MX-AOPC UA Server User's Manual

Edition 3.1, November 2016

www.moxa.com/product



MX-AOPC UA Server User's Manual

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

© 2016 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		Moxa China (Shanghai office)			
Toll-free:	1-888-669-2872	Toll-free:	800-820-5036		
Tel:	+1-714-528-6777	Tel:	+86-21-5258-9955		
Fax:	+1-714-528-6778	Fax:	+86-21-5258-5505		
<u>Moxa Eu</u>	<u>rope</u>	<u>Moxa Asi</u>	ia-Pacific		
<u>Moxa Eu</u> Tel:	<u>rope</u> +49-89-3 70 03 99-0	<u>Moxa Asi</u> Tel:	i <u>a-Pacific</u> +886-2-8919-1230		

Tel:

Fax:

+91-80-4172-9088

+91-80-4132-1045

Table of Contents

1.	Introduction	
	Overview	1-2
	System Requirements	1-2
	Specifications	1-2
2.	Getting Started	2-1
	Installing MX-AOPC UA Server	
	Configuring Active Tags	
	Opening the Configuration Console	
	Configuring Server Settings	
	Configuring Devices and Tags	
	Adding a Modbus Device	
	Creating Modbus Tags	
	Updating Configurations to the Server	
	Using the Viewer to Check Tag Values	
	Configuring OPC UA Settings	2-9
3.	Configuration Console	3-1
	Main Screen Overview	
	Menu Items	
	File	
	Edit	
	View	
	Tools	
	Runtime	
	Help	
4.	Device Management	
	Device Group	
	Adding a Device Group	
	Editing a Device Group	4-3
	Deleting a Device Group	4-4
	Active Devices	
	Deleting an Active Device from the Active Device Group List	
	Modbus Devices	
	Adding a Modbus Device to a Device Group	
	Editing a Modbus Device	
	Deleting a Modbus Device	
	Moving a Modbus Device to a Different Device Group	
5.	Tag Management	
	Tag Groups	
	Adding a Tag Group to a Device	
	Editing a Tag Group	
	Cutting a Tag Group	
	Copying a Tag Group	5-4
	Pasting a Tag Group	5-4
	Deleting a Tag Group	5-5
	Modbus Tags	5-5
	Adding a Modbus Tag to a Tag Group	5-5
	Importing a List of Modbus Tags into a Modbus Device	
	Editing a Modbus Tag	
	Deleting a Modbus Tag	
,		
6.	License Registration and Activation	6-1
Α.	Appendix	A-1
	Port Usage	
	Configuring DCOM Settings	

The following topics are covered in this chapter:

- Overview
- **System Requirements**
- □ Specifications

Overview

Moxa has pioneered the concept of "active type" OPC software in the automation industry. The patented MX-AOPC UA Server offers both polling (Modbus protocol) and non-polling (Moxa AOPC protocol) architectures alongside the standard OPC UA protocol, giving users the alternative of pull or push-based communication from Moxa's devices. OPC UA (Unified Architecture), which features more secure and reliable data communication between OPC servers and clients, is the next generation OPC standard (IEC 62541). By using Moxa's MX-AOPC UA Server, users can enjoy more secure and reliable data exchange and control.

The MX-AOPC UA Server includes:

- Server Runtime Service: Starts as a service by default after installation.
- · Configuration Console: An offline configuration tool for configuring server settings.
- Viewer: An OPC client that allows developers, testers, and integrators to easily view tag values and test MX-AOPC UA Server and connections.

System Requirements

Hardware Requirements

CPU: Intel Pentium 4 or above RAM: 512 MB (1024 MB recommended) Communication Interface: Ethernet or serial

Software Requirements

Operating System: Microsoft Windows 7/8/10, Microsoft Windows Server 2003/2008/2012 **Microsoft .NET Framework:** v3.5 Service Pack 1 **Editor (optional):** Microsoft Office 2003 (Access or Excel) or later

Specifications

OPC Server Specifications

OPC Unified Architecture: 1.02 OPC Data Access: 1.0a, 2.0, 2.05a, 3.0 Device Protocols: Moxa AOPC, Modbus/TCP (master), Modbus/RTU (master)

Products that Support AOPC Protocol

ioLogik: ioLogik 2500 series, ioLogik E1200 series, ioLogik E1500 series, ioLogik E2200 series, ioLogik E4200, ioLogik W5300 series

Note: Please check Moxa's website for the most up-to-date list of supported products.

Fully Supported OPC UA Server Profiles

Standard UA Server Profile

Core Server Facet

- User Token User Name Password Server Facet
- SecurityPolicy None
- Data Access Server Facet

UA-TCP UA-SC UA Binary

User Token - X509 Certificate Server Facet

SecurityPolicy - Basic128Rsa15

SecurityPolicy - None

2

Getting Started

The following topics are covered in this chapter:

- Installing MX-AOPC UA Server
- Configuring Active Tags
- Opening the Configuration Console
- Configuring Server Settings
- Configuring Devices and Tags
 - Adding a Modbus Device
 - Creating Modbus Tags
- Updating Configurations to the Server
- Using the Viewer to Check Tag Values
- Configuring OPC UA Settings

Installing MX-AOPC UA Server

MX-AOPC UA Server can be downloaded from the Moxa website at www.moxa.com.

After downloading the file, unzip it and run setup.exe. The installation program will guide you through the MX-AOPC UA Server installation process.

Configuring Active Tags

MX-AOPC UA Server will automatically receive active tags from Moxa's remote devices once the tags are created. Refer to the device's user's manual to learn how to use the device's configuration utility to create active tags.

Opening the Configuration Console

Open MX-AOPC UA Server's configuration console from the Windows Start menu: Start \rightarrow All Programs \rightarrow MOXA \rightarrow IO Server \rightarrow MX-AOPC UA Suite \rightarrow MX-AOPC UA Server.

Select main network adapter the first time you open the configuration console.

Main Network Adapter:	Intel(R) Ethernet Connection (3) I218-LM
Note: The main network	adapter needs to be enabled for starting runtime service.

The configuration console is an offline configuration tool for configuring Server Runtime settings. When the configuration console is launched, it will automatically get the latest configurations from the Server Runtime. If any active tag is received, the device will be listed in the **Active Device List**. To manually get the latest configurations from the Server Runtime, click the **Get Configuration from Server** icon on the MX-AOPC UA Server menu bar. To manually update the settings to the Server Runtime, click the **Update Configuration to Server** icon on the menu bar.

	e 1 1 2	🔊 🕵 🕺 🖻	🔓 🔒 🛃	y 💐	
- Active De		Tag Name	Data Type	Access Rights	Description
	2-01 (00:90:e8:16:e7:15) Device Group List	% E2242-01.DI-00	Boolean Boolean	Read-only	DI
Modbus L	evice Group List	🁒 E2242-01.DI-01		Read-only	DI
		🥸 E2242-01.DI-02	Boolean	Read-only	DI
		🧐 E2242-01.DI-03	Boolean	Read-only	DI
		🧐 E2242-01.DI-04	Boolean	Read-only	DI
		🧐 E2242-01.DI-05	Boolean	Read-only	Door Status
		🗞 E2242-01.DI-06	Boolean	Read-only	DI
		Second E2242-01.DI-07	Boolean	Read-only	DI
		Second E2242-01.DI-08	Boolean	Read-only	DI
		Second E2242-01.DI-09	Boolean	Read-only	DI
		Second 242-01.DI-10	Boolean Boolean	Read-only	DI
		Second Se	Boolean	Read-only Read-only	DI Sustan Canadatian
		Section 2242-01.SysConnect-00	boolean	Redu-only	System Connection
Date	Time Event				
< [

NOTE The first time you use MX-AOPC UA Server, we recommend turning off the Windows Firewall and then checking to see if MX-AOPC UA Server is able to receive active tags. If it can, turn the Windows Firewall back on and check it again. If MX-AOPC UA Server does not receive any active tags after you turn on the Windows Firewall, add aopcservice.exe in the Firewall Inbound Rules, and set it to Allow for Private, Public, and Domain network profiles.

NOTE Be sure to update the settings to the Server Runtime after changing the configuration. Otherwise, the Server Runtime will not reflect the configuration changes made using the configuration console.

Configuring Server Settings

Before configuring devices and tags, configure the server settings described below under the **Tools** menu.

<u>File Edit View To</u>	ools <u>R</u> untime <u>H</u> elp		
	Serial Port Settings		X
Active Device E2242-01 Modbus Device	AOPC Settings DCOM Configuration OPC UA Settings	•	
	Viewer System Log Change Password	•	
	Options		

Change Password

We strongly recommend changing the password the first time you use the Configuration Console. The default password is "moxa", which is needed for verification when updating configurations to the Server Runtime or exporting the system log to a text file.

NOTE When connecting an OPC UA client to MX-AOPC UA Server, use account name "admin" (the account name cannot be changed) and whatever the password is. The password is the same as the system password, which can be updated using Tools → Change Password.

Serial Port Settings

Configure the PC's Serial Port Settings if a serial device is connected to MX-AOPC UA Server.

Data Bits:	8	▼ 5	Stop Bits: 1	▼ 1	Parity: None	•
aud Rate:	115200		Control: None		<u></u>	
01410	115000	NI		-	NI	
COM9	115200	None	8	1	None	
	115200	None	8	1	None	
COM7	115200	None	8	1	None	
COM6	115200	None	8	1	None	
COM5	115200	None	8	1	None	
COM4	115200	None	8	1	None	
COM2 COM3	115200 115200	None	8	1	None	
COM1	115200	None	8	1	None	
Port	Baudrate	Parity	Data Bits	Stop Bits	Flow Control	

AOPC Settings

Configure **AOPC Settings** if a Moxa device updates Active Tags to MX-AOPC UA Server.

AOPC Settings		
Default Network Interface:	Intel(R) 825	77LM Gigabit Network Connection 🔹
Active Tag Listen Port:	9900	Enabled
Command Timeout:	30	sec(s)
Heartbeat Tolerance:	30	sec(s)
		OK Cancel

Configuring Devices and Tags

Adding a Modbus Device

1. Click the **Modbus Device Group List** to select it and then click the **New Device Group** icon and type in the name of the device group.

MX-AOPC UA Server	statement and the second division of
<u>File Edit View Tools Runtime H</u> elp	
	S 📽 🕺 🗈
Active Device List E2242-01 (00:90:e8: 16:e7: 15) Modbus Device Group List Device Group Property	Group No
Device Group Name: DeviceGroup	1 Cancel

2. Click the **New Device** icon and then configure the device properties.

MX-AOPC UA Server	<u>R</u> untime <u>H</u> elp					_
1 🖬 🖬 🗊) 🚺 🔊	🔊 🕵	XD	Ê 😭	4 1 🗦	<u>a</u>
Active Device List E2242-01 (00:90:e Modbus Device Group 1		Device Name		Enabled		Communication Port
Communicatio	Name: Device1 n Port: Intel(R) 82 otocol: Modbus/TCF		etwc 🔻	able Data Collec	tion	
Unit ID: IP Address:		0.0		connect Delay:	3000 3	ms
Port:	502			Cyde Delay: Polling Timeout: Polling Retries:	3000	sec(s) ms
					ОК	Cancel

3. Click the device group you just created to display a list of the devices in this group.

				×
)				
🔊 💸 🗡 🖻	ê 🔒 🗿 🦣			
Device Name	Enabled	Communication Port	Protocol	Ur
Device 1	Yes	Intel(R) 82577LM Gigabit	Modbus/TCP protocol	1
11 1 1 5 5 C 1 1 C				
	Device Name Device 1	Image: Second	Image: Second system Image: Second system Image: Second system Device Name Enabled Communication Port Device 1 Yes Intel(R) 82577LM Gigabit	Image: Second system Image: Second system <th< td=""></th<>

Creating Modbus Tags

1. Click the device name to select it and then click the **New Tag Group** icon and type in the name of the tag group.



2. Click the **New Tag** icon and then configure the tag properties.

MX-AOPC UA Server <u>File Edit View Tools R</u> unt	ime <u>H</u> elp			
		1	S X	
Active Device List	:e7:15)	Tag Name	2	Tag Typ
Tag Property				
Tag Name:	Tag1			
Description:				
Address:	0			
Function Code:	01: Read/M	rite Coils (0)	xxxx)	-
Data Type:	Boolean			•
Access Right:	Read/Write			
		ОК	Ca	ancel

3. The tag will be listed in the tag group.

MX-AOPC UA Server					x
<u>File Edit View Tools Runtime Hel</u>	р				
🗒 🗊 🗑 🗊 🗊 🔊	🔊 💸 🕺 🗊	È 🔒 🛃	J 🧕		
Active Device List	Tag Name	Tag Type	Functin Code	Start Address	Da
E2242-01 (00:90:e8:16:e7:15)	🥎 Tag1	Polling	0	0000	Bo
Process Device Group 1					
E Device1					
TagGroup 1					

Updating Configurations to the Server

When you finish updating the configuration, click the **Update Configuration to Server** icon to update the configuration to the Server Runtime. When the **Verify Password** window pops up, enter the correct password and then click **OK** to activate the changes.



Using the Viewer to Check Tag Values

After completely updating the Server Runtime settings, click the **Viewer** icon to open the viewer to check that the tag value is correct.

MX-AOPC UA Server			
<u>File E</u> dit <u>V</u> iew <u>T</u> ools <u>R</u> untime <u>H</u> elp			
🛅 🗊 📅 🗊 🗊 🔊	🔊 🛠 🗡 🖻	Ê 🔒 🦊 🦉	
Active Device List	Group No	Group Name	
E2242-01 (00:90:e8:16:e7:15)	1	DeviceGroup1	
DeviceGroup1			
🗄 ··· 📳 Device1			
TagGroup1			

File Tools H							
Active De	evice List 2-01 (00:90:e8:16:	7,15)	Tag Name	Data Type	Value	Timestamp	
Hodbus I Hodbus I Hod	Device Group List ceGroup1		Sec. Tag1	Boolean		21:20:08 2014/12/29	
			•	III			
Date	Time	Event					
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:21:57 13:21:57	The tag	g E2242-01.DI-00 changes	agGroup1.Tag1 changes the va			

The device tree in the left panel should be the same as the tree displayed by the configuration console. Click a tag group name to display the group's tag values in the right panel.

Configuring OPC UA Settings

You should configure OPC UA settings before connecting an OPC UA client to MX-AOPC UA Server. To access OPC UA Settings options, click **Tools** \rightarrow **OPC UA Settings**. Instructions for each option are given below.

Serial Port Settings AOPC Settings DCOM Configuration Group Name OPC UA Settings OPC UA Settings Server Endpoints Settings Server Endpoints Settings Security Policy	9
AOPC Settings DCOM Configuration Group Name Group Name Group Name Group Name Group Name Server Endpoints Settings Security Policy	
DeviceGri Security Policy	
Security Policy	
Devic Viewer System Log Certificates Management	
Change Password	

Server Endpoints Settings

"Server Endpoints Settings" are a list of interfaces that UA clients can use to communicate with MX-AOPC UA Server. MX-AOPC UA Server supports Universal Resource Locator (URL) binary type protocols.

To add a new interface to the list, select the appropriate network interface in the **Network Interface** drop-down box and type the port number for the URL in the **Port Number** input box. Click **Add** to add this new server endpoint to the list.

Server Endpoints Se	ttings	×
URL		Status
opc.tcp://192.168.1	12.112:53192/MXAOPC/UAServe	r Valid
Network Interface:	Intel(R) 82577LM Gigabit Networ	k Connection 🔹
Port Number:	53192	
	opc.tcp://192.168.12.112:53192	/MXAOPC/UAServer
Add	Delete Apply	Close Help

Security Policy

The security policy is applied to connections between OPC UA clients and MX-AOPC UA Server. Security options that can be selected are **None**, **Basic128Rsa15: Sign**, or **Basic128Rsa15: Sign** and **Encrypt**. If Basic128Rsa15: Sign, Basic128Rsa15: Sign and Encrypt, or both of these options are selected, you will need to configure **Certificates Management** settings (see below).



NOTE The default Account and Password for connecting an OPC UA client to the server are:

Account: admin

Password: moxa

The account name cannot be changed. To change the password, click **Tools** \rightarrow **Change Password**.

Certificates Management

If the security policy is set to **Basic128Rsa15: Sign**, **Basic128Rsa15: Sign and Encrypt**, or both, importing an OPC UA client's CA (Certificate Authority) file into MX-AOPC UA Server, and exporting the MX-AOPC UA Server's CA file to OPC UA Clients are both required.

Click the **Trust Clients** tab, click **Import**, and select the client's CA file to import it into MX-AOPC UA Server.

Client Name		URI	
👷 UA Local Discovery Server		urn:charleszk-chen.n	noxa.com:UALocalDiscover
•			4
Import Export	Remove	Reject	View Certificate
			·

Click the **Instance Certificates** tab and click **Export Server Certificate** to export MX-AOPC UA Server's CA file to OPC UA Clients.

Certificates Management		×
Trust Clients Instance Certificates		
View Server Certificate	Certificate MX-AOPC UA Server is from 2014/10/28 09:42:23 AM to 2019/10/2 09:42:23 AM	
Export Server Certificate Reissue Certificate		
	Close Help	

Click the **Update Configuration to Server** icon to enable any changes that have been made to the OPC UA configuration.

NOTE After reissuing certificates or re-installing MX-AOPC UA Server, you will need to once again export the Server Certificate to OPC UA clients.

3

Configuration Console

The following topics are covered in this chapter:

- Main Screen Overview
- Menu I tems
 - ≻ File
 - ≻ Edit
 - > View
 - > Tools
 - > Runtime
 - > Help

Main Screen Overview

MX-AOPC UA Server's configuration console displays the mapped I/O device with the settings of every I/O tag. It also shows the Server Runtime status and number of OPC clients.

	iew <u>T</u> ools <u>R</u> u		2 12 12 12 12 12 12 12 12 12 12 12 12 12 1	ĥ 😭 🦓 💐	1 🔊 3	
Active D	Device List		Tag Name	Data Type	Access Rights	Description
	42-01 (00:90:e8:16	:e7:15)	© E2242-01.DI-00	Boolean	Read-only	DI
	Device Group List		© E2242-01.DI-01	Boolean	Read-only	DI
🖻 🧻 Dev			© E2242-01.DI-02	Boolean	Read-only	DI
	Device1		© E2242-01.DI-03	Boolean	Read-only	DI
	TagGroup1		Second Contract Contr	Boolean	Read-only	DI
			© E2242-01.DI-05	Boolean	Read-only	Door Status
			© E2242-01.DI-06	Boolean	Read-only	DI
			© E2242-01.DI-07	Boolean	Read-only	DI
	4		\$ E2242-01.DI-08	Boolean 5	Read-only	DI
			Sec. 10.01	Boolean	Read-only	DI
			1 E2242-01.DI-10	Boolean	Read-only	DI
			1 E2242-01.DI-11	Boolean	Read-only	DI
			Sector SysConnect-00	Boolean	Read-only	System Connection
			1			
Date	Time	Event	<u> </u>			
			e of the tag 'E2242-01.DI-11' is g	changed to 0		
2014/12/29	Time 13:22:01 13:22:01	The value	e of the tag 'E2242-01.DI-11' is o			
2014/12/29 2014/12/29	13:22:01	The value The value	e of the tag 'E2242-01.DI-10' is o	changed to 0		
2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01	The value The value The value	e of the tag 'E2242-01.DI-10' is o e of the tag 'E2242-01.DI-09' is o	changed to 0 changed to 0		
2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01	The value The value The value The value	e of the tag 'E2242-01.DI-10' is o	changed to 0 changed to 0 changed to 0 changed to 0		
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value	e of the tag 'E2242-01.DI-10' is o e of the tag 'E2242-01.DI-09' is o e of the tag 'E2242-01.DI-08' is o e of the tag 'E2242-01.DI-07' is o	changed to 0 changed to 0 changed to 0 changed to 0		
Date 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value	e of the tag 'E2242-01.DI-10' is o e of the tag 'E2242-01.DI-09' is o e of the tag 'E2242-01.DI-09' is o e of the tag 'E2242-01.DI-08' is o	changed to 0 changed to 0 changed to 0 changed to 0 changed to 0 6		E
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value The value	e of the tag 'E2242-01.DI-10' is (e of the tag 'E2242-01.DI-09' is (e of the tag 'E2242-01.DI-08' is (e of the tag 'E2242-01.DI-07' is (e of the tag 'E2242-01.DI-07' is (e of the tag 'E2242-01.DI-06' is (changed to 0 changed to 0 changed to 0 changed to 0 changed to 0 changed to 0		
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value The value The value	e of the tag 'E2242-01.DI-10' is of e of the tag 'E2242-01.DI-09' is of e of the tag 'E2242-01.DI-08' is of e of the tag 'E2242-01.DI-08' is of of the tag 'E2242-01.DI-07' is of e of the tag 'E2242-01.DI-05' is of	changed to 0 changed to 0 changed to 0 changed to 0 changed to 0 changed to 0 changed to 0		
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value The value The value	e of the tag 'E2242-01.DI-10' is (e of the tag 'E2242-01.DI-09' is (e of the tag 'E2242-01.DI-09' is (e of the tag 'E2242-01.DI-08' is (of the tag 'E2242-01.DI-06' is (e of the tag 'E2242-01.DI-05' is (e of the tag 'E2242-01.DI-04' is (e of the tag 'E2242-01.DI-04' is (changed to 0 changed to 0		
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value The value The value The value	e of the tag 'E2242-01.DI-10' is (e of the tag 'E2242-01.DI-09' is (e of the tag 'E2242-01.DI-08' is (e of the tag 'E2242-01.DI-07' is (e of the tag 'E2242-01.DI-06' is (e of the tag 'E2242-01.DI-06' is (e of the tag 'E2242-01.DI-04' is (e of the tag 'E2242-01.DI-03' is (e of the tag 'E2242-01.DI-03' is (changed to 0 changed to 0		
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value The value The value The value	e of the tag 'E2242-01.DI-10' is of e of the tag 'E2242-01.DI-09' is of e of the tag 'E2242-01.DI-08' is of e of the tag 'E2242-01.DI-07' is of e of the tag 'E2242-01.DI-06' is of e of the tag 'E2242-01.DI-05' is of e of the tag 'E2242-01.DI-05' is of e of the tag 'E2242-01.DI-03' is of e of the tag 'E2242-01.DI-03' is of e of the tag 'E2242-01.DI-02' is of	changed to 0 changed to 0		
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value The value The value The value	e of the tag 'E2242-01.DI-10' is of e of the tag 'E2242-01.DI-09' is of e of the tag 'E2242-01.DI-08' is of e of the tag 'E2242-01.DI-07' is of e of the tag 'E2242-01.DI-06' is of e of the tag 'E2242-01.DI-05' is of e of the tag 'E2242-01.DI-04' is of e of the tag 'E2242-01.DI-03' is of	changed to 0 changed to 0	ed to 0	
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value The value The value The value The value	e of the tag 'E2242-01.DI-10' is (e of the tag 'E2242-01.DI-09' is (e of the tag 'E2242-01.DI-08' is (e of the tag 'E2242-01.DI-08' is (e of the tag 'E2242-01.DI-07' is (e of the tag 'E2242-01.DI-06' is (e of the tag 'E2242-01.DI-04' is (changed to 0 changed to 0 ch	ed to 0	

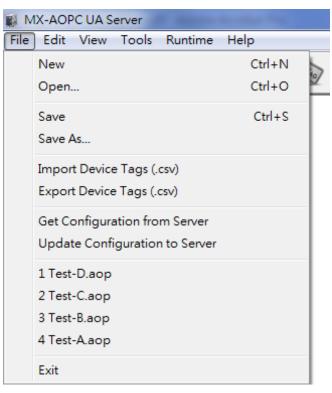
No.	Zone	Description
1	Software Title	Displays the name of the software: MX-AOPC UA Server
2	Menu	All configuration functions
3	Quick Launch Bar	Frequently used icons
4	Device View	All devices and tags
5	Detailed View	Detailed settings of the devices and tags
6	Log View	Server Runtime logs
7	Server Runtime Status	Shows if the Server Runtime Service is Running or Stopped
8	Server Time	Displays the server time (same as the PC's time)
9	Numbers of Device	Displays the number of devices listed in Device View
10	Numbers of OPC Client	Displays the number of OPC clients connected to MX-AOPC UA Server

Menu Items

All operations can be accessed from the following Menu items.

File

Use the File menu to manage project files, device tags, and server configuration.



- New: Create a new project file.
- **Open:** Open an existing project file.
- Save: Save the current project.
- Save As: Save the current project file as another project with a different filename.
- Import Device Tags (.csv): Import device tags into a Modbus device from a csv file.

Item	Format	Length	Note
GroupName	0 to 9, A to Z, a to z, Symbols	30	"." is not allowed.
TagName	0 to 9, A to Z, Symbols	30	"." is not allowed.
FunctionCode	1 to 4	1	1: Read/Write Coils
			2: Read Discrete Inputs
			3: Read/Write Holding Registers
			4: Read Input Registers
Address	0 to 65535	5	
DataType	Boolean	-	Use Boolean with FunctionCode
	Unsigned short integer		1 or 2.
	Unsigned integer		 Use other DataTypes with
	Float		FunctionCode 3 or 4.
Description	0 to 9, A to Z, a to z, Symbols	25	

- Export Device Tags (.csv): Export device tags from a Modbus device to a csv file.
- Get Configuration from Server: Get the latest configuration from the Server Runtime.
- Update Configuration to Server: Update the configuration to the Server Runtime from the Configuration Console.

- Previous saved files: Quickly open previously saved project files.
- Exit: Close the Configuration Console.

NOTE Active Tags cannot be imported into an Active Device folder in the Configuration Console from a csv file, or vice versa. Active Tags are automatically created by a Moxa active tag device. Refer to the Specifications section for the Products that Support AOPC Protocol, and refer to the device's user's manual to see how to create active tags using the device's configuration utility.

NOTE To get a csv template, create a Modbus device and execute the **Export Device Tags (.csv)** function from the Modbus Device.

Edit

Use the **Edit** menu to edit settings of devices and tags.

	AOPC UA Server dit <u>V</u> iew <u>T</u> ools <u>F</u>	<u>Runtime</u> <u>H</u> elp	
-	Cut	Ctrl+X	h @
	Сору	Ctrl+C	9
	Paste	Ctrl+V	Tag Name
<u> </u>	Delete	Del	🎯 Tag 1
G	Select All	Ctrl+A	
	New Device Grou	р	-
	New Device		
	New Tag Group		
	New Tag		L
	Properties		

- Cut: Cut a tag group or selected tags.
- **Copy:** Copy a tag group or selected tags.
- Paste: Paste a cut or copied tag group into a device, or paste cut or copied tags into a tag group.
- Delete: Delete the selected device, a selected tag group, or selected tags.
- Select All: Select all tags in a tag group.
- New Device Group: Create a new device group.
- New Device: Create a new Modbus device.
- New Tag Group: Create a new tag group.
- New Tag: Create a new tag.
- · Properties: Modify the settings of an existing device group, device, tag group, or tag.

NOTE The properties of an active device or active tag cannot be modified from the configuration console. Refer to the device's user's manual to see how to use the device's configuration utility to change active device or active tag settings.

View

Use the **View** menu to change the display settings of the Device View panel.

MX-AOPC	UA Server	
<u>File</u> <u>E</u> dit <u>V</u>	<u>(iew T</u> ools <u>R</u> untime <u>H</u>	elp
	Expand All Devices	Ctrl+H
	Collapse All Devices	Ctrl+H
🕀 👘 🛃 Active I	Device List	Group No

- Expand All Devices: Expand all devices in the Device View panel.
- Collapse All Devices: Collapse all devices in the Device View panel.

Tools

Use the **Tools** menu to configure serial ports, OPC settings, system log, password, console environment settings, or to launch Viewer.

MX-AOPC UA Serve	er	-	
<u>File Edit View To</u>	ols <u>R</u> untime <u>H</u> elp		
	Serial Port Settings		X
Active Device	AOPC Settings DCOM Configuration		
Modbus Devic	OPC UA Settings		
	Viewer		
	System Log	-	
	Change Password		
	Options		

Serial Port Settings

)ata Bits:	8	▼ S	top Bits: 1	▲ F	Parity: None	•
ud Rate:	115200	- Flow	Control: None	-		
0110	115000	NI	0	4	M	
COM9	115200	None	8	1	None	
COM8	115200	None	8	1	None	
COM7	115200	None	8	1	None	
COM6	115200	None	8	1	None	
COM5	115200	None	8	1	None	
COM4	115200	None	8	1	None	
COM2 COM3	115200 115200	None	8	1	None	
COM1	115200	None	8	1	None	
	Baudrate	Parity	Data Bits	Stop Bits	Flow Control	

- > Baud Rate: 300 to 921600 bps; default: 115200 bps
- Flow Control: None, RTS/CTS, or XON/XOFF; default: None
- > Data Bits: 5, 6, 7, or 8; default: 8
- Stop Bits: 1 or 2; default: 1
- > Parity: Even, Odd, or None; default: None

AOPC Settings

AOPC Settings		
Default Network Interface:	Intel(R) 825	77LM Gigabit Network Connection 🔹
Active Tag Listen Port:	9900	Enabled
Command Timeout:	30	sec(s)
Heartbeat Tolerance:	30	sec(s)
		OK Cancel

- Default Network Interface: Select a network interface that remote devices can use to connect to MX-AOPC UA Server.
- Active Tag Listen Port: The preferred TCP socket port for receiving active tags from remote devices (default: 9900).
- Command Timeout: The socket timeout interval (Port: 9500 and 9900) for controlling output channels on remote devices: 0 to 60; default: 30 sec.
- Heartbeat Tolerance: An additional timeout interval to wait for a heartbeat signal from remote devices: 0 to 60; default: 30 sec.
- **DCOM Configuration:** Configure DCOM settings for your security policy. Refer to Appendix A for details.

OPC UA Settings

MX-AOPC UA Serve	er	and the second state of th		
<u>File Edit View To</u>	ools <u>R</u> untime <u>H</u> elp			
	Serial Port Settings	X 🖻 🍙 🍘 🧦		
Active Device	AOPC Settings DCOM Configuration	Group Name		
🗄 🗐 DeviceGri	OPC UA Settings	Server Endpoints Settings		
	Viewer System Log	Security Policy Certificates Management		
	Change Password			
	Options			
		-		

> Server Endpoints Settings:

"Server Endpoints Settings" are a list of interfaces that UA clients can use to communicate with MX-AOPC UA Server. MX-AOPC UA Server supports Universal Resource Locator (URL) binary type protocols.

To add a new interface to the list, select the appropriate network interface in the **Network Interface** drop-down box and type the port number for the URL in the **Port Number** (default: 53192) input box. Click **Add** to add this new server endpoint to the list.

Server Endpoints S	ettings			X
URL			Status	
opc.tcp://192.168	. 12. 112: 53192/MX	AOPC/UAServer	Valid	
Network Interface:	Intel(R) 82577LM	1 Gigabit Network Co	onnection	•
Port Number:	53192			
	opc.tcp://192.168	8.12.112:53192/MX	AOPC/UAServer	
Add	Delete	Apply	Close	Help

Security Policy

The security policy is applied to connections between OPC UA clients and MX-AOPC UA Server. Security options that can be selected are **None**, **Basic128Rsa15: Sign**, or **Basic128Rsa15: Sign and Encrypt**. If Basic128Rsa15: Sign, Basic128Rsa15: Sign and Encrypt, or both of these options are selected, you will need to configure **Certificates Management** settings (see below).

Security Policy Setting
✓ None
Basic 128Rsa 15 - Sign
Basic128Rsa15 - Sign and Encrypt
OK Cancel

NOTE The default Account and Password for connecting an OPC UA client to the server are:

Account: admin Password: moxa

The account name cannot be changed. To change the password, click **Tools** \rightarrow **Change Password**.

> Certificates Management

If the security policy is set to **Basic128Rsa15: Sign**, **Basic128Rsa15: Sign and Encrypt**, or both, importing an OPC UA client's CA (Certificate Authority) file into MX-AOPC UA Server, and exporting the MX-AOPC UA Server's CA file to OPC UA Clients are both required.

Click the **Trust Clients** tab, click **Import**, and select the client's CA file to import it into MX-AOPC UA Server.

Client Name			URI	
👷 UA Local Discovery Server		um:charleszk-chen.moxa.com:UALocalDiscover		
•				

Click the **Instance Certificates** tab and click **Export Server Certificate** to export MX-AOPC UA Server's CA file to OPC UA Clients.

Cer	rtificates Management	×
[Trust Clients Instance Certificates	
	View Server Certificate Certificate MX-AOPC UA Server is from 2014/10/28 09:42:23 AM to 2019/10/2 09:42:23 AM	
	Reissue Certificate	
	Close	:lp

Click the **Update Configuration to Server** icon to enable any changes that have been made to the OPC UA configuration.

NOTE After reissuing certificates or re-installing MX-AOPC UA Server, you will need to once again export the Server Certificate to OPC UA clients.

- Viewer: Open the viewer to check that the tag value is correct.
- System Log

MX-AOPC UA Serve	er	-	And in case of the local division of the loc	
<u>File Edit View To</u>	ools <u>R</u> untime <u>H</u> elp			
	Serial Port Settings		XD	Ê 😭 🛃
Active Device	AOPC Settings DCOM Configuration OPC UA Settings			Group Name
i ⊡… () Modbus Devic i ⊡… 1) DeviceGro		-+		DeviceGroup1
	Viewer			
	System Log	•	Save to Te	ext File
	Change Password		Reset Syst System Lo	em Log g Settings
	Options	- h	-,	33-
_				

3-9

Save to Text File: Save MX-AOPC UA Server's system log to a text file. You will be required to enter a password (default password: moxa).

Verify Password	
Please enter password:	
••••	
OK Cancel	
OK Cancel	

Reset System Log: Reset MX-AOPC UA Server's system log. You will be required to enter a password (default password: moxa).

ActiveOPC	
Do you want to reset system log?	Verify Password
Yes No	OK Cancel

System Log Settings: Defines the maximum number of records that can be saved in the MX-AOPC UA Server's system log: 1 to 30000; default: 30000.

System Log Settings				
Event Records:	30000		(1~30000)	
		ОК	Cancel	

• **Change Password:** Change the MX-AOPC UA Server's system password. The password is required when updating configurations to System Runtime, saving system logs to a text file, or resetting system log. Length: 4 to 128; acceptable characters: A to Z, a to z, 0 to 9, Symbols; default: moxa.

Change Password	×
Old Password:	
New Password:	
Confirm Password:	
	OK Cancel

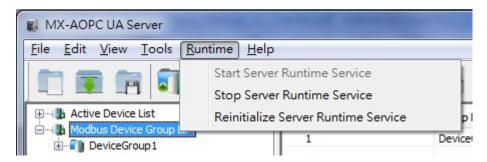
• Options: Configure environment settings for the server's configuration console.

Options
Startup Get configuration from Server Open previous configuration file
Configuration File Image: Automatically save configuration every 10 min(s) Image: Automatically save configuration before updating to server Image: Automatically save configuration before exiting this console
OK Cancel

NOTE If **Automatically save configuration every xx min(s)** is enabled, the configuration file will be automatically saved only when a file name is defined. Be sure to save your configuration file after creating a new project file.

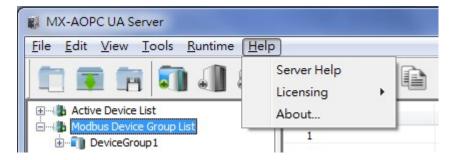
Runtime

Use the Runtime menu to Start, Stop, or Reinitialize Server Runtime Service.



Help

Use the **Help** menu to launch the server's help documentation, to check the server's license status, to add a license file, or check server version.



• Server Help: Launch MX-AOPC UA Server's help documentation.

Licensing

ile Edit View Tools Runtime 🛽	Help			
	Server Help			
	Licensing	•	License Info	
Active Device List	About		Add License File	>
Modbus Device Group List			Deactivate License	

License Info: Displays the server's User Code, License Status, and the Time Remaining on the license.
 Refer to Chapter 6: License Registration and Activation to learn how to activate the license.

User Code		×
User Code:	1613EB128766	
License Status:	Trial Version	
Time Remaining:	11 days	
		ОК

- Add License File: Import a license file after completing the license registration process. Refer to Chapter 6: License Registration and Activation to learn how to activate the license.
- Deactivate License: Deactivate the current license version and load factory default settings. Note that when you deactivate the license, your license file and runtime configurations will be deleted. Please backup your runtime configurations before executing a license deactivation procedure.
- About: Displays MX-AOPC UA Server's version number and build number.

Moxa MX-AOPC UA Server	1.0 build 14122910	ОК
Copyright (C) 2014 Moxa Inc.		

4

Device Management

The following topics are covered in this chapter:

Device Group

- Adding a Device Group
- Editing a Device Group
- > Deleting a Device Group

Active Devices

> Deleting an Active Device from the Active Device Group List

Modbus Devices

- > Adding a Modbus Device to a Device Group
- Editing a Modbus Device
- Deleting a Modbus Device
- > Moving a Modbus Device to a Different Device Group

Device Group

In this section we explain how to use the configuration console to add, edit, and delete device groups.

MX-AOPC UA Server's design logic is user-application oriented. As seen below, device groups can be created based on application, such as **SiteA** or **SiteB**.

<u>Eile E</u> dit <u>V</u> i	iew <u>T</u> ools <u>R</u> ur	ntime <u>H</u> elp									
1	n .		😰 🕵	X	d C	1		1	J.		
	42-01 (00:90:e8:16: Device Group List	:e7:15)	Group No 1 2		Grou SiteA SiteB						
	iologik E2242 Pump B iologik E2242										
Date	Time	Event									
Date 2014/12/29	Time 13:22:01		e of the tag 'E	2242-01.DI	-11' is change	d to 0					
		The value	e of the tag 'E e of the tag 'E		-						h
2014/12/29	13:22:01	The value The value	-	2242-01.DI	-10' is change	d to 0					h
014/12/29 014/12/29 014/12/29	13:22:01 13:22:01	The value The value The value	e of the tag 'E	2242-01.DI 2242-01.DI	-10' is change -09' is change	d to 0 d to 0					h
014/12/29 014/12/29 014/12/29 014/12/29	13:22:01 13:22:01 13:22:01	The value The value The value The value	e of the tag 'E e of the tag 'E	2242-01.DI 2242-01.DI 2242-01.DI	-10' is change -09' is change -08' is change	d to 0 d to 0 d to 0					h
014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29	13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value	e of the tag 'E e of the tag 'E e of the tag 'E	2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI	-10' is change -09' is change -08' is change -07' is change	d to 0 d to 0 d to 0 d to 0					h
2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value	e of the tag 'E e of the tag 'E e of the tag 'E e of the tag 'E e of the tag 'E	2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI	-10' is change -09' is change -08' is change -07' is change -06' is change	d to 0 d to 0 d to 0 d to 0 d to 0					h
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value The value	e of the tag 'E e of the tag 'E	2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI	-10' is change -09' is change -08' is change -07' is change -06' is change -05' is change	d to 0 d to 0 d to 0 d to 0 d to 0 d to 0 d to 0					h
014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value The value The value	e of the tag 'E e of the tag 'E	2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI	-10' is change -09' is change -08' is change -07' is change -06' is change -05' is change -04' is change	d to 0 d to 0					h
014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value The value The value The value	e of the tag 'E e of the tag 'E	2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI	-10' is change -09' is change -08' is change -07' is change -06' is change -04' is change -04' is change	d to 0 d to 0					-[
014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value The value The value The value	e of the tag 'E e of the tag 'E	2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI	-10' is change -09' is change -08' is change -06' is change -06' is change -06' is change -04' is change -03' is change -03' is change	d to 0 d to 0					
014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value The value The value The value	e of the tag 'E e of the tag 'E	2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI	-10' is change -09' is change -08' is change -06' is change -06' is change -06' is change -04' is change -03' is change -02' is change -02' is change -02' is change	d to 0 d to 0					-[
014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29 014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value The value The value The value	e of the tag 'E e of the tag 'E	2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI	10' is change 09' is change 08' is change 07' is change 06' is change 05' is change 04' is change 02' is change 01' is change 00' is change	d to 0 d to 0	ag 1' is ch	anged to	• 0		-[[
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	The value The value The value The value The value The value The value The value The value The value	e of the tag 'E e of the tag 'E	2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI 2242-01.DI eviceGroup	10' is change 09' is change 08' is change 07' is change 06' is change 05' is change 04' is change 02' is change 01' is change 00' is change 1.Device 1.Ta	d to 0 d to 0	-	anged to	• 0		h

Adding a Device Group

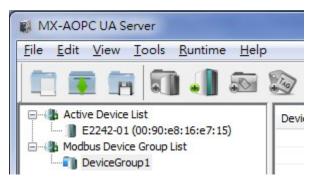
 Right click Modbus Device Group List and then click New Device Group in the popup menu, or click Modbus Device Group List to select it, and then click the New Device Group icon on the Quick Launch toolbar.



2. Type in the name of the device group (max. length = 30 characters; "." is not allowed), and then click **OK**.



3. The new device group will be added to the Modbus Device Group List.



Editing a Device Group

Right click the device group you would like to edit and then click **Properties** in the popup menu, or click the device group to select it and then click the **Properties** icon on the Quick Launch toolbar to open the properties window.



Deleting a Device Group

Right click the device group you would like to delete and then click **Delete** in the popup menu, or click the device group to select it and then click the **Delete** icon from the Quick Launch toolbar.



Active Devices

In this section we explain how to use the configuration console to delete active devices.

MX-AOPC UA Server will automatically receive the registration from a Moxa active device located at a remote site. Refer to the Moxa I/O device's user's manual to learn how to use the device's configuration utility to create active tags.

Deleting an Active Device from the Active Device Group List

Right click the active device you would like to delete and then click **Delete** in the popup menu, or click the active device to select it and then click the **Delete** icon from the Quick Launch toolbar.

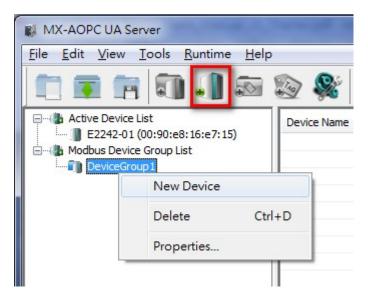


Modbus Devices

In this section we explain how to use the configuration console to add, edit, delete, and move Modbus devices.

Adding a Modbus Device to a Device Group

Right click the device group you would like to add a new Modbus device to and then click **New Device** in the popup menu. You may instead click the device group to select it and then click the **New Device** icon on the Quick Launch toolbar.



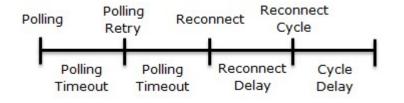
Ethernet Communication Port

If an Ethernet communication port is selected, the **Device Property** configuration window will appear as shown below:

Device	Name:	Device 1				Enable Data Collec	tion	
Communicatio	n Port:	Intel(R)	82577	M Gig	abit Netwo	•		
Pr	otocol:	Modbus/	TCP pro	tocol				
Device Setting	S					Timeout Settings		
Unit ID:	1				•	Reconnect Delay:	3000	ms
IP Address:	0	. 0	. 0	•	0	Reconnect Cycles:	3	
Port:	502					Cyde Delay:	3	sec(s)
						Polling Timeout:	3000	ms
						Polling Retries:	3	

- Device Name: Name of the Modbus device (max. length = 30; "." is not allowed).
- Enable Data Collection: Enable or disable data collection for this Modbus device.
- Communication Port: Select the communication interface of this Modbus device.

- Unit ID: The unit ID of this Modbus device (options: 1 to 247).
- IP Address: The IP Address of this Modbus device.
- Port: The TCP port of this Modbus device (options: 0 to 65535).
- **Reconnect Delay:** The delay time after the server tries to reconnect this Modbus device (options: 0 to 30000; default: 3000).
- Reconnect Cycles: The maximum number of reconnect cycles (options: 0 to 10; default: 3).
- **Cycle Delay:** The delay time after reaching the maximum number of reconnect cycles (options: 0 to 86400; default: 3).
- **Polling Timeout:** The timeout value when the server polls data from this Modbus device (options: 0 to 30000; default: 3000).
- **Polling Retries:** The maximum number of retries after a polling timeout occurs (options: 0 to 10; default: 3).



Serial Communication Port

If a serial communication port is selected, the **Device Property** configuration window will appear as shown below:

Device Name:	Device1	Enable Data Collect	tion	
Communication Port:	COM1	•		
Protocol:	Modbus/RTU protocol			
evice Settings		Timeout Settings		
Unit ID: 1	•	Response Timeout:	3000	ms
		Polling Delay:	10	ms

The following configuration items only appear when a serial communication port is selected.

- **Response Timeout:** The timeout value when the server polls the data of this Modbus device (options: 0 to 30000; default: 3000).
- Polling Delay: The delay time after a polling timeout occurs (0 to 60000; default: 10).

The newly created device group will now be shown as belonging to this group.

MX-AOPC UA Server					x
<u>File Edit View Tools Runtime Help</u>					
💼 🗊 💼 🗊 🌒 🔊	🔊 <table-of-contents> 🕺 🖻</table-of-contents>	ê 🍘 🗿 🦣			
Active Device List	Device Name	Enabled	Communication Port	Protocol	Ur
E2242-01 (00:90:e8:16:e7:15)	Device 1	Yes	Intel(R) 82577LM Gigabit	Modbus/TCP protocol	1
Device Group List	Device2	Yes	COM1	Modbus/RTU protocol	1
Device1					

Editing a Modbus Device

Right click the Modbus device you would like to edit and then click **Properties**... in the popup menu, or click the Modbus device to select it and then click the **Properties** icon in the Quick Launch toolbar to open the properties configuration window.



NOTE You are not allowed to cut, copy, or paste a Modbus device.

Deleting a Modbus Device

Right click the Modbus device and then click **Delete** in the popup menu, or click the Modbus device to select it and then click the **Delete** icon in the Quick Launch toolbar.

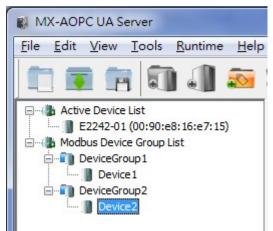
MX-AOPC UA Server		Same of Addision Street	
<u>File Edit View T</u> oo	ls <u>R</u> untime <u>H</u> elp	0	
	D 🕕 🔊	🔊 💸 🗡 🗈	È 😭 🐌
Active Device List E2242-01 (00:9 Modbus Device Group1 DeviceGroup1 Device1		Tag Group	Tag Name
Device2	New Tag Group Move to Device		
	Paste	Ctrl+V	
	Delete	Ctrl+D	
	Import Device T Export Device Ta		
Date Tin	Properties		

Moving a Modbus Device to a Different Device Group

<u>File Edit View Too</u>	ols <u>R</u> untime <u>H</u> e	elp	VP	<u>é</u> (2) ==	Bert
🛄 💽 📑 t		- 🔄 🐝	20		
Active Device List		Tag Group		Tag Name	Та
DeviceGrou	New Tag Grou	up			
	Move to Devi	ce Group	•	DeviceGroup1	
	Paste Delete		Ctrl+V Ctrl+D	DeviceGroup2	
	Import Device Export Device			III	
Date Tir	Properties				

1. Right click the Modbus device and then click the target device group in the popup menu.

2. The Modbus device will be moved to the target device group.



Tag Management

The following topics are covered in this chapter:

Tag Groups

- > Adding a Tag Group to a Device
- Editing a Tag Group
- Cutting a Tag Group
- > Copying a Tag Group
- Pasting a Tag Group
- > Deleting a Tag Group

Modbus Tags

- > Adding a Modbus Tag to a Tag Group
- > Importing a List of Modbus Tags into a Modbus Device
- Editing a Modbus Tag
- Deleting a Modbus Tag

Tag Groups

In this section we explain how to use the configuration console to add, edit, cut, copy, paste, and delete tag groups.

Adding a Tag Group to a Device

1. Right click the device that the tag group will be added to and then click **New Tag Group** in the popup menu, or click the device to select it and then click the **New Tag Group** icon on the Quick Launch toolbar.



2. Type in the name of the tag group (max. length = 30 characters; "." is not allowed) and then click OK.

Tag Group Proper	ty	
Tag Group Name:	TagGroup 1	
	ОК	Cancel

3. The new tag group will be added to the device.

-		
	NX-AOPC UA Server	
	<u>File Edit View Tools Runtime Help</u>	
	🛅 🗊 💼 🗊 🗊 🔊	140
	Active Device List E2242-01 (00:90:e8:16:e7:15) Modbus Device Group List DeviceGroup1	Tag

Editing a Tag Group

Right click the tag group and then click **Properties** in the popup menu, or click the tag group to select it and then click the **Properties** icon on the Quick Launch toolbar.

X
-
-

Cutting a Tag Group

Right click the tag group and click **Cut** in the popup menu, or click the tag group to select it and then click the **Cut** icon on the Quick Launch toolbar.

MX-AOPC UA Server			
<u>File Edit View Tools R</u>	untime <u>H</u> elp		
	. 🗊 🔊	🔊 📚	X
Active Device List		Tag Name	
	New Tag		
	Cut	Ctrl+X	
	Copy Delete	Ctrl+C Del	
	Properties		

Copying a Tag Group

Right click the tag group and then click **Copy** in the popup menu, or click the tag group to select it and then click the **Copy** icon on the Quick Launch toolbar.

MX-AOPC UA Server			
<u>File Edit View Tools</u>	<u>R</u> untime <u>H</u> elp		
1 🖬 🖬 🗐) 🕕 🔊	🔊 <table-of-contents> 📈</table-of-contents>	ê ê
Active Device List E2242-01 (00:90:e Modbus Device Group L Modbus DeviceGroup 1 Device1 TagGroup 1	ist	Tag Name	Tag Typ
	New Tag		
	Cut	Ctrl+X	
	Сору	Ctrl+C	
	Delete	Del	
	Properties		III

Pasting a Tag Group

Right click the Tag Group and then click **Paste** in the popup menu, or click the tag group to select it and then click the **Paste** icon on the Quick Launch toolbar.

MX-AOPC UA Se	rver			
<u>File Edit View</u>	<u>T</u> ools <u>R</u> untime <u>H</u> el	p		
	I I S	🔊 📚 🗡		
Active Device I E2242-01 Modbus Device DeviceGrou DeviceGrou Ta	(00:90:e8:16:e7:15) : Group List up1 1 gGroup1	Tag Group		Tag Name
	New Tag Group Move to Device	Group	•	
	Paste	Ctrl+	V	
	Delete	Ctrl+	D	
Date 1	Import Device Ta Export Device Ta			III
	Properties			

Deleting a Tag Group

Right click the tag group and then click **Delete** in the popup menu, or click the tag group to select it and then click the **Delete** icon on the Quick Launch toolbar.

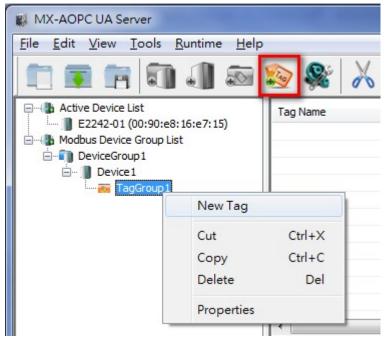
MX-AOPC UA Server		
<u>File Edit View Tools Runtime H</u> elp		
	🔊 💸 👗 🗈	Ê 😭 🐙
Active Device List E2242-01 (00:90:e8:16:e7:15) Modbus Device Group List OeviceGroup1 Device1 MagGroup1	Tag Name	Тад Туре
New Tag		
Cut Copy	Ctrl+X Ctrl+C	
Delete	Del	
Properties		
		III

Modbus Tags

In this section we explain how to use the configuration console to add, edit, delete, and move a Modbus tag.

Adding a Modbus Tag to a Tag Group

 Right click the tag group that the Modbus tag will be added to and then click New Tag in the popup menu, or click the tag group to select it and then click the New Tag icon on the Quick Launch toolbar.



2. Edit the items in the Tag Property window as needed.

Tag Name:	Tag1
Description:	
Address:	0
Function Code:	01: Read/Write Coils (0xxxx)
Data Type:	Boolean
Access Right:	Read/Write

- **Tag Name:** The name of the Modbus tag (max. length = 30; "." is not allowed).
- **Description:** Description of this Modbus tag (max. length = 25).
- > Address: Define the start address of this Modbus tag (0 to 65535).
- Function Code: Selecting the function code for this Modbus tag (options: 01: Read/Write Coils; 02: Read Discrete Inputs; 03: Read/Write Holding Registers; 04: Read Input Registers).
- Data Type: Selecting the data type of this Modbus tag (options: Boolean; Unsigned short integer; Unsigned integer; Float).
- 3. Click the tag group to verify that the Modbus tag was added to this group.

MX-AOPC UA Server							- C X
<u>File Edit View Tools Runtime Hel</u>	>						
🗒 🗊 📅 🗊 🗐 🔊	🔊 📚	* 🗈	Ê		S		
Active Device List	Tag Name	Tag Type	Functin Code	Start Address	Data Type	Access Rights	Description
E2242-01 (00:90:e8:16:e7:15)	🤏 Tag1	Polling	1	0000	Boolean	Read-only	
DeviceGroup1	100 C 100 C 100 C						
E Device 1							
TagGroup1							

Importing a List of Modbus Tags into a Modbus Device

To import a list of Modbus tags into a Modbus device, right click the Modbus device and then click **Import Device Tags (.csv)** in the popup menu. Select a csv file on your PC to import the tags listed in the csv file into the Modbus device. Refer to **Chapter 3: Configuration Console** \rightarrow **Menu Items** \rightarrow <u>File</u> for detailed csv file formats.

MX-AOPC UA Serve	r		
<u>File Edit View To</u>	ols <u>R</u> untime <u>H</u> elp)	
	🗊 🌒 🔊	😰 🕵	XD
Active Device List E2242-01 (00: Modbus Device Group1 DeviceGroup1 Device1	oup List	Tag Group	
	New Tag Group		
	Move to Device (Group	F
	Paste		Ctrl+V
	Delete		Ctrl+D
	Import Device Ta	igs (.csv)	
	Export Device Ta	gs (.csv)	
Date Ti	Properties		

Editing a Modbus Tag

Click the Modbus tag to select it and then click the **Properties** icon on the Quick Launch toolbar.

<u>File Edit View T</u> ools <u>R</u> untime <u>H</u> elp							
🗂 🗊 📅 🗐 🗐 🔊	1	X 🗈	Ê 🔒		<u>a</u>		
Active Device List	Tag Name	Tag Type	Functin Code	Start Address	Data Type	Access Rights	Description
E2242-01 (00:90:e8:16:e7:15) E2242-01 (00:90:e8:16:e7:15) Modbus Device Group List DeviceGroup1 Device1	🧐 Tag1	Polling	1	0000	Boolean	Read-only	
TagGroup1							

Deleting a Modbus Tag

Click the Modbus tag to select it and then click the **Delete** icon on the Quick Launch toolbar.

MX-AOPC UA Server <u>F</u> ile <u>E</u> dit <u>V</u> iew <u>T</u> ools <u>R</u> untime <u>H</u> elp							
	iy 🕵	X 🗈	Ê 😭		<u>a</u>		
	Tag Name	Tag Type	Functin Code	Start Address	Data Type	Access Rights	Description
Modbus Device Group List DeviceGroup1 DeviceGroup1 DeviceGroup1 TagGroup1	🔊 Tag1	Polling	1	0000	Boolean	Read-only	

License Registration and Activation

Three versions of MX-AOPC UA Server are available. The trial version, which supports up to 30 connected devices, can be installed and used for 30 days without registration. To use the free and paid versions you must submit a license registration. Both free and paid versions can be used indefinitely, but the free version only supports up to 30 connected devices. The three versions are summarized in the following table:

Version	Connected Devices	Run Time	License File
Trial	Up to 30	30 days	Not Required
Free	Up to 30	Unlimited	Required
Paid	Unlimited	Unlimited	Required

Take the following steps to register a license.

Step 1: Get the PC User Code from the MX-AOPC UA server's configuration console by clicking **Help** \rightarrow **License**. For the paid version, you will need to purchase a registration code from your Moxa distributor. The Registration Code can be found on the product label.

User Code		×	ΜΟΧΛ°
User Code: License Status:	1613EB128766 Trial Version		MN: MX-AOPC UA Server Product S/N:
Time Remaining:	11 days		Rev.: 1.0.0 Made in Taiwan P/N: 3093018000021
		ОК	Registration Code:

Step 2: Go to Moxa's Software Licensing website (<u>http://license.moxa.com</u>) and log in with your Moxa account and password, or apply for an account if this is your first visit to the site.

Step 3: On the Software Licensing website, navigate to Activate Your Software \rightarrow Software Package \rightarrow MX-AOPC UA Server. Select Free Version and enter the User Code, or select Paid Version and enter both the User Code and Registration Code.

ΜΟΧΛ	
Home > Activate Your Software >	Software Package > MX-AOPC UA Server
 Free Version User Code: Paid Version Registration Code: User Code: 	Submit

Step 4: Download the license file to a folder on your PC and unzip it.

Step 5: From MX-AOPC UA server's configuration console, click **Help** \rightarrow **Licensing** \rightarrow **Add License File** to add the license file (.lic) to MX-AOPC UA Server.

ile Edit View Tools Runtime [Help	
	Server Help	
	Licensing	License Info
Active Device List	About	Add License File
Modbus Device Group List		Deactivate License

Step 6: After license activation is complete, go to **Help** \rightarrow **License Info** to check the current license status.

ActiveOPC	User Code
Complete license activation.	User Code: 1613EB128766 License Status: Free Version Max. Device Count: 30
Finish	ОК
User Code 📃	×
User Code: 1613EB128766 License Status: Paid Version OK	

Port Usage

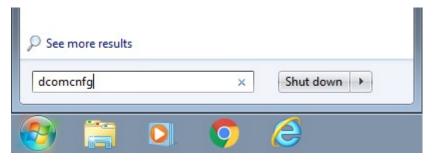
Port	Туре	Usage
502	ТСР	Modbus Communication
53192	ТСР	Default UA Server Endpoint
9500	ТСР	Moxa AOPC protocol
9900	ТСР	Moxa AOPC protocol

Configuring DCOM Settings

If the OPC client only supports the OPC Data Access (DA) standard, you will need to configure DCOM settings. Before launching MX-AOPC UA Server, configure the DCOM settings for your security policy.

NOTE If the OPC Client and Server software are installed on different servers, the DCOM, WORKGROUP, System Account, and Password settings should be the same.

1. Go to the START menu and type dcomcnfg to activate the Component Services dialog box.



 Right click My Computer under Console Root → Component Services → Computers, and click Properties to open the My Computer Properties dialog box.



3. Click the **COM Security** tab and edit who is allowed by default to access, launch, or activate the applications or objects.

Default Protocols Access Permissions	COM Se	curity	MSDTC
Access Permissions			
You may edit who is a also set limits on appli	ications that detem	nine their ow	n permissions.
	difying access perr ns to start, connec		
ſ	Edit Limits	E	dit Default
		to start, con	nect, function
	Edit Limits		dit Default
am more about setting t	these properties.		

4. Add Everyone, INTERACTIVE, NETWORK, and SYSTEM, and set Allow permission to all of these groups.

ccess Permission		? 🗾
Default Security		
Group or user names:		
& Everyone		
SELF		
SYSTEM		
S NETWORK		
& INTERACTIVE		
	A <u>d</u> d	Remove
Permissions for Everyone	Allow	Deny
Local Access	\checkmark	
Remote Access		
	0000000000	
Learn about access control an	d permissions	
	ОК	Cancel

NETWORK Administrators (IE11WIN7\.	Administrators)	
Everyone SYSTEM NETWORK Administrators (IE11WIN7) INTERACTIVE	Administrators)	
NETWORK Administrators (IE11WIN7).	Administrators)	
Administrators (IE11WIN7)	Administrators)	
	Administrators)	
	Add	Remove
ermissions for Everyone	Allow	Deny
Local Launch		
Remote Launch	V	
Local Activation	1	
Remote Activation	V	
earn about access control and	permissions	
eam about access control and	permissions OK	

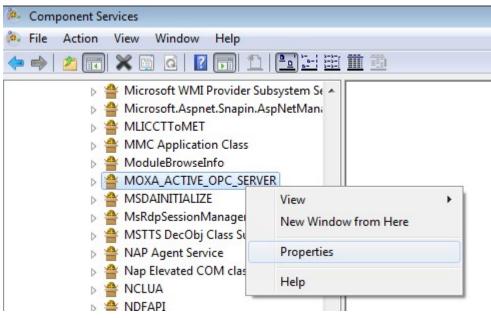
5. Click the **Default Properties** tab and check if the settings are the same as shown in the screenshot below.

Default Protocols	COM Securit	y MSDTC
General	Options	Default Properties
E <u>n</u> able COM Intern Default Distributed C		erties the packet level.
who is calling them, a	and whether the application	incations can determine on can do operations
who is calling them, a	and whether the application tity.	iications can determine on can do operations
who is calling them, a using the client's iden	and whether the application tity.	Ications can determine on can do operations
who is calling them, a using the client's iden Default <u>I</u> mpersonal Identify Security for reference and that the default i	and whether the application tity.	 can do operations d if authentication is used anonymous.

6. Click **Yes** when the following warning message appears.

DCOM Ma	achine wide settings		8
Â		nachine wide DCOM settings, this machine, some applications may e DCOM settings?	
		Yes	No

 Go back to the Component Services dialog box, and right click MOXA_ACTIVE_OPC_SERVER under Console Root → Component Services → Computers → My Computer → DCOM Config, and then click Properties.



8. Click the General tab, and set the Authentication Level to Connect.

MOXA_ACTIVE_OPC_SERV	/ER Properties	
General Location Secu	unity Endpoints Identity	
General properties of th	is DCOM application	
Application Name:	MOXA_ACTIVE_OPC_SERVER	
Application ID:	{6cbf6ab8-1ba8-4a2b-8b92-554d29d378f9}	
Application Type:	Local Service	
Authentication Level:	Connect	
Service Name:	MOXA_MX-AOPC_UA_SERVER	
Leam more about <u>setting</u>	these properties.	
	OK Cancel <u>A</u> pply	

9. Click the Security tab. You may either apply the default settings of Access, Launch, and Activation Permissions to the MX-AOPC UA Server or customize the permission settings. If you would like to customize the settings, make sure that Everyone, INTERACTIVE, NETWORK, and SYSTEM are added, and the permission for these groups is set to Allow.

Launch and Activation Permissions O	
Customize	Edit
Access Permissions	
Use Default	
Customize	Edit
Configuration Permissions	
🔘 Use Default	
Oustomize	Edit

10. Click the **Identity** tab and make sure **The system account** is selected. Now DCOM is ready to accept all incoming connections.

NOXA_AC	TIVE_OPC	_SERVER	Properties			? 🔀
General	Location	Security	Endpoints	Identity]	
Which	user accour	nt do you v	vant to use to	o run this a	applicatio	n?
🔘 The	interactive	user.				
The	launching (user.				
This	user.					
User:						Browse
Passi	word:	[
Confi	rm passwor	d: [
The	system acc	ount (serv	ices only).			
Leam m	nore about g	setting thes	e properties.			
			ОК	C	ancel	Apply