fewer	<u>d</u> etails									<u>E</u> nd task

- 5. Install the Wireshark tool on a PC and run the tool with the "hsr_prp_supervision" filter to wait for the PRP supervision frames.
- 6. Connect port A or port B of the DA-PRP-HSR-I210 to the Ethernet port of the PC.
- 7. Use the Moxa PRP Settings utility to set the PRP/HSR mode.
- 8. Check the supervision frame using the Wireshark tool.

PRP Supervision Frame

e Edit View Go C	apture Analyze Statistics Teleph			
i 🖉 🛞 🔝 🕅 🕅		ony Wireless Tools Help		
har pro supervision				
Time	Source	Destination	Protocol	Length Info
3133 1038.714345	MoxaTech 00:e5:0f	Iec 00:01:00	HSR/PRP	66 PRP Supervision
3137 1040.729941	MoxaTech 00:e5:0f	Iec_00:01:00	HSR/PRP	66 PRP Supervision
3140 1042.745453	MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP	66 PRP Supervision
3146 1044.761089	MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP	66 PRP Supervision
3150 1046.776562	MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP	66 PRP Supervision
3153 1048.792191	MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP	66 PRP Supervisior
3158 1050.807634	MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP	66 PRP Supervisior
3162 1052.823302	MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP	66 PRP Supervisior
3165 1054.838905	MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP	66 PRP Supervisior
3172 1056.854444	MoxaTech_00:e5:0f			
3181 1060.030294	MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP	66 HSR Supervisior
3185 1062.041793	MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP	66 HSR Supervisior
3189 1064.057315	MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP	66 HSR Supervisior
3192 1066.072794	MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP	66 HSR Supervisior
3196 1068.088432	MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP	66 HSR Supervision
3202 1070.104012	MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP	66 HSR Supervisior
3208 1072.119585	MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP	66 HSR Supervision
3211 1074.135104	MoxaTech 00:e5:0f	Iec 00:01:00	HSR/PRP	66 HSR Supervisior
Supervisite				
0000 0000 Sequence number TLV type: PRP N TLV length: 6 Source MAC Addr TLV type: Redun TLV length: 6 RedBox MAC Addr TLV type: End o TLV length: 0	= Path: 0 0001 = Version: 1 : 483 ode (Duplicate Discard) (20 ess: MoxaTech_00:e5:0f (00:: dancy Box MAC Address (30) ess: MoxaTech_00:e5:0f (00:: f TLVs (0)) 90:e8:00:e5:0f) 90:e8:00:e5:0f)		
0000 0000 0000 Sequence number TLV type: PRP N TLV length: 6 Source MAC Addr TLV type: Redun TLV length: 6 RedBox MAC Addr TLV type: End o TLV length: 0 /SS-Monitoring eth Src Port: 806	<pre> = Path: 0 0001 = Version: 1 :: 483 ode (Duplicate Discard) (20 ess: MoxaTech_00:e5:0f (00: dancy Box MAC Address (30) ess: MoxaTech_00:e5:0f (00: f TLVs (0) hernet trailer, Source Port:</pre>) 90:e8:00:e5:0f) 90:e8:00:e5:0f) 806		

HSR Supervision Frame

Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help Image: Source Detination Protocol Length Info Jing: pupervision Detination Protocol Length Info Jing: Job 1954.838905 MoxaTech.090:5:0f Icc_00:01:00 HSR/PRP 66 PRP Supervision Jing: Job 20024 MoxaTech.090:5:0f Icc_00:01:00 HSR/PRP 66 HSR Supervision Jiss: 1062.041793 MoxaTech.090:5:0f Icc_00:01:00 HSR/PRP 66 HSR Supervision Jiss: 1062.041793 MoxaTech.090:5:0f Icc_00:01:00 HSR/PRP 66 HSR Supervision Jiss: 1062.041794 MoxaTech.090:5:0f Icc_00:01:00 HSR/PRP 66 HSR Supervision Jiss: 1062.041794 MoxaTech.00:5:0f Icc_00:01:00 HSR/PRP 66 HSR Supervision Jiss: 1062.041793 MoxaTech.00:5:0f Icc_00:01:00 HSR/PRP 66 HSR Supervision Jiss: 1070.10401 MoxaTech.00:5:0f Icc_00:01:00 HSR/PRP 66 HSR Supervision Jiss: 1070.10521 MoxaTech.00:5:0f Icc_00:01:00			The second se	The second se
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3244 1086.228421 MoxaTech_00:e5:0f Iec_00:01:00 HSR/PRP 66 HSR Supervision 3256 1088.244045 MoxaTech_00:e5:0f Iec_00:01:00 HSR/PRP 66 HSR Supervision 3266 1080.2259591 MoxaTech_00:e5:0f Iec_00:01:00 HSR/PRP 66 HSR Supervision Frame 3181: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface 0 HSR/PRP 66 HSR Supervision Ethernet II, Src: MoxaTech_00:e5:0f (00:90:e8:00:e5:0f), Dst: Iec_00:01:00 (01:15:4e:00:01:00) HSR/PRP HSR/PRP HSR/PRP Supervision (IEC62439 Part 3) 0000 = Path: 0 0000 0000 0000 0001 = Version: 1 Sequence number: 484 TLV type: HSR Node (23) TLV length: 6 Source MAC Address: MoxaTech_00:e5:0f (00:90:e8:00:e5:0f) TLV type: Redundancy Box MAC Address (30) ILV type: Redundancy Box MAC Address (30)	3239 1084.212	2621 MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP 66 HSR Supervis
3256 1088.244045 MoxaTech_00:e5:0f Iec_00:01:00 HSR/PRP 66 HSR Supervision 3266 1090.25991 MoxaTech_00:e5:0f Iec_00:01:00 HSR/PRP 66 HSR Supervision Frame 3181: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface 0 Ethernet II, Src: MoxaTech_00:e5:0f (00:90:e8:00:e5:0f), Dst: Iec_00:01:00 (01:15:4e:00:01:00) High-availability Seamless Redundancy (IEC62439 Part 3 Chapter 5) HSR/PRP Supervision (IEC62439 Part 3) 0000 = Path: 0 000 0000 0001 = Version: 1 Sequence number: 484 TLV type: HSR Node (23) TLV length: 6 Source MAC Address: MoxaTech_00:e5:0f (00:90:e8:00:e5:0f) TLV type: Redundancy Box MAC Address (30)	3244 1086.228	R/21 MovaTach 00.65.0f	Tec 00:01:00	HSR/PRP 66 HSR Supervis
3266 1090.259591 MoxaTech_00:e5:0f Iec_00:01:00 HSR/PRP 66 HSR Supervision Frame 3181: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface 0 Ethernet II, Src: MoxaTech_00:e5:0f (00:90:e8:00:e5:0f), Dst: Iec_00:01:00 (01:15:4e:00:01:00) High-availability Seamless Redundancy (IEC62439 Part 3 Chapter 5) HSR/PRP Supervision (IEC62439 Part 3) 0000		1421 Noxarech_00.65.01		·····
Frame 3181: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface 0 Ethernet II, Src: MoxaTech_00:e5:0f (00:90:e8:00:e5:0f), Dst: Iec_00:01:00 (01:15:4e:00:01:00) High-availability Seamless Redundancy (IEC62439 Part 3 Chapter 5) HSR/PRP Supervision (IEC62439 Part 3) 0000	3256 1088.244	4045 MoxaTech_00:e5:0f	Iec_00:01:00	HSR/PRP 66 HSR Supervis
	3256 1088.24 3266 1090.255 Frame 3181: 66 Ethernet II, Si High-availabil	<pre>MoxaTech_00:e5:0f MoxaTech_00:e5:0f MoxaTech_00:e5:0f bytes on wire (528 bits) rc: MoxaTech_00:e5:0f (00 ity Seamless Redundancy (</pre>	Iec_00:01:00 Iec_00:01:00 . 66 bytes captured (528 bits) on interfac :90:e8:00:e5:0f), Dst: Iec_00:01:00 (01:11) IEC62439 Part 3 Chapter 5)	HSR/PRP 66 HSR Supervis HSR/PRP 66 HSR Supervis 66 HSR Supervis 5:4e:00:01:00)
	3256 1088.244 3266 1090.255 Frame 3181: 66 Ethernet II, S High-availabil HSR/PRP Superv. 0000 0000 00 Sequence num TLV type: HS TLV length: Source MAC A TLV type: Re TLV length:	<pre>Mail MovaTech_00:e5:0f MovaTech_00:e5:0f bytes on wire (528 bits) rc: MovaTech_00:e5:0f (00 ity Seamless Redundancy (ision (IEC62439 Part 3) = Path: 0 000 0001 = Version: 1 uber: 484 R Node (23) 6 duddress: MovaTech_00:e5:0f duddress: MovaTech_00:e5:0f duddress 6</pre>	Iec_00:01:00 Iec_00:01:00 . 66 bytes captured (528 bits) on interfac :90:e8:00:e5:0f), Dst: Iec_00:01:00 (01:11 IEC62439 Part 3 Chapter 5) f (00:90:e8:00:e5:0f) (30)	HSR/PRP HSR/PRP 66 HSR Supervis 66 HSR Supervis :4e:00:01:00)
RedBox MAC Address: MoxaTech_00:e5:0f (00:90:e8:00:e5:0f)	3256 1088.244 3266 1090.259 Frame 3181: 66 Ethernet II, S. High-availabil. HSR/PRP Superv. 0000 0000 00 Sequence num TLV type: HS TLV length: Source MAC A TLV type: Re TLV type: Re TLV tength: RedBox MAC A	<pre>Main HoxaTech_00:e5:0f MoxaTech_00:e5:0f bytes on wire (528 bits) nc: MoxaTech_00:e5:0f (00 ity Seamless Redundancy (ision (IEC62439 Part 3) = Path: 0 000 0001 = Version: 1 uber: 484 i& Node (23) 6 kddress: MoxaTech_00:e5:0f kddress: MoxaTech_00:e5:0f kddress: MoxaTech_00:e5:0f</pre>	Iec_00:01:00 Iec_00:01:00 Iec_00:01:00 , 66 bytes captured (528 bits) on interfac :90:e8:00:e5:0f), Dst: Iec_00:01:00 (01:11 IEC62439 Part 3 Chapter 5) f (00:90:e8:00:e5:0f) (30) f (00:90:e8:00:e5:0f)	HSR/PRP 66 HSR Supervis HSR/PRP 66 HSR Supervis ce 0 5:4e:00:01:00)
RedBox MAC Address: MoxaTech_00:e5:0f (00:90:e8:00:e5:0f) TLV type: End of TLVs (0)	3256 1088.244 3266 1090.259 Frame 3181: 66 Ethernet II, S. High-availabil. HSR/PRP Superv 0000 0000 00 Sequence num TLV type: HS TLV length: Source MAC A TLV type: En TLV length: RedBox MAC A TLV type: En	<pre>Main MoxaTech_00:e5:0f MoxaTech_00:e5:0f bytes on wire (528 bits) rc: MoxaTech_00:e5:0f (00 ity Seamless Redundancy (ision (IEC62439 Part 3) = Path: 0 000 0001 = Version: 1 bber: 484 iR Node (23) 6 kddress: MoxaTech_00:e5:0f dddress: MoxaTech_00:e5:0f dddress: MoxaTech_00:e5:0f dd of TLVs (0)</pre>	Iec_00:01:00 Iec_00:01:00 Iec_00:01:00 , 66 bytes captured (528 bits) on interfar :90:e8:00:e5:0f), Dst: Iec_00:01:00 (01:1! IEC62439 Part 3 Chapter 5)	HSR/PRP HSR/PRP 66 HSR Supervis 66 HSR Supervis 5:4e:00:01:00)
RedBox MAC Address: MoxaTech_00:e5:0f (00:90:e8:00:e5:0f) TLV type: End of TLVs (0) TLV length: 0	3256 1088.244 3266 1090.255 Frame 3181: 66 Ethernet II, S High-availabil HSR/PRP Superv 0000 0000 000 Sequence num TLV type: HS TLV length: RedBox MAC A TLV type: Re TLV length: RedBox MAC A TLV type: Re TLV length:	<pre>Main MoxaTech_00:e5:0f MoxaTech_00:e5:0f bytes on wire (528 bits) rc: MoxaTech_00:e5:0f (00 ity Seamless Redundancy (ision (IEC62439 Part 3) = Path: 0 000 0001 = Version: 1 bber: 484 iR Node (23) 6 6 dddress: MoxaTech_00:e5:0f dddress: MoxaTech_00:e5:0f dd of TLVs (0) 0</pre>	Iec_00:01:00 Iec_00:01:00 Iec_00:01:00 , 66 bytes captured (528 bits) on interfar :90:e8:00:e5:0f), Dst: Iec_00:01:00 (01:11 IEC62439 Part 3 Chapter 5) f (00:90:e8:00:e5:0f) (30) f (00:90:e8:00:e5:0f)	HSR/PRP HSR/PRP 66 HSR Supervis 66 HSR Supervis 5:4e:00:01:00)
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