GE
Automation & Controls
Programmable Control Products

PACSystems* RSTi-EP Controllers Performance Evaluation

GFK-3086A
Aug 2019

For Public Disclosure

Warnings, Cautions, and Notes as Used in this Publication GFL-002

Warning

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

Caution

Caution notices are used where equipment might be damaged if care is not taken.

Attention

Indicates a procedure or condition that should be strictly followed.

Note: Notes merely call attention to information that is especially significant to understanding and operating the equipment.

These instructions do not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met during installation, operation, and maintenance. The information is supplied for informational purposes only, and GE makes no warranty as to the accuracy of the information included herein. Changes, modifications, and/or improvements to equipment and specifications are made periodically and these changes may or may not be reflected herein. It is understood that GE may make changes, modifications, or improvements to the equipment referenced herein or to the document itself at any time. This document is intended for trained personnel familiar with the GE products referenced herein.

GE may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not provide any license whatsoever to any of these patents.

GE PROVIDES THE FOLLOWING DOCUMENT AND THE INFORMATI/ON INCLUDED THEREIN AS-IS AND WITHOUT WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE.

If you purchased this product through an Authorized Channel Partner, please contact the seller directly.

General Contact Information

Online technical support and GlobalCare	www.geautomation.com/support
Additional information	www.geautomation.com
Solution Provider	solutionprovider.ip@ge.com

Technical Support

If you have technical problems that cannot be resolved with the information in this manual, please contact us by telephone or email, or on the web at www.geautomation.com/support

Americas

Phone	1-800-433-2682
International Americas Direct Dial	1-780-420-2010 (if toll free 800-option is unavailable)
Customer Care Email	digitalsupport@ge.com
Primary language of support	English

Europe, the Middle East, and Africa

Phone	+800-1-433-2682
EMEA Direct Dial	+ 420-296-183-331 (if toll free 800-option is unavailable or if dialing from a mobile telephone)
Customer Care Email	digitalsupport.emea@ge.com
Primary languages of support	English, French, German, Italian, Spanish

Asia Pacific

Phone	+86-21-3877-7006 (India, Indonesia, and Pakistan)
	+86-400-820-8208 (rest of Asia)
Customer Care Email	digitalsupport.apac@ge.com
Primary languages of support	Chinese, English

Table of Contents

Table of Figures

Chapter 1 Preface

This document covers typical use case scenarios that demonstrate the Ethernet capabilities of RSTi-EP Controllers EPSCPE100/115. Each chapter will provide an overview of a system's configuration, followed by a synopsis of the controller's performance for the express purpose of aiding integrators and application engineers design end-user-specific applications that leverage the EPSCPE100/115. Further details of each configuration will be located in Appendices A and B.

A given feature may not be implemented on all PACSystems RSTi-EP Controllers. To determine whether a feature is available for specific firmware version, please refer to the *Important Product Information (IPI)* document provided with the product. Please see IPI document GFK-3013, for more information regarding controllers CPE100 and CPE115.

1.1 Revisions in this Manual

This revision of the *PACSystems* RSTi-EP Controllers Performance Evaluation* document covers the following:

Rev	Date	Description
A	Aug 2019	• Introduction of typical use-cases and performance specifications for RSTi-EP Controllers EPSCPE100/115.

1.2 PACSystems Documentation

PACSystems Manuals

PACSystems RX3i and RSTi-EP CPU Reference Manual	GFK-2222
PACSystems RX3i and RSTi-EP CPU Programmer's Reference Manual	GFK-2950
PACSystems RX3i and RSTi-EP TCP/IP Ethernet Communications User Manual	GFK-2224
PACSystems TCP/IP Ethernet Communications Station Manager User Manual	GFK-2225
C Programmer's Toolkit for PACSystems	GFK-2259
PAC Machine Edition Logic Developer Getting Started	GFK-1918
Proficy Process Systems Getting Started Guide	GFK-2487
PACSystems RXi, RX3i, and RSTi-EP Controller Secure Deployment Guide	GFK-2830
PACSystems RX3i & RSTi-EP PROFINET I/O Controller Manual	GFK-2571

RX3i Manuals

PACSystems RX3i System Manual	GFK-2314
PACSystems RX3i Ethernet Network Interface Unit User's Manual	GFK-2439
PACSystems RX3i PROFINET Scanner Manual	GFK-2737
PACSystems RX3i CEP PROFINET Scanner User Manual	GFK-2883
PACSystems RX3i Serial Communications Modules User's Manual	GFK-2460
PACSystems RX3i Genius Communications Gateway User Manual	GFK-2892

In addition to these manuals, datasheets and product update documents describe individual modules and product revisions. The most recent PACSystems documentation is available on the GE Automation & Controls support website www.geautomation.com/support.

Chapter 2 Discrete Automation Applications

This section is intended to demonstrate a discrete automation use case for the RSTi-EP Controller EPSCPE100/115. This section will provide three configurations along with controller performance measurements.

2.1 Configuration Example 1

In this application, the RSTi-EP Controller's PROFINET LAN is connected to four PROFINET nodes with MRP enabled. The controller is also connected to a Modbus RTU Master via a RS-232 serial connection.

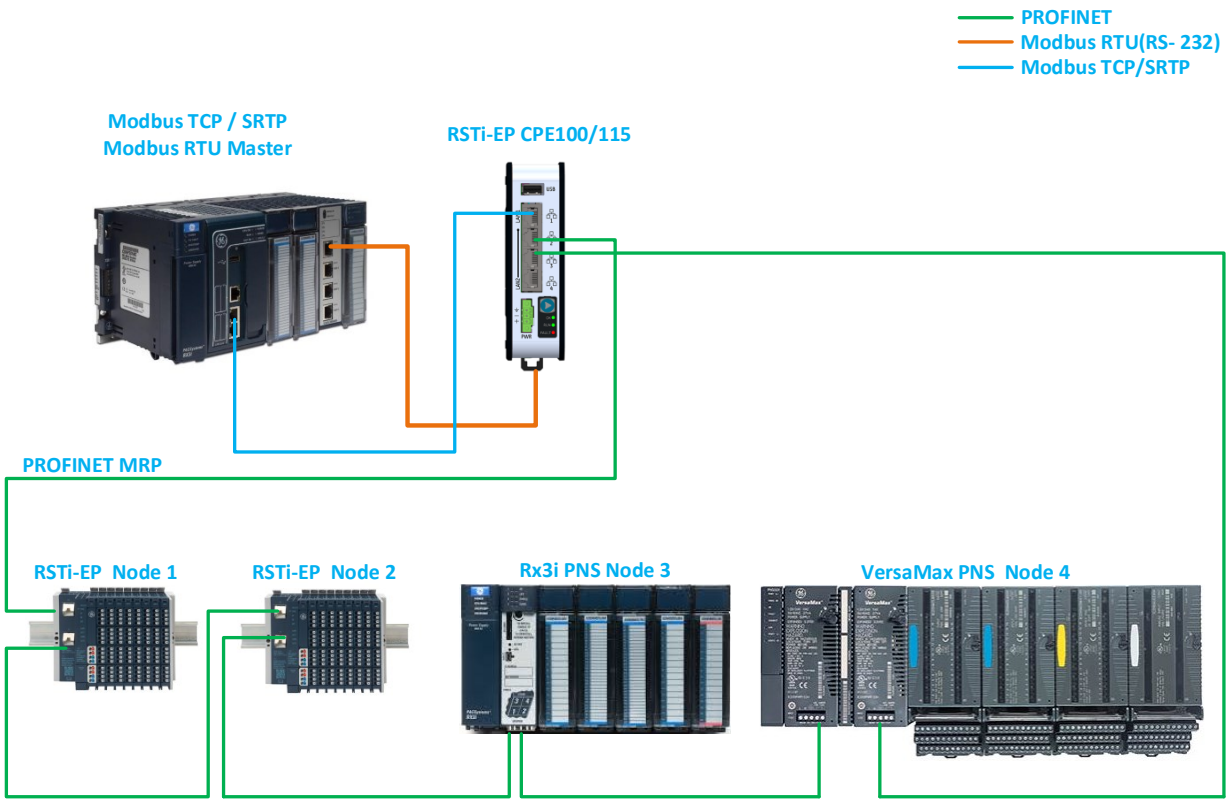

Figure 1: Sample 1 – Discrete Automation Solution Using RSTi-EP controller

The PROFINET LAN is configured with PROFINET nodes. The I/O Scan is set to *Normal Sweep* mode and all communication settings are set to default values. The PROFINET nodes are connected through MRP with four different PNS nodes (two EPXPNS001, one RX3i PNS001, and one VersaMax PNS001). All the nodes contain I/O modules with various combinations of discrete 4/8/16 point I/O modules and analog 4/8 channels I/O modules. Each I/O module has its outputs tied to the inputs of an adjoining I/O module. The performance data is shown under section 2.1.1. Additional details about the individual PROFINET nodes are available in the *Appendix A*.

PROFINET System Configuration (MRP Enabled)

PROFINET DEVICE	Total # of PROFINET I/O Modules	Total # of PROFINET I/O Discrete points/Analog Channels	UPDATE RATE (ms)	I/O BYTES
Node 1: EPXPNS001	64	276/230	32	713
Node 2: EPXPNS001	18	16/99	32	317
Node 3: RX3i PNS001	3	64/6	32	53
Node 4: VERSAMAX PNS2	2	0/19	32	62
Total	**87**	**356/354**		**1145**

The embedded Ethernet LAN port is configured with Modbus TCP Server protocol with configuration parameters as shown in the below table. The loopback time is measured between the Server read and write values.

MODBUS TCP Configuration	
DEVICE	**SERVER BYTES**
Server Read	150
Server Write	150
Total Bytes	**300**

The controller is simultaneously connected to a Modbus RTU Master via a RS-232 serial connection. The RTU Master (RX3i CMM004 is set at a baud rate of 115.2 Kbps. The loopback time is measured between the *Holding Register* and *Input Register* and between the *Input Discrete* and *Coil*. The configuration parameters are as shown in the below table.

Modbus RTU Slave Configuration: RS-232 at 115200 Baud	
Modbus Register Type	**No of Bytes**
HOLDING REGISTER	32
INPUT REGISTER	32
INPUT DISCRETE	64
COIL	64
Total Bytes	**144**

2.1.1 Performance Measurement

Typical and Max I/O loopback times are calculated as a mean of the analog and discrete loopback times across all four nodes (See below).

Measurements	Typical Time (ms)	Max Time (ms)
RSTi-EP Controller Sweep Time	12	20
PROFINET Discrete I/O Loopback Time	63	98
PROFINET Analog I/O Loopback Time	76	108
Modbus Server Loopback Time	30	60
RTU Slave Loopback Time	106	245

2.2 Configuration Example 2

In this application, the RSTi-EP Controller's PROFINET LAN is connected to eight PROFINET nodes, and the embedded Ethernet LAN is connected to a SRTP Master & an OPC-UA Client.

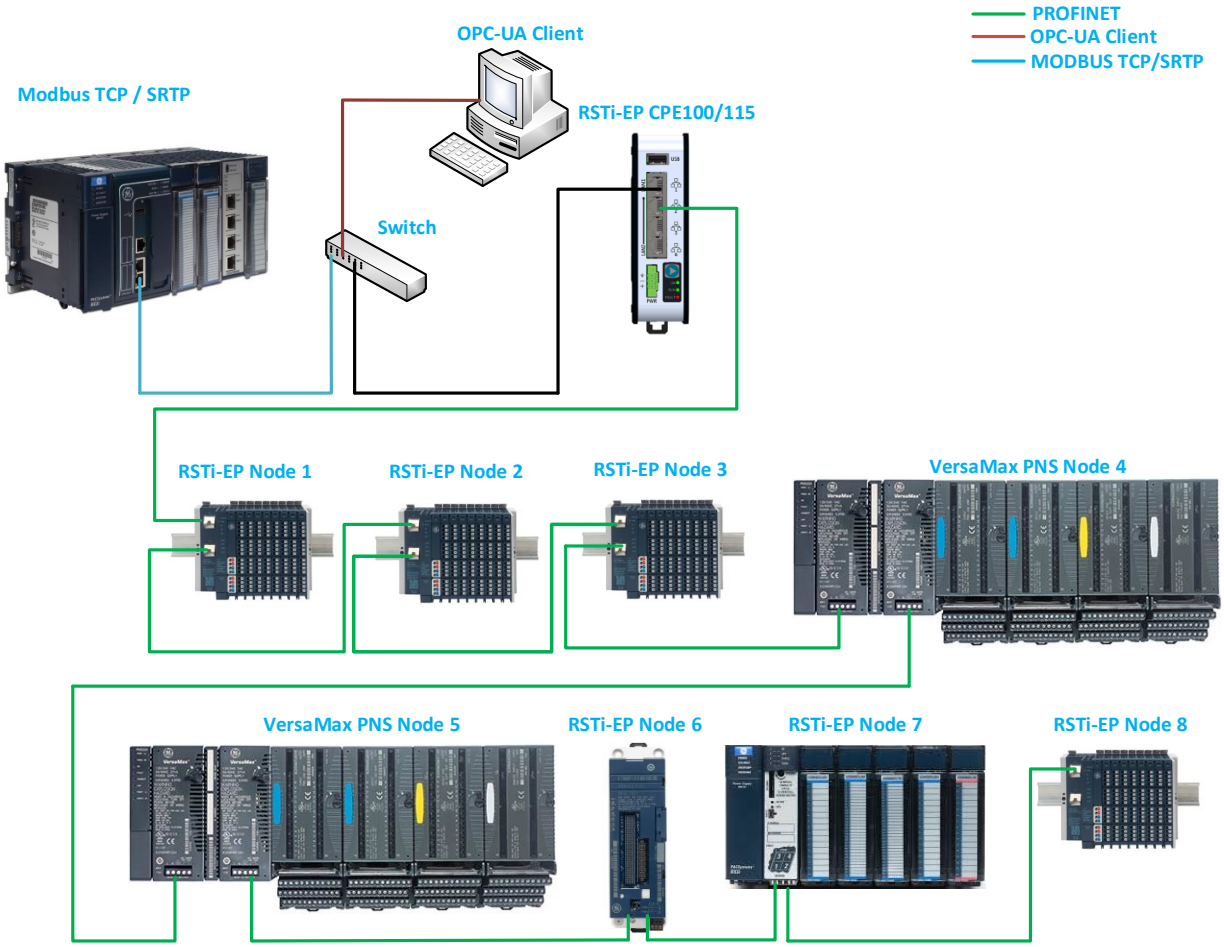

Figure 2: Sample 2 – Discrete Automation Solution Using RSTi-EP controller

The PROFINET LAN is configured with PROFINET nodes. The I/O Scan is set to *Normal Sweep* mode and all communication settings are set to default values. The PROFINET nodes are connected to eight different PNS nodes (four EPXPNS001, one RX3i PNS001, one RX3i CEP001, and two VersaMax PNS001). All the nodes contain I/O modules with various combinations of discrete 4/8/16 point I/O modules and analog 4/8 channels I/O modules. Each I/O module has its outputs tied to the inputs of an adjoining I/O module. Additional details about the individual PROFINET nodes are available in *Appendix A*.

PROFINET System Configuration				
PROFINET DEVICE	**Total # of PROFINET I/O Modules**	**Total # of PROFINET I/O Discrete points/Analog Channels**	**UPDATE RATE (ms)**	**I/O BYTES**
Node 1: EPXPNS001	64	276/230	16	713
Node 2: EPXPNS001	18	16/99	16	317
Node 3: EPXPNS001	4	32/8	16	36
Node 4: VERSAMAX PNS1	1	32/0	16	29
Node 5: VERSAMAX PNS2	2	0/19	16	62
Node 6: RX3i CEP001	2	64/0	16	36
Node 7: RX3i PNS001	3	64/6	16	53
Node 8: EPXPNS001	3	32/0	16	20
Total	**97**	**506/362**		**1266**

The embedded Ethernet LAN port is configured with SRTP Server protocol with configuration parameters as shown in the below table. The loopback time is measured between the Server read and write values.

SRTP Configuration	
DEVICE	**SERVER BYTES**
Server Read	50
Server Write	50
Total Bytes	**100**

The controller is simultaneously connected with an OPC-UA Client with one session and one subscription. There are 492 published variables and the publishing interval is set to 500 ms.

2.2.1 Performance Measurement

Typical and Max I/O loopback times are calculated as a mean of the analog and discrete loopback times across all eight nodes.

Measurements	Typical Time (ms)	Max Time (ms)
RSTi-EP Controller Sweep Time	17	25
PROFINET Discrete I/O Loopback Time	56	79
PROFINET Analog I/O Loopback Time	66	88
SRTP Server Loopback Time	63	113

2.3 Configuration Example 3

In this application, the RSTi-EP controller's embedded Ethernet LAN is configured with two Modbus Server channels, four EGD Producers, and four EGD Consumers.

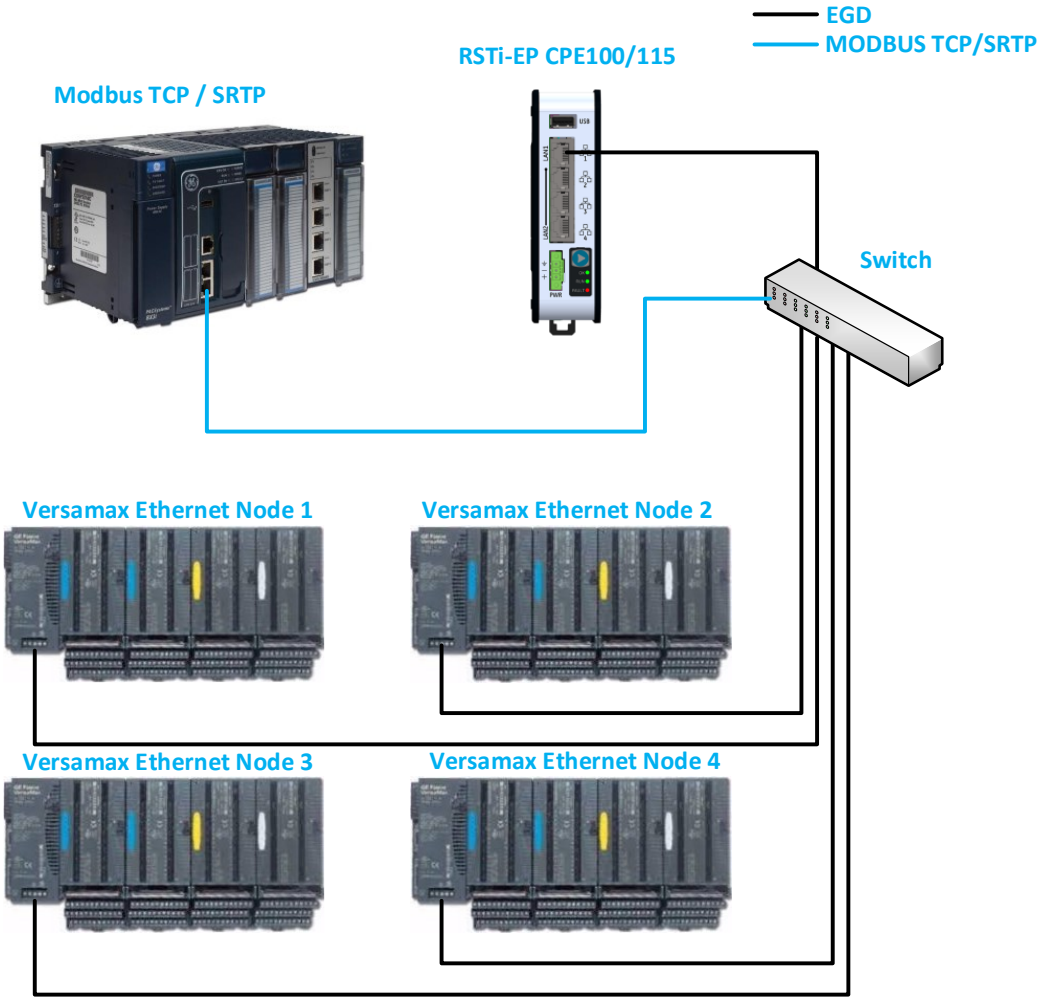

Figure 3: Sample 3 – Discrete Automation Solution Using RSTi-EP controller

The system EGD configuration is shown in the below table:

EGD System Configuration			
CPE100/CPE115 EGD	**Consumed / Produced Period (ms)**	**BYTES**	**DEST. TYPE**
Consumer 1	200 (Def)	57	
Consumer 2	200 (Def)	26	
Consumer 3	200 (Def)	19	
Consumer 4	200 (Def)	4	
Producer 1	20	65	Unicast
Producer 2	20	18	Unicast
Producer 3	20	4	Unicast
Producer 4	20	17	Unicast
Total Bytes		**210**	

The embedded Ethernet LAN port is configured with a Modbus TCP Server protocol with configuration parameters as shown in the below table. The loopback time is measured between the Server read and write values.

MODBUS TCP Configuration	
DEVICE	**SERVER BYTES**
Server Read	150
Server Write	150
Total Bytes	**300**

2.3.1 Performance Measurement

Typical and Max EGD loopback times are calculated as a mean of the analog and discrete loopback times across all four Versamax EBI nodes.

Measurements	Typical Time (ms)	Max Time (ms)
RSTi-EP Controller Sweep Time	5	15
EGD Loopback Time	43	69
Modbus TCP Server Loopback Time	36	71

Chapter 3 Process Automation Application

This section is intended to demonstrate a typical process automation use case for the RSTi-EP Controller EPSCPE100/115. This section will provide a single configuration along with controller performance measurements.

3.1 Configuration Example 1

In this application, it contains four RSTi-EP Controllers each connected with one PROFINET node, and with EGD connections interfaced with RX3i CPE400 controller which is configured with four EGD exchanges. Also, two of the RSTi-EP controllers are connected to Modbus RTU Master via the RS-232 and RS-485 serial connections.

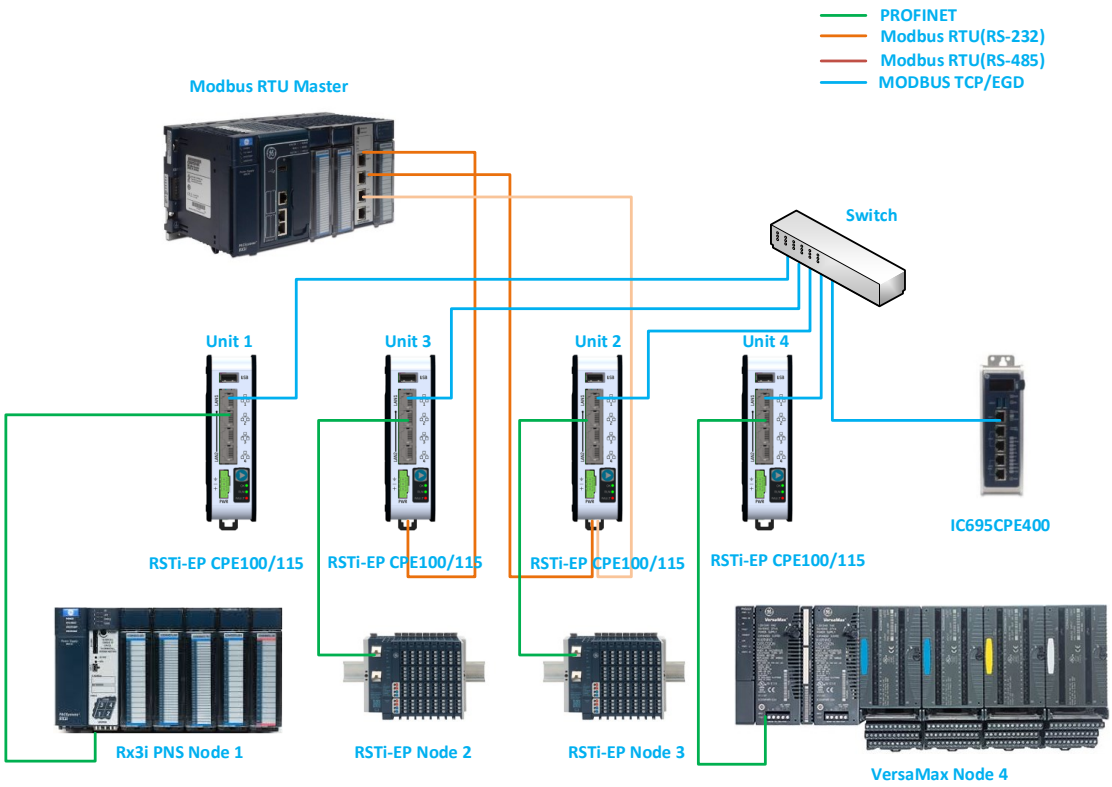

Figure 4: Sample Process Automation Configuration Using Four CPE100/CPE115s

The following table illustrates the EGD system configuration:

EGD System Configuration				
UNIT	**DEVICE**	**Consumed / Produced Period (ms)**	**BYTES**	**DEST. TYPE**
All RSTi-EP Controllers	**Consumer 1**	200 (Def)	1400	
	Consumer 2	200 (Def)	1400	
	Producer 1	20	1400	Unicast
	Producer 2	20	1400	Unicast
	Total Bytes		**5600**	
CPE400	**Consumer 1**	200 (Def)	1400	
	Consumer 2	200 (Def)	1400	
	Consumer 3	200 (Def)	1400	
	Consumer 4	200 (Def)	1400	
	Consumer 5	200 (Def)	1400	
	Consumer 6	200 (Def)	1400	
	Consumer 7	200 (Def)	1400	
	Consumer 8	200 (Def)	1400	
	Producer 1	20	1400	Unicast
	Producer 2	20	1400	Unicast
	Producer 3	20	1400	Unicast
	Producer 4	20	1400	Unicast
	Producer 5	20	1400	Unicast
	Producer 6	20	1400	Unicast
	Producer 7	20	1400	Unicast
	Producer 8	20	1400	Unicast
	Total Bytes		**22400**	

The four controllers' PROFINET LAN is configured with PROFINET nodes. The I/O Scan is set to *Normal Sweep* mode. All communication parameters are set to default values. One PROFINET node is connected to each RSTi-EP Controller unit as shown in Figure 4. PROFINET Node contain I/O modules with various combinations of discrete 4/8/16 point in/out modules and analog 4/8 channel in/out modules. The adjoining I/O module average and maximum loopback time is captured for the individual node. Each I/O module has its outputs tied to the inputs of an adjoining I/O module. For more details about individual PROFINET nodes refer to the Appendix B.

PROFINET System Configuration				
PROFINET DEVICE	**Total # of PROFINET I/O Modules**	**Total # of PROFINET I/O Discrete points/Analog Channels**	**UPDATE RATE (ms)**	**I/O BYTES**
Node 1: Rx3i PNS001	3	64/6	16	53
Node 2: EPXPNS001	18	16/99	16	317
Node 3: EPXPNS001	64	276/230	16	713
Node 4: VERSAMAX PNS	2	0/19	16	62
Total	**87**	**356/354**		**1145**

The RSTi-EP Controller Unit 3 is connected to a Modbus RTU Master via a RS-485 (2-wire) and via a RS-232 serial connections. Controller Unit 2 is connected to a Modbus RTU Master via RS-485 (4-wire) serial connection. The RTU Masters is set at baud rate of 115.2 Kbps for both the RS-232 and RS-485 configurations. Loopback times is measured between *Holding* and *Input Register*, and *Discrete Input* and *Coil*. The configuration parameters are shown in the below table.

Modbus RTU Slave Configuration: RS-232 at 115200 Baud	
Modbus Register	**Data Bytes**
DISCRETE INPUT	64
COILS	64
Total Bytes	**128**

Modbus RTU Slave Configuration: RS-485 (2 wire/4 wire) at 115200 Baud	
Modbus Register	**Data Bytes**
HOLDING REG	32
INPUT REG	32
Total Bytes	**64**

3.1.1 Performance Measurement

Typical and Max I/O loopback times are calculated as a mean of the analog and discrete loopback times across PROFINET node.

Measurement	Unit #	Typical Time (ms)	Max Time (ms)
RSTi-EP Controller Sweep Time	1	4	15
	2	5	16
	3	9	20
	4	3	14
PROFINET Discrete I/O Loopback Time	1	32	52
	2	34	59
	3	42	64
PROFINET Analog I/O Loopback Time	3	34	54
	4	78	93
EGD Loopback Time	1	20	47
	2	22	65
	3	24	66
	4	20	47
RTU Slave Loopback Time	3(RS485)	295	11491
	3(RS232)	88	572
	2(RS485)	204	1131

Chapter 4 Focused Solution

This section is intended to demonstrate a typical focused solution use case for the RSTi-EP Controller EPSCPE100/115. This section will provide a single configuration along with controller performance measurements.

4.1 Configuration Example 1

In this application, the RSTi-EP Controller's embedded PROFINET LAN is connected to four PROFINET nodes and a Modbus RTU Master via the RS-232 serial connections. The Controller's Ethernet LAN is interfaced with Quick Panel+ over SRTP and is communicating with OPC-UA client.

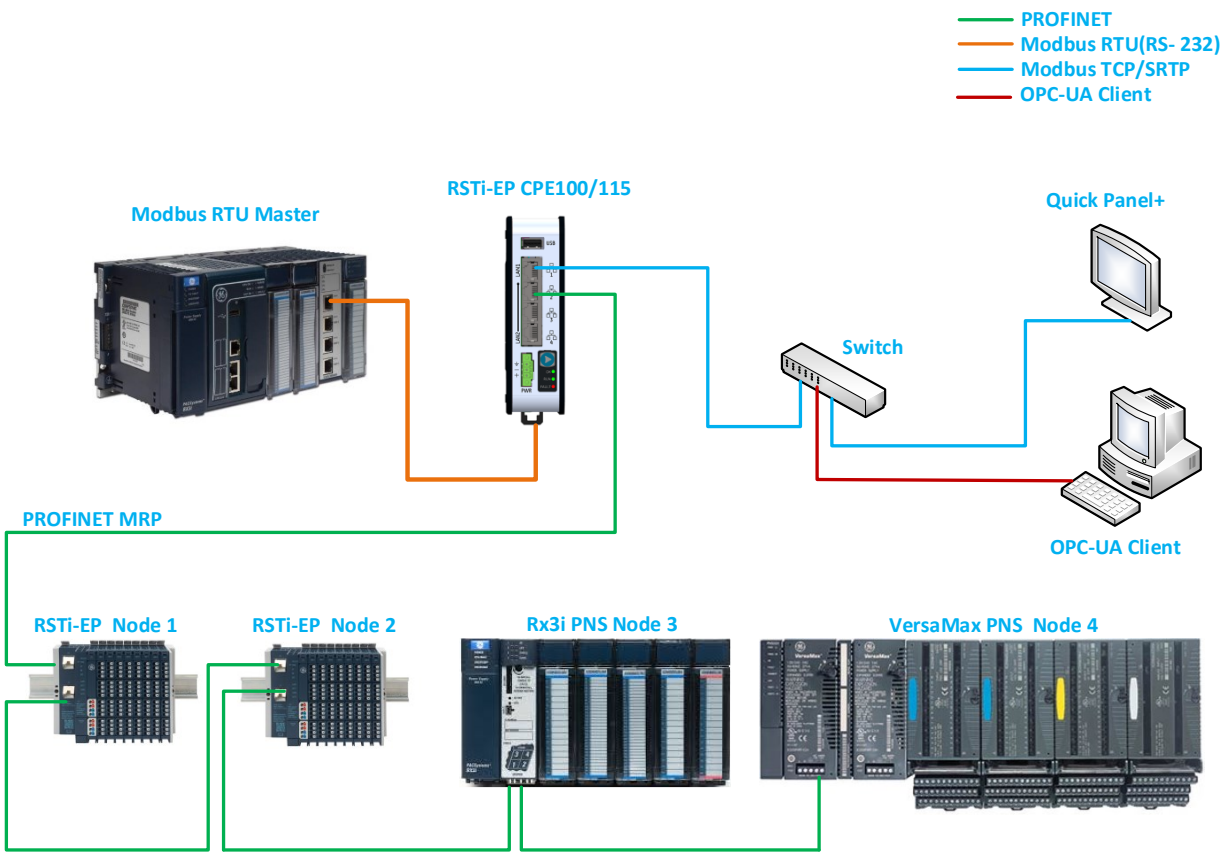

Figure 5: Sample Focused Solution Configuration Using a CPE100/CPE115

The PROFINET LAN is configured with PROFINET nodes. The I/O Scan is set to *Normal Sweep* mode and all communication settings are set to default values. Four PROFINET nodes are connected to the RSTi-EP Controller unit as shown in Figure 4. Each node contains I/O modules with various combinations of discrete 4/8/16 point I/O modules and analog 4/8 channel I/O modules. Each I/O module had its outputs tied to the inputs of an adjoining I/O module. For details about individual PROFINET nodes refer to *Appendix A*.

PROFINET System Configuration				
PROFINET DEVICE	**Total # of PROFINET I/O Modules**	**Total # of PROFINET I/O Discrete points/Analog Channels**	**UPDATE RATE (ms)**	**I/O BYTES**
Node 1: EPXPNS001	64	276/230	16	713
Node 2: EPXPNS001	18	16/99	16	317
Node 3: Rx3i PNS001	3	64/6	16	53
Node 4: VERSAMAX PNS	2	0/19	16	62
Total	**87**	**356/354**		**1145**

The RSTi-EP Controller unit is connected to a Modbus RTU Master via a RS-232 serial connection. The RTU Master's timeout is set to 10 seconds with a baud rate of 115.2 Kbps. Loopback is measured between *Holding* and *Input Register*, *Discrete Input* and *Coil*. The configuration parameters are as shown in the below table:

Modbus RTU Slave Configuration: RS-232 at 115200 Baud	
Modbus Register	**Data Bytes**
HOLDING REG	16
INPUT REG	16
DISCRETE INPUT	32
COILS	32
Total Bytes	**96**

The controller is also configured with an OPC UA Server with one session and one subscription. There are 493 published elements, the publishing interval is set to 500 ms.

4.1.1 Performance Measurement

Typical and Max loopback times are calculated as a mean of the analog and discrete loopback times across all eight nodes. The following table records the Typical and Max loopback times for the configuration featured in *Configuration Example 1* of this section.

Measurements	Typical Time (ms)	Max Time (ms)
RSTi-EP Controller Sweep Time	10	19
PROFINET Discrete I/O Loopback Time	61	93
PROFINET Analog I/O Loopback Time	76	103
RTU Slave Loopback Time	103	224

Appendix A *PROFINET Node Details*

This section provides details on the individual PROFINET nodes with descriptions for each slot.

Node 1: EPXPNS001 (64 I/O module)

Location	Description	Data Bytes
0	EPXPNS001 (PROFINET SCANNER)	8
1	EP-1214 (DI4)	3
2	EP-1218 (DI8 2-wire)	3
3	EP-125F (DI16)	4
4	EP-1318 (DI8 3-wire)	3
5	EP-12F4 (DI4 TS)	62
6	EP-2814 (DO4 SSR)	3
7	EP-2214 (DO4 0.5A)	3
8	EP-2218 (DO8)	3
9	EP-225F (DO16)	4
10	EP-2634 (DO4 P/N)	3
11	EP-2214 (DO4 0.5A)	3
12	EP-2218 (DO8)	3
13	EP-4164 (AO4 V/I)	10
14	EP-3164 (AI4 V/I)	10
15	EP-4264 (AO4 V/I DIAG)	10
16	EP-4164 (AO4 V/I)	10
17	EP-3124 (AI4 V/I 12BITS)	10
18	EP-3264 (AI4 V/I DIAG)	10
19	EP-3368 (AI8 I)	18
20	EP-4164 (AO4 V/I)	10
21	EP-4164 (AO4 V/I)	10
22	EP-5111 (HSC1)	26
23	EP-5422 (PWM 0.5A)	20
24	EP-3704 (AI4 RTD)	10
25	EP-3704 (AI4 RTD)	10
26	EP-3704 (AI4 RTD)	10
27	EP-3804 (AI4 TC)	10
28	EP-3804 (AI4 TC)	10
29	EP-3804 (AI4 TC)	10

30	EP-3804 (AI4 TC)	10
31	EP-4264 (AO4 V/I DIAG)	10
32	EP-4164 (AO4 V/I)	10
33	EP-4164 (AO4 V/I)	10
34	EP-4164 (AO4 V/I)	10
35	EP-4164 (AO4 V/I)	10
36	EP-4164 (AO4 V/I)	10
37	EP-4164 (AO4 V/I)	10
38	EP-5112 (HSC2)	28
39	EP-5442 (PWM 2A)	20
40	EP-2714 (DO4 RLY)	3
41	EP-3124 (AI4 V/I 12BITS)	10
42	EP-4164 (AO4 V/I)	10
43	EP-1218 (DI8 2-wire)	3
44	EP-3468 (AI8 I DIAG)	18
45	EP-5212 (FREQ1)	36
46	EP-5111 (HSC1)	26
47	EP-5112 (HSC2)	28
48	EP-5422 (PWM 0.5A)	20
49	EP-225F (DO16)	4
50	EP-2218 (DO8)	3
51	EP-1218 (DI8 2-wire)	3
52	EP-5422 (PWM 0.5A)	20
53	EP-5442 (PWM 2A)	20
54	EP-1901 (DI1 SF)	6
55	EP-3124 (AI4 V/I 12BITS)	10
56	EP-4264 (AO4 V/I DIAG)	10
57	EP-4264 (AO4 V/I DIAG)	10
58	EP-1922 (DI2 SF ProgDelay)	6
59	EP-3164 (AI4 V/I)	10
60	EP-225F (DO16)	4
61	EP-125F (DI16)	4
62	EP-1902 (DI2 SF)	6
63	EP-2218 (DO8)	3
64	EP-1218 (DI8 2-wire)	3

Node 2: EPXPNS001 (18 I/O Modules)

Location	Description	Data Bytes
0	EPXPNS001 (PROFINET SCANNER)	8
1	EP-2214 (DO4 0.5A)	3
2	EP-1214 (DI4)	3
3	EP-5112 (HSC2)	28
4	EP-5442 (PWM 2A)	20
5	EP-4164 (AO4 V/I)	10
6	EP-3164 (AI4 V/I)	10
7	EP-4264 (AO4 V/I DIAG)	10
8	EP-3124 (AI4 V/I 12BITS)	10
9	EP-3704 (AI4 RTD)	10
10	EP-4164 (AO4 V/I)	10
11	EP-3804 (AI4 TC)	10
12	EP-5111 (HSC1)	26
13	EP-5422 (PWM 0.5A)	20
14	EP-12F4 (DI4 TS)	62
15	EP-2214 (DO4 0.5A)	3
16	EP-3468 (AI8I DIAG)	18
17	EP-5212 (FREQ1)	36
18	EP-5442 (PWM 2A)	20

Node 3: EPXPNS001 (4 I/O Modules)

Location	Description	Data Bytes
0	EPXPNS001 (PROFINET SCANNER)	8
1	EP-125F (DI16)	4
2	EP-225F (DO16)	4
3	EP-4164 (AO4 V/I)	10
4	EP-3164 (AI4 V/I)	10

Node 4: VersaMax PNS1 (1 I/O Modules)

Location	Description	Data Bytes
0	VersaMax PROFINET I/O Scanner (2 RJ-45 Copper connectors)	20
1	IC200MDD840: Mixed 24VDC In Grp 20Pt / Out Relay 2.0A Grp 12Pt	9

Node 5: VersaMax PNS2 (2 I/O Modules)

Location	Description	Data Bytes
0	VersaMax PROFINET I/O Scanner (2 RJ-45 Copper connectors)	20
1	IC200ALG331: Analog Output 16 Bit Volt/Curr 1500VAC Iso 4Ch	10
2	IC200ALG263: Analog Input 15 Bit Voltage 15Ch	32

Node 6: RX3i CEP001 (2 I/O Modules)

Location	Description	Data Bytes
0	RX3i Carrier Embedded PROFINET (Copper)	18
1.1	IC694MDl754:32 Circuit Output 12/24 VDC 0.75A Positive ESCP	10
2.1	IC694MDL660: 32 Circuit Input 24 VDC Positive / Negative Logic	8

Node 7: RX3i PNS001 (3 I/O Modules)

Location	Description	Data Bytes
0	IC695PNS001 (PROFINET SCANNER)	18
1	IC694ALG442: 4 Input / /2 Output Channel Mixed Analog Current Voltage	17
2	IC694MDL754:32 Circuit Output 12/24 VDC 0.75A Positive ESCP	10
3	IC694MDL660: 32 Circuit Input 24 VDC Positive / Negative Logic	8

Node 8: EPXPNS001 (3 I/O Modules)

Location	Description	Data Bytes
0	EPXPNS001 (PROFINET SCANNER)	8
1	EP-125F (DI16)	4
2	EP-225F (DO16)	4
3	EP-125F (DI16)	4

Appendix B *VersaMax Ethernet Node Details*

The following tables provide details on the VersaMax Ethernet Nodes for Section 2.3, *Configuration Example 3*.

Node 1: IC200EBI001

Produce period = 20 ms, Consume Period = 200 ms

Location	Catalog Number	Data Bytes
Slot1	IC200MDL650	4
Slot2	IC200MDL750	4
Slot3	IC200ALG230	8
Slot4	IC200ALG321	8
Slot5	IC200MDD845	3
Slot6	IC200ALG431	12
Slot7	IC200MDD841	75

Node 2: IC200EBI001

Produce period = 20 ms, Consume Period = 200 ms

Location	Catalog Number	Data Bytes
Slot1	IC200MDM842	4
Rack 1, Slot1	IC200MDL752	4
Rack 1, Slot2	IC200MDL636	4
Rack 1, Slot3	IC200ALG331	8
Rack 1, Slot4	IC200ALG240	16

Node 3: IC200EBI001

Produce period = 20 ms, Consume Period = 200 ms

Location	Catalog Number	Data Bytes
Slot1	IC200MDL143	1
Slot2	IC200MDL144	1
Slot3	IC200MDL241	2
Slot4	IC200MDL631	1
Slot5	IC200MDL632	2
Slot6	IC200MDL635	2
Slot7	IC200MDl636	4
Slot8	IC200MDL643	2

Node 4: IC200EBI001

Produce period = 20 ms, Consume Period = 200 ms

Location	Catalog Number	Data Bytes
Slot1	IC200MDL329	1
Slot2	IC200MDL930	1
Slot3	IC200MDL940	2
Slot4	IC200MDL930	1
Slot5	IC200MDL940	2
Slot6	IC200MDL940	2
Slot7	IC200MDL940	2
Slot8	IC200MDL940	2

GE Automation and Controls Information Centers

Headquarters:
1-800-433-2682 or 1-434-978-5100
Global regional phone numbers are available on our web site
www.geautomation.com

Additional Resources

For more information, please visit our web site:

www.geautomation.com

GFK-3086A