# **Industrial Protocols User's Guide**

Sixth Edition, April 2014

www.moxa.com/product



# **Industrial Protocols User's Guide**

The software described in this manual is furnished under a license agreement and may be used only in accordance with the terms of that agreement.

## **Copyright Notice**

©2014 Moxa Inc., All rights reserved.

## Trademarks

The MOXA logo is a registered trademark of Moxa Inc. All other trademarks or registered marks in this manual belong to their respective manufacturers.

## Disclaimer

Information in this document is subject to change without notice and does not represent a commitment on the part of Moxa.

Moxa provides this document as is, without warranty of any kind, either expressed or implied, including, but not limited to, its particular purpose. Moxa reserves the right to make improvements and/or changes to this manual, or to the products and/or the programs described in this manual, at any time.

Information provided in this manual is intended to be accurate and reliable. However, Moxa assumes no responsibility for its use, or for any infringements on the rights of third parties that may result from its use.

This product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

## **Technical Support Contact Information**

#### www.moxa.com/support

 Moxa Americas

 Toll-free:
 1-888-669-2872

 Tel:
 +1-714-528-6777

 Fax:
 +1-714-528-6778

 Moxa Europe

 Tel:
 +49-89-3 70 03 99-0

Tel: +49-89-3 70 03 99-0 Fax: +49-89-3 70 03 99-99

<u>Moxa Ch</u>	<u>ina (Shanghai office)</u>			
Toll-free:	800-820-5036			
Tel:	+86-21-5258-9955			
Fax:	+86-21-5258-5505			
<u>Moxa Asia-Pacific</u>				
Tel:	+886-2-8919-1230			
Fax:	+886-2-8919-1231			

# **Table of Contents**

1.	MODBUS/TCP MAP	1-1
	Introduction	1-1
	Data Format and Function Code	1-1
	Configuring MODBUS/TCP on Moxa Switches	1-1
	MODBUS Data Map and Information Interpretation of Moxa Switches	1-2
2.	ETHERNET/IP	2-1
	Introduction	2-1
	Messaging Types	
	Configuring EtherNet/IP on Moxa Switches	
	CIP Objects of EtherNet/IP	
	Identity Object	
	TCP/IP Interface Object	
	Ethernet Link Object	
	Assembly Object	
	Message Router Object	
	Connection Manager Object	
	Port Object	
	Moxa Networking Object (Vendor Specific)	
	Electronic Data Sheet (EDS) File	
	Rockwell RSLogix 5000 Add-On Instructions (AOI)	
	AOI Installation	
	CIP Tags	
	Monitoring AOI Tags	
	Rockwell FactoryTalk® View Faceplate	
	FactoryTalk® View Faceplate Installation	
	Introduction to the Moxa Custom Faceplate	
3.	PROFINET I/O	3-1
	Introduction	
	PROFINET Environmental Introductions	
	PROFINET Networking Structure	
	PROFINET I/O Devices	
	PROFINET Protocols	
	Device descriptions	
	Configuring PROFINET I/O on Moxa Switches	
	Enable PROFINET I/O	
	Addressing of I/O Data in PROFINET I/O Based on Slot and Sub-Slots	
	PROFINET Attributes	
	PROFINET Cyclic I/O Data	
	PROFINET I/O Parameters	
	Step 7 Integration	
	Overview of Operation Procedure	
	Create a PROFINET I/O Subnet Project	
	GSD File Installation	
	Device Configuration	
	Save and Load the Project into the PLC	
	Monitoring the Switch	

# Introduction

MODBUS TCP is a protocol commonly used for the integration of a SCADA system. It is also a vendorneutral communication protocol used to monitor and control industrial automation equipment such as PLCs, sensors, and meters. In order to be fully integrated into industrial systems, Moxa's switches support Modbus TCP/IP protocol for real-time monitoring in a SCADA system.

# **Data Format and Function Code**

MODBUS TCP supports different types of data format for reading. The primary four types of them are:

Data Access Type		Function Code	Function Name	Note
Bit access	Physical Discrete Inputs	2	Read Discrete Inputs	
	Internal Bits or Physical Coils	1	Read Coils	
Word access	Physical Input Registers	4	Read Input Registers	Moxa Support
(16-bit access)	Physical Output Registers	3	Read Holding Registers	

Moxa switches support Function Code 4 with 16-bit (2-word) data access for read-only information.

# **Configuring MODBUS/TCP on Moxa Switches**

## Type 1

Modbus	
	Enable
	Activate

Select the checkbox and click **Activate** to enable the Modbus TCP.

#### Type 2: New UI 2.0

Modbus TCP is enabled by default. To disable Modbus TCP, uncheck Enable Modbus TCP then click Apply.

• Industrial Protocol	
EtherNet/IP	
Enable EtherNet/IP Note: IGMP snooping will be automatically enabled when EtherNet/IP is activated.	
Modbus TCP	
Enable Modbus TCP	
PROFINET I/O	
Enable PROFINET I/O	
	Apply

# **MODBUS Data Map and Information Interpretation of Moxa Switches**

The data map addresses of Moxa switches shown in the following table start from **MODBUS address 30001** for Function Code 4. For example, the address offset 0x0000 (hex) equals MODBUS address 30001, and the address offset 0x0010 (hex) equals MODBUS address 30017. Note that all the information read from Moxa switches are in hex mode. To interpret the information, refer to the ASCII table for the translation (e.g. 0x4D = M', 0x6F = o').

Address Offset	Data Type	Interpretation	Description			
System Informa	System Information					
0x0000	1 word	HEX	Vendor ID = $0x1393$			
0x0001	1 word		Unit ID (Ethernet = 1)			
0x0002	1 word	HEX	Product Code = 0x0003			
0x0010	20 words	ASCII	Vendor Name = "Moxa"			
			Word 0 Hi byte = 'M'			
			Word 0 Lo byte = $o'$			
			Word 1 Hi byte = 'x'			
			Word 1 Lo byte = 'a'			
			Word 2 Hi byte = $10'$			
			Word 2 Lo byte = $\0'$			
0x0030	20 words	ASCII	Product Name = "EDS-408A"			
			Word 0 Hi byte = 'E'			
			Word 0 Lo byte = $D'$			
			Word 1 Hi byte = 'S'			
			Word 1 Lo byte = '-'			
			Word 2 Hi byte = $4'$			
			Word 2 Lo byte = $0'$			
			Word 3 Hi byte = '8'			
			Word 3 Lo byte = $A'$			
			Word 4 Hi byte = `\0'			
			Word 4 Lo byte = $\0'$			
0x0050	1 word		Product Serial Number			
0x0051	2 words		Firmware Version			
			Word 0 Hi byte = major (A)			
			Word 0 Lo byte = minor (B)			
			Word 1 Hi byte = release (C)			
			Word 1 Lo byte = build (D)			
0x0053	2 words	HEX	Firmware Release Date			
			For example:			
			Word $0 = 0 \times 0609$			
			Word $1 = 0 \times 0705$			
			Firmware was released on 2007-05-06 at 09			
			o'clock			
0x0055	3 words	HEX	Ethernet MAC Address			
			Ex: MAC = 00-01-02-03-04-05			

Address Offset	Data Type	Interpretation	Description
			Word 0 Hi byte = $0 \times 00$
			Word 0 Lo byte = $0 \times 01$
			Word 1 Hi byte = $0 \times 02$
			Word 1 Lo byte = $0 \times 03$ Word 2 Hi byte = $0 \times 04$
			,
0,00000	1		Word 2 Lo byte = 0 x 05 Power 1
0x0058	1 word	HEX	0x0000: Off
			0x0001: On
0x0059	1 word	HEX	Power 2
0x0039	1 WOIU		0x0000: Off
			0x0001: On
0x005A	1 word	HEX	Fault LED Status
0,000,00	1 1014		0x0000: No
			0x0001: Yes
0x0080	1 word	HEX	DI1
			0x0000:Off
			0x0001:On
0x0081	1 word	HEX	DI2
			0x0000:Off
			0x0001:On
0x0082	1 word	HEX	D01
			0x0000:Off
			0x0001:On
0x0083	1 word	HEX	DO2
			0x0000:Off
			0x0001:On
Port Information			
0x1000 to	1 word	HEX	Port 1 to 8 Status
0x1011			0x0000: Link down
			0x0001: Link up
			0x0002: Disable
			0xFFFF: No port
0x1100 to	1 word	HEX	Port 1 to 8 Speed
0x1111			0x0000: 10M-Half
			0x0001: 10M-Full
			0x0002: 100M-Half 0x0003: 100M-Full
			0xFFFF: No port
0x1200 to	1 word	HEX	Port 1 to 8 Flow Ctrl
0x1200 to 0x1211	1 WOIU		0x0000:Off
0,1211			0x0001:On
			0xFFFF:No port
0x1300 to	1 word	HEX	Port 1 to 8 MDI/MDIX
0x1311	1 Word	TIEX .	0x0000: MDI
0,1011			0x0001: MDIX
			0xFFFF: No port
0x1400 to	20 words	ASCII	Port 1 to 8 Description
0x1413 (Port 1)			Port Description = "100TX,RJ45."
- ( /			Word 0 Hi byte = $1'$
0x1414 to			Word 0 Lo byte = $0'$
0x1427 (Port 2)			Word 1 Hi byte = '0'
			Word 1 Lo byte = $T'$
			Word 4 Hi byte = '4'
			Word 4 Lo byte = $5'$
			Word 5 Hi byte = `.'
			Word 5 Lo byte = '\0'
Packets Informa			
0x2000 to	2 words	HEX	Port 1 to 8 Tx Packets
0x2023			Ex: port 1 Tx Packet Amount = 44332211
			Received MODBUS response:
			0x44332211
			Word $0 = 4433$
0.0100.			Word 1 = 2211
0x2100 to	2 words	HEX	Port 1 to 8 Rx Packets
0x2123			Ex: port 1 Rx Packet Amount = 44332211
			Received MODBUS response:
			0x44332211
			Word $0 = 4433$
0./2200 t-	2 word-		Word 1 = 2211
0x2200 to	2 words	HEX	port 1 to 8 Tx Error Packets

Address Offset	Data Type	Interpretation	Description
0x2223			Ex: port 1 Tx Error Packet Amount = 44332211
			Received MODBUS response:
			0x44332211 Word 0 = 4433
			Word $1 = 2211$
0x2300 to	2 words	HEX	port 1 to 8 Rx Error Packets
0x2323	2 10103		Ex: port 1 Rx Error Packet Amount = $44332211$
			Received MODBUS response:
			0x44332211
			Word $0 = 4433$
Dedundan av Inf			Word 1 = 2211
Redundancy Inf 0x3000	1 word	HEX	Redundancy Protocol
0,2000	IWOIU		Redundancy Protocol 0x0000:None
			0x0001:RSTP
			0x0002:Turbo Ring
			0x0003:Turbo Ring V2
			0x0004:Turbo Chain
0.0400			0x0005: MSTP
0x3100	1 word	HEX	RSTP Root 0x0000: Not Root
			0x0001: Root
			0xFFFF: RSTP Not Enable
0x3200 to	1 word	HEX	RSTP Port 1 to 8 Status
0x3211			0x0000: Port Disabled
			0x0001: Not RSTP Port
			0x0002: Link Down
			0x0003: Blocked
			0x0004: Learning
			0x0005: Forwarding 0xFFFF: RSTP Not Enable
0x3300	1 word	HEX	TurboRing Master/Slave
0,5500	1 Word		0x0000: Slave
			0x0001: Master
			0xFFFF: Turbo Ring Not Enable
0x3301	1 word	HEX	TurboRing 1st Port status
			0x0000: Port Disabled
			0x0001: Not Redundant Port 0x0002: Link Down
			0x0002: Elink Down
			0x0004: Learning
			0x0005: Forwarding
0x3302	1 word	HEX	TurboRing 2nd Port status
			0x0000: Port Disabled
			0x0001: Not Redundant Port 0x0002: Link Down
			0x0002: Elink Down
			0x0004: Learning
			0x0005:Forwarding
0x3303	1 word	HEX	TurboRing Coupling
			0x0000: Off
			0x0001: On
0,2204	1 word	HEX	0xFFFF: Turbo Ring is Not Enabled
0x3304	1 word	ILX	TurboRing Coupling Port Status 0x0000: Port Disabled
			0x0001: Not Coupling Port
			0x0002: Link Down
			0x0003: Blocked
			0x0005: Forwarding
0	1		0xFFFF: Turbo Ring is Not Enabled
0x3305	1 word	HEX	TurboRing Coupling Control Port Status 0x0000: Port Disabled
			0x0001: Not Coupling Port
			0x0002: Link Down
			0x0003: Blocked
			0x0005: Forwarding
			0x0006: Inactive
			0x0007:Active
	1		0xFFFF:Turbo Ring is Not Enabled
	1 word	HEX	TurboRing V2 Coupling Mode
0x3500			
0x3500			0x0000: None 0x0001: Dual Homing

Address Offset	Data Type	Interpretation	Description
			0x0003: Coupling Primary
			0xFFFF:Turbo Ring V2 is Not Enabled
0x3501	1 word	HEX	TurboRing V2 Coupling Port Primary Status
			(Used in Dual Homing, Coupling Backup, and
			Coupling Primary)
			0x0000:Port Disabled
			0x0001: Not Coupling Port 0x0002: Link Down
			0x0003: Blocked
			0x0004: Learning
			0x0005: Forwarding
			0xFFFF: Turbo Ring V2 is Not Enabled
			_
0x3502	1 word	HEX	TurboRing V2 Coupling Port Backup Status
			(Only using in Dual Homing)
			0x0000: Port Disabled
			0x0001: Not Coupling Port
			0x0002: Link Down
			0x0003: Blocked
			0x0004: Learning 0x0005: Forwarding
			0xFFFF: Turbo Ring V2 Not Enable
0x3600	1 word	HEX	TurboRing V2 Ring 1 status
0,000			0x0000: Healthy
			0x0001: Break
			0xFFFF:Turbo Ring V2 Not Enable
0x3601	1 word	HEX	TurboRing V2 Ring 1 Master/Slave
			0x0000: Slave
			0x0001: Master
			0xFFFF: Turbo Ring V2 Ring 1 Not Enable
0x3602	1 word	HEX	TurboRing V2 Ring 1 1st Port Status
			0x0000: Port Disabled
			0x0001: Not Redundant Port
			0x0002: Link Down
			0x0003: Blocked
			0x0004:Learning
			0x0005:Forwarding
0x3603	1		0xFFFF:Turbo Ring V2 Ring 1 is Not Enabled
0X3603	1 word	HEX	TurboRing V2 Ring 1's 2nd Port Status 0x0000: Port Disabled
			0x0001: Not Redundant Port
			0x0002: Link Down
			0x0003: Blocked
			0x0004: Learning
			0x0005: Forwarding
			0xFFFF: Turbo Ring V2 Ring 1 is Not Enabled
0x3680	1 word	HEX	TurboRing V2 Ring 2 Status
			0x0000: Healthy
			0x0001: Break
			0xFFFF: Turbo Ring V2 Ring 2 is Not Enabled
0x3681	1 word	HEX	TurboRing V2 Ring 2 Master/Slave
			0x0000: Slave
			0x0001: Master
0	1		0xFFFF: Turbo Ring V2 Ring 2 is Not Enabled
0x3682	1 word	HEX	TurboRing V2 Ring 2's 1st Port Status
			0x0000: Port Disabled
			0x0001: Not Redundant 0x0002: Link Down
			0x0002: Link Down 0x0003: Blocked
			0x0003: Blocked 0x0004: Learning
			0x0005: Forwarding
			0xFFFF: Turbo Ring V2 Ring 2 is Not Enabled
0x3683	1 word	HEX	TurboRing V2 Ring 2's 2nd Port Status
			0x0000: Port Disabled
			0x0001: Not Redundant
			0x0002: Link Down
			0x0003: Blocked
			0x0004: Learning
			0x0005: Forwarding
			0xFFFF: Turbo Ring V2 Ring 2 is Not Enabled
0x3700	1 word	HEX	Turbo Chain Switch Roles
			0x0000: Head
			0x0001: Member

Address Offset	Data Type	Interpretation	Description
			0x0002: Tail
0.0701			0xFFFF: Turbo Chain is Not Enabled
0x3701	1 word	HEX	Turbo Chain 1st Port status 0x0000: Link Down
			0x0000: Link Down 0x0001: Blocking
			0x0001: Blocked
			0x0002: Blocked 0x0003: Forwarding
			0xFFFF: Turbo Ring V2 Ring 2 Not Enable
0x3702	1 word	HEX	Turbo Chain 2nd Port status
0/07/02	1 Word		0x0000: Link Down
			0x0001: Blocking
			0x0002: Blocked
			0x0003: Forwarding
			0xFFFF: Turbo Ring V2 Ring 2 Not Enable
MSTP Register		ſ	
0x4000 ~ 0x407F	1 word, 0x0103	HEX	MSTP CIST Port Role / Port State
	=> port role =		0x00: DisabledPort / 0x00 Port Disabled
	DesignatedPort		0x01: DesignatedPort / 0x01 Discarding
	port state =		0x02: RootPort / 0x02 Learning
	Forwarding		0x03: AlternatePort / 0x03 Forwarding
			0x04: BackupPort 0x06: Not MSTP Port / 0x06Not MSTP Port
			,
0x4080 ~ 0x40FF	1 word 0x0102	HEX	OxFFFF: MSTP Not Enable MSTP MSTI1 Port Role / Port State
$0x4060 \approx 0x40FF$	1 word, 0x0103 => port role =	NEX	0x00: DisabledPort / 0x00 Port Disabled
	DesignatedPort		0x01: DisabledPort / 0x00 Port Disabled
	port state =		0x02: RootPort / 0x02Learning
	Forwarding		0x03: AlternatePort / 0x03Forwarding
	i oi waranig		0x04: BackupPort
			0x05: MasterPort
			0x06: Not MSTP Port / 0x06Not MSTP Port
			0xFFFF: MSTP Not Enable
0x4100 ~ 0x417F	1 word, 0x0103	HEX	MSTP MSTI2 Port Role / Port State
	=> port role =		0x00: DisabledPort / 0x00 Port Disabled
	DesignatedPort		0x01: DesignatedPort / 0x01Discarding
	port state =		0x02: RootPort / 0x02Learning
	Forwarding		0x03: AlternatePort / 0x03Forwarding
			0x04: BackupPort
			0x05: MasterPort
			0x06: Not MSTP Port / 0x06Not MSTP Port
			0xFFFF: MSTP Not Enable
0x4180 ~ 0x41FF	,	HEX	MSTP MSTI3 Port Role / Port State
	=> port role =		0x00: DisabledPort / 0x00 Port Disabled
	DesignatedPort		0x01: DesignatedPort / x01Discarding
	port state =		0x02: RootPort / 0x02Learning
	Forwarding		0x03: AlternatePort / 0x03Forwarding
			0x04: BackupPort 0x05: MasterPort
			0x06: Not MSTP Port / 0x06Not MSTP Port
			0xFFFF: MSTP Not Enable
0x4200 ~ 0x427F	1 word, 0x0103	HEX	MSTP MSTI4 Port Role / Port State
5/1200 ·· 0/72/1	=> port role =		0x00: DisabledPort / 0x00 Port Disabled
	DesignatedPort		0x01: DesignatedPort / 0x01Discarding
	port state =		0x02: RootPort / 0x02Learning
	Forwarding		0x03: AlternatePort / 0x03Forwarding
			0x04: BackupPort
			0x05: MasterPort
			0x06: Not MSTP Port / 0x06Not MSTP Port
			0xFFFF: MSTP Not Enable
0x4280 ~ 0x42FF	1 word, 0x0103	HEX	MSTP MSTI5 Port Role / Port State
	=> port role =		0x00: DisabledPort / 0x00 Port Disabled
	DesignatedPort		0x01: DesignatedPort / 0x01Discarding
	port state =		0x02: RootPort / 0x02Learning
	Forwarding		0x03: AlternatePort / 0x03Forwarding
			0x04: BackupPort
			0x05: MasterPort
			0x06: Not MSTP Port / 0x06Not MSTP Port
0 4000 0 107-			0xFFFF: MSTP Not Enable
0x4300 ~ 0x437F	1 word, 0x0103	HEX	MSTP MSTI6 Port Role / Port State
	=> port role =		0x00: DisabledPort / 0x00 Port Disabled
	DesignatedPort		0x01: DesignatedPort / 0x01Discarding
	port state =		0x02: RootPort / 0x02Learning
	Forwarding		0x03: AlternatePort / 0x03Forwarding

Address Offset	Data Type	Interpretation	Description	
			0x05: Ma 0x06: No	nckupPort asterPort ot MSTP Port / 0x06Not MSTP Port STP Not Enable
0x4380 ~ 0x43FF	1 word, 0x0103 => port role = DesignatedPort port state = Forwarding	HEX	MSTP MSTI7 0x00: Dis 0x01: De 0x02: Ro 0x03: Alt 0x04: Ba 0x05: Ma 0x06: No	Port Role / Port State sabledPort / 0x00 Port Disabled signatedPort / 0x01Discarding ootPort / 0x02Learning ternatePort / 0x03Forwarding ickupPort asterPort t MSTP Port / 0x06Not MSTP Port STP Not Enable

# Introduction

EtherNet/IP is an Industrial Ethernet Protocol defined by the ODVA association. The protocol is open to the public and vendors can implement EtherNet/IP into their industrial devices without incurring a license fee. Many vendors have adopted this protocol as the standard communication protocol between devices. For example, Rockwell Automation uses EtherNet/IP as the standard protocol for their Logix controllers over Ethernet networks.

To allow complete integration with a Rockwell system, Moxa switches not only provide a full-functioning of industrial network infrastructure, but also enable the SCADA system to monitor the status of the switches as well as that of the PLCs, .making the switches part of a Rockwell system.

# **Messaging Types**

EtherNet/IP supports two types of communication methods for EtherNet/IP devices: Explicit Messaging and Implicit Messaging. Explicit Messaging is unscheduled and is used for a request/response communication procedure (or client/server procedure). Explicit Messaging uses TCP/IP over Ethernet. Implicit Messaging is scheduled and is used for a producer/consumer communication with UDP over Ethernet. Implicit Messaging is also called I/O Messaging.

# **Configuring EtherNet/IP on Moxa Switches**

Type 1:



Check the **Enable** checkbox to enable EtherNet/IP. With EtherNet/IP enabled, IGMP Snooping and IGMP Query functions will be enabled automatically to be properly integrated in Rockwell systems for multicast Implicit (I/O) Messaging.

#### Type 2: New UI2.0

The default Modbus TCP support is enabled. To disable the Modebus TCP support, uncheck the **Enable Modbus TCP** then click **Apply** to activate the setting.

```
Industrial Protocol
```

EtherNet/IP

Enable EtherNet/IP

Note: IGMP snooping will be automatically enabled when EtherNet/IP is activated.

#### Modbus TCP

Enable Modbus TCP

#### **PROFINET I/O**

Enable PROFINET I/O

Apply

# **CIP Objects of EtherNet/IP**

Several communication objects are defined in CIP (Common Industrial Protocol). Moxa switches support the following objects for PLCs and SCADA systems to monitor:

- Identity Object
- TCP/IP Interface Object
- Ethernet Link Object
- Assembly Object
- Message Router Object
- Connection Manager Object
- Port Object
- Moxa Networking Object (Vendor Specific)

The supported attributes and services of the above objects are introduced in the table below, including the access rules for each attribute. To understand the details of each attribute of the standard objects, refer to the official documents of CIP introduction (Vol. 1) and the EtherNet/IP Adaptation of CIP (Vol. 2).

# **Identity Object**

The Class code of Identity object is **0x01** (Defined in CIP Vol1, 5-2).

There is **one** instance of this object in our product. It stores the information of the production and the device. The following tables summarize the class attributes and the instance attributes.

Attr ID	Access Rule	Name	Data Type	Description
1	Get	Revision	UINT (16)	Revision of this object
2	Get	Max Instance	UINT (16)	Maximum instance number of an object currently created in this class level of the device
3	Get	Number of Instances	UINT (16)	Number of object instances currently created in this class level of the device.
6	Get	Maximum ID Number Class Attributes	UINT (16)	The attribute ID number of the last class attribute of the class definition implemented in the device
7	Get	Maximum ID Number Instance Attributes	UINT (16)	The attribute ID number of the last instance attribute of the class definition implemented in the device

#### **Class Attribute List**

#### **Instance Attribute List**

Attr ID	Access Rule	Name	(Struct.)	Data Type	Description
1	Get	Vendor ID		UINT (16)	991, the vendor ID of Moxa.
2	Get	Device Type		UINT (16)	0 x 307, "Managed Ethernet Switch".
3	Get	Product Code		UINT (16)	Please refer to Product Code Table.
4	Get	Revision		(Struct.)	The version of the Identity object
			Major	USINT (8)	The structure member, major
			Minor	USINT (8)	The structure member, minor.
5	Get	Status		WORD (16)	Not used
6	Get	Serial Number		UDINT (32)	The serial number of each device
7	Get	Product Name		SHORT_ STRING	The product name in human-readable format
15	Get/Set	Assigned Name		STRINGI	The assigned switch name For example: "Managed Redundant Switch xxxxx". (xxxxx is series number.)
17	Get/Set	Geographic Location		STRINGI	The assigned switch location The default string is "Switch Location".

Used to write an object instance attribute

Invokes the reset service for the device

The Identity Object Instance supports the following CIP Common services:

Reset

	· · · · · · ·		Service Name	Description	
Code	Class	Instance			
0x01	$\checkmark$	$\checkmark$	Get_Attributes_All	Returns the contents of all attributes of the class	
0x0E	✓	$\checkmark$	Get_Attribute_Single	Used to read an object instance attribute.	

Set\_Attribute\_Single

#### **Common Service List**

 $\checkmark$ 

 $\checkmark$ 

0x10

0x05

Product Code	Model Name	Product Code	Model Name	Product Code	Model Name
0x0001	n/a	0x0012	EDS-G509	0x0023	TN-5510-PoE
0x0002	n/a	0x0013	EDS-P510	0x0024	TN-5508-PoE
0x0003	EDS-726	0x0014	EDS-516A-MM-M12	0x0025	n/a
0x0004	n/a	0x0015	IKS-6526SB	0x0026	IKS-6524
0x0005	EDS-518A	0x0016	EDS-608	0x0027	n/a
0x0006	EDS-405A	0x0017	IKS-6726-PoE	0x0028	n/a
0x0007	EDS-408A	0x0018	EDS-611	0x0029	EDS-P506A
0x0008	EDS-505A	0x0019	EDS-616	0x002A	PT-7728-PTP
0x0009	EDS-508A	0x001A	EDS-619	0x002B	PT-510
0x000A	EDS-510A	0x001B	TN-5518	0x002C	PT-508
0x000B	EDS-516A	0x001C	TN-5516	0x002D	n/a
0x000C	EDS-728	0x001D	TN-5510	0x002E	n/a
0x000D	PT-7728	0x001E	TN-5508	0x002F	IKS-G6524
0x000E	EDS-828	0x001F	EOM-104	0x0030	ICS-G7526
0x000F	PT-7828	0x0020	PT-G7509	0x0031	ICS-G7528
0x0010	PT-7710	0x0021	TN-5518-PoE	0x0032	n/a
0x0011	IKS-6726 or PT7728S old	0x0022	TN-5516-PoE	0x0033	IPS-P408
0x0034	TN-5818	0x0045	EDS-G508E	0x0056	n/a
0x0035	IKS-G6824	0x0046	EDS-G512E	0x0057	RedBox
0x0036	ICS-G7826	0x0047	EDS-G516E	0x0058	PT-7728-S-CN
0x0037	ICS-G7828	0x0048	EDS-D102		
0x0038	ICS-G7748	0x0049	TN-5816v2		
0x0039	ICS-G7750	0x004A	n/a		
0x003A	ICS-G7752	0x004B	n/a		
0x003B	ICS-G7848	0x004C	n/a		
0x003C	ICS-G7850	0x004D	n/a		
0x003D	ICS-G7852	0x004E	n/a		
0x003E	IKS-6852	0x004F	EDS-408A-SS-ST-BP		
0x003F	IKS-6728	0x0050	EDS-510A-3SFP-2SSC		
0x0040	PT-7528	0x0051	n/a		
0x0041	PT-7528-PTP	0x0052	IEX-402-VDSL		
0x0042	TN-5510-2DSL	0x0053	IKS-6728-8PoE		
0x0043	EDS-828-G52	0x0054	EDS-510E		

#### Product Code Table

# **TCP/IP Interface Object**

The Class code of TCP/IP Interface object is **0xf5** (Defined in CIP Vol2, 5-3).

There is **one** instance of this object.

The following tables summarize the attributes of this object.

#### **Class Attribute List**

Attr ID	Access Rule	Name	Data Type	Description
1	Get	Revision	UINT (16)	Revision of this object.
2	Get	Max Instance	UINT (16)	Maximum instance number of an object currently created in this class level of the device
3	Get	Number of Instances	UINT (16)	Number of object instances currently created at this class level of the device
6	Get	Maximum ID Number Class Attributes	UINT (16)	The attribute ID number of the last class attribute of the class definition implemented in the device
7	Get	Maximum ID Number Instance Attributes	UINT (16)	The attribute ID number of the last instance attribute of the class definition implemented in the device

#### **Instance Attribute List**

Attr ID	Access Rule	Name	(Struct.)	Data Type	Description
1	Get	Status		DWORD (32)	Interface status
					0 = The Interface Configuration
					attribute has not been configured.
					1 = The Interface Configuration
					attribute contains valid
					configuration obtained from
_					BOOTP, DHCP or non-volatile storage.
2	Get	Configurat		DWORD (32)	Interface capability flags
		ion			Bit map of capability flags:
		Capability			Bit 0: BOOTP Client
					Bit 1: DNS Client Bit 2: DHCP Client
					Bit 3: DHCP-DNS Update
					Bit 4: Configuration Settable
3	Get/Set	Configurat		DWORD (32)	Interface control flags
5	Gel/Sel	ion		DWORD (32)	Bit map of control flags:
		Control			Bit 0 to 3: Startup Configuration
		Control			0 = The device shall use the
					interface configuration values
					previously stored (for example,
					in non-volatile memory or via hardware
					witches).
					1 = The device shall obtain its
					interface configuration values via
					BOOTP.
					2 = The device shall obtain its
					interface configuration values via DHCP
					upon start-up.
4	Get	Physical		(Struct.)	3 to15 = Reserved. Path to physical link object
4	Gel	Link	Dath Ciza		Size of Path
		Object	Path Size Path	UINT (16) Padded	Logical segments identifying the
		Object	raui	EPATH	physical link object
5	Get/Set	Interface		(Struct.)	TCP/IP network interface configuration
5	Gel/Sel	Configurat		(Struct.)	TCF/IF network interface conliguration
		ion	IP Address	UDINT (32)	The device's IP address
			Network Mask	UDINT (32)	The device's network mask
			Gateway Address	UDINT (32)	Default gateway address
			Name Server	UDINT (32)	Primary name server
			Name Server2	UDINT (32)	Secondary name server
			Domain Name	STRING	Default domain name
6	Get/Set	Host		STRING	Host name
		Name			

The TCP/IP Object Instance supports the following CIP Common services:

#### **Common Service List**

Service	Implementation		Service Name	Description
Code	Class	Instance		
0 x 01	$\checkmark$	$\checkmark$	Get_Attributes_All	Returns the contents of all attributes of the class
0 x 0E	✓	$\checkmark$	Get_Attribute_Single	Used to read an object instance attribute
0 x 10		$\checkmark$	Set_Attribute_Single	Used to modify an object instance attribute

# **Ethernet Link Object**

The Class code of Ethernet Link object is **Oxf6** (Defined in CIP Vol2, 5-4). For each switch port, there is an instance of this class. The following table shows the mapping of instance number and the switch port number.

Instance Number	Mapping to
0	Ethernet Link class
1	1st switch port
2	2nd switch port
3	3rd switch port

The following tables summarize the attributes of the Ethernet Link object.

There are some vendor specific attributes in the table (Starting from attribute Id 100).

Attr ID	Access Rule	Name	Data Type	Description
1	Get	Revision	UINT (16)	Revision of this object
2	Get	Max Instance	UINT (16)	Maximum instance number of an object currently created in this class level of the device
3	Get	Number of Instances	UINT (16)	Number of object instances currently created in this class level of the device
6	Get	Maximum ID Number Class Attributes	UINT (16)	The attribute ID number of the last class attribute of the class definition implemented in the device
7	Get	Maximum ID Number Instance Attributes	UINT (16)	The attribute ID number of the last instance attribute of the class definition implemented in the device
100	Get	Moxa-specific Revision	UINT (16)	Revision of Moxa specific attributes and services

#### **Class Attribute List**

#### Instance attribute list

Attr ID	Access Rule	Name	(Struct.)	Data Type	Description
1	Get	Interface Speed		UDINT (32)	Interface speed currently in use (Speed in Mbps, e.g., 0, 10, 100, 1000, etc.)
2	Get	Interface Flags		DWORD (32)	Refer to the Interface Flags table.
3	Get	Physical Address		ARRAY of 6 USINT(8)	MAC layer address (The System MAC address).
4	Get	Interface Counters		(Struct.)	Counters relevant to the receipt of packets.
			In Octets	UDINT (32)	Octets received on the interface.
			In Ucast Packets	UDINT (32)	Unicast packets received on the interface.
			In NUcast Packets	UDINT (32)	Non-unicast packets received on the interface.
			In Discards	UDINT (32)	Inbound packets received on the interface but are discarded.
			In Errors	UDINT (32)	Inbound packets that contain Errors (does not include In Discards).
			Out Octets	UDINT (32)	Octets sent on the interface.
			Out Ucast Packets	UDINT (32)	Unicast packets sent on the interface.
			Out NUcast Packets	UDINT (32)	Non-unicast packets sent on the interface.
			Out Discards	UDINT (32)	Discarded outbound packets.
			Out Errors	UDINT (32)	Outbound packets that contain errors.
5	Get	Media Counters		(Struct.)	
			Alignment Errors	UDINT (32)	Received frames that are not an integral number of octets in length.
			FCS Errors	UDINT (32)	Received frames that do not pass the FCS check.
			Single Collisions	UDINT (32)	Successfully transmitted frames which experienced exactly one collision.
			Multiple Collisions	UDINT (32)	Successfully transmitted frames which experienced more than one collision.
			SQE Test Errors	UDINT (32)	Number of times the SQE test error message is generated.

Image: Section of the sectio					-	
Image: Section of the sectio					UDINT (32)	
Image: A set of the s				Late	UDINT (32)	Number of times a collision is detected later than 512 bit times
Image: server					UDINT (32)	
Sense Frors         Condition was lost or never asserted when attempting to transmit a frame.           Frame Too         UDINT (32)         Received frames that exceed the maximum permitted frame size.           MAC         UDINT (32)         Received frames that exceed the maximum permitted frame size.           6         Get/Set         Interface Control         (Struct.)         Configuration for physical interface frames for which receiption on an interface frames for which receiption and MAC sublayer receive error.           6         Get/Set         Interface Control         (Struct.)         Configuration for physical interface.           10         Get         Interface Label         WORD (16)         Bit 0: Auto-Negotiate Value 0: Forced Shall be forced to operate.           101         Get         Interface Label         SHORT STRING         Human readable identification           101         Get         Interface Storm Protection         STRING         Value 0: Disabled Broadcast Storm Protection. UNIT (8)         Value 0: Disabled Broadcast Storm Protection. (Only selected products support this function)           102         Get/Set         Utilization Alarm Lower         USINT (8)         RX interface utilization in percentage           103         Get         Interface Utilization Alarm Lower         USINT (8)         RX interface utilization upper limit in percentage           104         Get/Set				Transmit		fails due to an internal MAC sublayer transmit error.
Frame Too Long         UDINT (32)         Received frames size.           MAC Receive         WAC Receive         UDINT (32)         Frames for which reception on an interface fails due to an internal MAC subjeyer receive error.           6         Get/Set         Interface Control         (Struct.)         Configuration for physical interface.           6         Get/Set         Interface Control         (Struct.)         Configuration for physical interface.           6         Get/Set         Interface Control         WORD (16)         Bit 0: Auto-Nego Bit 1: Autif-Fuil Duplex Value 0: half duplex Value 0: inful duplex Value 0: inful duplex Value 0: inful duplex           10         Get         Interface Label         SHORT STRING         Human readable identification           100         Get         Interface Port Interface         STRING         Human readable identification           101         Get         Interface Utilization         USINT (8)         Value 0: Disabled Broadcast Storm Protection.           102         Get/Set         Interface Utilization         USINT (8)         Value 0: Clisabled Broadcast Storm Protection.           103         Get         Interface Utilization         USINT (8)         Value 0: Ignore Value 1: Git/Get/Set           104         Get/Set         Utilization Alarm Upper Threshold         USINT (8)         Value 0: Ignore Value				Sense	UDINT (32)	condition was lost or never asserted when attempting to
Receive Errors         Interface fails due to an internal MAC sublayer receive error.           6         Get/Set         Interface Control Bits         (Struct.)         Configuration for physical interface.           6         Get/Set         Interface Control Bits         WORD (16)         Bit 0: Auto-Negotiate Value 0: Force Value 0: half duplex Value 0: half duplex Value 1: full ouplex Value 1: full (feely 1) Value 2: on (feely 1) Value 2: full (feely 1) Value 2: full (feely 1) Value 4: off (feely 1) Value 4: off (feely 1) Value 4: off (feely 1) Value 4: off (feely 1) Value 4: ouplex ouplex Value 1: full ouplex Value 1: full ouplex Value 1: full ouplex Value 1: full ouplex Va					UDINT (32)	Received frames that exceed the
6         Get/Set         Interface Control         (Struct.)         Configuration for physical interface.           6         Get/Set         Interface Control Bits         WORD (16)         Bit 0: Auto-Negotiate Value 0: Force Value 1: Auto-Nego Bit 1: Half/Bull Duplex Value 1: Auto-Nego           10         Get         Interface Label         SHORT_STRING         Human readable identification           100         Get         Interface Port Index         UDINT (32)         Port index.           101         Get         Interface Port Index         UDINT (32)         Port index.           101         Get         Interface Port Index         UDINT (32)         Port index.           102         Get/Set         Broadcast Storm Protection         StrING         Value 0: Disabled Broadcast Storm Protection.           103         Get         Interface Utilization Alarm Upper Threshold         USINT (8)         RX interface utilization in percentage           104         Get/Set         Utilization Alarm Lower         USINT (8)         Not supported           105         Get/Set         Port Traffic-Overload Alarm Lower         USINT (8)         Value 0: Ignore Value 1: On Relay 1) Value 2: On (Relay 1) Value 2: On (Relay 1)           106         Get/Set         Port Traffic-Overload Alarm         UDINT(32)         Number of TX unicast packets per se				Receive	UDINT (32)	interface fails due to an internal
Bits         Value 0: Force Value 1: Auto-Nego Bit 1: Half/Full Duplex Value 2: half duplex Value 2: half duplex Value 2: half duplex Value 2: half duplex Bit 2 to 15: Reserved, all zero Bit 2 to 15: Reserved, all zero Bit 2 to 15: Reserved, all zero Bit 2 to 15: Reserved, all zero Speed 3t which the interface shall be forced to operate.           10         Get         Interface Label         UINT (16)         Speed 3t which the interface shall be forced to operate.           101         Get         Interface Port Index         UDINT (32)         Port index.           102         Get/Set         Broadcast Storm Protection         USINT (8)         Value 0: Disabled Broadcast Storm Protection.           103         Get         Interface Utilization Alarm Upper Threshold         USINT (8)         Value 0: Disabled Broadcast Storm Protection.           103         Get         Utilization Alarm Upper Threshold         USINT (8)         RX interface utilization in percentage           104         Get/Set         Utilization Alarm Lower Threshold         USINT (8)         Not supported           105         Get/Set         Port Link Alarm         USINT (8)         Value 0: Ignore Value 1: On (Relay 1) Value 2: On (Relay 2)           106         Get/Set         Port Traffic-Overload Alarm         USINT (8)         Value 0: Ignore Value 1: Enable(Relay 1)           107         Get/Set         Port Traffic-Overload Alarm         USINT (8)	6	Get/Set	Interface Control		(Struct.)	Configuration for physical
Image: SpeedForced Interface Interface SpeedUINT (16) Interface SpeedSpeed at which the interface shall be forced to operate.10GetInterface Port IndexUDINT (32)Port index.101GetInterface Port IndexUDINT (32)Port index.102Get/SetBroadcast Storm ProtectionUSINT (8)Value 0: Disabled Broadcast Storm Protection. Value 1: Enable Broadcast Storm Protection103GetInterface Utilization Alarm Upper ThresholdUSINT (8)RX interface utilization in percentage104Get/SetUtilization Alarm Upper ThresholdUSINT (8)RX interface utilization upper limit in percentage105Get/SetUtilization Alarm Lower Lower ThresholdUSINT (8)Not supported106Get/SetPort Link Alarm Lower Alarm LowerUSINT (8)Value 0: Ignore Value 1: Con Relay 1) Value 2: On (Relay 1) Value 2: On (Relay 1) Value 2: On (Relay 2)107Get/SetPort Traffic-Overload AlarmUSINT (8)Value 0: Disable Value 1: Enable(Relay 1) Value 2: Disable Value 1: Enable(Relay 1) Value 2: Disable Value 1: Enable(Relay 1) Value 2: Disable Value 2: Enable(Relay 2)108GetTx Unicast Packet RateUDINT(32)Number of TX unicast packets per second109GetRx Wulticast Packet RateUDINT(32)Number of TX uniticast packets per second113GetRx Broadcast Packet RateUDINT(32)Number of TX broadcast packets per second					WORD (16)	Value 0: Force Value 1: Auto-Nego Bit 1: Half/Full Duplex Value 0: half duplex Value 1: full duplex
10         Get         Interface Label         SHORT_STRING         Human readable identification           100         Get         Interface Port Index.         UDINT (32)         Port idex.           101         Get         Interface Port Description         STRING         Port description.           102         Get/Set         Broadcast Storm Protection         Value 0: Disabled Broadcast Storm Protection.           103         Get         Interface Utilization         USINT (8)         RX interface utilization in percentage           104         Get/Set         Utilization Alarm Upper Threshold         USINT (8)         RX interface utilization upper limit in percentage           105         Get/Set         Utilization Alarm Upper Threshold         USINT (8)         Not supported           106         Get/Set         Port Link Alarm Upper Threshold         USINT (8)         Value 0: Ignore Value 1: Enable(Relay 1) Value 2: On (Relay 2) Value 2: On (Relay 2) Value 2: On (Relay 1) Value 2: Enable(Relay 2)           107         Get/Set         Port Traffic-Overload Alarm         UDINT(32)         Number of TX unicast packets per second           109         Get         Tx Unicast Packet         <				Interface	UINT (16)	Speed at which the interface
100         Get         Interface Port Index         UDINT (32)         Port index.           101         Get         Interface Port Description         STRING         Port description.           102         Get/Set         Broadcast Storm Protection         Value 0: Disabled Broadcast Storm Protection.           103         Get         Interface Utilization         USINT (8)         Value 1: Enable Broadcast Storm Protection.           103         Get         Interface Utilization         USINT (8)         RX interface utilization in percentage           104         Get/Set         Utilization Alarm Upper Threshold         USINT (8)         RX interface utilization upper limit in percentage           105         Get/Set         Utilization Alarm Lower Threshold         USINT (8)         Not supported           106         Get/Set         Port Traffic-Overload Alarm Lower Threshold         USINT (8)         Value 0: Ignore Value 1: On (Relay 1) Value 2: On (Relay 2)           107         Get/Set         Port Traffic-Overload Alarm         USINT (8)         Value 0: Disable Value 2: Enable(Relay 1)           108         Get         Tx Unicast Packet UDINT(32)         Number of TX unicast packets per Second           109         Get         Rx Unicast Packet Rate         UDINT(32)	10	Get	Interface Label		SHORT STRING	Human readable identification
DescriptionUSINT (8)Value 0: Disabled Broadcast Storm Protection. Value 1: Enable Broadcast Storm Protection. (Only selected products support this function)103GetInterface UtilizationUSINT (8)Value 0: Disabled Broadcast Storm Protection. (Only selected products support this function)103GetInterface UtilizationUSINT (8)RX interface utilization in percentage104Get/SetUtilization Alarm Upper ThresholdUSINT (8)RX interface utilization upper limit in percentage105Get/SetUtilization Alarm Lower ThresholdUSINT (8)Not supported106Get/SetPort Link Alarm Alarm LowerUSINT (8)Value 0: Ignore Value 1: On (Relay 1) Value 2: On (Relay 1) Value 2: On (Relay 1) Value 2: On (Relay 1) Value 3: Off (Relay 1) Value 2: On Stable(Relay 1) Value 2: Enable(Relay 2)108GetTx Unicast Packet RateUDINT(32)Number of TX unicast packets per second109GetRx Unicast Packet RateUDINT(32)Number of TX multicast packets per second110GetTx Multicast Packet RateUDINT(32)Number of TX multicast packets per second112GetRx Multicast Packet RateUDINT(32)Number of TX broadcast packets per second	100	Get	Interface Port Index		UDINT (32)	Port index.
102Get/SetBroadcast Storm ProtectionUSINT (8)Value 0: Disabled Broadcast Storm Protection. Value 1: Enable Broadcast Storm Protection. (Only selected products support this function)103GetInterface UtilizationUSINT (8)RX interface utilization in percentage104Get/SetUtilization Alarm Upper ThresholdUSINT (8)RX interface utilization upper limit in percentage105Get/SetUtilization Alarm Lower ThresholdUSINT (8)Not supported106Get/SetPort Link AlarmUSINT (8)Value 0: Ignore Value 1: On (Relay 1) Value 2: On (Relay 2)107Get/SetPort Traffic-Overload AlarmUSINT (8)Value 0: Disable Value 1: Enable(Relay 2)108GetTx Unicast Packet RateUDINT(32)Number of TX unicast packets per second109GetRx Unicast Packet RateUDINT(32)Number of TX unicast packets per second110GetRx Multicast Packet RateUDINT(32)Number of TX unicast packets per second111GetRx Multicast Packet RateUDINT(32)Number of TX unicast packets per second113GetRx Broadcast Packet RateUDINT(32)Number of TX broadcast packets	101	Get			STRING	Port description.
103GetInterface UtilizationUSINT (8)RX interface utilization in percentage104Get/SetUtilization Alarm Upper ThresholdUSINT (8)RX interface utilization upper limit in percentage105Get/SetUtilization Alarm Lower ThresholdUSINT (8)Not supported106Get/SetPort Link Alarm Lower ThresholdUSINT (8)Value 0: Ignore Value 1: On (Relay 1) Value 2: On (Relay 2) Value 3: Off (Relay 1) Value 4: Off (Relay 1) Value 4: Off (Relay 2)107Get/SetPort Traffic-Overload AlarmUSINT (8)Value 0: Disable Value 1: Enable(Relay 2)108GetTx Unicast Packet RateUDINT(32)Number of TX unicast packets per second109GetRx Unicast Packet RateUDINT(32)Number of RX unicast packets per second111GetRx Multicast Packet RateUDINT(32)Number of TX multicast packets per second112GetRx Multicast Packet RateUDINT(32)Number of RX multicast packets per second113GetRx Broadcast Packet RateUDINT(32)Number of RX broadcast packets	102	Get/Set	Broadcast Storm		USINT (8)	Storm Protection. Value 1: Enable Broadcast Storm Protection. (Only selected products support
104Get/SetUtilization Alarm Upper ThresholdUSINT (8)RX interface utilization upper limit in percentage105Get/SetUtilization Alarm Lower ThresholdUSINT (8)Not supported106Get/SetPort Link AlarmUSINT (8)Value 0: Ignore Value 1: On (Relay 1) Value 2: On (Relay 2) Value 3: Off (Relay 1) Value 3: Off (Relay 1) Value 4: Off (Relay 1) Value 1: Enable(Relay 1) Value 2: Enable(Relay 1) Value 2: Enable(Relay 2)107Get/SetPort Traffic-Overload AlarmUSINT (8)Value 0: Disable Value 1: Enable(Relay 1) Value 2: Enable(Relay 2)108GetTx Unicast Packet RateUDINT(32)Number of TX unicast packets per second109GetRx Unicast Packet RateUDINT(32)Number of TX multicast packets per second110GetTx Multicast Packet RateUDINT(32)Number of TX multicast packets per second111GetRx Multicast Packet RateUDINT(32)Number of TX multicast packets per second113GetRx Broadcast Packet RateUDINT(32)Number of TX broadcast packets per second	103	Get	Interface Utilization		USINT (8)	RX interface utilization in
105Get/SetUtilization Alarm Lower ThresholdUSINT (8)Not supported106Get/SetPort Link AlarmUSINT (8)Value 0: Ignore Value 1: On (Relay 1) Value 2: On (Relay 2) Value 3: Off (Relay 1) Value 4: Off (Relay 1) Value 4: Off (Relay 1) Value 4: Off (Relay 2)107Get/SetPort Traffic-Overload AlarmUSINT (8)Value 0: Disable Value 1: Enable(Relay 1) Value 2: Enable(Relay 2)107GetTx Unicast Packet RateUDINT(32)Number of TX unicast packets per second109GetTx Multicast Packet RateUDINT(32)Number of RX unicast packets per second110GetTx Multicast Packet RateUDINT(32)Number of TX multicast packets per second111GetRx Multicast Packet RateUDINT(32)Number of RX multicast packets per second111GetRx Multicast Packet RateUDINT(32)Number of RX multicast packets per second113GetRx Broadcast Packet RateUDINT(32)Number of RX broadcast packets per second	104	Get/Set	Alarm Upper		USINT (8)	RX interface utilization upper limit
106Get/SetPort Link AlarmUSINT (8)Value 0: Ignore Value 1: On (Relay 1) Value 2: On (Relay 2) Value 3: Off (Relay 1) Value 4: Off (Relay 1) Value 4: Off (Relay 2)107Get/SetPort Traffic-Overload AlarmUSINT (8)Value 0: Disable Value 1: Enable(Relay 1) Value 2: Enable(Relay 2)108GetTx Unicast Packet RateUDINT(32)Number of TX unicast packets per second109GetRx Unicast Packet RateUDINT(32)Number of RX unicast packets per second110GetTx Multicast Packet RateUDINT(32)Number of TX multicast packets per second111GetTx Multicast Packet RateUDINT(32)Number of TX multicast packets per second112GetTx Broadcast Packet RateUDINT(32)Number of TX broadcast packets per second113GetRx Broadcast PacketUDINT(32)Number of RX broadcast packets	105	Get/Set	Utilization Alarm Lower		USINT (8)	Not supported
107Get/SetPort Traffic-Overload AlarmUSINT (8)Value 0: Disable Value 1: Enable(Relay 1) Value 2: Enable(Relay 2)108GetTx Unicast Packet RateUDINT(32)Number of TX unicast packets per second109GetRx Unicast Packet RateUDINT(32)Number of RX unicast packets per 	106	Get/Set			USINT (8)	Value 1: On (Relay 1) Value 2: On (Relay 2) Value 3: Off (Relay 1)
108GetTx Unicast Packet RateUDINT(32)Number of TX unicast packets per second109GetRx Unicast Packet RateUDINT(32)Number of RX unicast packets per second110GetTx Multicast Packet RateUDINT(32)Number of TX multicast packets per second111GetRx Multicast Packet 	107	Get/Set			USINT (8)	Value 0: Disable Value 1: Enable(Relay 1)
109GetRx Unicast Packet RateUDINT(32)Number of RX unicast packets per second110GetTx Multicast Packet RateUDINT(32)Number of TX multicast packets 	108	Get			UDINT(32)	Number of TX unicast packets per
110GetTx Multicast Packet RateUDINT(32)Number of TX multicast packets per second111GetRx Multicast Packet RateUDINT(32)Number of RX multicast packets per second112GetTx Broadcast Packet RateUDINT(32)Number of TX broadcast packets per second113GetRx Broadcast PacketUDINT(32)Number of RX broadcast packets per second	109	Get	Rx Unicast Packet		UDINT(32)	Number of RX unicast packets per
111GetRx Multicast Packet RateUDINT(32)Number of RX multicast packets per second112GetTx Broadcast Packet RateUDINT(32)Number of TX broadcast packets per second113GetRx Broadcast PacketUDINT(32)Number of RX broadcast packets	110	Get	Tx Multicast Packet		UDINT(32)	Number of TX multicast packets
112     Get     Tx Broadcast Packet Rate     UDINT(32)     Number of TX broadcast packets per second       113     Get     Rx Broadcast Packet     UDINT(32)     Number of RX broadcast packets	111	Get	Rx Multicast Packet			Number of RX multicast packets
113         Get         Rx Broadcast Packet         UDINT(32)         Number of RX broadcast packets	112	Get	Tx Broadcast Packet		UDINT(32)	Number of TX broadcast packets
	113	Get			UDINT(32)	

114	Get	Tx Multicast Packet	UD	( )	Total number of TX multicast packets
115	Get	Rx Multicast Packet	UD	DINT(32)	Total number of RX multicast packets
116	Get	Tx Broadcast Packet	UD	( )	Total number of TX broadcast packets
117	Get	Rx Broadcast Packet	UD	DINT(32)	Total number of RX broadcast packets
118	Get	Redundant Port Status	UC	DINT(32)	Bit 0 = Disable Bit 1 = Not Redundant port Bit 2 = Link down Bit 3 = Blocking Bit 4 = Learning Bit 5 = Forwarding

#### **Interface Flags**

Bit(s)	Called	Definition
0	Link Status	0 indicates an inactive link;
		1 indicates an active link.
1 Half/Full Duplex		0 indicates half duplex;
		1 indicates full duplex.
2-4	Negotiation Status	Indicates the status of link auto-negotiation
		0 = Auto-negotiation in progress.
		1 = Auto-negotiation and speed detection failed. Using default values
		for speed and duplex. Default values are product-dependent;
		recommended defaults are 10Mbps and half duplex.
		2 = Auto negotiation failed but detected speed. Duplex was defaulted.
		Default value is product-dependent; recommended default is half
		duplex.
		3 = Successfully negotiated speed and duplex.
		4 = Auto-negotiation not attempted. Forced speed and duplex.
5	Manual Setting Requires	0 indicates the interface can activate changes to link parameters
	Reset	(auto-negotiate, duplex mode, interface speed) automatically. 1
		indicates the device requires a Reset service be issued to its Identity
		Object in order for the changes to take effect.
6	Local Hardware	0 indicates the interface detects no local hardware fault; 1 indicates a
	Fault	local hardware fault is detected. The meaning of this is product-
		specific. For example, an AUI/MII interface might detect no
		transceiver attached, or a radio modem might detect no antenna
		attached. In contrast to the soft, possibly self-correcting nature of the
		Link Status being inactive, this is assumed a hard-fault requiring user
		intervention.
7~31	Reserved.	Shall be set to zero

The Ethernet Link Object Instance supports the following CIP common services:

#### **Common Service List**

	Implementation		Service Name	Description
Code	Class	Instance		
0x0E	✓	$\checkmark$	Get_Attribute_Single	Used to read an object instance attribute
0x10		✓	Set_Attribute_Single	Used to modify an object instance attribute

# **Assembly Object**

The Moxa switch support **static** assembly object for CIP I/O messaging.

The Class code is **0x04** (Defined in CIP Vol 1, 5-5).

There are three instances of this object as the following.

	Instance Number	Size (32 bit)
Input	2	5
Output	1	2
Configuration	3	0

The **Input** means the data is produced by switch which includes the information and status report to the originator for monitoring. The **Output** means the data is generated by the originator (remote host) and is consumed by switch.

#### **Class Attribute List**

Attr ID	Access Rule	Name	Data Type	Description
1	Get	Revision	UINT (16)	Revision of this object

#### **Instance Attribute List**

Attr ID	Access Rule	Name	(Struct.)	Data Type	Description
3	Get/Set	Data		Array of BYTE	The implicit messaging content
4	Get	Size		UINT (16)	Number of bytes in Attr. 3

#### **Common Service List**

	· · · · · · · · · · · · · · · · · · ·		Service Name	Description
Code	Class	Instance		
0x0E	✓	$\checkmark$	Get_Attribute_Single	Used to read an object instance attribute
0x10		$\checkmark$	Set_Attribute_Single	Used to modify an object instance attribute

For the definition of the I/O messaging, see the following table for details.

#### I/O Messaging Content

Direction	I/O data	Size	Value & Description
Input	Switch Fault Status	UDINT (32)	Please refer to Moxa Networking Object Attr ID 2.
	Port Exist	ULINT (64)	Please refer to Moxa Networking Object Attr ID 4.
	Port Link Status	ULINT (64)	Please refer to Moxa Networking Object Attr ID 6.
Output	Port Enable	ULINT (64)	Please refer to Moxa Networking Object Attr ID 5.

# **Message Router Object**

The object within a node that distributes messaging requests to the appropriate application objects.

The supported messaging connections are as the following:

- Explicit Messaging
- Unconnected Messaging
- Implicit messaging

When using the UCMM to establish an explicit messaging connection, the target application object is the Message Router object (Class Code **2**).

#### **Class Attribute List**

Attr ID	Access Rule	Name	Data Type	Descriptions
1	Get	Revision	UINT (16)	Revision of this object

#### **Instance Attribute List**

Attr ID	Access Rule	Name	(Struct.)	Data Type	Description
1	Get	Object_list		(Struct.)	A list of supported objects
			Number	UINT (16)	Number of supported classes in the classes array
			Classes	Array of UINT (16)	List of supported class codes
2	Get	Number Available		UINT (16)	Maximum number of connections supported
3	Get	Number Active		UINT (16)	Number of connections currently used by system components
4	Get	Active Connections		Array of UINT (16)	A list of the connection IDs of the currently active connections

#### **Common Service List**

	Implem	entation	Service Name	Description
Code	Class	Instance		
0x0E		$\checkmark$	Get_Attribute_Single	Used to read an object instance attribute

# **Connection Manager Object**

The Connection Manager Class allocates and manages the internal resources associated with both I/O and Explicit Messaging connections.

The class code is **0x06**. There is one instance of this object.

The supported connection trigger type is *cyclic* and *change of state*.

The instance attribute list is introduced as the following.

#### **Class Attribute List**

Attr ID	Access Rule	Name	Data Type	Description
1	Get	Revision	UINT (16)	Revision of this object

#### **Instance Attribute List**

Attr ID	Access Rule	Name	Data Type	Description
1	Get/Set	Open Requests	UINT(16)	Number of Forward Open service requests received

#### **Common Service List**

Service	Implem	entation	Service Name	Description
Code	Class	Instance		
0x0e	✓	$\checkmark$	Get_Attribute_Single	Returns the contents of the specified attribute
0x10		$\checkmark$	Set_Attribute_Single	Used to modify an object instance attribute
0x4E		✓	Forward_Close	Closes a connection
0x54		$\checkmark$	Forward_Open	Opens a connection

# **Port Object**

The port object represents the underlying interface of CIP which is EtherNet/IP.

The class code is **0xf4**. There is one instance of this object.

The instance attribute "**Port Type**" identifies the CIP adaptation.

#### **Class Attribute List**

Attr ID	Access Rule	Name	(Struct.)	Data Type	Description
1	Get	Revision		UINT (16)	Revision of this object
2	Get	Max Instance		UINT (16)	Maximum instance number of an object currently created in this class level of the device
3	Get	Number of Instances		UINT (16)	Number of object instances currently created at this class level of the device.
8	Get	Entry Port		UINT (16)	The attribute ID number of the last class attribute of the class definition implemented in the device
9	Get	Port Instance Info		(Array of Struct.)	
			Port Type	UINT (16)	Enumerates the type of port
			Port Number	UINT (16)	CIP port number associated with this port

#### **Instance Attribute List**

Attr ID	Access Rule	Name	(Struct.)	Data Type	Description
1	Get	Port Type		UINT (16)	Enumerates the type of port. 4 = EtherNet/IP.
2	Get	Port Number		UINT (16)	CIP port number associated with this port. (Value 1 is reserved for internal product use)
3	Get	Link Object		(Struct.)	
			Path Length	UINT (16)	Number of 16 bit words in the following path.
			Link Path	Padded EPATH	Logical path segments that identify the object for this port.
4	Get	Port Name		SHORT_STR ING	String which names the physical network port. The maximum number of characters in

				the string is 64.
5	Get	Port Type Name	SHORT_STR ING	String which names the port type. The maximum number of characters in the string is 64.
6	Get/Set	Port Description	SHORT_STR ING	String which describes the port. The maximum number of characters in the string is 64.
7	Get	Node Address	Padded EPATH	Node number of this device on port. The range within this data type is restricted to a Port Segment.
9	Get	Port Key	Packed EPATH	Electronic key of network/chassis this port is attached to. This attribute shall be limited to format 4 of the Logical Electronic Key segment.

#### **Common Service List**

			Service Name	Description
Code	Class	Instance		
0x0E	✓	$\checkmark$	Get_Attribute_Single	Used to read an object instance attribute
0x10		✓	Set_Attribute_Single	Used to modify an object instance attribute

# Moxa Networking Object (Vendor Specific)

The Moxa Networking object includes system information and status.

It can also be used to do the device diagnostic & configuration through explicit messaging.

#### The class code is **0x404**.

#### **Class Attribute List**

Attr ID	Access Rule	Name	Data Type	Description
1	Get	Revision	UINT (16)	Revision of this object

#### **Instance Attribute List**

Attr	Access	Name	Data Type	Description
ID	Rule			
1	Get	Firmware Version	UDINT (32)	Switch firmware version
2	Get	System Fault	UDINT (32)	Switch fault status
		Status		Bit 0: Reserved
				Value 0: Ok
				Value 1: Fail
				Bit 1: Reserved
				Value 0: Ok
				Value 1: Fail
				Bit 2: Port utilization alarm
				Value 0: No alarm
				Value 1: alarm
				Bit 3: Port link up
				Value 0: No alarm
				Value 1: Alarm
				Bit 4: Port link down
				Value 0: No alarm
				Value 1: Alarm
				Bit 5: Turbo ring break(Ring Master only)
				Value 0: No alarm
				Value 1: Alarm
				Bit 6: Power Input 1 fail
				Value 0: No alarm
				Value 1: Alarm
				Bit 7: Power Input 2 fail
				Value 0: No alarm
				Value 1: Alarm
				Bit 8:DI 1(off)
				Value 0: No alarm
	1			Value 1: Alarm
	1			Bit 9: DI 1(on)
	1			Value 0: No alarm
	1			Value 1: Alarm
	1			Bit 10: DI 2(off)
	1			Value 0: No alarm
				Value 1: Alarm

			-	
				Bit 11: DI 2(on)
				Value 0: No alarm
				Value 1: Alarm
				Bit 12: Reserved
				Value 0: Not support
				Value 1: Detected
				Bit 13: Power supply 1
				Value 0: Off
				Value 1:On
				Bit 14: Power supply 2 Value 0: Off
				Value 1:On
				Bit 15~31: Reserved.
3	Get	Switch Port	USINT (8)	Switch max port number
5	000	Number	001111 (0)	
4	Get	Port Exist	ULINT (64)	switch per port exist
-			· · · · · · · · · · · · · · · · · · ·	Bit mask, the LSB indicates the first port.
				Value 0: Not exist
				Value 1: Exist
5	Get/Set	Port Enable	ULINT (64)	Switch per port enable
			· · /	Bit mask, the LSB indicates the first port.
				Value 0: Enable
				Value 1: Disable
6	Get	Port Link Status	ULINT (64)	Switch per port link status
				Bit mask, the LSB indicates the first port.
				Value 0: Link down
L				Value 1: Link up
7	Get/Set	IGMP Snooping	USINT (8)	IGMP snooping enable:
		Enable		Value 0: Disable
-	0.1/0.1			Value 1: Enable
8	Get/Set	Query Interval	UDINT (32)	Query interval range from 20 to 600 secs
9	Get/Set	IGMP Enhanced	USINT (8)	IGMP enhanced mode
		Mode		0: Disable(default)
1.4		D.L. 1		1: Enable
14	Get/Set	Relay 1	USINT (8)	Override relay warning setting
				0: Disable(default)
15	Cat/Sat	Relay 2	USINT (8)	1: Enable Override relay warning setting
15	Get/Set	Relay Z	USINI (8)	0: Disable (default)
				1: Enable
16	Get/Set	Power 1 Relay	USINT (8)	Power input 1 failure (on->off)
10	000,000	Warning	001111 (0)	0: Disable (default)
				1: Enable (relay 1)
				2: Enable (relay 2)
17	Get/Set	Power 2 Relay	USINT (8)	Power input 2 failure (on->off)
	,	Warning	(-)	0: Disable (default)
		J		1: Enable (relay 1)
				2: Enable (relay 2)
18	Get/Set	DI 1 (0ff)	USINT (8)	DI 1 (0ff)
		Relay Warning		0: Disable (default)
				1: Enable (relay 1)
				2: Enable (relay 2)
19	Get/Set	DI 1 (on)	USINT (8)	DI 1 (0n)
		Relay Warning		0: Disable (default)
				1: Enable (relay 1)
				2: Enable (relay 2)
20	Get/Set	DI 2 (0ff)	USINT (8)	DI 2 (0ff)
		Relay Warning		0: Disable (default)
				1: Enable (relay 1)
L				2: Enable (relay 2)
21	Get/Set	DI 2 (on)	USINT (8)	DI 2 (0n)
		Relay Warning		0: Disable (default)
				1: Enable (relay 1)
	0.1/2			2: Enable (relay 2)
22	Get/Set	Turbo Ring Break	USINT (8)	Turbo ring break (Ring Master only)
		Relay Warning		0: Disable (default)
				1: Enable (relay 1)
22	Cat	CDULUT		2: Enable (relay 2)
23	Get	CPU Usage	USINT (8)	Percent of usage (0 to100)
24	Get Cet/Cet	Device Up Time	UDINT (32)	Number of seconds since the device was powered up
25	Get/Set	Reset MIB Counts	USINT (8)	Reset port MIB counters.
26	Get	Redundant Device	UDINT (32)	Bit mask of device roles.
		Mode		Bits 0= RSTP

				Bits 1= Turbo Ring Bits 2= Turbo Ring v2 Bits 3= Turbo Chain Bits 4= MSTP
27	Get/Set	Reset Device	USINT (8)	Reboot and reset to default 1: Reboot the device 2: Reset to default

#### **Common Service List**

Service	Implem	entation	Service Name	Description
Code	Class	Instance		
0x0E	✓	$\checkmark$	Get_Attribute_Single	Used to read an object instance attribute
0x10		$\checkmark$	Set_Attribute_Single	Used to modify an object instance attribute

# **Electronic Data Sheet (EDS) File**

The EDS (Electronic Data Sheet) file contains electronic descriptions of all relevant communication parameters and objects of an EtherNet/IP device. It is required for RSLogix 5000 to recognize Moxa switch and its CIP capability.

The list includes the sections which are described in our EDS file.

- [File]
- [Device]
- [Device Classification]
- [Port]

Icon should be 32 \* 32 in pixel.

# Rockwell RSLogix 5000 Add-On Instructions (AOI)

The Rockwell RSLogix 5000 Add-On Instructions (AOI) encapsulates Moxa switch supported EtherNet/IP functions in a common interface logic component. In RSLogix 5000 programming, users could use the AOI to communicate with Moxa switches and need not know the internal logic.

Our AOI would provide logic of Moxa switch configuration and monitoring by using EtherNet/IP in explicit messaging and implicit messaging. The AOI also provides some tags for RSLogix 5000/SCADA programming.

# **AOI Installation**

To install the AOI, you must use Rockwell RSLogix 5000 version 18 or later and Moxa managed Ethernet switches with firmware version 3.0 or later.

## The Five Major Stages of Installing the AOI

- 1. Add Moxa switch to the I/O configuration tree
- 2. Import the Add-On Instruction (AOI)
- 3. Add an instance of the AOI in your application
- 4. Create and configure tags for the AOI
- 5. Download the configured AOI to Rockwell PLC

#### Add Moxa switch to the I/O configuration tree

In order to import the AOI, the first step is to create a new Ethernet Module in RSLogix 5000.

1. Open RSLogix 5000 and create a new controller.

Click **Type** and select the Rockwell PLC model of the PLC connected to the Moxa switch. Input a **Name** and **Description** for this new controller.

уре:	1769-L32E CompactLogix5332E Controller	~	ОК
Revision:	18 🗸		Cancel
	Redundancy Enabled		Help
Name:	EDS_408A_AOI		
Description:		_	
		~	
Chassis Type:		~	
Slot	0 C Safety Partner Slot: <none></none>		
Create In:	C:\RSLogix 5000\Projects		Browse

2. Add an Ethernet Module to the I/O Configuration.

In the controller organizer window, select **I/O Configuration**, right click **Ethernet** under the PLC Ethernet port of the PLC connected to a Moxa switch, and select **New Module**.

Controller Organizer			
Controller EDS_408A_AOI  Controller Tags  Controller Fault Handler  Power-Up Handler			
	Select M	odule	
Add-On-Defined     Mole-Defined     Mole-Defined     Mole-Defined     Mole-Defined     Module-Defined     Module-Defined	Module Comm Digital Drives HMI Specia	6	Vendor
Arrow Module	B		Find Add Favorite
CompactB Paste	Ctrl+V By Categ	jory By Vendor Fav	vorites

3. Under the **Communications** group, select **Generic Ethernet Module** to represent Moxa Ethernet switches

Modu	le	Description	Vendor
	1783-ETAP1F	3 Port Ethernet Tap, 1 Fiber/2 Twisted-Pair Media	Allen-Bradley
	1783-ETAP2F	3 Port Ethernet Tap, 2 Fiber/1 Twisted-Pair Media	Allen-Bradley
	1788-EN2DN/A	1788 Ethernet to DeviceNet Linking Device	Allen-Bradley
	1788-ENBT/A	1788 10/100 Mbps Ethernet Bridge, Twisted-Pair Media	Allen-Bradley
	1788-EWEB/A	1788 10/100 Mbps Ethernet Bridge w/Enhanced Web Serv.	. Allen-Bradley
	1794-AENT	1794 10/100 Mbps Ethernet Adapter, Twisted-Pair Media	Allen-Bradley
	Drivelogix5730 Et	10/100 Mbps Ethernet Port on DriveLogix5730	Allen-Bradley
	ETHERNET-BRIDGE	Generic EtherNet/IP CIP Bridge	Allen-Bradley
	ETHERNET-MODU	Generic Ethernet Module	Allen-Bradley
	EtherNet/IP	SoftLogix5800 EtherNet/IP	Allen-Bradley
	PSSCENA	Ethernet Adapter, Twisted-Pair Media	Parker Hannif
	Stratix 8000	26 Port Managed Switch	Allen-Bradley
	- Stratix 8000	22 Port Managed Switch	Allen-Bradley
<	1		>
		Find	Add Favorite
	Category By Ve	endor Favorites	

4. Configure the Ethernet module with the correct name, description, IP address and connection parameters and click OK.

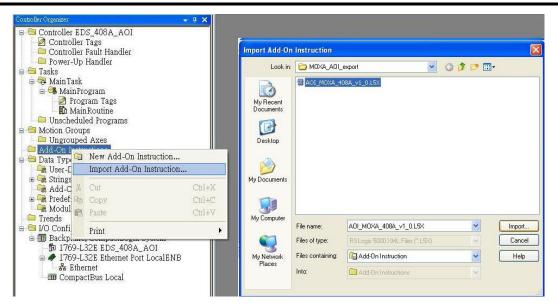
Vendor:	ETHERNET-MODULE Generic Etherr Allen-Bradley LocalENB					
	EDS_408A	Connection Para	Assembly			
	The MOXA managed switch	Input:	Instance:	5 Size:	*	(32-bit)
	×	Output:	1	2	*	(32-bit)
Comm Format: Address / H		Configuration:	3	0	*	(8-bit)
<ul> <li>IP Addre</li> <li>Host Nar</li> </ul>		Status Input: Status Output:				

5. After finishing configuration, the new Ethernet module representing the Moxa Ethernet switch will appear under the **I/O Configuration** list in the controller organizer window.

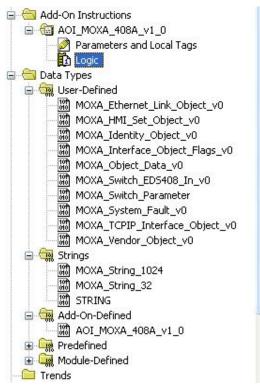
🚊 😁 I/O Configuration
😑 🏢 Backplane, CompactLogix System
- 🔂 1769-L32E EDS_408A_AOI
😑 🛷 1769-L32E Ethernet Port LocalENB
🖻 器 Ethernet
🚽 🥔 1769-L32E Ethernet Port LocalENB
ETHERNET-MODULE EDS_408A
CompactBus Local

# Import the Add-On Instruction (AOI)

- 1. In the controller organizer window, right click the **Add-On Instructions** folder, select **Import Add-On Instructions** and select the correct AOI file (xxx.L5X) to import.
- **NOTE** The AOI file is available from the Moxa website or in the software CD. Please make sure to use the latest switch firmware and AOI for programming.

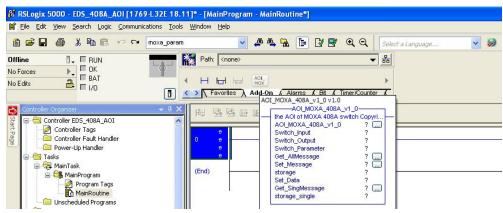


2. After importing, the controller organizer window shows all AOI for Moxa Ethernet switches under the **Add-On Instructions** folder.



## Add an instance of the AOI in your application

1. Double click the **MainRoutine** in the Controller Organizer to start the ladder programming. Add the AOI for the specific Moxa Ethernet switch to create a new rung.

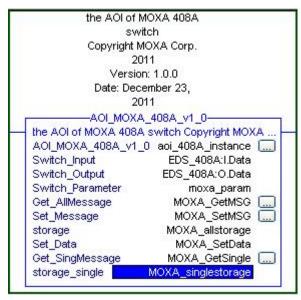


#### Create and configure tags for the AOI

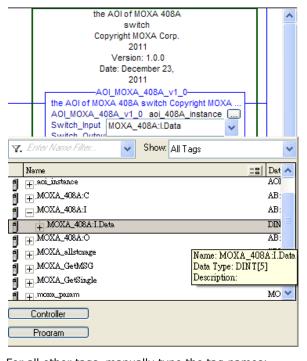
1. Right click on the ? in the field of each tag, select New Tag and input a Name for each new tag.

电感感	abcd ab • (ab)				
e 0 e -				XA_408A_v1_0- KA 408A switch (	
e		New T	ag		? ?
New Tag			truction	Ctrl+X	? .
Name:	aoi_408A_instance	ОК	nstruction	Ctrl+C Ctrl+V	? ? ?
Description:		Cancel	Instruction	Del	?
		Help	dder Element	Alt+Ins	?
	2		in Operand Description	Ctrl+D	
Туре:	Base Connection		nstruction Defaults	-	-
Alias For:			nstruction Defaults		
Alids Ful.	<u> </u>		e Force		
Data Type:	A0I_M0XA_408A_v1_0			Ctrl+G	
Scope:	🗓 EDS_408A_AOI 🛛 🖌		tion <u>H</u> elp	F1	
External	Read/Write		e Parameter		
Access:			e All Unknown Parameters	5	
Style:	×		nstruction Logic		
Constant			nstruction Definition		
Open Con	figuration		ties	Alt+Enter	

2. Add a **Name** for all AOI tags.



For "Switch\_Input" and "Switch\_Output", use the scrollbar to select the tag name



For all other tags, manual	if type the tag hameof
AOI Tag	Reference Tag Name
AOI_MOXA_408A_v1_0	aoi_408A_instance
Switch_Input	MOXA_408A:I.Data
Switch_Output	MOXA_408A:O.Data
Switch_Parameter	moxa_param
Get_AllMessage	MOXA_GetMSG
Set_Message	MOXA_SetMSG
storage	MOXA_allstorage
Set_Data	MOXA_SetData
Get_SingMessage	MOXA_GetSingle
storage_single	MOXA_singlestorage

 Click the square button to the right of the **Get\_AllMessage** tag and configure all parameters as follows: (Service Code: 1; Class: 1; Instance: 1; Attribute: 1; Destination: MOXA\_allstorage[0])

Message C	onfiguration - MOXA_GetMSG		
Configuration Message Service Type: Service Code: Instance:	Type: CIP Generic Custom I (Hex) Class: 1 (Hex)	Source Element: Source Length: Destination	0 (Bytes) MOXA_allstorage[0] V New Tag
<ul> <li>Enable</li> <li>Error Co</li> <li>Error Path:</li> <li>Error Text:</li> </ul>	○ Enable Waiting ○ Start ode: Extended Error Code: OK	O Done D	Vone Length: 0 ] Timed Out ← Apply Help

Click the **Communication** tab and set up the communication path to the Moxa Ethernet switch for **Get\_AllMessage** 

#### Configuration Communication\* Tag Browse... <u>Path:</u> O Broadcas Message Path Browser Communicati Path: MOXA\_408A ( CIP M0XA\_408A CIP Wath Source IE ⇒ 1/0 Configuration ⇒ ∰ Backplane, CompactLogix System → № 1769-L32E M0XA\_Switch\_A0I ⇒ № 1769-L32E Ethernet Port LocalENB Connecte 금 윮 Ethernet ▲ 1769-L32E Ethernet Port LocalENB ● ETHERNET-MODULE MOXA\_408A ● CompactBus Local O Enable O ) Error Cc Error Path: Error Text: OK Cancel Help

4. Click the square button to the right of the **Set\_Message** tag and configure all parameters as follows: (Service Code: 10; Class: f6; Instance: 1; Attribute: 1; Source Ethernet: MOXA\_SetData)

essage C Configurati			A_SetMSG		2
Message	Туре:	CIP Gene	ric	~	
Service Type: Service Code: Instance:		ite Single Iex) Class: Attribut	F6 (Hex) e: 1 (Hex)	Source Element: Source Length: Destination	MOXA_SetData (Bytes)
nableable	Enable V	Vaitingting	Starlitart	Doneone [	)one Length: 0

Click the **Communication** tab and set up the communication path to the Moxa Ethernet switch for **Set\_Message** 

Configuration	Communication Tag	
💿 Path:	Browse	ə
() Broa	Message Path Browser	
Commun CIP	Path: EDS408A EDS408A	
O CIP \ Sour		(Octal)
C Enable C Error Cc Tror Path: Tror Text:	CompactBus Local	

5. Click the square button to the right of the **Get\_SingMessage** tag and configure all parameters as follows:

(Service Code: e; Class: f6; Instance: 1; Attribute: 1; Destination: MOXA\_Singlestorage[0])

Configurati	on <sup>*</sup> Comr	nunication 1	Гад		
Message	Туре:	CIP Gene	eric	~	
Service Type:	Get Attrib	ute Single		Source Element: Source Length:	
Service Code:		Hex) Class:	f6 (He	ex) Destination	0 🗢 (Bytes) 0XA_Singlestorage[0] 🗸
Instance:	1	Attribut	te: 1 (He	exj	New Tag
) Enable	() Ena	ble Waiting	🔾 Start	🔾 Done	Done Length: 0
) Error Co rror Path: rror Text:	ode:	Extend	ded Error Code	:	🔲 Timed Out 🗲
HULLENC					

Click the **Communication** tab and set up the communication path to the Moxa Ethernet switch for **Get\_SingMessage** 

Configuration	Message Path Browser	
Path:	Path: EDS408A EDS408A	
Communic CIP CIP W Source Conne	CompactBus Local     CompactBus Local     CompactLogix System     Dia 1769-L32E Ethernet Port LocalENB     CompactBus Local     CompactBus Local	(Octal)
⊖ Enable ⊖ Error Co⊨		
Fror Path:	OK Cancel Help	

### Download the configured AOI to the Rockwell PLC

 Click the **Network** Icon, select the Rockwell PLC connected to the Moxa switch and click **Download** to install the AOI configuration to the PLC.

Controller	Path	Go Online
D_408A_AO	I ETHERNET\192.168.34.29\Backplane\0	Upload
		Download
		Close
		Help

2. After finishing configuration, go to the controller organizer window, right click **Controller Tags** and select **Monitor Tags** to check if each tag can display the correct value transferred from the Ethernet device.

Controller EDS_408A_		Name	A Value	<ul> <li>Force M</li> </ul>
Controller Faul	New Tag Ctrl+W	🛨 aoi_408A_instance	(	}
Power-Up Han		EDS_408A:C	(	}
AminTask     Edit Tags     Verify     Progra     MainRx     Export Tags     Unscheduled P	Monitor Tags		(	}
	Edit Tags	± EDS_408A:0	{	}
	Verify	+ MOXA_allstorage	(	}
	HOXA_GetMSG	{	}	
	HOXA_GetSingle	(	}	
Motion Groups	Print 🕨	+ moxa_param		}
Ungrouped Axes			(	}
Add-On Instructions	v1.0	H-M0XA_SetMSG	{	}
Parameters ar		+ MOXA_singlestorage	1	}

lame -	A 82	Value 🔶	Force Mask 🗲	Style	Data Type	-
moxa_param.Switch_Idnetit	у	{}	{}		MOXA_Identi	i
🗄 🛨 moxa_param.Switch_Idn	etity.Vendor_ID	991		Decimal	INT	
🗄 moxa_param.Switch_Idn	etity.Device_Type	775		Decimal	INT	l
🛨 moxa_param.Switch_Idn	etity.Product_Code	7		Decimal	INT	l
🛨 moxa_param.Switch_Idn	etity.Major_Revision	0		Decimal	SINT	
🛨 moxa_param.Switch_Idn	etity.Minor_Revision	0		Decimal	SINT	
🛨 moxa_param.Switch_Idn	etity.Serial_Number	16#0000_259d		Hex	DINT	
🛨 moxa_param.Switch_Idn	etity.Product_Name	'EDS-408A'	{}		STRING	
+ moxa_param.Switch_Idnetity.Assigned_Na		313	{}		MOXA_String	-
moxa_param.Switch_Idnetity.Geographic			{}		MOXA_String	
🛨 moxa_param.Switch_TCPIF	0	{}	{}		MOXA_TCPI.	
🚊 moxa_param.Switch_Vendo	or	{}	{}		MOXA_Vend	ł
🛨 moxa_param.Switch_Ver	ndor.System_Firm	524291		Decimal	DINT	
+ moxa_param.Switch_Ver	ndor.System_Fault	8192		Decimal	DINT	ļ
+ moxa_param.Switch_Ver	ndor.Switch_Port	0		Decimal	SINT	l
+ moxa_param.Switch_Ver	ndor.Port_Exist	{}	{}	Decimal	DINT[2]	l
+ moxa_param.Switch_Ver	ndor.Port_Enbale	{}	{}	Decimal	DINT[2]	l
🛨 moxa_param.Switch_Ver	ndor.Port_Link_St	{}	{}	Decimal	DINT[2]	l
+ moxa_param.Switch_Ver	ndor.IGMP_Snoop	0		Decimal	SINT	l
+ moxa_param.Switch_Ver	ndor.Query_Interval	125		Decimal	DINT	l
+ moxa_param.Switch_Ver	ndor.IGMP_Enhan	0		Decimal	SINT	l
+ moxa_param.Switch_Ver	ndor.Relay_1	0		Decimal	SINT	l
📩 🗄 moxa_param.Switch_Ver	ndor.Relay_2	0		Decimal	SINT	

**NOTE** Only Moxa pre-configured tags will display the correct values. Refer to the **CIP Tags** section below for detailed information.

#### Sample AOI Project

For easier AOI installation, Moxa has also provided a sample AOI project, in which all the parameters are configured with default values. The sample project is a (.ACD) file, which is available for download from the Moxa website or software CD. You may import the sample project in RSLogix 5000, and directly download this AOI to the PLC with minimal installation steps. But to use the sample project, you still must change or set up the parameters below.

- 1. Change the controller type used in the real environment.
- 2. Change the controller and Moxa switch's IP address.
- 3. Setup the Project path.

**NOTE** The sample AOI project only supports RSLogix 5000 version 18.

## **CIP** Tags

There are tags for each CIP object. The tags correspond to the object's attributes.

## **Tags for Identity Object**

Data Type: MOXA\_Identity\_Object\_v0

Name	Data Type	Description
Vendor ID	INT	991, MOXA Vendor ID
Device Type	INT	0x307, "Managed Ethernet Switch"
Product Code	INT	EDS-405A=0x0006, EDS-408A=0x0007,
		EDS-505A=0x0008, EDS-508A=0x0009,
		EDS-510A=0x000A, EDS-516A=0x000B,
		EDS-G509=0x0012
Major Revision	SINT	The structure member, major
Minor Revision	SINT	The structure member, minor
Serial Number	DINT	Switch serial number
Product Name	STRING	Switch model name
Assigned Name	STRING	User assigned switch name
Geographic Location	STRING	User assigned switch location

## **Tags for TCPIP Object**

Data Type: MOXA\_TCPIP\_Interface\_Object\_v0

Name	Data Type	Description
Status	DINT	Interface status
Configuration	DINT	Interface capability flags
Capability		
Configuration Control	DINT	Interface control flags
Path Size	INT	Size of Path
Object Path 1	INT	Logical segments identifying the physical link object
Object Path 2	INT	Logical segments identifying the physical link object
IP Address	DINT	The device's IP address
Network Mask	DINT	The device's network mask
Gateway Address	DINT	Default gateway address
Name Server 1	DINT	Primary name server
Name Server 2	DINT	Secondary name server
Domain Name	STRING	Default domain name
Host Name	STRING	Host name

# **Tags for Ethernet Link Object**

Name	Data Type	Description
Interface Speed	DINT	Interface speed currently in use. Speed in Mbps (e.g., 0, 10,
Interface opeca	DIN	100, 1000, etc.)
Interface Flags	MOXA_Interface_	Interface status flags
-	Object_Flags_v0	
Physical Address	SINT[6]	MAC layer address
InOctets	DINT	Octets received on the interface
InUcastPackets	DINT	Unicast packets received on the interface
InNucastPackets	DINT	Non-unicast packets received on the interface
InDiscards	DINT	Inbound packets received on the interface but discarded
InErrors	DINT	Inbound packets that contain errors (does not include In Discards)
OutOctets	DINT	Octets sent on the interface
OutUcastPackets	DINT	Unicast packets sent on the interface
OutNucastPackets	DINT	Non-unicast packets sent on the interface
OutDiscards	DINT	Outbound packets discarded
OutErrors	DINT	Outbound packets that contain errors
Alignment Errors	DINT	Frames received that are not an integral number of octets in
-		length
FCS Errors	DINT	Frames received that do not pass the FCS check
Single Collisions	DINT	Successfully transmitted frames which experienced exactly one
		collision
Multiple Collisions	DINT	Successfully transmitted frames which experienced more than
	DINT	one collision
SQE Test Errors Deferred	DINT DINT	Number of times SQE test error message is generated
Transmissions	DINI	Frames for which first transmission attempt is delayed because the medium is busy
Late Collisions	DINT	Number of times a collision is detected later than 512 bit-times
	DINI	into the transmission of a packet
Excessive Collisions	DINT	Frames for which transmission fails due to excessive collisions
MAC Transmit Errors	DINT	Frames for which transmission fails due to an internal MAC
		sublayer transmit error
Carrier Sense Errors	DINT	Times that the carrier sense condition was lost or never
		asserted when attempting to transmit a frame
Frame Too Long	DINT	Frames received that exceed the maximum permitted frame size
MAC Receive Errors	DINT	Frames for which reception on an interface fails due to an
<u> </u>		internal MAC sublayer receive error
Control Bits	INT	0 Auto-negotiate 0 indicates 802.3 link auto-negotiation is
Forced Interface	INT	disabled. 1 indicates auto-negotiation is enabled Speed at which the interface shall be forced to operate. Speed
Speed		in Mbps (10, 100, 1000, etc.)
Interface Label	STRING	Label like "TX5"
Interface Port Index	DINT	Port index
Interface Port	STRING	Port description
Description		
Broadcast Storm	SINT	Only on MOXA IKS, PT, EDS-516A/518A, and EDS-728/828
Protection		series
Interface Utilization	SINT	Percentage of entire interface bandwidth being used (0-100)
Utilization Alarm Upper	SINT	Upper percentage at which to declare an utilization alarm (0-
Threshold	CINT	100) Lower percentage at which to declare an utilization alarm (0-
Utilization Alarm Lower Threshold	SINT	100)
Port Link Alarm	SINT	0: Ignore,
	SINI	1: On (Relay 1),
		2: On (Relay 2),
		3: Off (Relay1),
		4: Off (Relay2)
Port TrafficOverload	SINT	0: Disable,
Alarm		1: Enable(Relay 1),
To Union ( D. J. ( D. )	DINT	2: Enable(Relay 2)
Tx Unicast Packet Rate		Number of TX unicast packets per second
Rx Unicast Packet Rate		Number of RX unicast packets per second
Tx Multicast Packet Rate	DINT	Number of TX multicast packets per second
Nate	1	
	DINT	I Number of RX multicast nackets per second
Rx Multicast Packet	DINT	Number of RX multicast packets per second
Rx Multicast Packet Rate		
Rx Multicast Packet	DINT	Number of RX multicast packets per second Number of TX broadcast packets per second

Rate		
Tx Multicast Packet	DINT	Total number of TX multicast packets
Rx Multicast Packet	DINT	Total number of RX multicast packets
Tx Broadcast Packet	DINT	Total number of TX multicast packets
Rx Broadcast Packet	DINT	Total number of RX broadcast packets
Redundant Port Status	DINT	Bit 0 = Disable,
		Bit 1 = Not Redundant port,
		Bit 2 = Link down,
		Bit 3 = Blocking,
		Bit 4 = Learning,
		Bit 5 = Forwarding

# **Tags for Moxa Networking Object**

Data Type: MOXA\_Vendor\_Object\_v0

Name	Data Type	Description
System Firmware	DINT	Switch firmware version
Version		
System Fault Status	DINT	Switch fault status
Switch Port Number	SINT	Switch max port number
Port Exist	DINT[2]	Switch per port exist
Port Enable	DINT[2]	Switch per port exist
		0:Enable
		1:Disable
Port Link Status	DINT[2]	Switch per port link status
IGMP Snooping	SINT	IGMP snooping enable:
		0: Disable
		1: Enable
Query Interval	DINT	Query Interval range from 20~600 sec
IGMP Enhanced Mode	SINT	IGMP enhanced mode
		0: Disable (default)
		1: Enable
Relay 1	SINT	Override relay warning setting
		0: Disable (default)
		1: Enable
Relay 2	SINT	Override relay warning setting
		0: Disable (default)
	OTHE	1: Enable
Power 1 Relay Warning	SINT	Power input 1 failure (on $\rightarrow$ off)
		0: Disable (default)
		1: Enable(relay 1)
Dowen 2 Dolov Worning	CINT	2: Enable(relay 2)
Power 2 Relay Warning	SINT	Power input 2 failure (on $\rightarrow$ off)
		0: Disable (default)
		1: Enable(relay 1)
DI 1 Off Relay Warning	SINT	2: Enable(relay 2) DI 1 (off)
DI I Oli Kelay Walling	31111	0: disable (default)
		1: Enable(relay 1)
		2: Enable(relay 2)
DI 1 On Relay Warning	SINT	DI 1 (on)
Di i on Keldy Warning	SINT	0: Disable (default)
		1: Enable(relay 1)
		2: Enable(relay 2)
DI 2 Off Relay Warning	SINT	DI 2 (off)
		0: Disable (default)
		1: Enable(relay 1)
		2: Enable(relay 2)
DI 2 On Relay Warning	SINT	DI 2 (on)
		0: Disable (default)
		1: Enable(relay 1)
		2: Enable(relay 2)
Turbo Ring Break Relay	SINT	Turbo Ring Break (Ring Master Only )
Warning		0: Disable (default)
		1: Enable (relay 1)
		2: Enable (relay 2)
CPU Usage	SINT	Percent of usage (0-100)
Device Up Time	DINT	Number of seconds since device was powered up
Reset Mib Counter	SINT	Reset port MIB counters
Redundant Device Mode	DINT	Bit 0: RSTP,

		Bit 1: Turbo Ring, Bit 2: Turbo Rong v2, Bit 3: Turbo Chain, Bit 4: MSTP
Reset Device	SINT	1: restart the device 2: reset to default

## Pre-configured Tags in the Moxa AOI

The Moxa AOI supports all the CIP tags listed in the tables above. But in the AOI, we only pre-configure logic links between selected tags and Moxa switches. To monitor the non-configured tags, PLC programmers need to create the links manually. Otherwise, in RSLogix 5000, the value column of these tags will display as "0". If you experience problems creating new links, please contact Moxa technical support for assistance.

**NOTE** For pre-configured tags, Moxa has already created the logic links between the CIP tags and Moxa Ethernet switches so RSLogix 5000 can get/set the switch information correctly.

The table below specifies all the pre-configured tags in Moxa AOI with a X mark.

Pre-Configured Tags	Name
Identity Object (0x01)	
*	Vendor ID
*	Device Type
*	Product Code
	Revision
	Status
*	Serial Number
*	Product Name
~	Assigned Name
	Geographic Location
TCP/IP Interface Object (0xf	
	Status
	Configuration Capability
	Configuration Control
	Physical Link Object
	Interface Configuration
*	IP Address
*	Network Mask
	Gateway Address
	Name Server
	Name Server 2
	Domain Name
*	Host Name
Ethernet Link Object (0xf6)-	
*	Interface Speed
*	Interface Flags
	Link Status
	Half/Full Duplex
	Negotiation Status
	Manual Setting Requires Reset
	Local Hardware Fault
*	Physical Address
	Interface Counters
	In Octets
	In Ucast Packets
	In Nucast Packets
	In Discards
*	In Errors
	Out Octets
	Out Ucast Packets
	Out Nucast Packets
	Out Discards
*	Out Errors
	Media Counters
	Interface Control
*	Control Bits
*	Forced interface Speed
/•\	i oreca interface opeca

Г	
	Interface Lable
	Interface Description
	Interface Port Description
\•/	Broadcast Storm Protection Interface Utizatiion
*	
	Utilization Alarm Upper Threshold
	Utilization Alarm Lower Threshold
	Port Link Alarm
•	Port Traffic-Overload Alarm
*	Tx Unicast Packet Rate
*	Rx Unicast Packet Rate
*	Tx Multicast Packet Rate
*	Rx Multicast Packet Rate
*	Tx Broadcast Packet Rate
*	Rx Broadcast Packet Rate
	Tx Multicast Packet
	Rx Multicast Packet
	Tx Broadcast Packet
	Rx Broadcast Packet
*	Redundant port status
Port Object (0xf4)	
	Port Type
	Port Number
	Link Object
	Port Name
	Port Type Name
	Port Description
	Node Address
	Davit I/au
	Port Key
MOXA Networking Ob	ect (0x404)
*	ect (0x404) Firmware Version
	ect (0x404) Firmware Version System Fault Status
*	ect (0x404) Firmware Version System Fault Status Switch Port Number
* *	ect (0x404) Firmware Version System Fault Status Switch Port Number Port Exist
* * * * * * * *	ect (0x404) Firmware Version System Fault Status Switch Port Number
* *	ect (0x404) Firmware Version System Fault Status Switch Port Number Port Exist
* * * * * * * *	ect (0x404) Firmware Version System Fault Status Switch Port Number Port Exist Port Enable
* * * * * * * *	ect (0x404) Firmware Version System Fault Status Switch Port Number Port Exist Port Enable Port Link Status IGMP Snooping Enable Query Interval
* * * *	ect (0x404) Firmware Version System Fault Status Switch Port Number Port Exist Port Enable Port Link Status IGMP Snooping Enable
* * * * *	ect (0x404) Firmware Version System Fault Status Switch Port Number Port Exist Port Enable Port Link Status IGMP Snooping Enable Query Interval
* * * * *	ect (0x404) Firmware Version System Fault Status Switch Port Number Port Exist Port Exist Port Link Status IGMP Snooping Enable Query Interval IGMP Enhanced Mode
* * * * *	ect (0x404) Firmware Version System Fault Status Switch Port Number Port Exist Port Enable Port Link Status IGMP Snooping Enable Query Interval IGMP Enhanced Mode Relay1
* * * * *	ect (0x404) Firmware Version System Fault Status Switch Port Number Port Exist Port Enable Port Link Status IGMP Snooping Enable Query Interval IGMP Enhanced Mode Relay1 Relay2
* * * * *	ect (0x404)          Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         Power 2 relay waring         DI 1(off) relay warning
* * * * *	ect (0x404)          Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         Power 2 relay waring
* * * * *	ect (0x404)         Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         DI 1(off) relay warning         DI 1(on) relay warning         DI 2(off) relay warning
* * * * *	ect (0x404)         Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         DI 1(off) relay warning         DI 1(on) relay warning         DI 2(off) relay warning         DI 2(on) relay warning
* * * * *	ect (0x404)         Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         DI 1(off) relay warning         DI 1(on) relay warning         DI 2(off) relay warning
* * * * *	ect (0x404)         Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         DI 1(off) relay warning         DI 1(on) relay warning         DI 2(off) relay warning         DI 2(on) relay warning         CPU usage
**       **       **       **       **       **       **	ect (0x404)         Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         DI 1(off) relay warning         DI 1(on) relay warning         DI 2(off) relay warning         DI 2(on) relay warning         Turbo Ring Break relay warning
**       **       **       **       **       **       **	ect (0x404)         Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         DI 1(off) relay warning         DI 1(on) relay warning         DI 2(off) relay warning         DI 2(on) relay warning         CPU usage
**       **       **       **       **       **       **       **       **       **       **       **       **       **       **       **       **       **	ect (0x404)         Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         DI 1(off) relay warning         DI 1(on) relay warning         DI 2(off) relay warning         DI 2(on) relay warning         CPU usage         Device Up Time
**       **	ect (0x404)         Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         DI 1(off) relay warning         DI 2(off) relay warning         DI 2(on) relay warning         CPU usage         Device Up Time         Reset MIB Counts         Redundant device mode
**       **       **       **       **       **       **       **       **       **       **       **       **       **	ect (0x404)         Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         DI 1(off) relay warning         DI 1(on) relay warning         DI 2(off) relay warning         DI 2(on) relay warning         CPU usage         Device Up Time         Reset MIB Counts
**         **	ect (0x404)         Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         DI 1(off) relay warning         DI 2(off) relay warning         DI 2(off) relay warning         CPU usage         Device Up Time         Reset MIB Counts         Redundant device mode
**       **	ect (0x404)         Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         DI 1(off) relay warning         DI 1(off) relay warning         DI 2(off) relay warning         DI 2(on) relay warning         CPU usage         Device Up Time         Reset MIB Counts         Redundant device mode         reset device         Switch Fault Status
**       **	ect (0x404)         Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         DI 1(off) relay warning         DI 2(off) relay warning         DI 2(off) relay warning         DI 2(off) relay warning         CPU usage         Device Up Time         Reset MIB Counts         Redundant device mode         reset device         Switch Fault Status         Port Exist
**         **	ect (0x404)         Firmware Version         System Fault Status         Switch Port Number         Port Exist         Port Enable         Port Link Status         IGMP Snooping Enable         Query Interval         IGMP Enhanced Mode         Relay1         Relay2         Power 1 relay waring         DI 1(off) relay warning         DI 1(off) relay warning         DI 2(off) relay warning         DI 2(on) relay warning         CPU usage         Device Up Time         Reset MIB Counts         Redundant device mode         reset device         Switch Fault Status

# **Monitoring AOI Tags**

In RSLogix 5000, you can monitor the values of all configured tags by selecting "Monitor Tags" in the controller organizer window. It can also be used to check that the AOI is installed correctly

**NOTE** Only Moxa pre-configured tags will display the correct values. Refer to the **CIP Tags** section above for detailed information.

Controller Organizer - 4 X	Scope: DS_408A_AOI Y Show: All T	
Controller Tags	Name	_=∎ △ Value   Force M
Controller Faul 📝 New Tag Ctrl+W	± aoi_408A_instance	()
Power-Up Han	+ EDS_408A:C	()
🗈 🔄 Tasks 🛛 🔹 Monitor Tags	EDS_408A:I	()
Edit Tags	EDS_408A:0	()
Progra Verify	+ MOXA_allstorage	()
MainRo Export Tags	HOXA_GetMSG	()
Unscheduled P	HOXA_GetSingle	()
Motion Groups Print	+ moxa_param	()
Ungrouped Axes	HOXA_SetData	()
Gligforgud Axes     Gad-On Instructions     Gad-On Instruction     Gad-On Instructions     Gad-On	+ MOXA_SetMSG	{}
Parameters and Local Tags	HOXA_singlestorage	{}

# **Monitor Tags for Identity Object**

Click **moxa\_param Switch\_Identity** and expand the list to check the values for Identity tags.

tem Run		Path: AB_E	THIP-1\192.168	34.29\Bac	kplane\0*	-
Controller Organizer 🚽 🕂	Scope: 🛐 EDS408A_Demc 😪 Show: All Ta	ags		<b>v</b> 7.	Enter Name Filter	
Controller FORSTREET	Name _== 4	Value 🔶	Force Mask 🗲	Style	Data Type	1
Controller Fault Handler	+ EDS408A:I	{}	{}		AB:ETHERN	
- 🗁 Power-Up Handler	± EDS408A:0	{}	{}		AB:ETHERN	
Tasks	± MOXA allstorage	{}	{}	Decimal	SINT[200]	
A Main lask	± MOXA GetMSG	{}	{}		MESSAGE	
- Program Tags		{}	{}		MOXA Switc	T
MainRoutine	+ moxa param.Switch Input	{}	{}		MOXA Switc	
C Unscheduled Programs Motion Groups	+ moxa param.Switch Output	0		Decimal	DINT	
Ungrouped Axes	moxa_param.Switch Idnetity	{}	{}	Decimal	MOXA Identi	Fî.
Add-On Instructions	+ moxa_param.Switch_Idnetity.Vendor	991		Decimal	INT	-
AOI_MOXA_408A_v1_0		775		Decimal Decimal	INT	
Data Types	+ moxa_param.Switch_Idnetity.Device					R
Strings	+ moxa_param.Switch_Idnetity.Produc	7		Decimal	INT	-
Add-On-Defined	+ moxa_param.Switch_Idnetity.Major	0		Decimal	SINT	12
Redefined	+ moxa_param.Switch_Idnetity.Minor	0		Decimal	SINT	
🥁 Module-Defined	moxa_param.Switch_Idnetity.Serial	16#0000_259d		Hex	DINT	
Trends	🕂 moxa_param.Switch_Idnetity.Produc	'EDS-408A'	{}		STRING	1
I/O Configuration Backplane, CompactLogix System	The moxa_param.Switch_Idnetity.Assign	11	{}		MOXA String.	
- To 1769-L32E EDS408A Demo 20120711	+ moxa_param.Switch_Idnetity.Geogra		{}		MOXA String.	-8

# **Monitor Tags for TCPIP Object**

Click **moxa\_param Switch\_TCPIP** and expand the list to check the values for TCPIP tags.

Forces		-(_)(U)(L)-  Jarms 👗 Bit 👗 Timer/Counter 👗 1		
Controller Organizer 🛛 🗢 📮 🗙	Scope: DS408A_Demc 🗸 Show: All Tags	▲ X.	Enter Name Filter	
Controller EDS408A_Demo_201	Name 28/4	Value 🗧	Force Mask • 9	Style
Controller Fault Handler	+ EDS408A:0	{}	()	
🗀 Power-Up Handler	+ MOXA allstorage	()	{}	)ecimal
Tasks	+ MOXA GetMSG	{}		
🔁 MainTask 🖃 🚭 MainProgram	- moxa param	()		
Program Tags	+ moxa_param.Switch Input	()		
MainRoutine	+ moxa_param.Switch_Output	()		Decimal
🗀 Unscheduled Programs	moxa_param.switch_output     moxa_param.switch_ldnetity	{}		ecima
Motion Groups				
Add-On Instructions	moxa_param.Switch_TCPIP	{}		
AOI_MOXA_408A_v1_0	+ moxa_param.Switch_TCPIP.Status			)ecimal
Data Types	<ul> <li>moxa_param.Switch_TCPIP.Configuration_Capab.</li> </ul>		-	ecimal
User-Defined	moxa_param.Switch_TCPIP.Configuration_Control	<u></u> [	]C	)ecimal
Add-On-Defined	+ moxa_param.Switch_TCPIP.Path_Size	0	C	)ecimal
Predefined	+ moxa_param.Switch_TCPIP.Object_Path_1	0		)ecimal
Module-Defined	moxa_param.Switch_TCPIP.Object_Path_2	0	0	)ecimal
Trends	+ moxa_param.Switch_TCPIP.IP_Address	-1062723062	C	) ecimal
I/O Configuration Backplane, CompactLogix S	+ moxa_param.Switch_TCPIP.Network_Mask	-256	C	ecimal (
1769-L32E EDS408A D	+ moxa param.Switch TCPIP.Gateway Address	0		ecimal
😑 🛷 1769-L32E Ethemet Por	moxa param.Switch TCPIP.Name Server 1	16#0000 0000	-	lex
🖻 🚼 Ethemet	± moxa param.Switch TCPIP.Name Server 2	16#0000 0000	-	łex
1769-L32E Ethe	+ moxa param.Switch TCPIP.Domain Name			
- CompactBus Local	+ moxa_param.Switch_TCPIP.Host_Name	'Managed Redundant Switch 09629		

# **Monitor Tags for Ethernet Link Object**

Click **moxa\_param Switch\_Ethernet\_Link** and expand the list to check the values for per port Ethernet Link tags.

Nam	eA	Value		Force I	Mask 🗲	Style	
	moxa_param.Switch_Ethernet_Link[1]		{	.}	{}		
	Tomoxa_param.Switch_Ethernet_Link[1].Interfac		1	00		Decimal	Ê.
	moxa_param.Switch_Ethernet_Link[1].Interfac		{	. }	{}		
	moxa_param.Switch_Ethernet_Link[1].Interf			1		Decimal	É
	moxa_param.Switch_Ethernet_Link[1].Interf			1		Decimal	E.
	moxa_param.Switch_Ethernet_Link[1].Interf			0		Decimal	
	moxa_param.Switch_Ethernet_Link[1].Interf			1		Decimal	
	moxa_param.Switch_Ethernet_Link[1].Interf			0		Decimal	R S
	moxa_param.Switch_Ethernet_Link[1].Interf			0		Decimal	
	moxa_param.Switch_Ethernet_Link[1].Interf			0		Decimal	Ê.
	moxa_param.Switch_Ethernet_Link[1].Physical		{	. }	{}	Decimal	12
	moxa_param.Switch_Ethernet_Link[1].Physi			0		Decimal	
	+ moxa_param.Switch_Ethernet_Link[1].Physi		-1	12		Decimal	E.
	+ moxa_param.Switch_Ethernet_Link[1].Physi			24		Decimal	-
	The moxa_param.Switch_Ethernet_Link[1].Physi			21		Decimal	8
	moxa_param.Switch_Ethernet_Link[1].Physi			87		Decimal	
	moxa_param.Switch_Ethernet_Link[1].Physi		-1			Decimal	80
	moxa_param.Switch_Ethernet_Link[1].InOctets			0		Decimal	a. 1
	+ moxa_param.Switch_Ethernet_Link[1].InUcast			0		Decimal	
	moxa_param.Switch_Ethernet_Link[1].InNucas			0		Decimal	<u>)</u>
	moxa_param.Switch Ethernet Link[1].InDiscards			0		Decimal	
	moxa_param.Switch_Ethernet_Link[1].InErrors			0		Decimal	-
	+ moxa param.Switch Ethernet Link[1].OutOctets			0		Decimal	8
	Monitor Tags / Edit Tags /		- Mir			)	>
me	-	■ Value	ШГ	+		Mask 🗲	
me	+ moxa_param.Switch_Ethernet_Link[1].InErrors		lin -	¢ 0		)	Decir
me	+ moxa_param.Switch_Ethernet_Link[1].InErrors + moxa_param.Switch_Ethernet_Link[1].OutOctets	-== A  Value	jir.	¢ 0		)	Decir Decir
me	+ moxa_param.Switch_Ethernet_Link[1].InErrors + moxa_param.Switch_Ethernet_Link[1].OutOctets + moxa_param.Switch_Ethernet_Link[1].OutUcastPac	±≘ ∆ Value	jir.	• 0 0		)	Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutNucastPa</li> </ul>	±≘ ∆ Value		+ 0 0 0		)	Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutNucastPa</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> </ul>	±≘ ∆ Value		• 0 0 0 0		)	Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutNucastPa</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> </ul>	EBIA Value		← 0 0 0 0 0		)	Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutNucastPa</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].Alignment_Err</li> </ul>	EBIA Value		• 0 0 0 0 0 0 0 0 0 0		)	Decir Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutNucastPa</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].Alignment_Err</li> <li>moxa_param.Switch_Ethernet_Link[1].FCS_Errors</li> </ul>	La Value		• 0 0 0 0 0 0 0 0 0		)	Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutNucastPa</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].Alignment_Err</li> </ul>	La Value		• 0 0 0 0 0 0 0 0 0 0 0 0 0		)	Decir Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutNucastPa</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].Alignment_Err</li> <li>moxa_param.Switch_Ethernet_Link[1].FCS_Errors</li> </ul>	Kets Ckets Cristian Character Charac		• 0 0 0 0 0 0 0 0 0		)	Decir Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].Alignment_Err</li> <li>moxa_param.Switch_Ethernet_Link[1].FCS_Errors</li> <li>moxa_param.Switch_Ethernet_Link[1].FCS_Errors</li> </ul>	kets ckets ors ons ons ons ons ons ons ons ons ons on		• 0 0 0 0 0 0 0 0 0 0 0 0 0		)	Decir Decir Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].Alignment_Err</li> <li>moxa_param.Switch_Ethernet_Link[1].FCS_Errors</li> <li>moxa_param.Switch_Ethernet_Link[1].Single_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Multiple_Collisic</li> </ul>	Image: Second				)	Decir Decir Decir Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].Alignment_Err</li> <li>moxa_param.Switch_Ethernet_Link[1].FCS_Errors</li> <li>moxa_param.Switch_Ethernet_Link[1].Single_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Multiple_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Multiple_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Suge_Test_Err</li> </ul>	tes Value  kets ckets ors ions ions ismi				)	Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].FCS_Errors</li> <li>moxa_param.Switch_Ethernet_Link[1].Single_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Multiple_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Single_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Sole_Test_Er</li> <li>moxa_param.Switch_Ethernet_Link[1].Sole_Test_Er</li> <li>moxa_param.Switch_Ethernet_Link[1].Deferred_Trans</li> </ul>	tes value		♦ 0		)	Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutNucastPa</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].Single_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Single_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].SugL_Test_Err</li> <li>moxa_param.Switch_Ethernet_Link[1].Deferred_Tran</li> <li>moxa_param.Switch_Ethernet_Link[1].Deferred_Tran</li> <li>moxa_param.Switch_Ethernet_Link[1].Late_Collision</li> </ul>	La Value Value Value kets ckets ors ions ions ions ions s s lissio		€ 0		)	Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].FCS_Errors</li> <li>moxa_param.Switch_Ethernet_Link[1].Single_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Multiple_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Nultiple_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Deferred_Trait</li> <li>moxa_param.Switch_Ethernet_Link[1].Deferred_Trait</li> <li>moxa_param.Switch_Ethernet_Link[1].Deferred_Trait</li> <li>moxa_param.Switch_Ethernet_Link[1].Late_Collision</li> <li>moxa_param.Switch_Ethernet_Link[1].Excessive_Collision</li> </ul>			← 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		)	Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].Single_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Suge_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Suge_Test_Er</li> <li>moxa_param.Switch_Ethernet_Link[1].Deferred_Trait</li> <li>moxa_param.Switch_Ethernet_Link[1].Late_Collision</li> <li>moxa_param.Switch_Ethernet_Link[1].Late_Collision</li> <li>moxa_param.Switch_Ethernet_Link[1].MAC_Transm</li> </ul>	□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□		← 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		)	Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].Single_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Suge_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Suge_Test_Er</li> <li>moxa_param.Switch_Ethernet_Link[1].Deferred_Trait</li> <li>moxa_param.Switch_Ethernet_Link[1].Late_Collision</li> <li>moxa_param.Switch_Ethernet_Link[1].Late_Collision</li> <li>moxa_param.Switch_Ethernet_Link[1].Act_Transm</li> <li>moxa_param.Switch_Ethernet_Link[1].Carrier_Sense</li> </ul>	E≣ △ Value Kets Cokets Cokets Cons C		← 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		)	Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].Alignment_Err</li> <li>moxa_param.Switch_Ethernet_Link[1].Single_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Suge_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Deterred_Trait</li> <li>moxa_param.Switch_Ethernet_Link[1].Late_Collision</li> <li>moxa_param.Switch_Ethernet_Link[1].Late_Collision</li> <li>moxa_param.Switch_Ethernet_Link[1].MAC_Transm</li> <li>moxa_param.Switch_Ethernet_Link[1].Carrier_Sense</li> <li>moxa_param.Switch_Ethernet_Link[1].Carrier_Sense</li> <li>moxa_param.Switch_Ethernet_Link[1].Carrier_Sense</li> <li>moxa_param.Switch_Ethernet_Link[1].Frame_Too_L</li> </ul>	E≣ △ Value Kets Cokets Cokets Cons C		← 0		)	Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDuctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDucastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDucastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDucastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDucastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDucastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDucastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDucastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].Single_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Ste_Test_Err</li> <li>moxa_param.Switch_Ethernet_Link[1].Deferred_Trait</li> <li>moxa_param.Switch_Ethernet_Link[1].Late_Collision</li> <li>moxa_param.Switch_Ethernet_Link[1].Late_Collision</li> <li>moxa_param.Switch_Ethernet_Link[1].Carrier_Senset</li> <li>moxa_param.Switch_Ethernet_Link[1].Carrier_Senset</li> <li>moxa_param.Switch_Ethernet_Link[1].MAC_Transm</li> <li>moxa_param.Switch_Ethernet_Link[1].Carrier_Senset</li> <li>moxa_param.Switch_Ethernet_Link[1].Carrier_Senset</li> <li>moxa_param.Switch_Ethernet_Link[1].Carrier_Senset</li> <li>moxa_param.Switch_Ethernet_Link[1].Control_Bits</li> </ul>	E≣ △ Value Kets Cokets ors ions ions ions s lisio t_Er _Er ong e_Er		← 0		)	Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutOctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDiscards</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].Single_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Suge_Test_Err</li> <li>moxa_param.Switch_Ethernet_Link[1].Deferred_Trans</li> <li>moxa_param.Switch_Ethernet_Link[1].Late_Collision</li> <li>moxa_param.Switch_Ethernet_Link[1].Excessive_Cod</li> <li>moxa_param.Switch_Ethernet_Link[1].Excessive_Cod</li> <li>moxa_param.Switch_Ethernet_Link[1].AdC_Transm</li> <li>moxa_param.Switch_Ethernet_Link[1].Frame_Too_L</li> <li>moxa_param.Switch_Ethernet_Link[1].Control_Bits</li> <li>moxa_param.Switch_Ethernet_Link[1].Control_Bits</li> </ul>	Image: Second		•     •		Mask ←	Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir
	<ul> <li>moxa_param.Switch_Ethernet_Link[1].InErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDuctets</li> <li>moxa_param.Switch_Ethernet_Link[1].OutUcastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDucastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDucastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDucastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDucastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDucastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDucastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutDucastPac</li> <li>moxa_param.Switch_Ethernet_Link[1].OutErrors</li> <li>moxa_param.Switch_Ethernet_Link[1].Single_Collisic</li> <li>moxa_param.Switch_Ethernet_Link[1].Ste_Test_Err</li> <li>moxa_param.Switch_Ethernet_Link[1].Deferred_Trait</li> <li>moxa_param.Switch_Ethernet_Link[1].Late_Collision</li> <li>moxa_param.Switch_Ethernet_Link[1].Late_Collision</li> <li>moxa_param.Switch_Ethernet_Link[1].Carrier_Senset</li> <li>moxa_param.Switch_Ethernet_Link[1].Carrier_Senset</li> <li>moxa_param.Switch_Ethernet_Link[1].MAC_Transm</li> <li>moxa_param.Switch_Ethernet_Link[1].Carrier_Senset</li> <li>moxa_param.Switch_Ethernet_Link[1].Carrier_Senset</li> <li>moxa_param.Switch_Ethernet_Link[1].Carrier_Senset</li> <li>moxa_param.Switch_Ethernet_Link[1].Control_Bits</li> </ul>	Image: Second		•     •		)	Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir Decir

Name		Value 🔶	Force Mask *
	🛨 moxa_param.Switch_Ethernet_Link[1].Interface_Port_Descript		{}
	+ moxa_param.Switch_Ethernet_Link[1].Broascast_Storm_Prote	0	
	Tomoxa_param.Switch_Ethernet_Link[1].Interface_Utilization	0	
	+ moxa_param.Switch_Ethernet_Link[1].Utilization_Alarm_Upper	0	
	+ moxa_param.Switch_Ethernet_Link[1].Utilization_Alarm_Lower	0	
	+ moxa_param.Switch_Ethernet_Link[1].Port_Link_Alarm	0	
	+ moxa_param.Switch_Ethernet_Link[1].Port_TrafficOverload_Al	0	
	moxa_param.Switch_Ethernet_Link[1].Tx_Unicast_Packet_Rate	9	
	+ moxa_param.Switch_Ethernet_Link[1].Rx_Unicast_Packet_R	10	
	+ moxa_param.Switch_Ethernet_Link[1].Tx_Multicast_Packet	0	
	moxa_param.Switch_Ethernet_Link[1].Rx_Multicast_Packet	0	
	+ moxa_param.Switch_Ethernet_Link[1].Tx_Broadcast_Packet	0	
	+ moxa_param.Switch_Ethernet_Link[1].Rx_Broadcast_Packet	0	
	+ moxa_param.Switch_Ethernet_Link[1].Tx_Multicast_Packet	0	
	+ moxa_param.Switch_Ethernet_Link[1].Rx_Multicast_Packet	0	
	moxa_param.Switch_Ethernet_Link[1].Tx_Broadcast_Packet	0	
	+ moxa_param.Switch_Ethernet_Link[1].Rx_Broadcast_Packet	0	
	🗄 moxa_param.Switch_Ethernet_Link[1].Redundant_Port_Status	2	
H	-moxa_param.Switch_Ethernet_Link[2]	()	{}
H	- moxa_param.Switch_Ethernet_Link[3]	()	{}
H	-moxa_param.Switch_Ethernet_Link[4]	()	{}
E	-moxa_param.Switch_Ethernet_Link[5]	{}	{}
1	moxa param.Switch Ethernet Link/6] Aonitor Tags / Edit Tags /	()	{}

# Monitor Tags for Moxa Networking Object

Click **moxa\_param Switch\_Vendor** and expand the list to check the values for Moxa custom tags.

Name	A 82	Value	÷	Force Mask *	Style	1
moxa_	param.Switch_Vendor.Port_Enbale		{}	{}	Decimal	1
± mo:	xa_param.Switch_Vendor.Port_Enbale[0]		0		Decimal	
	xa_param.Switch_Vendor.Port_Enbale[1]		0		Decimal	
E moxa_	param.Switch_Vendor.Port_Link_Status		{}	{}	Decimal	
+ mo:	xa_param.Switch_Vendor.Port_Link_Status[0]		3		Decimal	
± mo:	xa_param.Switch_Vendor.Port_Link_Status[1]		0		Decimal	
🛨 moxa_	param.Switch_Vendor.IGMP_Snooping		0		Decimal	
+ moxa_	param.Switch_Vendor.Query_Interval		125		Decimal	
± moxa_	param.Switch_Vendor.IGMP_Enhanced_M		0		Decimal	
+ moxa_	param.Switch_Vendor.Relay_1		0		Decimal	
+ moxa_	param.Switch_Vendor.Relay_2		0		Decimal	
+ moxa_	param.Switch_Vendor.Power_1_Relay_W		0		Decimal	
+ moxa_	param.Switch_Vendor.Power_2_Relay_W		0		Decimal	
+ moxa_	param.Switch_Vendor.DI_1_Off_Relay_W		0		Decimal	
+ moxa_	param.Switch_Vendor.DI_1_0n_Relay_W		0		Decimal	
+ moxa_	param.Switch_Vendor.DI_2_Off_Relay_W		0		Decimal	
+ moxa_	param.Switch_Vendor.DI_2_On_Relay_W		0		Decimal	
+ moxa_	param.Switch_Vendor.Turbo_Ring_Break		0		Decimal	
± moxa_	param.Switch_Vendor.CPU_Usage		1		Decimal	
+ moxa_	_param.Switch_Vendor.Device_Up_Time		0		Decimal	
+ moxa_	param.Switch_Vendor.Reset_Mib_Counter		0		Decimal	
+ moxa_	param.Switch_Vendor.Redundant_Device		2		Decimal	
+ moxa pa	ram.Switch <u>Ethernet Link</u>		{}	{}		

# **Rockwell FactoryTalk® View Faceplate**

# FactoryTalk® View Faceplate Installation

To install the faceplate, you must have Rockwell FactoryTalk® View Studio SE (Site Edition) version 5 or later and a Moxa managed Ethernet switch with firmware version 3.0 or later.

# Create a FactoryTalk® View Shortcut to the PLC

1. Start the FactoryTalk  $\ensuremath{\mathbb{R}}$  View Studio software and select Site Edition (Local).

Application T	ype Selection	1		
		Factor	ry <b>Talk<sup>*</sup> View</b> Studio	
Select the type of type of the	of application you Site Edition (Local)	u would like to Machine Edition	configure:	
			Continue	Exit

2. Add a new Site Edition (Local) and enter the Application name.

New Existing		
Application name: Description:	EDS_408A_Platform	
Language:	English (United States), en-US	Import

3. Configure a shortcut to the PLC that is running the Moxa AOI.

In the Explorer window, right click the newly-added application, select **Add New Server** and **Rockwell Automation Device Server (RSLinx Enterprise)**, and click OK.

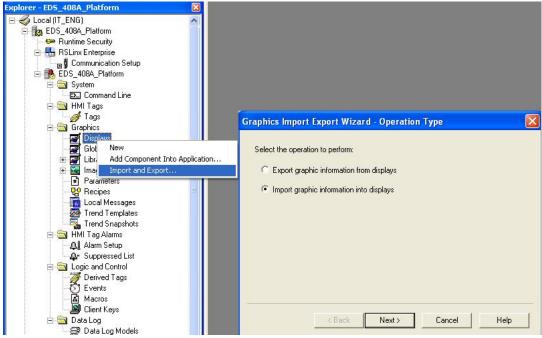
🖃 🎻 Local (IT_ENG)		
EDS_408A_Platform		
🛛 🖙 Runtime Secu 🛛 Delete		
Add New Server	Rockwell Automation Device Server (RSLinx Enterprise)	
E System	OPC Data Server	
	Tag Alarm and Event Server	
<ul> <li>Security</li> <li>HMI Tags</li> <li>Tags Properties</li> <li>Graphics</li> <li>Graphics</li> <li>Global Objects</li> <li>Global Objects</li> <li>Global Objects</li> <li>Recipes</li> <li>Recipes</li> <li>Cal Messages</li> <li>Trend Templates</li> <li>Trend Templates</li> <li>Trend Snapshots</li> <li>HMI Tag Alarms</li> <li>Al Alarm Setup</li> <li>Suppressed List</li> <li>Derived Tags</li> <li>Events</li> <li>Macros</li> <li>Clent Keys</li> <li>Data Log</li> </ul>		
└ 쯝 Data Log Models	OK Cancel Apply H	lelp

4. The shortcut is named PLC. Click "Yes" to apply the configuration.

Device Shortcuts	Primary
Add Remove Apply	■       ■       RSLinx Enterprise, IT_ENG         ●       ■       1789-A17, Backplane         ●       ♣       EtherNet, Ethernet         ●       ♣       EtherNet, Ethernet         ●       ●       ■       CompactLogix System, CompactLogix System         ●       ●       ●       0, 1769-L32E/A, ED_408A_AOI         ●       ●       0, 1769-L32E/A, ED_408A_AOI
RSLinx Enterprise	2 192.168.34.253, , ED5-408A
You've made the following changes to the shortcut 'PL Primary path edited - Old: - New: CompactLogix System.ED_408A_AOI Press Yes to apply changes. Press No to discard changes	
	Mode; Online Not Browsing

# Import FactoryTalk® View Faceplate Graphics

1. Right click Display in the FactoryTalk® View Explorer window, select **Import and Export** and choose **Import graphic information into displays**.



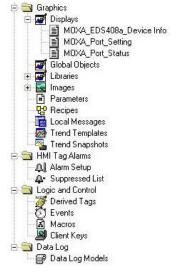
2. Select No and Multiple displays batch import file

Graphics Import Export Wizard - Backup	Graphics Import Export Wizard - Import File Type
Do you want to backup the displays that will be modified by the import? Yes No	Select the type of file to import: Single display import file Multiple displays batch import file
< Back Next > Cancel Help	<back next=""> Cancel Help</back>

- 3. Import all graphics files for FactoryTalk® View faceplate display.
- **NOTE** Moxa provides sample graphics files for selected switches, which are available for download at the Moxa website or from the software CD.

	Import Export e multiple display b		iple Import File		
C LI	importing vate new objects or Select Multiple		- Instant File		
Whe can a over	Look in: My Recent Documents Desktop My Documents My Computer	FTView Fa	ceplat <u>EDS_408A_Platform.xml</u> 108a_Device Info.xml Setting.xml Status.xml		
	My Network Places	File name: Files of type:	BatchImport_EDS_408 Batch Import Files (*.xr		Open Cancel

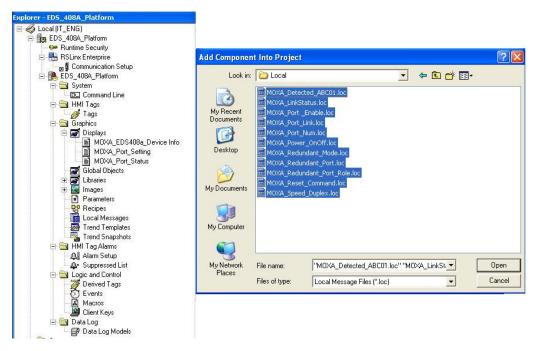
4. After import, these objects will appear under **Displays** in the Explorer window.



# Import FactoryTalk® View Faceplate Local Message

1. Right click Local Message in the FactoryTalk® View Explorer window, select Add Component Into Application and import all the local message files (.loc)

**NOTE** Moxa provides sample local message files for selected switches, which are available for download at the Moxa website or from the software CD..

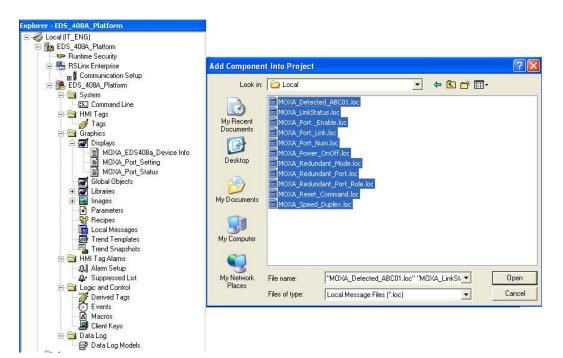


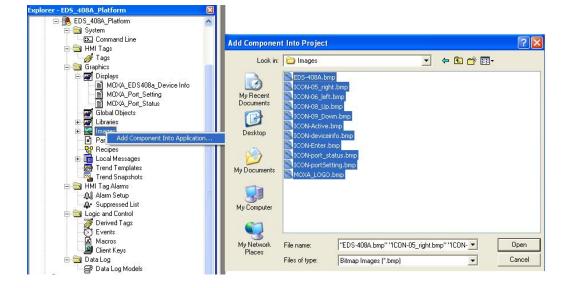
- 2. After import, these objects will appear under "Local Message" in the Explorer window.
  - Ē Local Messages Ē. MOXA\_Detected\_ABC01 Ē Ē MOXA\_LinkStatus Ē MOXA\_Port\_Enable MOXA\_Port\_Link Ē MOXA\_Port\_Num MOXA\_Power\_OnOff Ē MOXA\_Redundant\_Mode MOXA\_Redundant\_Port MOXA\_Redundant\_Port\_Role 1 MOXA\_Reset\_Command Ē MOXA\_Speed\_Duplex

# Import FactoryTalk® View Faceplate Images

 Right click Images in the FactoryTalk® View Explorer window, select Add Component Into Application and import all the image files (.bmp)

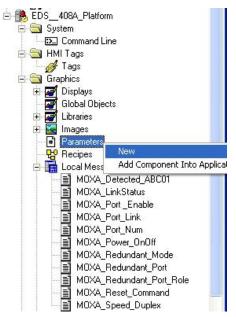
**NOTE** Moxa provides sample image files for selected switches, which are available for download at the Moxa website or from the software CD.



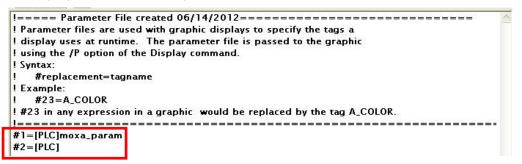


### **Create a New Parameter**

1. Right click Parameters in the FactoryTalk® View Explorer window, and select New



- 2. Create a parameter file that will be associated with the display.
  - Manually input "#1=[PLC]moxa\_param", and "#2=PLC" in the file.



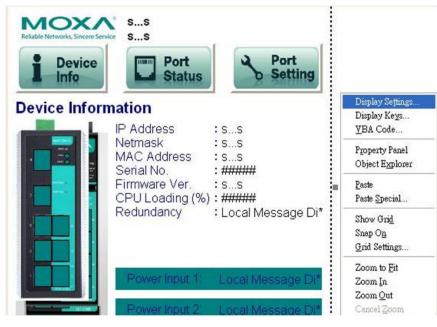
In the parameter definition, the shortcut PLC was created earlier. (Refer to Create a FactoryTalk® View Shortcut to PLC)

Another important piece is **moxa\_param**, which is the name of the Switch\_Parameters tag created for the MOXA\_SWITCH\_AOI in your RSLogix project. (Refer to **Create and configure tags for the AOI**)



# **Configure FactoryTalk® View Faceplate Display**

1. Right click all parameter tabs under **Displays** in the FactoryTalk® View Explorer window, and select **Display Setting**.



2. Configure **Display Type** and **Size** as shown.

For the Moxa custom faceplate, you need to configure three parameters: MOXA\_Device Info; MOXA\_Port\_Setting; MOXA\_Port\_Status.

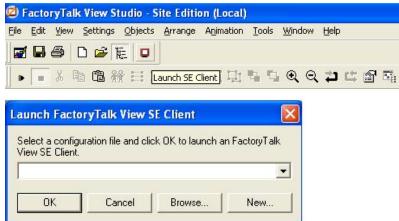
play Settings operties Behavior	
Display Type C Replace C Overlay Keen at Back © On Top	Size C Use Current Size Specifu Size in Pixels Width: 567 Height: 623
<ul> <li>Allow Multiple Running Copies</li> <li>Cache After Displaying</li> <li>No</li> <li>Yes</li> <li>Always Updating</li> </ul>	Resize Allow Display to be Resized When Resized Pan  Scale
<ul> <li>Title Bar</li> <li>Insert Variable</li> <li>System Menu</li> <li>Minimize Button</li> <li>Maximize Button</li> <li>Size to Main Window at Runtime</li> <li>Show Last Acquired Value</li> <li>Maximum Tag Update Rate:</li> </ul>	Position  Use Current Position  Specify Position in Pixels  Security Code:  Background Color:
1 seconds	Cancel Set as Default Help

## Sample FactoryTalk® View Faceplate Project

For easier FactoryTalk® View Faceplate installation, Moxa also provides a sample project, in which all the parameters are configured with default values. The sample project is a (.APA) file, which is available for download from the Moxa website or software CD. You may import the sample project in FactoryTalk® View Faceplate Site Edition (SE).

# Setting Up a FactoryTalk® View SE Client

1. Launch FactoryTalk  $\ensuremath{\mathbb{R}}$  SE client



2. Set up the new configuration file name and path.

actoryTalk Viev	v SE Client Cor	ifiguration Nan	ne	Đ
Type the name of	a new configuration	n file:		
EDS-408A				
Type or browse for	the location to sto	re this configuratior	n:	
C:\FactoryTalk Vi				
Help	About	Cancel	< Back	Next>

3. Select the application type **Local** 

FactoryTalk View	v SE Client Ap	plication Type		
Select the type of	SE application the	client will connect t	o:	
Help	About	Cancel	< Back	Next >

4. Enter the name of the application and select the language

FactoryTalk View SE Client Application Name	ř.	
Type the name of the application you want to connect to	<b>o</b> :	
EDS_408A_Platform	-	
Open FactoryTalk View SE Client as view-only		
Enable on-screen keyboard		
F Allow display code debugging		
Select the initial runtime language:		
Select the initial runtime language: English (United States), en-US	•	
	•	

5. Configure the FactoryTalk® View SE Client Components and set **Initial Display** to **MOXA\_Device\_Info** 

Select components.				
Components				
Initial display:	MOX	KA_EDS408a_De	vice Info	•
Display parameters:				
Initial client key file:	Γ			•
Startup macro:	Γ			•
Shutdown macro:				•
Help Ab	out	Cancel	< Back	Next>

7.

6. Configure the FactoryTalk® View SE Window Properties and input **Title bar text** with the text you would like to appear in the title bar.

	ew SE Client Wind			
Title bar text:	EDS408A Facep	lated		
	m menu and close butt			
-	m menu and close but Min/Max buttons	on		
J♥ Show N	Min/Max Duttons			
🥅 Maximize w	indow			
🔽 Show Diagr	nostics List			
🔽 Allow u	indocking of Diagnostic	:s List		
🔲 Disable swi	tch to other application	s		
Help	About	Cancel	< Back	Next >
	About			Next >
sh the set	. ا <u>ــــــــــــــــــــــــــــــــــــ</u>	e configura	ation	Next >
sh the set ctoryTalk Vie	up and save th	e configura	ation	Next >
sh the setu ctoryTalk Vie The FactoryTalk	up and save th w SE Client Comp View SE Client is now	e configura	ation	Next >
sh the setu ctoryTalk Vie The FactoryTalk	up and save the second	e configura	ation	Next >
sh the setu ctoryTalk Vie he FactoryTalk o save, click an o discard, click	up and save the w SE Client Comp View SE Client is now option below, and the Cancel.	le configura letion Option configured. n click Finish.	ation s	Next >
sh the set toryTalk Vie he FactoryTalk o save, click an o discard, click Save configu	up and save the w SE Client Comp View SE Client is now option below, and the Cancel. ration and open Factor	le configura letion Option configured. n click Finish.	ation s	Next >
sh the setu :toryTalk Vie he FactoryTalk o save, click an o discard, click	up and save the w SE Client Comp View SE Client is now option below, and the Cancel. ration and open Factor	le configura letion Option configured. n click Finish.	ation s	Next >

# Help < Back Finish About. Cancel

# **Introduction to the Moxa Custom Faceplate**

The Moxa custom Faceplate consists of three main displays: Device Information, Port Status, and Port Setting. Click the tabs at the top of the screen to change between different displays.

# **Device Information**

The device information display shows general switch information and power and link status.

MOXA_Switch_Dev	🜌 MOXA_Switch_DeviceInfo - /MOXA_SWITCH_DEMO 🔳 🗖 🔀			
Reliable Networks, Sincere Serv	EDS-408A Managed Redundant Switch 09604			
1 Device Info	Port Status Port Setting			
Device Inform	nation			
	IP Address       : 192.168.127.253         Netmask       : 255.255.255.0         MAC Address       : 00-90-E8-15-A9-7F         Serial No.       : 09604         Firmware Ver.       : V3.1         CPU Loading (%)       : 0         Redundancy       : None			
الطط	Power Input 1: On			
	Power Input 2: Off			
	<ul> <li>Link Up</li> <li>Power On</li> <li>Link Down</li> <li>Power Down</li> </ul>			

The following table describes fields and values.

Field	Values	Description
IP Address	192.168.192.253 (factory default)	Switch IP address
Netmask	255.255.255.0	Switch subnet mask
MAC Address	00:90:E8:xx:xx:xx	MAC address of switch
Serial No.	Max. 5 characters	Switch serial number
Firmware Ver.	V3.1	Software version of switch
CPU Loading (%)	0-100%	CPU loading percentage
Redundant Protocol	RSTP Turbo Ring Turbo Ring v2 Turbo Chain MSTP	Redundant protocol setting
Power Input 1	On Off	Power supply 1 status
Power Input 2	On Off	Power supply 2 status
Model name	EDS-XXX	Switch model name
Switch name	Max. 30 characters	User assigned switch name

Field	Color	State	Description
Link Status	Green	Link Up	Current port link state
	Grey	Link Down	
Power Status	Amber	Power On	Current power link state
	Grey	Power Off	

# **Port Status**

The port status display shows information for a selected switch port. Use the right/left buttons to select a switch port.

🖉 MOXA_Port_Status - /EDS408A_Platform//	
Device     Po	d Redundant Switch 09496
Port 2	
Link Status	: Link Up
Speed	: 100/Half
Redundant Port Status	: Forwarding
Tx Unicast (Packet/sec)	: 119
Rx Unicast (Packet/sec)	: 148
Tx Multicast (Packet/sec)	: 0
Rx Multicast (Packet/sec)	: 0
Tx Broadcast (Packet/sec)	: 0
Rx Broadcast (Packet/sec)	: 0
Tx Packet Error	: 0
Rx Packet Error	: 3084

Field	Values	Description
Port Index	Port 3	Selected port number
Link status	Link up	Selected port link status
	Link down	
Speed	10/Half	Selected port speed and mode
	10/Full	
	100/Half	
	100/Full	
	1000/Half	
	Unknown	
Redundant Port Status	Disable	Selected port redundancy status
	Not Redundant Port	
	Link Down	
	Blocking	
	Learning	
	Forwarding	
Tx Unicast (Packet/sec)		The Tx unicast packets per second
Rx Unicast (Packet/sec)		The Rx unicast packets per second
Tx Multicast (Packet/sec)		The Tx multicast packets per second
Rx Multicast (Packet/sec)		The Rx multicast packets per second
Tx Broadcast (Packet/sec)		The Tx broadcast packets per second
Rx Broadcast (Packet/sec)		The Rx broadcast packets per second
Tx Packet Error		The number of Tx packet error
Rx Packet Error		The number of Rx packet error

# **Port Setting**

The Port Setting allows some switch port settings to be changed. Use the right/left buttons to select a switch port and click the **Activate** button to save the change.

MOXA_Port_Setting - /EDS4	08A_Platform//	
	EDS-408A Managed Redui	ndant Switch 09496
Info	Status	<b>b</b> Setting
Port Setting		· ·
	Port 2	
Enable : Enable Speed : Auto		
Set Speed:	Set Enable:	
Auto	Disable	
10/Half	Enable	Activate
10/Full		
100/Half		
100/Full		

Field	Values	Description
Port Index	Port 3	Selected port number
Speed	10/Half 10/Full 100/Half 100/Full 1000/Half Unknown	Selected port speed and mode
Enable	Enable Disable	Selected port enable or disable

# Introduction

This section is supported only with EDS-400A-PN, EDS-510E, and EDS-G500E series devices.

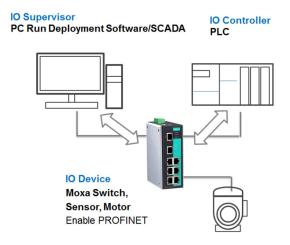
PROFINET is a communication standard for automation of PROFIBUS & PROFINET International (PI). It is 100% Ethernet-compatible as defined in IEEE standards. With PROFINET, applications can be implemented for production and process automation, safety applications, and the entire range of drive technology. With its integrated Ethernet-based communication, PROFINET satisfies a wide range of requirements, from data-intensive parameter assignment to extremely fast I/O data transmission.

PROFINET I/O is used for data exchange between I/O controllers (PLC, etc.) and I/O devices (field devices). This specification defines a protocol and an application interface for exchanging I/O data, alarms, and diagnostics. And its real-time (RT) solution allows response time in the range of 5 ms, which corresponds to today's PROFIBUS DP applications.

# **PROFINET Environmental Introductions**

# **PROFINET Networking Structure**

PROFINET I/O follows the Provider/Consumer model for data exchange. PROFINET forms logical link relationships between network character types. They are shown below.



There are 3 major character types defined by PROFINET I/O, including I/O controller, I/O supervisor, and I/O devices. Switches are considered I/O devices.

# I/O Controller

This is typically the programmable logic controller (PLC) on which the automation program runs. The I/O controller provides output data to the configured I/O-devices in its role as provider and is the consumer of input data of I/O devices.

#### I/O Supervisor

This can be a programming device, personal computer (PC), or human machine interface (HMI) device for commissioning or diagnostic purposes.

#### **I/O Device**

An I/O device is a distributed I/O field device that is connected to one or more I/O controllers via PROFINET I/O. The I/O device is the provider of input data and the consumer of output data.

# **PROFINET I/O Devices**

The MOXA switch is a PROFINET I/O device. A device model describes all field devices in terms of their possible technical and functional features. It is specified by the DAP (Device Access Point) and the defined modules for a particular device family. A DAP is the access point for communication with the Ethernet interface and the processing program.

# **PROFINET** Protocols

#### DCP

In PROFNET I/O, each field device has a symbolic name that uniquely identifies the field device within a PROFINET I/O system. This name is used for assigning the IP address and the MAC address. The DCP protocol (Dynamic Configuration Protocol) integrated in every I/O device is used for this purpose.

#### DHCP

Because DHCP (Dynamic Host Configuration Protocol) is in widespread use internationally, PROFINET has provided for optional address setting via DHCP or via manufacturer-specific mechanisms.

#### **PROFINET Type LLDP**

Automation systems can be configured flexibly in a line, star, or tree structure. To compare the specified and actual topologies, to determine which field devices are connected to which switch port, and to identify the respective port neighbor, LLDP according to IEEE 802.1AB was applied in PROFINET I/O.

PROFINET filed bus exchange existing addressing information with connected neighbour devices via each switch port. The neighbor devices are thereby unambiguously identified and their physical location is determined.

# **Device descriptions**

#### **GSD** file

The GSD files (General Station Description) of the field devices to be configured are required for system engineering. This XML-based GSD describes the properties and functions of the PROFINET I/O field devices. It contains all data relevant for engineering as well as for data exchange with the device. Find your field device GSD file in the CD or download the GSD file from the MOXA web site.

# **Configuring PROFINET I/O on Moxa Switches**

# **Enable PROFINET I/O**

### **Enable PROFINET in WEB UI**

#### Type 1

PROFINET IO		
	<ul> <li>Enable</li> </ul>	(Enable LLDP automatically after activating)
	O Disable	
	Activate	

Select the **Enable** option and click **Activate** to enable PROFINET I/O. With PROFINET I/O enabled, PROFINET type LLDP will be enabled automatically.

Select the **Disable** option and click **Activate** to disable PROFINET I/O, the switch will disable PROFINET type LLDP and use standard LLDP.

PROFINET special model is enabled by default on the EDS-400A-PN series switches.

### Type 2: New UI 2.0

#### Industrial Protocol

#### EtherNet/IP

Enable EtherNet/IP

Note: IGMP snooping will be automatically enabled when EtherNet/IP is activated.

#### Modbus TCP

Enable Modbus TCP

#### **PROFINET I/O**

Enable PROFINET I/O



The default PROFINET I/O setting of EDS E series is disabled. To enable the PROFINET I/O support, check the **Enable PROFINET I/O** and click **Apply**.

**NOTE:** Enabling PROFINET will prevent MXview (2.2 and earlier versions) from performing auto-detection of network topology. Auto-detection of network topology is only supported by versions of MXview 2.3 and later. To use auto-detection in earlier versions of MXview (2.2 and earlier), you should first disable PROFINET I/O, perform MXview auto-detection of network topology, and then enable PROFINET I/O.

### CLI

The CLI (command line interface) can be used to enable or disable PROFINET for the switch.

Command List:

- profinetio to enable PROFINET I/O.
- no profinetio to disable PROFINET I/O.

EDS-408A-SS-SC-PN# con	
EDS-408A-SS-SC-PN(config)#	profinetio

# Addressing of I/O Data in PROFINET I/O Based on Slot and Sub-Slots

The concept of the MOXA PROFINET switch with GSD version 2 is shown the table below. In this structure, each switch port represents one sub-slot.

S	Slot 0					
	Sub Slot 0	Sub Slot 0X8000	Sub Slot 0X8001	Sub Slot 0X8002	Sub Slot 0X8003	
	DAP	IO Data	Port 1	Port 2	Port 3	

# **Manufacturer Information**

Each PROFINET device is addressed based on a MAC address. This address is unique worldwide. The company code (bits 47 to 24) can be obtained from the IEEE Standards Department free of charge. This part is called the OUI (organizationally unique identifier).

Table. MOXA OUI

	Bit Value 4724 Bit Value 230										
0	0	0	2	2	9	x	x	x	x	x	x
Company Code (OUI)				(	Conse	ecutiv	/e Nu	ımbei	-		

# **PROFINET** Attributes

The PROFINET I/O connection can be configured for both cyclic I/O data and I/O parameters. I/O parameters are acyclic I/O data. These are major setup and monitor attributes in PROFINET.

Cyclic I/O Data

Cyclic I/O data are always sent between the PLC and Switches at the specified periodic time. These data are transmitted almost real time. For example, status information from the Switches, and variables to be written to the Switch would typically be part of the cyclic data.

• I/O Parameters

PROFINET I/O parameters are defined for device configuration and status monitoring. These data are useful for infrequent data transfers, or for very large data transfers. Only transfer when needed

• Alarm

Alarms are mainly PROFINET I/O transmitted high-priority events. Alarm data are exchanged between an I/O device and an I/O controller. Once an event triggers it, the switch will send the alarm to the PLC immediately. Enable or disable these alarms by setting I/O parameters.

# **PROFINET Cyclic I/O Data**

The MOXA PROFINET switch provides PROFINET I/O cyclic data and includes the following items:

**NOTE:** The default transfer frequency of PROFINET Cyclic I/O data is 128 ms. There are 3 options available in SIMATIC STEP 7: 128/256/512 ms.

PROFINET	Cyclic I/O	Data Table
----------	------------	------------

Category	Direction	Byte	Bit	Name	Description
Device	Input	0	0	Device status	0 is failed status, 1 is OK.
	-		1	Power 1	0 is unavailable, 1 is OK
			2	Power 2	0 is unavailable, 1 is OK
			3	RSTP status	0 is disabled, 1 is enabled
			4	Turbo Ring v1	0 is disabled, 1 is enabled
			5	Turbo Ring v2	0 is disabled, 1 is enabled
			6	Turbo Chain	0 is disabled, 1 is enabled
			7	Turbo Ring v2 status	0 is broken, 1 is healthy
Port	Input	1	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

You can monitor these attributes in SIMATIC STEP 7. Operation steps are in the Chapter "Monitoring the Switch"

Monitor Device I/O Cyclic Data in SIMATIC STEP 7

au	հ։	MOXA'SIMATIC 300(1	)/CPU 315-2 PN/DP			
	Åddae ss	Symbol	Display format	Status value	Modify value	^
1	I 0.0		BOOL	true		
2	I 0.1		BOOL	false		
3	I 0.2		BOOL	true		
4	I 0.3		BOOL	false		
s	I 0.4		BOOL	true		
6	I 0.5		BOOL	false		
7	I 0.6		BOOL	false		
ß	I 0.7		BOOL			~
<						>
> c	( R <u>o</u> w I un condi		date Force Symbol w	ith F5		
N	Monito	ec :		🔲 <u>E</u> nable Perij	pheral Outputs	
г	Modify	<b>K (2</b> )	fodify Value	I/O Display		

Monitor Port I/O Cyclic Data in SIMATIC STEP 7

Addaess Symbol Display formet Status vi 1 I 1.0 BOOL false	lue Modify velue 🙆						
2 I 1.1 BOOL true							
3 I 1.2 BOOL 🚺 true							
4 I 1.3 BOOL false							
5 I 1.4 BOOL false							
6 I 1.5 BOOL 🔤 false							
7 I 1.6 BOOL also							
8 I 1.7 BOOL	~						
< III III III III III III III III III I	>						
Rgw Not Effective Update Force Symbol with F5							
E 14 17	Display						

# **PROFINET I/O Parameters**

MOXA defines comprehensive PROFINET I/O parameters for more flexible settings and monitoring. There attributes are readable or writable. PROFINET I/O parameters use PROFINET acyclic data to achieve

communication in the network. You can use the SIMATIC STEP 7 tool or engineering deployment software to edit it. There are 3 categories of parameters, including Device Parameters, Device Status and Port Parameters. The following tables provide parameter information:

- **r/w:** Read and Write
- ro: Read Only

#### **Device parameters**

These parameters control PROFINET Alarm functions. PROFINET Alarm is a message which sends from switch to PLC immediately once the event is triggered.

Byte	Name	Access	Value	Description	Default Value
0	Status Alarm	rw	0	Do not send any alarms	0: No alarms
			1	Send alarm if any status change	
1	Power Alarm 1	rw	0	Do not send power failed alarms	0: No alarms
			1	Send alarm if power supply 1 fails	
2	Power Alarm 2	rw	0	Do not send power failed alarms	0: No alarms
			1	Send alarm if power supply 2 fails	

Byte	Name	Access	Value	Description
0	Device Status	ro	0	Unavailable
			1	ОК
			2	Device bootup fails
1	Fault Status	ro	0	Unavailable
			1	OK
			2	Device detect fault
2	Power 1 Status	ro	0	Unavailable
			1	OK
			2	Power 1 fails
3	Power 2 Status	ro	0	Unavailable
-			1	OK
			2	Power 2 fails
4	DI 1 Status	ro	0	Unavailable
-	DI I Status	10	1	Closed
			2	Open
5	DI 2 Status	ro	0	Unavailable
5	DI 2 Status	ro	1	Closed
				Open
6	De dure de ret Ma de		2	
6	Redundant Mode	ro	0	Unavailable
			1	RSTP
			2	Turbo Ring V1
-			3	Turbo Ring V2
			4	Turbo Chain
7	Ring Status	ro	0	Unavailable
			1	Healthy
			2	Break
8	Redundant Port 1 Status	ro	0	Unavailable
			1	Link is up
			2	Link is down
9	Redundant Port 2 Status	ro	0	Unavailable
			1	Link is up
			2	Link is down
10	Ring Coupling Mode	ro	0	Unavailable
			1	Backup
			2	Primary
			3	Dual homing
11	Coupling Port 1 Status	ro	0	Unavailable
			1	Link is up
			2	Link is down
12	Coupling Port 2 Status	ro	0	Unavailable
			1	Link is up
			2	Link is down
13	Connection	ro	0	Unavailable
15				
			-	
			1 2	OK Connection failure

# Device Status

#### **Port Parameters**

Byte	Name	Access	Value	Description
0	Port Alarm	rw	0	Do not send alarm
			1	Send alarm when port link down
1	Port Admin State	rw	0	Unavailable
			1	Off
			2	On
2	Port Link State	ro	0	Unavailable
			1	Link is up
			2	Link is down
3	Port Speed	ro	0	Unavailable
			1	10
			2	100
			3	1000
4	Port duplex	ro	0	Unavailable
			1	Half
			2	Full
5	Port Auto-negotiation	ro	0	Unavailable
			1	Off
			2	On
6	Port flow control	ro	0	Unavailable
			1	Off
			2	On
7	Port MDI/MDIX	ro	0	Unavailable
			1	MDI
			2	MDIX

# **Step 7 Integration**

# **Overview of Operation Procedure**

The following steps show how to integrate the switch into a PROFINET network:

- 1. Enable PROFINET on the switch Enable PROFIENT in switch web UI or by CLI commands
- Create a PROFINET I/O subnet project in STEP 7 Create a PROFINET I/O Ethernet project for deploying environment
- 3. **GSD file installation** Import MOXA switch GSD into the project
- Device configuration Search and discover the switch in STEP 7. Configure PROFINET attributes such as IP address, device name and I/O parameters.
- 5. Save and load the project into the PLC Load this project and into the PLC
- Monitoring the Switch Use STEP 7 to monitor switch attributes

# **Create a PROFINET I/O Subnet Project**

In SIMATIC Manager menu bar, click File > New Project

New Project		X
User projects I	ibraries   Multiprojec ts	
Name	Storage path	▲
1002	C∆Program FilesiSier	mens% tep 7/s7proj/10
Add to current		
Na <u>m</u> e:	. multiplojeet	<u>Т</u> уре:
MOXA		Project 💌
Storage location ()		E Library
C: Program Files	Siemens'Step7\s7proj	Browse
OK	Ca	ncel Help

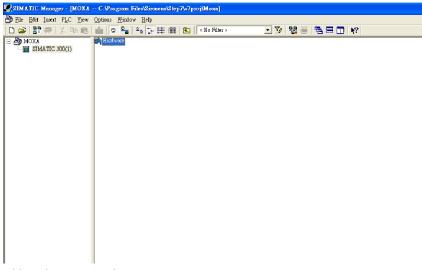
Name your project in the Name field then click OK.

Insert a station in your project

Right click in category column > **Insert New Object** > your PLC series (here we select SIMATIC 300 station).

🋃 SIMATIC Man	ager - [MOXA ·	C:\Program Files	Siemens\Step7\s7proj\M	oxa]			
🎒 Eile Edit Iase							
	X 🖻 💼	1 C 2 2	. 🐎 🏭 🏢 🖉 🖓 🖓	o Filter >	💽 🎾 🔡 🗐 🖷	🗏 🔟 🕅	
AD MOXA							
	Cut	Ctrl+X					
1	Сору	Ctrl+C					
1	Paste	Ctrl+V					
	Delete	Del					
	Insert New Ol	oject 🕨	SIMATIC 400 Station				
1	PLC	•	SIMATIC 300 Station SIMATIC H Station				
1	Rename	F2	SIMATIC PC Station				
1	Object Proper	ties Alt+Return	Other Station.				
			SIMATIC S5				
1			PG/PC				
			MPI PROFIBUS				
1			Industrial Ethernet				
			PTP				
1			Foundation Fieldbus				
1			S7 Program				
			M7 Program	]			
1							
1							
1							

Then you can see the new object in the project. Double click on the Hardware.



Add Rack in HW Config After double-clicking on HW, you will see the **HW Config** window.

🛱 HW Config - [SIMATIC 300(1) (Configuration) MOXA]		
ang ing Config- [SimAri C 300(1) (Configuration) - MOXA] Mg Sunion Edit Insert FLC Yew Options Window Help		- 0 ×
		- 0 A
	End:	ntni
	Profile:	Standard
<≫		C TU 314 204 C TU 315 206 C
Statute 200()           Bott Despution		C (70 3) 542 C (70 3) 542 C (70 3) 54 7 MAP C (70 3) 7 MAP C (
Prov FL to set Help.		

Drag a rack from the side bar to main dashboard. In here, we drag **Rail**, which is under the Rack-300 folder, to the main screen.

B IIW Config - [SIMATIC 300(1) (Configuration) MOXA]		
🛤 Sation Edit Insett PLC Yiew Options Window Help		_ 8 :
	· · · · ·	: • ×
🚍 (I) UR	Find:	nt n.
	-	
2	Profile:	Standard
3		🗄 🧰 CPU 314 IFM 🛛
<u>4</u> <u>5</u>		E CPU 314C-2 DP
6		🗄 🧰 CPU 314C-2 PN/DP
7		E CPU 314C-2 PtP
8		EPU 315 CPU 315-2 DP
9		* _ CPU 315-2 DF
10		E CPU 315F-2 DP
11		🗄 🧰 CPU 315F-2 PM/DP
		🗄 🧰 CPU 316
		🖲 🧰 CPU 316-2 DP
		CPU 317-2     CPU 317-2     CPU 317-2     CPU 317-2     PN/DP
· · · · · · · · · · · · · · · · · · ·		E CPU 317F-2 PN/DP
		* 💼 CPU 318-2
		🗄 🧰 CPU 319-3 PN/DP
() UR		😟 🧰 CPU 319F-3 PN/DP
Slot I Module Order number Firmware MPI address I address Q address Comment		🗄 🧰 CPU 614
		😟 🚞 CPU M7
		FM-300 Gateway
3		IM-300
4		M7-EXTENSION
5		PS-300
		RACK-300
		E Reil
		SM-300
10	🙂 🔢 🖇	SIMATIC 400
		SIMATIC PC Based Control 300/400 SIMATIC PC Station
	6ES7 39 Availabl	ID-1???O-0.A.A.O E in versious lengths
Insertion possible		Ch

Search PRODINET Ethernet devices

Use **Edit Ethernet Node** to browse device information in PROFINET networks. Click **PLC** > **Ethernet** > **Edit Ethernet Node** 

<u>PLC V</u> iew Options <u>W</u> indow <u>H</u> elp		
Download Upload	Ctrl+L	
Download Module Identification Upload Module Identification to PG Faulty Modules		
Module Information Operating Mode Clear/Reset Set Time of Day Monitor/Modify	Ctrl+D Ctrl+I	
Updat <u>e</u> Firmware		
Save De <u>v</u> ice Name to Memory Card		
Ethernet	×	<u>E</u> dit Ethernet Node
PROFIBUS	•	Verify Device Name
Save Service Data		<u>A</u> ssign Device Name

#### Then click Browse

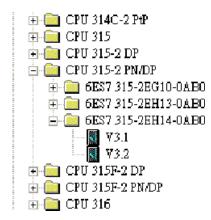
themet node		
		Nodes accessible online
IAC <u>a</u> ddress:		Brows
et IP configuration		
€ Use I <u>P</u> parameters		
IP address:		Gateway Do not use router
Subnet mas <u>k</u> :	,	C Use router
bobliot mon <u>a</u> .	1	Address:
Client ID:	on	
ssign device name		
Device name:		Assign Name
eset to factory settings –		Reset
		<u>M</u> eser
Close		Help

Click **Start** to search devices. Use STEP 7 through PROFINET DCP to discover devices in networks. Find PLC/switch IP addresses, MAC addresses, and device names here.

Browse Network - 2	Nodes			×
<u>Stop</u> ∑ Fast search	!         IP address           192.168.127.253         192.168.127.33	MAC address 00-90-E8-25-FF 00-1B-1B-16-E6	Device type MOXA Eth S7-300	Name dut408 pn-io
Elash	MAC address: 00-9	00-E8-25-FF-FC		
OK			Cancel	Help

Add PLC CPU in HW Config

Select your PLC CPU and drag it to the rack slot 2. Please select by PLC you used. Here we will select 6ES7-315-2EH14-0AB0 V3.1.



Then click Properties, the Ethernet interface dialog will pop out. Fill in your PLC **IP address** in "IP address" column. Then click **New** in subnet to create a new Ethernet subnet. Here we will create a subnet named "PROFINET Ethernet"

B H ₩ Config - [SIMATIC 300(1) (Configuration): 2 MOXA]			×
💼 Station Edit Insert PLC View Options Mindow Help			×
	^	: D	×
	E	ind: nt o	hį
	E P	rofile: Standard	•
00 UR         3         3         4         5         6         7         8         9         11         12         13         14         15         16         17         18         19         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111 <td></td> <td>CPU 313C 2DP     CPU 315C 2PP     CPU 315C 2PP</td> <td></td>		CPU 313C 2DP     CPU 315C 2PP     CPU 315C 2PP	
Insertion possible			lhg

PROFINET I/O Ethernet subnet project accomplished

Eq. 1.W Config - [SIMATIC 300(1) (Configuration): 2 MOXA]		- C 🕹 🚨
🛤 Station Edit Insett FLC Yaw Options Window Help		_ 8 ×
	Find:	ntint
	Profile:	Standard
PROFINET Blenet FROFINET-0-System (100)           1         ICFU JIS 2 PROF           All         IAPOP           Bert         IAPOP		
		E CPU 317-2 PM/DP CPU 317F-2
FROFINET Eftemet: PROFINET-IO-System (100)		🗄 🦲 CPU 317F-2 PM/DP
Device Number II Paddrees. Device Name Order number Firmware Disgnostic address Initial state Shared Comment		# CPU 318-2 # CPU 319-3 PM/DP
Device Number 1 Padrice. Device Neme Under number Princeare Dagnothe address Indexi state Stated Comment		* 🔄 CPU 3195-3 PMDP
	⊕-( ⊕-(	CPU 614     CPU 614     PM-300     Goldway     System 404     CPU 64     CPU 64
	-Control	work memory; 0.05ms/1000 instructions; PROFINET on; 37 Communication (losifiable PErPCs); PROFINET IO list; supports RT/IRT; PROFINET interface and 2 ports;
Investing possible		Che

# **GSD** File Installation

- 1. Open SIMATIC manager on your PC.
- 2. Open your project.
- 3. Open hardware configuration.

SIMATIC Manager - [1108_4	08PFNtest C:\Program Files\Siemens\Step7\s7proj\1108_408]
🞒 File Edit Insert PLC Yiew	<u>Options W</u> indow <u>H</u> elp
🗅 🚅 🔡 🛲 🕺 🖻 🛍	🚵 🧟 💁 📴 📜 🏥 🏥 🔁 < No Filter > 💌
□ 월 1108_408PFN test	CPU 315-2 PN/DP

4. Install the GSD file:

Put the GSD file and icon file on your PC at the same folder Select "Install GSD File" and install the GSD file just saved.

🖳 HW Config - [SIMATIC	300 Station (Configuration)	0605_408]			
D Station Edit Insert PLC	∑ <u>Y</u> iew <u>Options</u> <u>W</u> indow <u>H</u> elp				_ 8 ×
0 🚔 🐂 🖬 🕵 🎒	Customize	Ctrl+Alt+E			
0) UR 1 2 CPU315-	Specify Module Configure <u>N</u> etwork Symbol Table <u>R</u> eport System Error	Ctrl+Alt+T		Find: Profile:	□x n†n↓ Standard
XI MPI/DP X2 FN-IO X2 FI Port I	<u>E</u> dit Catalog Profile <u>U</u> pdate Catalog		PROFINET-IO-System (100)		PROFIBUS DP PROFIBUS-PA PROFINET IO
X2 P2 Port 2 3 4	Install <u>H</u> W Updates Install <u>G</u> SD File		(1) dut408		📄 Additional Field Devices 😥 🦳 Gateway
5	Find in Service & Supp	ort			Network Components      E      EtherDevice Switch
7 8 9 9 10 11 11 11 11 11 11 11 11 11 11 11 11	Create GSD file for I-D	evice	]	×	

- You will find the new MOXA switch under PROFINET IO > Additional Field Devices > Network Components > MOXA EtherDevice Switch.
- 6. Use Drag & Drop to pull the MOXA switch onto the bus cable. And you can see the MOXA switch icon displayed on the screen

	iew Options <u>W</u> indow	FTerb		- 8
	a 🖻 🛛 🔬 🎒 🖻 🖻	⊐ <b>₩ k</b> ?		
<b>⊒</b> (0) UR			<u>^</u>	
1				End: At A
2 CPU315-2 P	M/DP(1)			Profile: Standard
XI MPI/DP			-	-
2 PM-10		Ethernet(1): PRO	DFINET-IO-System (100)	PROFIBUS DP
2 P1 Port 1 2 P2 Port 2				PROFINET IO
2 F2 B F0/12			(1) dut408	📄 🦲 Additional Field Devices
			in the second	😟 🧰 Gateway
				😑 🧰 Network Components
				🗄 🪞 EtherDevice Switch
				🗉 🧰 Ethemet Switch
}				MACH 100 Switch Family L2 Profes
				MACH 100GE Switch Family L2 Prc MOXA EtherDevice Switch
0				EDS-405A-PN
1				
				10 CO EDC 4004
				+ EDS-408A
				🗄 🦲 EDS-408A-1M2S-SC
			~	⊕
			>	🕀 🦲 EDS-408A-1M2S-SC
			3	
(1) dut408			×	
(1) dut408		Diamontin oldurar		⊕ ■ ED-3-4061M2.8%C     ⊕ ■ ED-3-4062M1.8%C     ⊕ ■ ED-3-4062M1.8%C     ⊕ ■ ED-3-4062M1.8%C     ⊕ ■ ED-3-4064M1.8%C     ⊕ ■ ED-3-4064M1.8%C     ⊕ ■ ED-3-4064M1.8%C     ⊕ ■ ED-3-4064M1.8%C
(1) dut408	I address Q address	Diagnostic address:	Comment	<ul> <li>⊕ EDS-406A-1MCS-SC</li> <li>⊕ EDS-406A-2M-SSC</li> <li>⊕ EDS-406A-2M-SC</li> <li>⊕ EDS-406A-3M-SC</li> <li>⊕ EDS-406A-3M-SC</li> <li>⊕ EDS-406A-MM-ST</li> <li>⊕ EDS-406A-FFN</li> <li>⊕ EDS-406A-FFN</li> <li>⊕ EDS-406A-ST-SC</li> </ul>
(1) dut408 ot M. Order number		2042*		⊕         EDS-408.4-1M23/SC           ⊕         EDS-408.4-2M13/ST           ⊕         EDS-408.4-3M-SC           ⊕         EDS-408.3-SS           ⊕         EDS-408.3-SS
(1) dut408 ot M Order number dut40007-000408- 1 X1				⊕         ■ DD-408.4 M/X3/SC           ⊕         ■ DD-408.4 M/X3/ST           ⊕         ■ DD-408.4 M/X3/SC           ⊕         ■ DD-408.4 P/M           ⊕         ■ DD-508.4 M/X3/SC           ⊕         ■ DD-508.4 M/X3/SC           ⊕         ■ DD-508.4 M/X3/SC           ⊕         ■ DD-508.4 M/X3/SC
(1) dut408 ot M. Order number dut40007-000408- 1 X1 1 X1 Pl		2042*		⊕         EDS-4008.4 M23-SC           ⊕         EDS-4008.4 M23-ST           ⊕         EDS-4008.4 M4-SC           ⊕         EDS-4008.4 SS-SC           ⊕         EDS-5008           ⊕         EDS-5108           ⊕         EDS-516A
(1) dut408 t M. Order number <i>dut4(0007-000408-1</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>I</i> <i>XI</i> <i>XI</i> <i>I</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i> <i>XI</i>		2042* 2041* 2040* 2039* 2038*		⊕         EDS-408.4-1M23-SC           ⊕         EDS-408.4-2M13-ST           ⊕         EDS-408.4-2M13-ST           ⊕         EDS-408.4-2M1-ST           ⊕         EDS-508.4           ⊕         EDS-508.4           ⊕         EDS-508.4           ⊕         EDS-508.4           ⊕         EDS-508.4           ⊕         EDS-508.4
(1) dut408 ot M. Order number <i>dut40007-000408-</i> <i>1 XI PI</i> <i>1 XI PI</i>		2042* 2041* 2040* 2039* 2038* 2038*		⊕         EDS-4008.4 M23-SC           ⊕         EDS-4008.4 M23-ST           ⊕         EDS-4008.4 M4-SC           ⊕         EDS-4008.4 ST           ⊕         EDS-4008.4 ST           ⊕         EDS-4008.4 ST           ⊕         EDS-5008           ⊕         EDS-5108           ⊕         EDS-516A           ⊕         EDS-516A           ⊕         EDS-512E
1)         dut408           at         M.         Order number           at         attit         Order number           at         Att         Att           1.         Att         Att           1.4         Att         Att		2042 * 2041 * 2040 * 2039 * 2038 * 2038 * 2037 * 2036 *		⊕         EDS-4408.4 MM2S/SC           ⊕         EDS-4408.4 MM2S/C           ⊕         EDS-4408.4 MM-SC           ⊕         EDS-408.4 MM-SC           ⊕         EDS-408.4 MM-SC           ⊕         EDS-408.4 MM-SC           ⊕         EDS-408.4 ST           ⊕         EDS-508.4           ⊕         EDS-508.4           ⊕         EDS-508.4           ⊕         EDS-508.6           ⊕         EDS-508.6           ⊕         EDS-508.6           ⊕         EDS-508.6           ⊕         EDS-508.6
I)         dut408           at         M.         Order number           att         At         At           1         At         P           4         At         P		2042 * 2041 * 2041 * 2039 * 2038 * 2038 * 2037 * 2036 * 2035 *		⊕         EDS-408.4-1M23.SC           ⊕         EDS-408.4-2M13.ST           ⊕         EDS-408.4-3M-3C           ⊕         EDS-408.4-3M-3C           ⊕         EDS-408.4-MA-SC           ⊕         EDS-408.4-MA-SC           ⊕         EDS-408.2-FN           ⊕         EDS-408.4-SS SC           ⊕         EDS-408.2-SS SC           ⊕         EDS-5164           ⊕         EDS-516A
1)         dut408           ot         M.         Order number           i         MMC0007-000408-           i         XI		2002* 2001* 2009* 2009* 2009* 2008* 2007* 2005* 2005* 2005* 2005* 2005*		⊕         EDS-408.4 M23.8C           ⊕         EDS-408.4 M13.8T           ⊕         EDS-408.4 M4.8C           ⊕         EDS-408.4 M4.9C           ⊕         EDS-408.4 M4.9C           ⊕         EDS-408.4 M4.9C           ⊕         EDS-408.4 M4.9C           ⊕         EDS-408.4 FM           ⊕         EDS-408.4 FM           ⊕         EDS-408.4 SS-0C           ⊕         EDS-408.4 SS-0C           ⊕         EDS-506.4 FM           ⊕         EDS-505.4 FM           ⊕         ED
(1)         dut08           (1)         dut08           (1)         dut07-000108-           (1)         dut1           (1)         dut1 <td></td> <td>2042 * 2041 * 2041 * 2039 * 2038 * 2038 * 2037 * 2036 * 2035 *</td> <td></td> <td>⊕         EDS-408.4-M23.SC           ⊕         EDS-408.4-M13.ST           ⊕         EDS-408.4-M4.SC           ⊕         EDS-508.4-M4.SC           ⊕         EDS-5108           ⊕         EDS-516A           ⊕         EDS-516A           ⊕         EDS-50508           ⊕         EDS-5162           ⊕         EDS-5162           ⊕         EDS-5162           ⊕         EDS-510E           ⊕         EDS-510E           ⊕         EDS-510E           ⊕         EDS-510E           ⊕         EDS-510E           ⊕         EDS-510E           ⊕         EDS-510E</td>		2042 * 2041 * 2041 * 2039 * 2038 * 2038 * 2037 * 2036 * 2035 *		⊕         EDS-408.4-M23.SC           ⊕         EDS-408.4-M13.ST           ⊕         EDS-408.4-M4.SC           ⊕         EDS-508.4-M4.SC           ⊕         EDS-5108           ⊕         EDS-516A           ⊕         EDS-516A           ⊕         EDS-50508           ⊕         EDS-5162           ⊕         EDS-5162           ⊕         EDS-5162           ⊕         EDS-510E
(1) dut408 t M. Order number M. Order number J. XI P 1. XI P		2002* 2001* 2009* 2009* 2003* 2003* 2003* 2003* 2003* 2003* 2003* 2003* 2003*		⊕         EDS-408.4 M23.8C           ⊕         EDS-408.4 M13.8T           ⊕         EDS-408.4 M4.8C           ⊕         EDS-408.4 FM           ⊕         EDS-408.4 FM           ⊕         EDS-408.4 FM           ⊕         EDS-508.4 SS OC           ⊕         EDS-5108

• Product Icons

Ex. File Name: EDS-405A.bmp, EDS-408A.bmp, EDS-510E.bmp, EDS-G508E.bmp, EDS-G512E-4GSFP.bmp, EDS-G516E-4GSFP.bmp



# **Device Configuration**

1. Browse the switch

Select **PLC** > **Ethernet** > **Edit Ethernet Node** to open the Browse dialog.

Station Edit Ins	ert <u>PLC View Options Window H</u> elp	
) 🚅 🔐 🛱 🛱	<u>D</u> ownload Ctr Upload	1+L
🗃 (0) UR	Download Module Identifi <u>c</u> ation Upload Module Ide <u>n</u> tification to PG	
1	Faulty Modules	
XI M X2 PI R X2 PI R X2 PZ R 3	Output         Module Information         Ctr           Operating Mode         Ctr           Information         Information           Information         Information           Information         Information           Information         Information           Information         Information	1+D Ethemet(
5	Update Firmware	
6	Save Device Name to Memory Card	
8	Ethernet	▶ <u>E</u> dit Ethernet Node
9 10	PROFIBUS	▶ Verify Device Name
11	Save Service Data	Assign Device Name

After the Edit Ethernet Node dialog box appears, click Browse

Sthemet node		
		Nodes accessible online
AAC <u>a</u> ddress:		<u>B</u> rowse
et IP configuration		
• Use I <u>P</u> parameters		
IP address:		Gateway
TL angless:	1	• Do not use router
Subnet mas <u>k</u> :		C Use router
		Address:
Obtain IP address fr	om a DHCP server	
Identified by		
🕫 Client ID	C MAC address	C Device name
Client ID:		
Assign IP Configure	dion	
Assign device name		
Device name:		Assign Name
	2	
Reset to factory settings		
in the second second		Reset
		Weser
Close		

Select your target switch and click  $\ensuremath{\textbf{OK}}$ 

		MAC address	Device type	Name
Sjop t search	192.168.12 192.168.12 192.168.12	7.253 00-90-E8-25-E	F EtherDevic	
	<			

- 2. Assign IP address and Device name
  - a. Give the switch an IP address and subnet mask Click **Assign IP configuration**
  - b. Give the switch a name Click **Assign Name**

c. Click Close to finish

		N 1 - 11 - 1
		Nodes accessible online
AC address:	00-90-E8-25-FF-FC	Browse
et IP configuration -		
• Use I <u>P</u> parameters		
TD - J.J	<b></b>	Gateway
IP address:	192.168.127.253	Do not use router
Subnet mas <u>k</u> :	255.255.255.0	C Use router
		Address: 192.168.127.253
🔿 Obtain IP address	from a DHCP server	
Identified by		
🕫 Client ID	$m{C}$ MAC address	$m{C}$ De <u>v</u> ice name
Client ID:		
Assign IP Configu	uration	
ngaga n ooning.		
lssign device name – Device name:	dut408	Assign Name
Assign device name		Assign Name

- **NOTE** The field **Device name** does not allow any empty spaces in the name. If the device name is entered with a space, the system will remove words after the space automatically.
  - 3. Set IP address and device for your project
    - a. Double-click the switch icon to open switch property menu.
    - b. Set the **Device name** and **IP address** corresponding with those you have just assigned in STEP 7.
      - Use IP parameters
         Manual input of IP address and Subnet mask
        - Obtain IP address from a DHCP server Select MAC address then click Assign IP configuration

Nodes accessible online
Browse
Gateway
🕫 Do not use router
C Use router
Address: 192.168.127.253
Assign Name
Reset
Veser

After the IP has been assigned by DHCP, click **Browse** again to check the assigned IP address.

c. Click Save and Compile then click download to Module.

Short description:	EDS-408A-PFN	
	EDS-408A-PFN	<u>_</u>
Order No./ firmware:	0007-000408-0000 / \73.1	<u> </u>
Family:	MOXA EtherDevice Switch	
Device name:	eds408	
	Change Release Number	106.xml
- <u>N</u> ode in PROFINET I	· · · · · · · · · · · · · · · · · · ·	
- <u>N</u> ode in PROFINET I D <u>e</u> vice number:	O System	O-System (100)
1. The second	O System	0-System (100)
D <u>e</u> vice number:	O System 1  PROFINET-IO 192.168.127.253 Ethemet.	0-System (100)
D <u>e</u> vice number: IP address:	O System 1  PROFINET-IO 192.168.127.253 Ethemet.	0-System (100)
Device number: IP address: ☞ Assign IP address	O System 1  PROFINET-IO 192.168.127.253 Ethemet.	O-System (100)

- 4. Configuring device properties
  - a. Select the switch and double-click the first **sub-module slot 0** to set device properties.

	🔪 (1) dut408A			
Slot	Module 🚺	Order number	I address	Q address
0	📩 do#408A	0007-000408-00		
XI	XI			
XI A	XI PI			
XI I	XI P2			
XI A	XI P3			
XI A	XI P4			
XI A	XI PS			
XI A	XI P6			
XI A	XI P7			
XI A	XI P8			
1	Device data		0	
2	🛛 Port data		1	

- b. Select **Parameters** and change the device parameter settings.
- c. Click Save and Compile, then click download to Module

	Value
🚗 Parameters	
E Device parameters	
🔲 🗐 Status change	No alarms
🖃 Redundant power supply	No alarms
Device status	

- 5. Configuring I/O cycle
  - a. Select the switch and double-click the  ${\bf sub-module\ X1}$  to set the I/O cycle.
  - b. Select **IO Cycle** and change the I/O cycle settings. Click **Save and Compile**, then click **download to Module**.

Properties - PN-IO (PN-IO)							X
General   Addresses IO Cycle							
Update Time							
Mode:	Fixed update time	_		•			
- Alexandra and a second			Factor			Send clock [	msj
Update time [ms]:	128.000	- 1	128	·*	x	1.000	
Watchdog Time	256.000 512.000						
Number of accepted update cyc	les with missing IO data:					3	-
Watchdog time [ms]:						384.000	
OK						Cancel	Help

- 6. Configuring port property
  - a. Select the switch and double-click the **sub-module X1 PN** to set port property.
  - b. Select Parameters.
  - c. Change the port parameters settings.
  - d. Click Save and Compile then click download to Module.

eneral   Addresses   Topology   Options	Parameters	
	Value	
🖃 🔄 Parameters		
📥 🔄 Port parameter		
- 🖹 Alarms	On	
🖃 Admin state	Active	

- 7. Configuring connection options
  - a. Select the switch and double-click the **sub-module X1 PN** to set port options.
  - b. Select **Options**.
  - c. Change the port option settings.
  - d. Click Save and Compile, then click download to Module

Transmission medium / duplex:	Automatic settings	•
Disable autonegotiation	Automatic setting: TP 100 Mbps full duplex TP 10 Mbps full duplex TP 100 Mbps full duplex TP 100 Mbps full duplex	
Boundaries	TP 100 Mbps hull duplex TP 100 Mbps half duplex	
🗂 End of sync domain		
📕 End of detection of accessible no	des	
End of topology discovery		

# Save and Load the Project into the PLC

Click the icon (in red box) to download project configuration to the PLC.

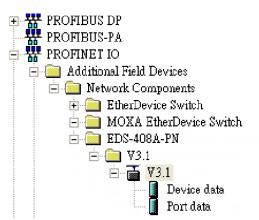
After the project is configured, SIMATIC STEP 7 will load all information required for data exchange to the I/O Controller (PLC), including the IP addresses of the connected I/O devices.

HW Config - [SIMATIC 300 Station (Config         Station Edit Insert PLC Yiev Options With         D 20 20 - Edit Station Rest         Image: Station Rest<	ndow <u>H</u> elp
OUR           1         CPU315-2 PN/DP(1)           X1         MBMDP           X2         PN-IO           X2 PI         Port 1           X2 PJ         Port 2           3	Ethernet(1): PROFINET-IO-System (100)
<	

# **Monitoring the Switch**

### **Monitor PROFINET I/O Cyclic Data**

MOXA switches provide PROFINET I/O cyclic data for real-time monitoring. In side bar you can see **Device** data and **Port data**.



Use Drag & Drop to pull the **Device data** onto **slot 1**. Right-click on slot 1, then select **Monitor/Modify**.

) }							аресну моаше	
, 10							Delete	Del
1							<u>G</u> o To <u>F</u> ilter Assigned Modules	
i mah	(1) dut408						<u>M</u> onitor/Modify	
ot	Module	Order number	I address	Q address	Diagnostic address:	Cor	<u>E</u> dit Symbols	
2	a da#08	0007-000408-0000			2042*		Object Properties Open Object With	Alt+Return Ctrl+Alt+C
r	XI				2041*			
PI	XI PI				2040*		Change Access	
P2	XI P2		-	14	2039*	-		
P3	XI P3			14	2038*		Assign Asset ID	
I ₽4	XI P4				2037*		Product Support Information	Ctrl+F2
I PS	XI P5				2036*		FAQs	Ctrl+F7
I P6	XI P6				2035*		Find Manual	Ctrl+F6
l P7	XI P7				2034*	-	Pinu Manuai	Cultro
I P8	XI P8				2033*		Start Device Tool	
	Device data		0			-		

Use Monitor to check the input data value. In this dialog, you can see the status value of each address. Please refer to the **PROFINET Cyclic I/O data table** in Chapter 5.1 to see the meaning of each bit. For example, address 0.1 is Bit 1 in the **PROFINET Cyclic I/O data table**. It represents Power 1 status of the switch. 1 means Power 1 exists and **Green** will be displayed in the **Modify/monitor** window NOTE: Refer to the **PROFINET Cyclic I/O data table** in chapter 5.1 for the meanings of each address.

-				test/SIMATIC 300(1)			1	1
	Að	lduess	Symbol		2.00	Status value	Modify value	
1	I	0.0		BOG		📘 truë		
2	I	0.1		BOO	DL	📘 true		
3	Ι	0.2		BOG	DL	false		
4	Ι	0.3		BOG	DL	false		
5	I	0.4		BOG	DL	false		
6	I	0.5		BOG	DL	true		
7	I	0.6		BOO	DL	false		
8	Ι	0.7		BOG	DL			
<	1							>
Г Г	un (	condi (onito lodify		Update Force : Run immediately & Status Value			pheral Outputs	

To monitor Port data, follow the same steps, drag Port data in the side bar and drop it onto slot 2.

(1) EDS-408A-PN Slot 🚺 Module Order number 
 0
 EDS-408A-PN
 0007-000408-00

 XI
 XI
 XI

 XI I
 XI PI
 XI
 XI A 🚺 XI P2 XI A 🚺 XI P3 XI A \llbracket XI P4 XI A 📲 XI PS XI A XI P6 XI A 🛽 XI P7 XI A 🚺 XI P8 1 Device data 2 Port data

MOXA PROFINET I/O cyclic data in the slot 1 and 2

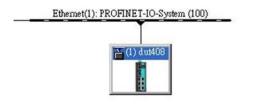
Then right click. Select **Monitor/Modify.** You will see a monitoring window.

🛗 Monitor/Modify - Po	ort data - (R-/S2)			×
Online via essigned CPU ser	vices			
	TIC 300(1)/CPU 315-2 PN/D	P		_
		1	1 17	_
Adduess Symbol		at Status value	Modify value	^
1 I 1.0	BOOL	false		
2 I 1.1	BOOL	truë		
<sup>3</sup> I 1.2	BOOL	true		
4 I 1.3	BOOL	false		=
5 I 1.4	BOOL	false		
6 I 1.5	BOOL	false		
7 I 1.6	BOOL	false		
8 I 1.7	BOOL			~
<			>	
🗙 Row Not Effective	Update Force Symbol	with <b>F</b> 5		
		VIDERS		
Run conditionally	Run immediately			
Monitor	🔐 Status Value	🔲 Enable Peri	pheral Outputs	
Modi <u>f</u> y	📭 Modify Value	🔲 1/0 <u>D</u> isplay		
😋 Irigger			RUNNING	
			W RUNNING	
Close			Help	

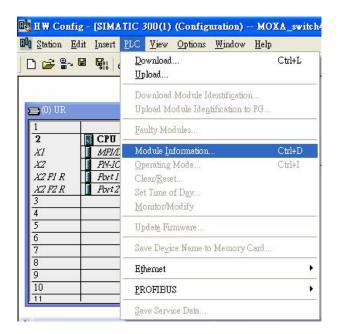
# **Module Information**

MOXA switch supports SIMATIC STEP 7 Ethernet traffic information monitoring and PROFINET alarms. These attributes can be monitored in module information dialog. Following are the steps of operation.

Select MOXA switch icon on the screen.



Then, click menu bar PLC > Module Information



The module information dialog will then pop up.

### **Port Statistics Output**

Select **Statics** tags. Find out each port traffic information list below.

General Network Cor	IO Device Diagnostics mection	Communication Diagn Statistics	ostics   Inte Identification	rface
Port	Statistical va	lue	Current	~
Port 1 (X1 P1)	Dropped rec	eived packets - no resources	٥	
Port 1 (X1 P1)	Bad receive	l packets	Ō	
Port 1 (X1 P1)	Received oc		15718	
Port 1 (X1 P1)	Dropped ser	at packets - no resources	0	
Port 1 (X1 P1)		kets - transmit collisions	0	
Port 1 (X1 P1)	Sent octets		2422725	
Port 2 (X1 P2)	Dropped rec	eived packets - no resources	0	
Port 2 (X1 P2)	Bad receive	Bad received packets		
Port 2 (X1 P2)	Received oc	tets	0	
Port 2 (X1 P2)	Dropped ser	nt packets - no resources	0	
Port 2 (X1 P2)		kets - transmit collisions	0	
Port 2 (X1 P2)	Sent octets		0	
Port 3 (X1 P3)		eived packets - no resources	0	
Port 3 (X1 P3)	Bad receive		0	
Port 3 (X1 P3)	Received oc		1307731	
Port 3 (X1 P3)	Dropped ser	nt packets - no resources	0	~
Port 2 /11 P2)	Red cent ner	kate - transmit collisions	n	0.0

Statistics tab lists each port traffic status and the number of packets. Click **Update** to refresh the data.

# **I/O Device Diagnostics**

Moxa PROFINET switches support PROFINET alarms. These alarm messages will be sent by the switch immediately when an event is triggered. These alarms can be enabled/disabled using PROFINET I/O parameters(see chapter **PROFINET I/O Parameters**).

Select **IO Device Diagnostics** tab to view alarms received by the PLC.

Module Info	rmation - 1	EDS-408A-PN				
lath: MOXA_sv Status: 😵 Error	vitch408API	IVSIMATIC 300(1)VC	Operating mo	de of the CPU:	🕜 STO	)P
Networ	k Connectio	n	Statistics	1	Identifica	tion
General	IO De	vice Diagnostics	Communics	ation Diagnostics		Interface
IO controller: Manufacturer's d	lescription	pn-io 553	De	evice ID:		16# 0007
					Hex. F	ormat
Standard diagno						
Channel-specific						
Slot	Channel	Error				
0 X1 0.X1 P5		Power supply 1 error Link down (16# 000	(15# 0000, 15# 0, 16# 00000000	)) )		
	dia mantia v	The second se	1			
Help on selected		<u></u>	splay			

The **Channel-specific diagnostics** field is displaying link-down alarm information. Click **Update** to refresh the data.

# **Communication Diagnosis**

Select a sub-module and use "PLC: Module Information" to see the diagnostic data.

hysical <u>P</u> roperties:	To the test	a.m.	34.3
Name Port 3 (X1 P3)	<ul> <li>Port status</li> <li>OK</li> </ul>	Automatic settings	Mode TP 100 Mbps full du
etails of Port:	Port 3 (X1 P3)		

# **Topology Editor**

MOXA devices support SIMATIC STEP 7 Topology editor. Click Topology Editor. View each port's connection status in table view tag.

ə <sup>r'</sup> ə Topology Editor			X
Table view Graphic view Offline/online comp	aison		
Interconnection table		Selection range	
₩ Show station name	Filter: Show all ports	Filter: Show all ports	•
Port Partner po	rt Cable len Signal del		
🔲 X1 P1 (X1 P1)			
X1 P2 (X1 P2)			
	0(1) \ PN-IO(CPU 31 0.00		
🔲 X1 P4 (X1 P4)			
X1 P5 (X1 P5)			
X1 P6 (X1 P6)			
X1 P7 (X1 P7)			
X1 P8 (X1 P8)			
SIMATIC 300(T) PN-IO(CPU 315-2 PN/DP)			
Port 1 (X2 P1 R) dut408 \ X1	P3 (X1 P3) 0.00	Passive Components	
Port 2 (X2 P2 R)	F3(X1F3) 0.00	+-SCALANCE X100	
Poitz (A2P2II)		E- SCALANCE W	
		I → medium converter	
		E − PC Modules	
		. Endard IE	
		E-SIMATIC HMI	
<		<b>x</b>	
Online Update Object ]	Properties <u>Export</u> Options	s <u>A</u> dd	
			=
UK		Cancel Help	

In the **Offline/Online Comparison** tab, you can compare device partner ports. Click S**tart** to discover connection relationships.

Confi	gured topology (offline)			Detected topology (online)	
E	ilter: Show all devices	•	<u>S</u> tart	3 devices found	
bject name	Partner port	Cable data	Object name	Partner port	Cable data
dut408	ALC:				
X1 P1 (X1 P1)			Port 1		
X1 P2 (X1 P2)			Port 2		
X1 P3 (X1 P3)			Port 3	pn-io \ Port 1	-(-)
X1 P4 (X1 P4)			Port 4	chrisch-test \Port 1	-(-)
X1 P5 (X1 P5)			Port 5	dut2408 \ Port 5	-(-)
X1 P6 (X1 P6)			Port 6	dut2408 \ Port 6	-(-)
X1 P7 (X1 P7)			Port 7		
X1 P8 (X1 P8)			Port 8		
PN-IO(CPU 315-2 PN/DP	)		🖃 – pn-io		
Port 1 (X2 P1 R)			Port 1	dut408 \ Port 3	-(-)
Port 2 (X2 P2 R)			Port 2		
			dut2408		
			Port 1		
			Port 2		
			Port 3		
			Port 4		
			Port 5	dut408 \ Port 5	-(-)
			Port 6	dut408 \ Port 6	-(-)
			<	III III	
			120		
		>	Assign	Apply Export Options	

You can also draw the connection of each port manually in **Graphic view** tab.

<sup>n<sup>1</sup>g Topology Editor</sup>	
Table view Graphic view Offline/online compension	
SIMATIC 300 Station PN-IO(CPU315-2 PN/DP(1)) dut408 dut408	Miniature View         Image: Components         Passive Components         • SCALANCE X100         • SCALANCE X100         • Miniature Converter         • PC Modules         • SIMATIC HMI
Online Update Object Properties Options Print	
OK	Cancel Help