

PACSystems™ Industrial PROFINET Managed Ethernet Switches Web Configuration Tool Guide

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Section 1: Overview

1.1 Revisions in this Manual

Rev	Date	Description
B	May 2022	Updates to correct the details of the PROFINET database and device data.
A	Jan-2020	Following Emerson's acquisition of this product, changes have been made to apply appropriate branding and registration of the product with required certification agencies. No changes to the material, process, form, fit, or functionality.
-	Aug-2019	Initial release.

1.2 PACSystems Documentation

1.2.1 PACSystems Manuals

<i>PACSystems RX3i and RSTi-EP CPU Reference Manual</i>	GFK-2222
<i>PACSystems RX3i and RSTi-EP CPU Programmer's Reference Manual</i>	GFK-2950
<i>PACSystems RX3i and RSTi-EP TCP/IP Ethernet Communications User Manual</i>	GFK-2224
<i>PACSystems TCP/IP Ethernet Communications Station Manager User Manual</i>	GFK-2225
<i>PACSystems Memory Xchange Modules User's Manual</i>	GFK-2300
<i>PACSystems Hot Standby CPU Redundancy User Manual</i>	GFK-2308
<i>PAC Machine Edition Logic Developer Getting Started</i>	GFK-1918
<i>PAC Process Systems Getting Started Guide</i>	GFK-2487
<i>PACSystems RXi, RX3i, and RSTi-EP Controller Secure Deployment Guide</i>	GFK-2830
<i>PACSystems RX3i Systems Manual</i>	GFK-2314
<i>PACSystems RX3i Ethernet Network Interface Unit User's Manual</i>	GFK-2439
<i>PACSystems RX3i PROFINET Scanner Manual</i>	GFK-2737
<i>PACSystems RX3i & RSTi-EP PROFINET I/O Controller Manual</i>	GFK-2571
<i>PACSystems Industrial PROFINET Managed Ethernet Switches Important Product Information (IPI)</i>	GFK-3028
<i>PACSystems Industrial PROFINET Managed Ethernet Switches User's Manual</i>	GFK-3030
<i>PACSystems Industrial PROFINET Managed Ethernet Switches CLI Command Reference Guide</i>	GFK-3061
<i>PACSystems Industrial PROFINET Managed Ethernet Switches Secure Deployment Guide (SDG)</i>	GFK-3063
<i>PACSystems Industrial PROFINET Managed Ethernet Switches MRP Application Guide</i>	GFK-2070
<i>PACSystems Industrial PROFINET Managed Ethernet Switches Installation & Maintenance Requirements</i>	GFK-3098

1.3 Overview

The GLM serial switch is a full gigabit, rack-mount type Ethernet switch, providing 10, or 14 Gigabit Ethernet ports to update the existing network to a full gigabit speed infrastructure. A full Gigabit network provides higher overall throughput than a legacy Fast Ethernet network and reduces the response time for timing-sensitive applications that may mix video, voice, and data in its traffic pipe.

The PROFINET which is the Ethernet-based automation standard of PROFIBUS International and covers all requirements of the automation technology is also implemented in Emerson's GLM serial switch. The PROFINET overview and how to use Emerson's PROFINET switch are in the following chapters.

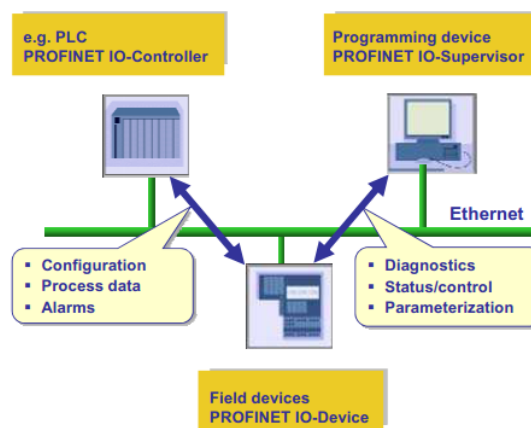
1.4 PROFINET I/O Introduction

PROFINET is an industrial communication network based on Ethernet for all applications views from PROFIBUS International (PI). It covers the key markets and key technologies in automation both today and the future. With PROFINET I/O implementation, production and process automation can be easily done. Besides, data exchanges on PROFINET I/O are done between the I/O controller (PLC, etc.) and I/O devices (field devices).

1.4.1 Network Structure Overview

There are three major roles in the PROFINET I/O network structure. They are the I/O controller, I/O supervisor, and I/O devices. It follows the provider and consumer model for data exchange. The detailed descriptions are below.

Figure 1: PROFINET Network Structure



1.4.2 I/O Controller

The I/O controller is the role to control the I/O device. In PROFINET I/O networking, it may be only one controller. However, it allows several controllers to implement system redundancy. The typical controller is the programmable logic controller (PLC) where the automation program runs.

1.4.3 I/O Supervisor

I/O supervisor may be a programming device that controls the I/O controller, personal computer, or HMI device for commissioning or diagnostic use.

1.4.4 I/O Device

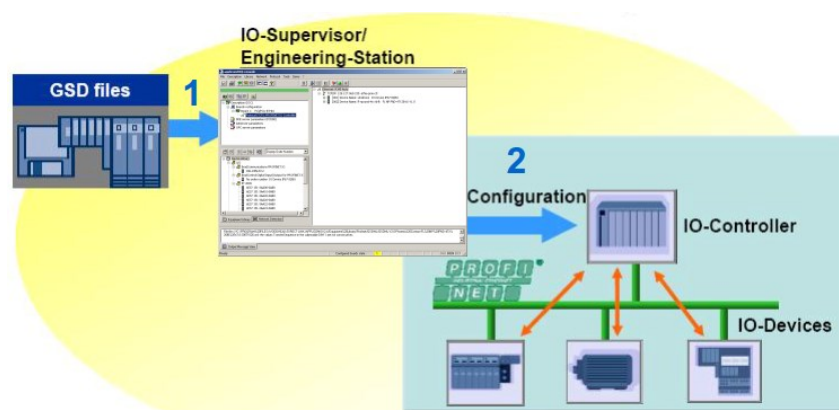
I/O device is a distributed field device which connected to one or more I/O controllers via PROFINET I/O. It sends switch data to the controller periodically by supported cycle time.

Emerson's PROFINET switch acts as a PROFINET I/O device. It supports many useful attributes for the I/O controller to configure or monitor. The detailed attributes are described under the GSD file and the following subject.

1.5 Device Description — GSD

The GSD file (General Station Description) is an XML-based description language for PROFINET I/O Device. It uses to describe the features and functions of the PROFINET device model. Before configuring an I/O controller, the configuration tool needs a GSDML file for each type of device on the network. Find your GSD file in the CD before starting to run PROFINET.

Figure 2: Input GSD File



1.6 Media Redundancy — MRP

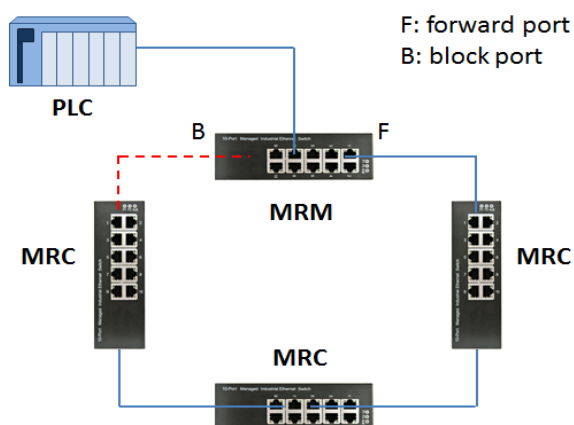
It introduces Media Redundancy Protocol (MRP) in PROFINET IO to prevent network broken caused by link loss or network device error. MRP is a special protocol for ring network setups. Ring networks are the preferred redundant network setups in the field area of Industrial Ethernet

PROFINET networks. MRP guarantees quick network reconfiguration after the loss of a network link.

Within MRP, two device roles are defined: the Media Redundancy Manager (MRM) role, typically taken by either the IO-Controller or a switch in a ring, and the Media Redundancy Client (MRC) role, typically taken by PROFINET IO devices.

Both MRM and MRC have two designated ring ports. The links of these ring ports with other devices' ring ports form the ring (Figure 3).

Figure 3: MRP



Section 2: PROFINET I/O Command on Switch

2.1 Configuration

Enable PROFINET

No command. (PROFINET function is always on)

Set PROFINET Name

```
configure terminal
profinet
devname <name>
```

Example:

```
GLM082# configure terminal
GLM082(config)# profinet
GLM082(profinet-config)# devname IO-Device-01
GLM082(profinet-config)#
```

2.2 Monitor (MRP, LLDP)

Device Name

show PROFINET name

Example:

```
GLM082# show profinet name

Name of Station           : GLM082
```

MRP Status

```
show profinet mrp all
```

```
show profinet mrp group <1,2>
```

```
GLM082# show profinet mrp all
```

```
MRP Group 1 Info:
```

```
=====
```

```
Role           : Manager
```

```
Ring Port1     : 1
```

```
Ring Port2     : 2
```

Example:

```
GLM082# show profinet mrp group 1
```

MRP Group 1:

Mode: Enable

Role: MRM

Node 1 : 1

Node 2 : 2

DomainName : mrpdomain-1

100BASE-TX full duplex mode

100BASE-TX half duplex mode

10BASE-T full duplex mode

10BASE-T half duplex mode

Port MAU type - 1000BaseTFD

Profinet - Port Delay : Port Rx Delay Local - 0

Port Rx Delay Remote - 0

Port Tx Delay Local - 0

Port Tx Delay Remote - 0

Port Cable Delay Local - 0

LLDP Information

Test Monitoring Count	: 3
Non Blocking MRC Supported	: 0
Test Monitoring Extended Count	: 25
React on Link Change	: 1
Check Media Redundancy	: 1
Domain Name	: mrpdomain-1
Real Role State	: 1
Real Ring State	: 1
Ring Port1 PortState	: FORWARDING
Ring Port2 PortState	: BLOCKED
MRP Group 2 Info:	
=====	
Role	: Client
Ring Port1	: 3
Ring Port2	: 4
Vlan	: 0
Link Down Interval	: 20
Link Up Interval	: 20
Link Change Count	: 4
Blocked State Supported	: 1
Domain Name	: mrpdomain-2
Ring Port1 PortState	: FORWARDING
Ring Port2 PortState	: BLOCKED

Section 3: PROFINET I/O Attributes Support

3.1 Cyclic I/O Data (RTC)

Emerson PROFINET switch provides PROFINET I/O cyclic data which sends information between the PROFINET switch and the controller periodically. The default transfer frequency of PROFINET cyclic data is 128 ms. There are 3 available values defined in the GSD file: 128, 256, or 512 ms.

The following tables show GE Intelligent Platforms PROFINET I/O switch which supports 5 RTC modules. The second byte for modules 2 to 5 depends on the port count of the device (max 14 ports for Emerson).

Table 1: Slot 1 Device Data

Category	Direction	Byte	Bit	Name	Description
Device Data (Slot1)	Input	0	0	Alarm Status	0=No Alarm (ALM Relay Open), 1=Alarm Detected (ALM Relay Closed)
			1	Power 1 Status	0=PWR1 not OK, 1=PWR1 OK
			2	Power 2 Status	0=PWR2 not OK, 1=PWR2 OK
			3	Ring Enabled/Disabled	0=Disabled, 1=Enabled
			4	Ring Status	0=Failure, 1=Normal Condition
			5	Module OK Status	0 is Not OK, 1 is OK
			6	Reserved	
			7	Reserved	

Table 2: Slot 2 Port Status

Category	Direction	Byte	Bit	Name	Description
Port Status	Input	0	0	Port 1 Connection	0 is not connected, 1 is connected
			1	Port 2 Connection	0 is not connected, 1 is connected
			2	Port 3 Connection	0 is not connected, 1 is connected
			3	Port 4 Connection	0 is not connected, 1 is connected
			4	Port 5 Connection	0 is not connected, 1 is connected
			5	Port 6 Connection	0 is not connected, 1 is connected
			6	Port 7 Connection	0 is not connected, 1 is connected
			7	Port 8 Connection	0 is not connected, 1 is connected
		1	0	Port 9 Connection	0 is not connected, 1 is connected
			1	Port 10 Connection	0 is not connected, 1 is connected
			2	Port 11 Connection	0 is not connected, 1 is connected
			3	Port 12 Connection	0 is not connected, 1 is connected
			4	Port 13 Connection	0 is not connected, 1 is connected
			5	Port 14 Connection	0 is not connected, 1 is connected

Table 3: Slot3: Port Alarm Setting

Category	Direction	Byte	Bit	Name	Description
Port Setting	Input Output	0	0	Port 1 Alarm	0 is not to send an Alarm, 1 is to send an Alarm
			1	Port 2 Alarm	0 is not to send an Alarm, 1 is to send an Alarm
			2	Port 3 Alarm	0 is not to send an Alarm, 1 is to send an Alarm
			3	Port 4 Alarm	0 is not to send an Alarm, 1 is to send an Alarm
			4	Port 5 Alarm	0 is not to send an Alarm, 1 is to send an Alarm
			5	Port 6 Alarm	0 is not to send an Alarm, 1 is to send an Alarm
			6	Port 7 Alarm	0 is not to send an Alarm, 1 is to send an Alarm
			7	Port 8 Alarm	0 is not to send an Alarm, 1 is to send an Alarm
		1	0	Port 9 Alarm	0 is not to send an Alarm, 1 is to send an Alarm
			1	Port 10 Alarm	0 is not to send an Alarm, 1 is to send an Alarm
			2	Port 11 Alarm	0 is not to send an Alarm, 1 is to send an Alarm
			3	Port 12 Alarm	0 is not to send an Alarm, 1 is to send an Alarm
			4	Port 13 Alarm	0 is not to send an Alarm, 1 is to send an Alarm
			5	Port 14 Alarm	0 is not to send an Alarm, 1 is to send an Alarm

Table 4: Slot4: MRP Group1

Category	Direction	Byte	Bit	Name	Description
MRP Group1	Input	0	0	MRP Group1 Mode	0 is Disable MRP, 1 is Enable MRP
			1	MRP Group1 Role	0 is MRC, 1 is MRM
			2	MRP Group1 Ring Status	0 is Open, 1 is Close
MRP Group1 Port	Input	1	0	Port1 is MRP-G1 Ring port	0 is not Ring port, 1 is Ring port
			1	Port2 is MRP-G1 Ring port	0 is not Ring port, 1 is Ring port
			2	Port3 is MRP-G1 Ring port	0 is not Ring port, 1 is Ring port
			3	Port4 is MRP-G1 Ring port	0 is not Ring port, 1 is Ring port
			4	Port5 is MRP-G1 Ring port	0 is not Ring port, 1 is Ring port
			5	Port6 is MRP-G1 Ring port	0 is not Ring port, 1 is Ring port
			6	Port7 is MRP-G1 Ring port	0 is not Ring port, 1 is Ring port
			7	Port8 is MRP-G1 Ring port	0 is not Ring port, 1 is Ring port
		2	0	Port9 is MRP-G1 Ring port	0 is not Ring port, 1 is Ring port
			1	Port10 is MRP-G1 Ring port	0 is not Ring port, 1 is Ring port
			2	Port11 is MRP-G1 Ring port	0 is not Ring port, 1 is Ring port
			3	Port12 is MRP-G1 Ring port	0 is not Ring port, 1 is Ring port
			4	Port13 is MRP-G1 Ring port	0 is not Ring port, 1 is Ring port
			5	Port14 is MRP-G1 Ring port	0 is not Ring port, 1 is Ring port

Table 5: Table 4: Slot 5: MRP Group2

Category	Direction	Byte	Bit	Name	Description
MRP Group2	Input	0	0	MRP Group2 Mode	0 is Disable MRP, 1 is Enable MRP
			1	MRP Group2 Role	0 is MRC, 1 is MRM
			2	MRP Group2 Ring Status	0 is Open, 1 is Close
MRP Group2 Port	Input	1	0	Port1 is MRP-G2 Ring port	0 is not Ring port, 1 is Ring port
			1	Port2 is MRP-G2 Ring port	0 is not Ring port, 1 is Ring port
			2	Port3 is MRP-G2 Ring port	0 is not Ring port, 1 is Ring port
			3	Port4 is MRP-G2 Ring port	0 is not Ring port, 1 is Ring port
			4	Port5 is MRP-G2 Ring port	0 is not Ring port, 1 is Ring port
			5	Port6 is MRP-G2 Ring port	0 is not Ring port, 1 is Ring port
			6	Port7 is MRP-G2 Ring port	0 is not Ring port, 1 is Ring port
			7	Port8 is MRP-G2 Ring port	0 is not Ring port, 1 is Ring port
		2	0	Port9 is MRP-G2 Ring port	0 is not Ring port, 1 is Ring port
			1	Port10 is MRP-G2 Ring port	0 is not Ring port, 1 is Ring port
			2	Port11 is MRP-G2 Ring port	0 is not Ring port, 1 is Ring port
			3	Port12 is MRP-G2 Ring port	0 is not Ring port, 1 is Ring port
			4	Port13 is MRP-G2 Ring port	0 is not Ring port, 1 is Ring port
			5	Port14 is MRP-G2 Ring port	0 is not Ring port, 1 is Ring port

Table 6: Slot6: Ring Group1

Category	Direction	Byte	Bit	Name	Description
Ring Group1	Input	0	0	Ring Group1 Mode	0 is Disable Ring, 1 is Enable Ring
			1	Ring Group1 Role	0 is Ring Slave, 1 is Ring Master
			2	Ring Status	0 is Failure, 1 is Normal Condition
Ring Group1 Ports	Input	1	0...3	Ring Port 1 Number	Port ID number (1 thru 14)
			4...6	Reserved	
			7	Port 1 Status	0=Forwarded, 1=Blocked
		2	0...3	Ring Port 2 Number	Port ID number (1 thru 14)
			4...6	Reserved	
			7	Port 2 Status	0=Forwarded, 1=Blocked

Table 7: Slot7: MRE Group1

Category	Direction	Byte	Bit	Name	Description
MRE Group1	Input	0	0	MRE Group1 Mode	0 is Disable Ring, 1 is Enable Ring
			1	MRE Group1 Role	0 is Ring Slave, 1 is Ring Master
			2	Ring Status	0 is Failure, 1 is Normal Condition
		1	0...3	Ring Port Number	Port ID number (1 thru 14)
			4...6	Reserved	
			7	Port Status	0=Forwarded, 1=Blocked

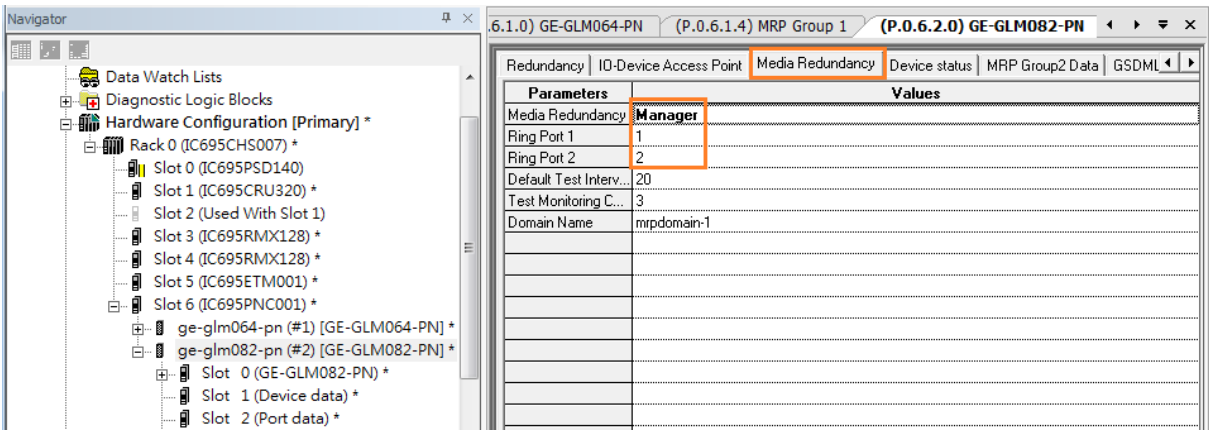
Table 8: Slot8: MRE Group2

Category	Direction	Byte	Bit	Name	Description
MRE Group2	Input	0	0	MRE Group2 Mode	0 is Disable Ring, 1 is Enable Ring
			1	MRE Group2 Role	0 is Ring Slave, 1 is Ring Master
			2	Ring Status	0 is Failure, 1 is Normal Condition
		1	0...3	Ring Port Number	Port ID number (1 thru 14)
			4...6	Reserved	
			7	Port Status	0=Forwarded, 1=Blocked

Note: There are two databases in the switch, one is for the web (runtime) configuration and the other is for the PROFINET configuration. The Ring (index 1) and the M-Chain (index 4,5) of the RingV2 configuration are defined by the PME and will be saved to the PROFINET database. The Ring/Coupling (index 2) and the Chain (index 3) are configured by the webserver interface and will be saved to the Web database.

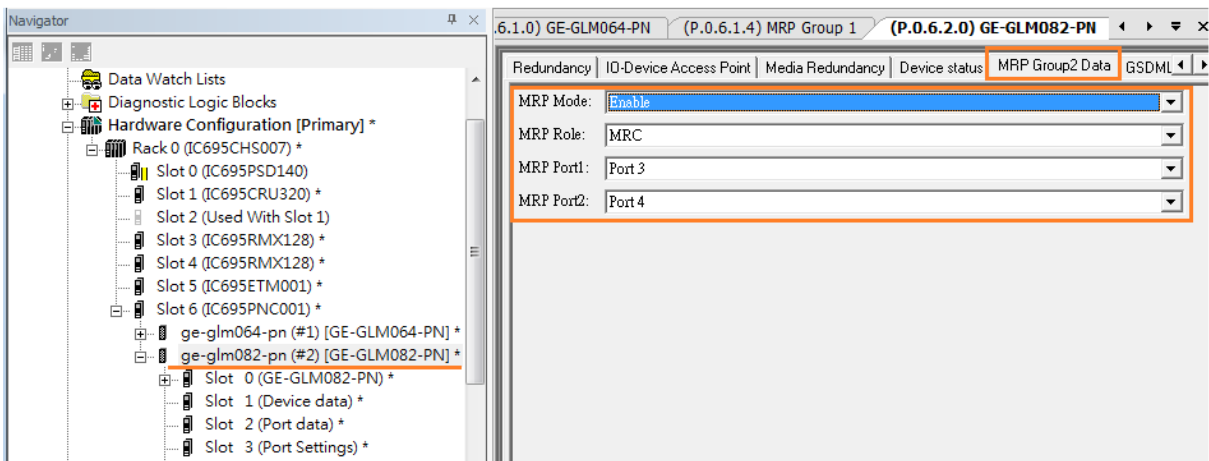
When the ring parameters have to be set through the web configuration only Ring/Coupling (index 2) and the Chain (index 3) can be used and when the parameters have to be set via the PME application only the Ring(index 1) and the M-Chain (index 4, 5) can be used.

Figure 5: Parameters in Media Redundancy



Besides, it supports dual MRP in a single IO-Device. These two MRP are independent and use different ring ports. The second MRP can be modified on the **MRP Group2 Data** sheet.

Figure 6: MRP Group2 Data



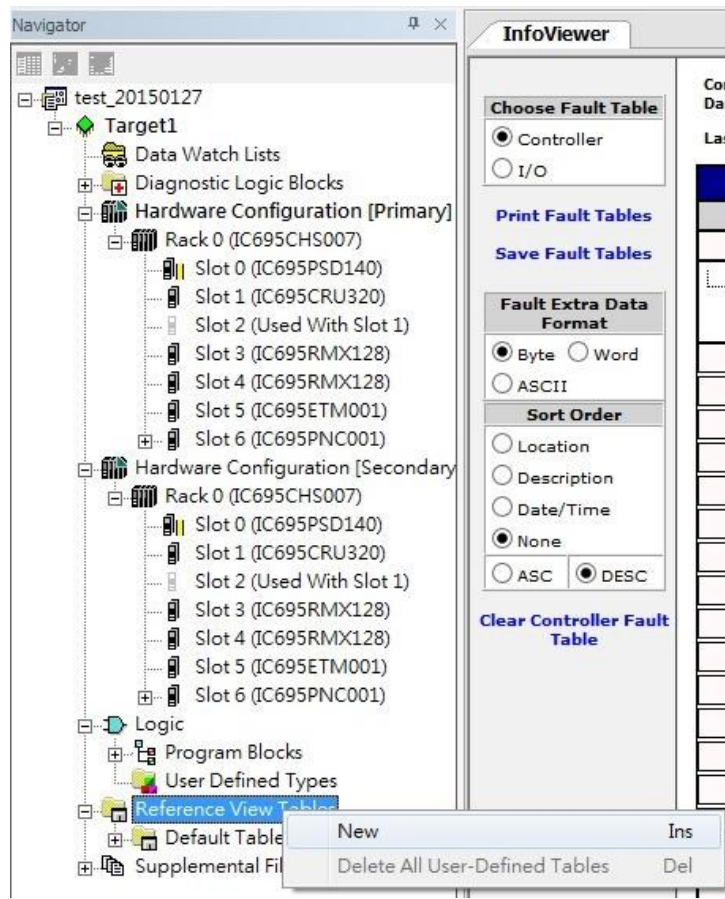
Section 5: Configuration and Monitor

After implementing **Download Active Target**, to monitor the I/O date, both 2 CRU320s shall be set to **RUN TO ENABLE** on the embedded switch.

To configure and monitor the status of the I/O device, the Proficy Machine Edition supports the memory control mechanism for I/O data access. The memory control interface is implemented by **Reference View Table**.

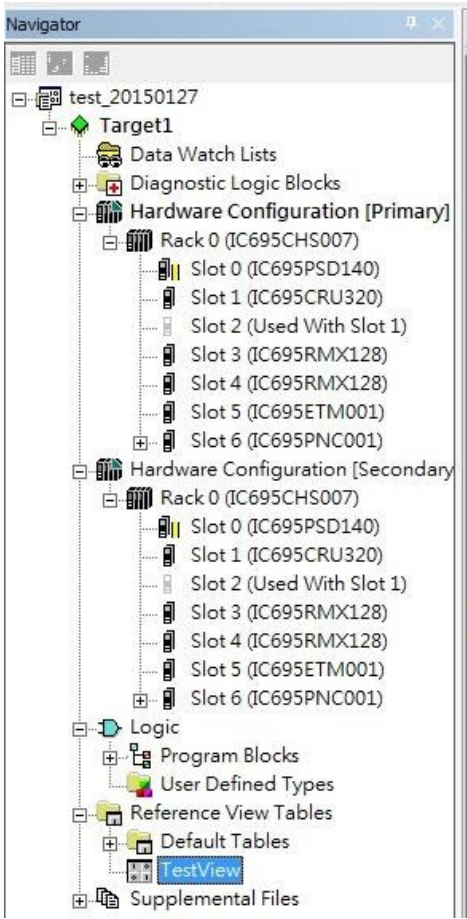
Click **Reference View Table** and click the right bottom and select **New**.

Figure 7: Reference View Table



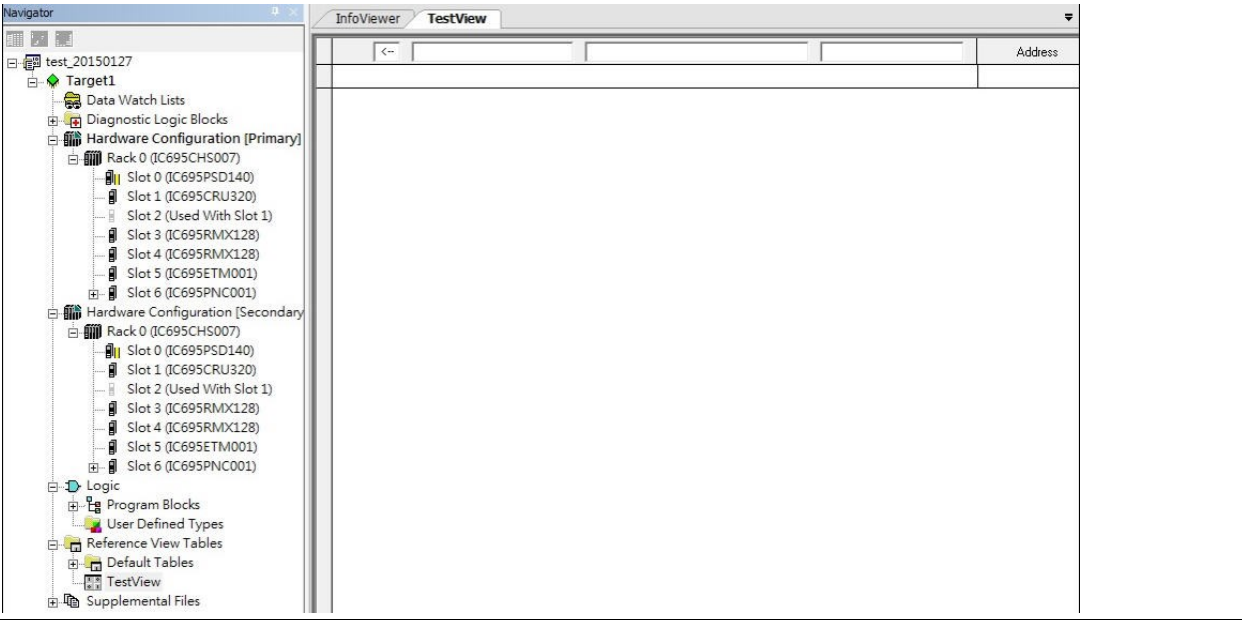
Specify the name of the table, here we named it “TestView”.

Figure 8: TestView Reference Table



Double click the new table “TestView”, then the table is shown.

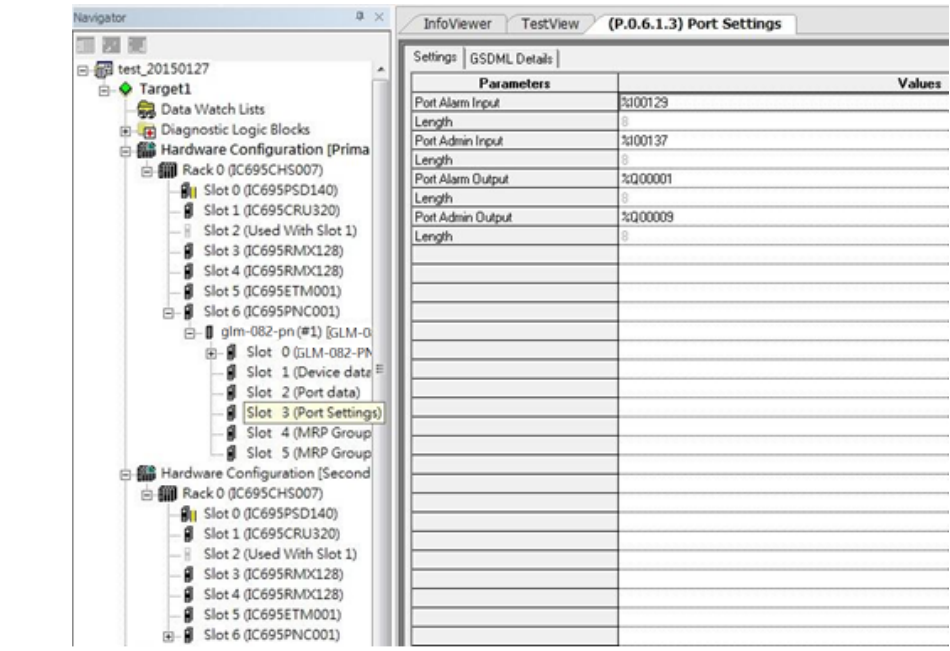
Figure 9: Opening the TestView Reference Table



To configure and monitor the status of the I/O Device, the port link status alarm enables/disables the state as illustrated in Figure 9. The port link status alarm control function is supported and defined in the GSDML file.

Click **Slot 3 (port setting)** as the following picture.

Figure 10: Slot 3 (Port Setting)

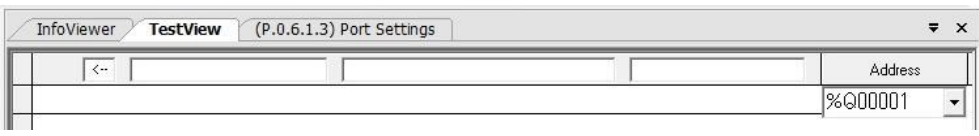


The **Port Alarm Output** is the configuration interface to enable/disable the port alarm, the address is **%Q00001** with the length of 8 bits. The symbol Q means the output direction from I/O Controller.

The **Port Alarm Input** is the monitor interface to fetch the port alarm status, the address is **%I00129** with the length of 8 bits. The symbol I means the input direction to I/O Controller.

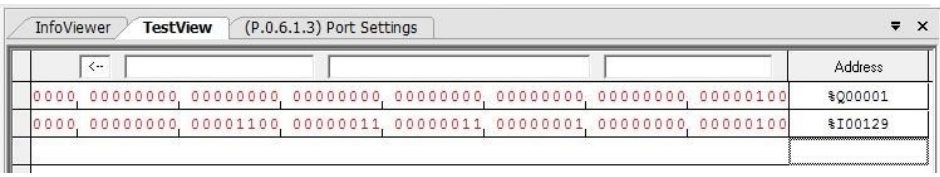
First, we copy the address of **Port Alarm Output**, **%Q00001** to the table.

Figure 11: Port Alarm Output



Then we copy the address of **Port Alarm Input** to the table.

Figure 12: Port Alarm Input

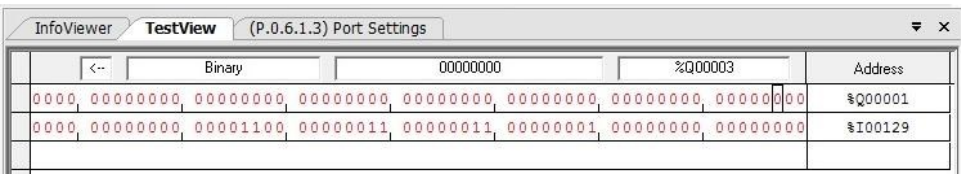


								Address
0000	00000000	00000000	00000000	00000000	00000000	00000000	00000100	%Q00001
0000	00000000	00001100	00000011	00000011	00000001	00000000	00000100	%I00129

As we can see in the figure above, the alarm of port 3 is enabled (according to value 1, bit 2, address **%Q00001**, and the definition of the GSDML file). Also, the value 1, bit 2, address **%I00129** represents that there is an alarm that occurs in port 3 since the connection fails.

To disable the port 3 link status alarm, we can modify the value in bit 2, address **%Q00001** as 0, then the alarm status is eliminated.

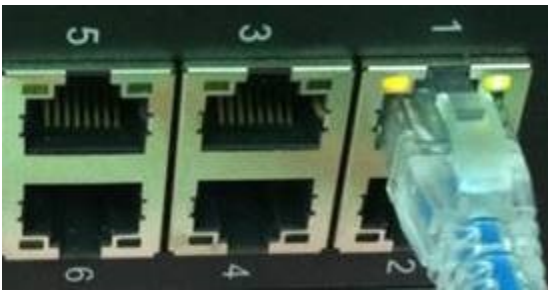
Figure 13: %Q00001



								Address
Binary							00000000	%Q00003
0000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	%Q00001
0000	00000000	00001100	00000011	00000011	00000001	00000000	00000000	%I00129

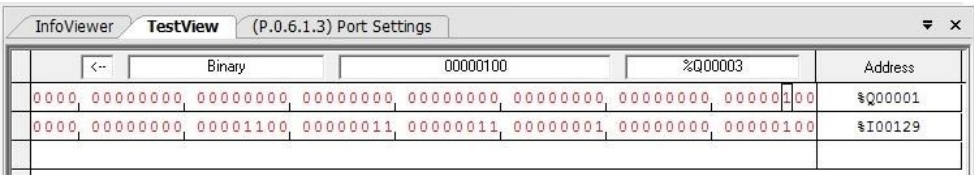
Also, we can see the current state of the I/O Device. Now port 3 is linked down and the alarm LED is off since the link status alarm is disabled.

Figure 14: Port 3 Link Down



Now we re-enable the port 3 link status alarm.

Figure 15: Re-enable Port 3



The screenshot shows a web interface window titled 'InfoViewer' with a sub-tab 'TestView' and a specific view '(P.0.6.1.3) Port Settings'. The window contains a table with binary data and addresses. The table has columns for binary data and an 'Address' column. The data is organized into two rows of binary values, each followed by an address.

Binary	Address
0000 00000000 00000000 00000000 00000000 00000000 00000000 00000100	%Q00001
0000 00000000 00001100 00000011 00000011 00000001 00000000 00000100	%I00129

As we can see in the figure above, the link status alarm is enabled in port 3 and the link status has occurred.

Also, the alarm LED is on because is port 3 link status is enabled and the link status is down.

Appendix A PROFINET I/O Acyclic Data

A-1 Acyclic I/O Data (RTA)

Emerson PROFINET switch also provides PROFINET I/O acyclic data for more flexible settings and monitoring. Thus, it allows to read or to write the supported attributes. It uses PROFINET acyclic data to achieve communication in the network. For writable attributes, a controller, like Proficy Machine Edition tool, or engineering deployment software needed to edit it. The following tables show Emerson's I/O switch which supports 4 RTA modules.

- ro: Ready Only
- rw: Read and Write

Table 9: System Data (Slot 0x0, Subslot 0x1, Index 0x1)

Byte	Name	Access	Value	Description
0	Device Status	ro	0	Unavailable(Do not support)
			1	OK(default)
			2	Device bootup fails
1	Alarm Status	ro	0	Unavailable(Do not support)
			1	No Alarm(default)
			2	Alarm happened
2	Power 1 Status	ro	0	Unavailable (Do not support)
			1	OK
			2	Power 1 fails
3	Power 2 Status	ro	0	Unavailable (Do not support)
			1	OK
			2	Power 2 fails
		ro	0	MRP

Byte	Name	Access	Value	Description
4	Redundant Mode		1	RSTP/MSTP
			2	Ring/Coupling/Dual Homing/Chain/Balancing Chain
			3	No Redundant
5	Ring-1 Mode (config value)	ro	0	Unavailable(Do not support)
			1	Enabled
			2	Disabled
6	Ring-1 Role	ro	0	Unavailable(Do not support)
			1	Ring Master
			2	Ring Slave
7	Ring-1 State	ro	0	Unavailable (Do not support)
			1	Disabled
			2	Normal
			3	Fail
8	Ring-2 Mode (config value)	ro	0	Unavailable(Do not support)
			1	Enabled
			2	Disabled
9	Ring-2 Role	ro	0	Unavailable(Do not support)
			1	Ring Master
			2	Ring Slave
			3	Coupling Primary
			4	Coupling Backup
			5	Dual Homing
10	Ring-2 State	ro	0	Unavailable (Do not support)
			1	Disabled
			2	Normal

Byte	Name	Access	Value	Description
			3	Fail
11	Ring-3 Mode (config value)	ro	0	Unavailable(Do not support)
			1	Enabled
			2	Disabled
12	Ring-3 Role	ro	0	Unavailable(Do not support)
			1	Chain Head
			2	Chain Tail
			3	Chain Member
			4	Balancing Chain Terminal 1
			5	Balancing Chain Terminal 2
			6	Balancing Chain Central Block
			7	Balancing Chain Member
13	Ring-3 State	ro	0	Unavailable (Do not support)
			1	Disabled
			2	Normal
			3	Fail

Table 10: Port Data (Slot 0x0, Subslot 0x8001 ~ 0x800e, Index 0x1)

Byte	Name	Access	Value	Description
0	Port Alarm	ro	0	Do not send alarm
			1	Send alarm when a port link is down
1	Port Setting State	ro	0	Unavailable(Do not support)
			1	Off
			2	On
2	Port Link State	ro	0	Unavailable(Do not support)
			1	Link is up
			2	Link is down
3	Port Speed	ro	0	Unavailable (Link down show Unavailable)
			1	10 Mbps
			2	100 Mbps
			3	1G bps
4	Port Duplex	ro	0	Unavailable (Link down show Unavailable)
			1	Half
			2	Full
5	Port Auto-negotiation	ro	0	Unavailable(Do not support)
			1	Off
			2	On

Table 11: MRP Group 1 (Slot 0x0, Subslot 0x1, Index 0x3)

Byte	Name	Access	Value	Description
0	MRP Mode	rw	0	Disable MRP (Default)
			1	Enable MRP
1	MRP Role	rw	0	MRC (Default)
			1	MRM
2	Ring Port1 of MRP	rw	0~13	Port ID of Ring port1, 0 is Default value. (0 is meaning port1, 1 is meaning port2 ...etc.)
3	Ring Port2 of MRP	rw	0~13	Port ID of Ring port1, 1 is the default value. (0 is meaning port1, 1 is meaning port2 ...etc.)

Table 12: MRP Group 2 (Slot 0x0, Subslot 0x1, Index 0x3)

Byte	Name	Access		Value	Description
0	MRP Mode		rw	0	Disable MRP (Default)
				1	Enable MRP
1	MRP Role		rw	0	MRC (Default)
				1	MRM
2	Ring Port1 of MRP	rw		0~13	Port ID of Ring port1, 2 is the default value. (0 is meaning port1, 1 is meaning port2 ...etc,)
3	Ring Port2 of MRP	rw		0~13	Port ID of Ring port1, 3 is the default value. (0 is meaning port1, 1 is meaning port2 ...etc,)

Table 13: Ring Group 1 (Slot 0x0, Subslot 0x1, Index 0x4)

Byte	Name	Access	Value	Description
0	Ring Mode	rw	0	Disable Ring (Default)
			1	Enable Ring
1	Ring Role	rw	0	SLAVE (Default)
			1	MASTER
2	Ring Port1	rw	1~14	Port ID of Ring port1, 1 is Default value. (1 is meaning port1, 2 is meaning port2 ...etc,)
3	Ring Port2	rw	1~14	Port ID of Ring port1, 2 is the default value. (1 is meaning port1, 2 is meaning port2 ...etc,)

Table 14: MRE Group 1 (Slot 0x0, Subslot 0x1, Index 0x5)

Byte	Name	Access	Value	Description
0	MRE Mode	rw	0	Disable MRE (Default)
			1	Enable MRE
1	MRE Role	rw	0	SLAVE (Default)
			1	MASTER
2	MRE Port	rw	1~14	Port ID of Ring port1, 5 is Default value. (1 is meaning port1, 2 is meaning port2 ...etc,)

Table 15: MRE Group 2 (Slot 0x0, Subslot 0x1, Index 0x6)

Byte	Name	Access	Value	Description
0	MRE Mode	rw	0	Disable MRE (Default)
			1	Enable MRE
1	MRE Role	rw	0	SLAVE (Default)
			1	MASTER
2	MRE Port	rw	1~14	Port ID of Ring port1, 6 is Default value. (1 is meaning port1, 2 is meaning port2 ...etc,)

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