

User Manual

ADAM-6300 Series

IoT OPC UA Ethernet I/O Modules



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If you think you have a defective product, follow these steps:

- 1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
- 2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
- 3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
- 4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
- 5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Part No. Printed in Taiwan Edition 2 May 2021

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This type of cable is available from Advantech. Please contact your local supplier for ordering information.

Test conditions for passing also include the equipment being operated within an industrial enclosure. In order to protect the product from damage caused by electrostatic discharge (ESD) and EMI leakage, we strongly recommend the use of CEcompliant industrial enclosure products.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference. In this event, users are required to correct the interference at their own expense.

Technical Support and Assistance

- 1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
- 2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

Safety Instructions

- 1. Read these safety instructions carefully.
- 2. Keep this User Manual for later reference.
- 3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
- 4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
- 5. Keep this equipment away from humidity.
- 6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
- 7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
- 8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- 9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
- 10. All cautions and warnings on the equipment should be noted.
- 11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
- 12. Never pour any liquid into an opening. This may cause fire or electrical shock.
- 13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
- 14. If one of the following situations arises, get the equipment checked by service personnel:
- The power cord or plug is damaged.
- Liquid has penetrated into the equipment.
- The equipment has been exposed to moisture.
- The equipment does not work well, or you cannot get it to work according to the user's manual.
- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage.
- 15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -25°C OR ABOVE 70°C. THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
- 16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

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Product Overview

1.1 ADAM-6300 Introduction

Advantech's ADAM-6300 series are highly-secure groundbreaking remote I/O modules supporting OPC UA without the need of gateways. They can link directly to SCADA and cloud, accelerating OT and IT convergence. ADAM-6300 series are equipped with security IC, OPC UA security certificate and encryption. Their high I/O density and support for daisy-chaining make ADAM-6300 series a highly integrated and cost-effective remote I/O solution.

1.2 Features

- 1. Uniquely-designed remote I/O with OPC UA protocol.
- Remote I/O directly links to SCADA and cloud, accelerating OT and IT convergence.
- 3. Additional OPC UA provides security certificate and encryption.
- 4. Most integrated and cost effective- high I/O density and support of daisy-chaining.

1.3 Hardware Introduction

1.3.1 Front Name Plate



Figure 1.1 Front Name Plate

"U" icon in I/O label means Upper block assignment.

1.3.2 Power Connection



Figure 1.2 Power Connector

1.3.3 Ethernet Connector and Grounding Screw



Figure 1.3 Ethernet Connector and Grounding Screw

1.3.4 LED Definition

The ADAM-6300 series are equipped with LED indicators that show the device status. The LED indicator behaviors are defined below.

| LED | Color | Behavior | Definition | | | | | | |
|---------|--------|----------------|---|--|--|--|--|--|--|
| Statua | Croop | Flashing(1Hz) | Normal mode | | | | | | |
| Status | Green | Flashing(10Hz) | Module is booting | | | | | | |
| Link1 | Yellow | Stay on | Ethernet(Eth1) speed is connected | | | | | | |
| Link2 | Yellow | Stay on | Ethernet(Eth2) speed is connected | | | | | | |
| Active1 | Green | Flashing | Ethernet(Eth1) is transmitting/receiving data | | | | | | |
| Active2 | Green | Flashing | Ethernet(Eth2) is transmitting/receiving data | | | | | | |

The indicator behavior for Error LED light can be configured using ASCII command: \$01ErrLEDs \$01ErrLED0: Error light off

\$01ErrLED1: Error light stay on

1.3.5 **Dimensions**





1.4 Package Information

- 1 x ADAM-6300 module
- 1 x ADAM-6300 quick start note
- 1 x Electronic information for pollution (China only)
- 1 x DIN rail mounting bracket



Hardware Installation

2.1 Mounting: DIN rail

The ADAM-6300 module can be secured to a cabinet by using DIN rails. First, user can fix the ADAM-6300 module to the DIN rail adapter and then secure it on the DIN rail. When mounting the module on the rail, you should consider using end brackets at each end of the rail in order to prevent the module from sliding.



Figure 2.1 DIN Rail Adapter

2.2 Power Supply Wiring

The ADAM-6300 series is designed for a standard industrial unregulated 24 VDC power supply. For further applications, it can also accept +10 to 30 VDC.

Power supply ripple must be limited to 200 mV peak-to-peak, and the immediate ripple voltage should be maintained between +10 and 30 VDC. Screw terminals +Vs and GND are for wiring the power supply.

We advise using the following standard colors (which are also indicated on the modules) for the power lines: +Vs (R) Red GND (B) Black.

2.3 I/O Module Wiring

A plug-in screw terminal block is used for the interface between I/O modules and field devices. The following information must be considered when connecting electrical devices to I/O modules.

- The terminal block accepts Wire Size #16~28 AWG (stripped length: 6.5 mm)
- Always use a continuous length of wire; do not combine wires
- Use the shortest possible wire length
- Use wire trays for routing where possible
- Avoid running wires near high-energy wiring
- Avoid running input wiring proximal to output wiring
- Avoid creating sharp bends in the wires

Note! The wires should be at least 2 mm in diameter.



ADAM-6300 User Manual



Introduction to Digital

3.1 Specifications

3.1.1 General

- **Power input:** $10 \sim 30 V_{DC}$
- LAN: 10/100Base-T(X)
- Connectors: 2 x RJ-45 (LAN), 1 MAC ID; Plug-in screw terminal block (I/O and power)
- **Screw terminal block:** Accepts wire size #16-28 AWG, stripped length: 6.5 mm
- Watchdog: System and Communication
- Real-time clock accuracy: 2 seconds per day
- Certification: CE, FCC

3.1.2 Protection

Power Reversal Protection

3.1.3 Environment

- **Operating temperature:** -25 ~ 70 °C (-13 ~ 158 °F)
- Storage temperature: -40 ~ 85 °C (-40 ~ 185 °F)
- **Operating humidity:** 20 ~ 95% RH (non-condensing)
- **Storage humidity:** 0 ~ 95% RH (non-condensing)

3.1.4 OPC UA Specification

- Support Address Space
- Session, Monitored item and Subscription

| Items | Max | Remark |
|-------------------------------|-----|---|
| Max Monitored Items | 600 | Including all sessions |
| Max Sessions | 4 | The maximum sessions supported, includ- ing security and non security session. |
| Max Subscriptions per Session | 1 | |

Note!

ADAM-6300 supports 4 session including security and non security session. User can disconnect session and restart ADAM-6300 to remove sessions you don't need.

Security Policy

An endpoint security policy is a predefined communication mode that mandates a combination of security algorithms and optionally message signing and encryption.

- Endpoint Security Policy: None
- Endpoint Security Policy: Sign Basic128Rsa15
- Authentication Policy
 - User Token Anonymous Token Security Policy None
 - User Token Username / Password Token Security Policy Basic128Rsa15
- Supports 8 certificates

Note!

ADAM-6350 supports 8 certificates. User can click Delete Certificates and restart ADAM-6350 to remove certificates you don't need.

3.1.5 Modbus

| | ADAM-6350 | | | | | | | | | | | | | | | | | | | | |
|------------------|--------------|------------------|----------------|------------------|--------------|------------------|----------------|------------------|--------------|------------------|----------------|--------|--------|--------|---------|-------|----------|--------|--|--|--|
| AI | | 0 | | 40 | | 0 | DI | 18 | | DO | 18 | | | | | | | | | | |
| Addres s (0x) | chan- nel | Descrip- tion | Attri- bute | Addres s (0x) | chan- nel | Descrip- tion | Attri- bute | Addres s (0x) | chan- nel | Descrip- tion | Attri- bute | | | | | | | | | | |
| 0x0001 | 0 | | | 0x0033 | 0 | | | 0x0065 | 12 | | | | | | | | | | | | |
| 0x0002 | 1 | | | 0x0034 | 1 | | | 0x0066 | 13 | DI Stop/ | | | | | | | | | | | |
| 0x0003 | 2 | | | 0x0035 | 2 | | | 0x0067 | 14 | Start | R/W | | | | | | | | | | |
| 0x0004 | 3 | | | 0x0036 | 3 | | | 0x0068 | 15 | Otart | 17/17 | | | | | | | | | | |
| 0x0005 | 4 | | | 0x0037 | 4 | | | 0x0069 | 16 | Counter | | | | | | | | | | | |
| 0x0006 | 5 | | | 0x0038 | 5 | | | 0x0070 | 17 | | | | | | | | | | | | |
| 0x0007 | 6 | | | 0x0039 | 6 | | | 0x0071 | | | | | | | | | | | | | |
| 0x0008 | 7 | | | 0x0040 | 7 | | | 0x0072 | | | | | | | | | | | | | |
| 0x0009 | 8 | DI Value | | 0x0041 | 8 | | | 0x0073 | 12 | | | | | | | | | | | | |
| 0x0010 | 9 | | | | | Di value | | 0x0042 | 9 | | | 0x0074 | 13 | | | | | | | | |
| 0x0011 | 10 | | | | | | | | | | 0x0043 | 10 | | | 0x0075 | 14 | DI clear | R/W | | | |
| 0x0012 | 11 | | | | | | | | 0x0044 | 11 | | | 0x0076 | 15 | counter | 17/17 | | | | | |
| 0x0013 | 12 | | | | | | 0x0045 | 12 | | | 0x0077 | 16 | | | | | | | | | |
| 0x0014 | 13 | | | | 0x0046 | 13 | - | | 0x0078 | 17 | | | | | | | | | | | |
| 0x0015 | 14 | | | 0x0047 | 14 | | | 0x0079 | | | | | | | | | | | | | |
| 0x0016 | 15 | | _ | | _ | | | | - | | | | Read | 0x0048 | 15 | | | 0x0080 | | | |
| 0x0017 | 16 | | Neau | 0x0049 | 16 | | | 0x0081 | 12 | | | | | | | | | | | | |
| 0x0018 | 17 | | | 0x0050 | 17 | | | 0x0082 | 13 | DI | | | | | | | | | | | |
| 0x0019 | 18 | | | 0x0051 | 18 | | | 0x0083 | 14 | enable/ | D/W | | | | | | | | | | |
| 0x0020 | 19 | | | 0x0052 | 19 | | | 0x0084 | 15 | disable | 17.44 | | | | | | | | | | |
| 0x0021 | 20 | | | 0x0053 | 20 | | | 0x0085 | 16 | filter | | | | | | | | | | | |
| 0x0022 | 21 | | | 0x0054 | 21 | | | 0x0086 | 17 | | | | | | | | | | | | |
| 0x0023 | 22 | | | 0x0055 | 22 | | | 0x0087 | | | | | | | | | | | | | |
| 0x0024 | 23 | | | 0x0056 | 23 | | | 0x0088 | | | | | | | | | | | | | |
| 0x0025 | 24 | | | 0x0057 | 24 | | | 0x0089 | 12 | | | | | | | | | | | | |
| 0x0026 | 25 | | | 0x0058 | 25 | | | 0x0090 | 13 | DO start/ | | | | | | | | | | | |
| 0x0027 | 26 | | | 0x0059 | 26 | | | 0x0091 | 14 | ston | D/W | | | | | | | | | | |
| 0x0028 | 27 | | | 0x0060 | 27 | | | 0x0092 | 15 | stop | 17.44 | | | | | | | | | | |
| 0x0029 | 28 | | | 0x0061 | 28 | | | 0x0093 | 16 | pulse | | | | | | | | | | | |
| 0x0030 | 29 | | | 0x0062 | 29 | | | 0x0094 | 17 | | | | | | | | | | | | |
| 0x0031 | 30 | | | 0x0063 | 30 | | | 0x0095 | | | | | | | | | | | | | |
| 0x0032 | 31 | | | 0x0064 | 31 | | | 0x0096 | | | | | | | | | | | | | |

| Addres s (4x) | chan- nel | Descrip- tion | Attri- bute | Addres s (4x) | chan- nel | Descrip- tion | Attri- bute | Addres s (4x) | chan- nel | Descrip- tion | Attri- bute |
|------------------|--------------|------------------|----------------|------------------|--------------|------------------|----------------|------------------|--------------|------------------|----------------|
| 4x0033 | 10 | | | 4x0065 | 16 | DO | Read | 4x0127 | 12 | | |
| 4x0034 | 12 | | | 4x0066 | 10 | Remaine | | 4x0128 | 13 | Pulse | |
| 4x0035 | 10 | | | 4x0067 | 47 | Output | | 4x0129 | 14 | Out Low | |
| 4x0036 | 13 | | | 4x0068 | 17 | Count | | 4x0130 | 15 | Level | R/W |
| 4x0037 | 14 | | | | | | | 4x0131 | 16 | Width | |
| 4x0038 | 14 | DI | Read | 4x0109 | 12 | | | 4x0132 | 17 | | |
| 4x0039 | 15 | Value | Neau | 4x0110 | 13 | | | 4x0133 | 10 | | |
| 4x0040 | 15 | | | 4x0111 | 14 | DI Filter | | 4x0134 | 12 | | |
| 4x0041 | 16 | | | 4x0112 | 15 | nal Width | FX/ V V | 4x0135 | 12 | | |
| 4x0042 | 10 | | | 4x0113 | 16 | | | 4x0136 | 13 | | r./ v v |
| 4x0043 | 17 | | | 4x0114 | 17 | | | 4x0137 | 14 | Total | |
| 4x0044 | 17 | | | 4x0115 | 12 | | | 4x0138 | 14 | Pulse | |
| 4x0045 | 10 | | | 4x0116 | 13 | | | 4x0139 | 15 | Output | |
| 4x0046 | 12 | | | 4x0117 | 14 | DI Filter | | 4x0140 | 15 | Count | |
| 4x0047 | 12 | | | 4x0118 | 15 | nal Width | r./vv | 4x0141 | 16 | | |
| 4x0048 | 13 | | | 4x0119 | 16 | | | 4x0142 | 2 10 | | r./ v v |
| 4x0049 | 14 | | | 4x0120 | 17 | | | 4x0143 | 17 | | |
| 4x0050 | 14 | DI Fre- | Pood | 4x0121 | 12 | | | 4x0144 | 17 | | |
| 4x0051 | 15 | Value | Reau | 4x0122 | x0122 13 | | | | | | |
| 4x0052 | 15 | | | 4x0123 | 14 | Pulse Out | D/W | | | | |
| 4x0053 | 16 | | | 4x0124 | 15 | Width | | | | | |
| 4x0054 | 10 | | | 4x0125 | 16 | | | 4x0221 | ΔII | All DI | Pood |
| 4x0055 | 17 | | | 4x0126 | 17 | | | 4x0222 | Ali | Values | Neau |
| 4x0056 | 17 | | | | | | | | | | |
| 4x0057 | 12 | | | | | | | 4x0223 | ΔII | All DO | |
| 4x0058 | 12 | | | | | | | 4x0224 | All | Values | |
| 4x0059 | 12 | DO | | | | | | | | | |
| 4x0060 | 15 | Remained | Read | | | | | | | | |
| 4x0061 | 14 | Output | Neau | | | | | | | | |
| 4x0062 | 14 | Count | | | | | | | | | |
| 4x0063 | 15 | Count | | | | | | | | | |
| 4x0064 | 15 | | | | | | | | | | |

| Chapter 3 |
|----------------|
| Introductio |
| on to Digital |
| $\overline{0}$ |

| ADAM-6360D | | | | | | | | | | | | |
|-----------------|--------------|------------------|----------------|------------------|--------------|------------------|----------------|------------------|--------------|-----------------|----------------|-----|
| AI | | 0 | | AO | | 0 | DI | 14 | | DO | 14 | |
| Address (0x) | chan- nel | Descrip- tion | Attri- bute | Addres s (0x) | chan- nel | Descrip- tion | Attri- bute | Addres s (0x) | chan- nel | Descri ption | Attri- bute | |
| 0x0001 | 0 | | | 0x0033 | 0 | | | 0x0065 | 8 | | | |
| 0x0002 | 1 | | | 0x0034 | 1 | | | 0x0066 | 9 | | | |
| 0x0003 | 2 | | | 0x0035 | 2 | | | 0x0067 | 10 | DI Stop/ | D/M/ | |
| 0x0004 | 3 | | | 0x0036 | 3 | SSR | | 0x0068 | 11 | Counter | | |
| 0x0005 | 4 | | | 0x0037 | 4 | Value | | 0x0069 | 12 | | | |
| 0x0006 | 5 | | | 0x0038 | 5 | | | 0x0070 | 13 | | | |
| 0x0007 | 6 | DI Value | | 0x0039 | 6 | | | 0x0071 | | | | |
| 0x0008 | 7 | Divalue | | 0x0040 | 7 | | | 0x0072 | | | | |
| 0x0009 | 8 | | | 0x0041 | 0 | | | 0x0073 | 8 | | | |
| 0x0010 | 9 | | | 0x0042 | 1 | | | 0x0074 | 9 | | | |
| 0x0011 | 10 | | | | 0x0043 | 2 | | | 0x0075 | 10 | DI clear | R/W |
| 0x0012 | 11 | | | 0x0044 | 3 | DO value | | 0x0076 | 11 | counter | 1.7.44 | |
| 0x0013 | 12 | _ | | 0x0045 | 4 | | | 0x0077 | 12 | - | | |
| 0x0014 | 13 | | | 0x0046 | 5 | | | 0x0078 | 13 | | | |
| 0x0015 | 14 | | | 0x0047 | 6 | | | 0x0079 | | | | |
| 0x0016 | 15 | _ | Read | 0x0048 | 7 | _ | R/W | 0x0080 | | | | |
| 0x0017 | 16 | | Reau | 0x0049 | 8 | | 17/14 | 0x0081 | 8 | | | |
| 0x0018 | 17 | | | 0x0050 | 9 | | | 0x0082 | 9 | DI | | |
| 0x0019 | 18 | _ | | 0x0051 | 10 | _ | | 0x0083 | 10 | enable/ | R/W | |
| 0x0020 | 19 | _ | | 0x0052 | 11 | _ | | 0x0084 | 11 | disable | 1.7, 4.4 | |
| 0x0021 | 20 | _ | | 0x0053 | 12 | _ | | 0x0085 | 12 | fliter | | |
| 0x0022 | 21 | _ | | 0x0054 | 13 | _ | | 0x0086 | 13 | | | |
| 0x0023 | 22 | _ | | 0x0055 | 14 | _ | | 0x0087 | | | | |
| 0x0024 | 23 | _ | | 0x0056 | 15 | _ | | 0x0088 | | | | |
| 0x0025 | 24 | | | 0x0057 | 16 | | | 0x0089 | 8 | | | |
| 0x0026 | 25 | | | 0x0058 | 17 | | | 0x0090 | 9 | DO | | |
| 0x0027 | 26 | | | 0x0059 | 18 | | | 0x0091 | 10 | start/ | DVV | |
| 0x0028 | 27 | | - | 0x0060 | 19 | | | 0x0092 | 11 | stop | | |
| 0x0029 | 28 | | | 0x0061 | 20 | | | 0x0093 | 12 | pulse | | |
| 0x0030 | 29 | | | 0x0062 | 21 | | | 0x0094 | 13 | | | |
| 0x0031 | 30 | | | 0x0063 | 22 | | | 0x0095 | | | | |
| 0x0032 | 31 | | | 0x0064 | 23 | | | 0x0096 | | | | |

| Address (4x) | chan- nel | Descrip- tion | Attri- bute | Addres s (4x) | chan- nel | Descrip- tion | Attri- bute | Addres s (4x) | chan- nel | Descri ption | Attri- bute | | | | |
|-----------------|--------------|------------------|----------------|------------------|--------------|---------------------------------|----------------|------------------|--------------|-----------------|----------------|--|--|--|--|
| 4x0033 | 0 | | | 4x0065 | 4 | DO | | 4x0127 | 0 | | | | | | |
| 4x0034 | 0 | | | 4x0066 | 4 | Remained | Dood | 4x0128 | 1 | Pulse | | | | | |
| 4x0035 | 0 | | | 4x0067 | Б | Pulse Out- | Reau | 4x0129 | 2 | Out | | | | | |
| 4x0036 | 9 | | | 4x0068 | 5 | put Count | out Count | | 3 | Level | | | | | |
| 4x0037 | 10 | | | | | | | 4x0131 | 4 | Width | | | | | |
| 4x0038 | 10 | DI | Road | | | | | 4x0132 | 5 | | | | | | |
| 4x0039 | 11 | Value | Neau | | | | | 4x0133 | 0 | | | | | | |
| 4x0040 | | | | | | | | 4x0134 | 0 | | | | | | |
| 4x0041 | 12 | | | | | | | 4x0135 | 1 | | R/W | | | | |
| 4x0042 | 12 | | | | | | | 4x0136 | 1 | | 1.7.4.4 | | | | |
| 4x0043 | 13 | | | | | | | 4x0137 | 2 | Total | | | | | |
| 4x0044 | 10 | | | | | | | 4x0138 | 2 | Pulse | | | | | |
| 4x0045 | 8 | | | | | | | 4x0139 | 3 | Output | | | | | |
| 4x0046 | Ŭ | | | | | | | 4x0140 | Ŭ | Count | | | | | |
| 4x0047 | 9 | | | 4x0109 | 8 | | | 4x0141 | 4 | | R/W | | | | |
| 4x0048 | Ŭ | DI Fre- | | 4x0110 | 9 | | | 4x0142 | • | | 10.00 | | | | |
| 4x0049 | 10 | | | 4x0111 | 10 | Low Sig- | R/W | 4x0143 | 5 | | | | | | |
| 4x0050 | 10 | | Read | 4x0112 | 11 | nal Width | | 4x0144 | U | | | | | | |
| 4x0051 | 11 | Value | riodu | 4x0113 | 12 | | | | | | | | | | |
| 4x0052 | | - | | 4x0114 | 13 | | | | | | | | | | |
| 4x0053 | 12 | | | 4x0115 | 8 | | | | 1 | 1 | | | | | |
| 4x0054 | | - | | 4x0116 | 9 | | | 4x0221 | All | All DI | Read | | | | |
| 4x0055 | 13 | | | 4x0117 | 10 | DI Filter | | 4x0222 | | Values | | | | | |
| 4x0056 | | | | 4x0118 | 11 | nal Width | R/W | | 1 | 1 | 1 | | | | |
| 4x0057 | • | | | 4x0119 | 12 | | | 4x0223 | | All DO | | | | | |
| 4x0058 | 0 | 50 | | 4x0120 | 13 | | | 4x0224 | All | & SSR Values | R/W | | | | |
| 4x0059 | 1 | DO Remained | | 4x0121 | 0 | | | | | | | | | | |
| 4x0060 | 1 | Pulse | Read | 4x0122 | 1 | | | | | | | | | | |
| 4x0061 | | Output | Read | 4x0123 | 2 | Pulse Out Low Level Width | DAA | | | | | | | | |
| 4x0062 | 2 | Count | | 4x0124 | 3 | | | | | | | | | | |
| 4x0063 | 3 | 3 | 3 | 3 | з | | | 4x0125 | 4 | vviatn | | | | | |
| 4x0064 | | | | | | | 4x0126 | 5 | | | | | | | |

| | ADAM-6317 | | | | | | | | | | | | | | | | | | | |
|---------------------|-------------|-----------------|----------------|---------------------|-------------|-----------------|---------------|---------------------|-------------|-------------------|----------------|---------------------|-------------|----------------------|--------------|-----|--|--|--|--|
| AI | | 8 | A | 0 | | 0 | DI | 11 | | DO | 10 | | | | | | | | | |
| Addr ess (0x) | cha nnel | Descr iption | Attri- bute | Addr ess (0x) | chan nel | Descri ption | Attri bute | Addr ess (0x) | chan nel | Descri ption | Attri- bute | Addr ess (0x) | cha nnel | Descr iption | Attr bute | | | | | |
| 0x00 01 | 0 | | | 0x00 33 | 0 | | | 0x00 65 | 5 | | | 0x00 97 | 0 | | | | | | | |
| 0x00 02 | 1 | | | 0x00 34 | 1 | | | 0x00 66 | 6 | | | 0x00 98 | 1 | | | | | | | |
| 0x00 03 | 2 | | | 0x00 35 | 2 | | | 0x00 67 | 7 | DI Stop/ | DAA | 0x00 99 | 2 | | | | | | | |
| 0x00 04 | 3 | | | 0x00 36 | 3 | | | 0x00 68 | 8 | Counter | R/W | 0x01 00 | 3 | Burn- out flag | Rea | | | | | |
| 0x00 05 | 4 | | | 0x00 37 | 4 | DO | | 0x00 69 | 9 | | | 0x01 01 | 4 | | d | | | | | |
| 0x00 06 | 5 | DI Value | | 0x00 38 | 5 | Value | | 0x00 70 | 10 | | | 0x01 02 | 5 | | | | | | | |
| 0x00 07 | 6 | | | 0x00 39 | 6 | | | 0x00 71 | | 1 | I | 0x01 03 | 6 | | | | | | | |
| 0x00 08 | 7 | | | 0x00 40 | 7 | | | 0x00 72 | | | | 0x01 04 | 7 | | | | | | | |
| 0x00 09 | 8 | | | 0x00 41 | 8 | | | 0x00 73 | 5 | | | | | | | | | | | |
| 0x00 10 | 9 | | | 0x00 42 | 9 | | | 0x00 74 | 6 | | | | | | | | | | | |
| 0x00 11 | 10 | | | | | | | | 0x00 43 | 10 | | | 0x00 75 | 7 | DI clear | R/W | | | | |
| 0x00 12 | 11 | | | | | Dood | 0x00 44 | 11 | | | 0x00 76 | 8 | counter | r./ vv | | | | | | |
| 0x00 13 | 12 | | | | Reau | 0x00 45 | 12 | | r./ vv | 0x00 77 | 9 | _ | | | | | | | | |
| 0x00 14 | 13 | | | 0x00 46 | 13 | 13 | | 0x00 78 | 10 | | | | | | | | | | | |
| 0x00 15 | 14 | | | 0x00 47 | 14 | | | 0x00 79 | | | | | | | | | | | | |
| 0x00 16 | 15 | | | 0x00 48 | 15 | | | 0x00 80 | | | | | | | | | | | | |
| 0x00 17 | 16 | | | 0x00 49 | 16 | | | 0x00 81 | 5 | | | | | | | | | | | |
| 0x00 18 | 17 | | | 0x00 50 | 17 | | | 0x00 82 | 6 | | | | | | | | | | | |
| 0x00 19 | 18 | | | 0x00 51 | 18 | | | 0x00 83 | 7 | DI enable/ | P/\\/ | | | | | | | | | |
| 0x00 20 | 19 | | | 0x00 52 | 19 | | | 0x00 84 | 8 | disable filter | 10,00 | | | | | | | | | |
| 0x00 21 | 20 | | | 0x00 53 | 20 | | | 0x00 85 | 9 | | | | | | | | | | | |
| 0x00 22 | 21 | | | 0x00 54 | 21 | - | | 0x00 86 | 10 | | | | | | | | | | | |
| 0x00 23 | 22 | | | 0x00 55 | 22 | | | 0x00 87 | | | | | | | | | | | | |
| 0x00 24 | 23 | | | 0x00 56 | 23 | | | 0x00 88 | | | | | | | | | | | | |

| 0x00 25 | 24 | | | 0x00 57 | 24 | | | 0x00 89 | 4 | | | | | | | | | | | | | | | | |
|-------------|------|---------------|--------|-------------|--------|--------|--------|-------------|--------|-----------------|----------|-------------|--------|----------------|------------|--|--|------------|---|---|--|------------|---|--|--|
| 0x00 26 | 25 | | | 0x00 58 | 25 | | | 0x00 90 | 5 | | | | | | | | | | | | | | | | |
| 0x00 27 | 26 | | | 0x00 59 | 26 | | | 0x00 91 | 6 | DO start/ | | | | | | | | | | | | | | | |
| 0x00 28 | 27 | | | 0x00 60 | 27 | | | 0x00 92 | 7 | stop pulse | R/W | | | | | | | | | | | | | | |
| 0x00 29 | 28 | | | 0x00 61 | 28 | | | 0x00 93 | 8 | | | | | | | | | | | | | | | | |
| 0x00 30 | 29 | | | 0x00 62 | 29 | | | 0x00 94 | 9 | | | | | | | | | | | | | | | | |
| 0x00 31 | 30 | | | 0x00 63 | 30 | | | 0x00 95 | | | <u> </u> | | | | | | | | | | | | | | |
| 0x00 32 | 31 | | | 0x00 64 | 31 | | | 0x00 96 | | | | | | | | | | | | | | | | | |
| Addr | cha | Descr | Attri- | Addr | chan | Descri | Attri | Addr | chan | Descri | Attri- | Addr | cha | Descr | Attri | | | | | | | | | | |
| ess (4x) | nnel | iption | bute | ess (4x) | nel | ption | bute | ess (4x) | nel | ption | bute | ess (4x) | nnel | iption | bute | | | | | | | | | | |
| 4x00 01 | 0 | | | 4x00 33 | | | | 4x00 65 | | | | 4x01 27 | 4 | | | | | | | | | | | | |
| 4x00 02 | 1 | | | 4x00 34 | 5 | | | 4x00 66 | 8 | Remain ed | | 4x01 28 | 5 | | | | | | | | | | | | |
| 4x00 03 | 2 | | | 4x00 35 | | | | 4x00 67 | | Pulse Output | Read | 4x01 29 | 6 | Pulse Out | | | | | | | | | | | |
| 4x00 04 | 3 | AI | | 4x00 36 | 6 | | | 4x00 | 9 | Count | | 4x01 30 | 7 | Low Level | R/W | | | | | | | | | | |
| 4x00 | 4 | Raw Value | Read | 4x00 37 | | | | | | I | | 4x01 | 8 | vvidtn | | | | | | | | | | | |
| 4x00 | 5 | | | 4x00 38 | 7 | DI | Poo | | | | | 4x01 | 9 | | | | | | | | | | | | |
| 4x00 | 6 | | | 4x00 | | er | d | 4x01 | 0 | | | 4x01 | | | | | | | | | | | | | |
| 07 | 0 | | | 39 4×00 | 8 | Value | | 01 | U | | | 33 | 4 | | | | | | | | | | | | |
| 4x00 08 | 7 | | | 4x00 40 | | | | 4x01 02 | 1 | | | 4x01 34 | | | | | | | | | | | | | |
| 4x00 | 0 | | | 4x00 41 | | | | 4x01 03 | 2 | | | 4x01 | | | | | | | | | | | | | |
| 4x00 10 | 1 | | | 4x00 42 | 9 | | | 4x01 04 | 3 | AI | | 4x01 36 | 5 | | R/W | | | | | | | | | | |
| 4x00 11 | 2 | | | 4x00 43 | | | | 4x01 05 | 4 | Range Type | R/W | 4x01 37 | | Total Pulse | | | | | | | | | | | |
| 4x00 12 | 3 | Al | | 4x00 44 | 10 | | | 4x01 06 | 5 | | | 4x01 38 | 6 | Out- put | | | | | | | | | | | |
| 4x00 13 | 4 | nel Status | Read | 4x00 45 | 5 | | | 4x01 07 | 6 | | | 4x01 39 | | ooun | | | | | | | | | | | |
| 4x00 14 | 5 | Status | Status | Status | Status | Status | Status | Status | Status | Status | Status | Status | Status | tatus | 4x00 46 | | | 4x01 08 | 7 | , | | 4x01 40 | 7 | | |
| 4x00 15 | 6 | | | 4x00 47 | 6 | | | 4x01 09 | 5 | | | 4x01 41 | _ | | R/W | | | | | | | | | | |
| 4x00 16 | 7 | | | 4x00 48 | | | | 4x01 10 | 6 | | | 4x01 42 | ð | | | | | | | | | | | | |

| 4x00 17 | | | | 4x00 49 | 7 | | | 4x01 11 | 7 | | | 4x01 43 | • | | | | | |
|------------|---|-------------|------------|------------|--------------------------|--------------------------------|------------|------------|---------------------|--------------------|-----------------|------------|--------|--------|----------|--|--|--|
| 4x00 18 | 0 | | | 4x00 50 | 1 | | | 4x01 12 | 8 | DI Fil- ter Low | | 4x01 44 | 9 | | | | | |
| 4x00 19 | 1 | | | 4x00 51 | 0 | | | 4x01 13 | 9 | Signal Width | R/W | | | | | | | |
| 4x00 20 | | - | | 4x00 52 | 4x00 52 4x00 53 | DI Fre- quenc y Value | Rea d | 4x01 14 | 10 | | | | | | | | | |
| 4x00 21 | 2 | | | 4x00 53 | | | | 4x01 15 | 5 | | | | | | | | | |
| 4x00 22 | 2 | | | 4x00 54 | 9 | | | 4x01 16 | 6 | | | 4x02 21 | A II | All DI | Rea | | | |
| 4x00 23 | 2 | AI Scale | | 4x00 55 | | | 4x01 17 | 7 | DI Fil- ter High | | 4x02 22 | All | Values | d | | | | |
| 4x00 24 | 3 | | Bood | 4x00 56 | 10 | 10 | | | 4x01 18 | 8 | Signal Width | r./ v v | | | | | | |
| 4x00 25 | 4 | d Value | Neau | 4x00 57 | 4 | | | 4x01 19 | 9 | | | 4x02 23 | Λ.ΙΙ | All DO | | | | |
| 4x00 26 | 4 | _ | | 4x00 58 | 4 | | | 4x01 20 | 10 | | | 4x02 24 | Ę | Values | 1 \/ V V | | | |
| 4x00 27 | Б | | | | | 4x00 59 | 5 | DO | | 4x01 21 | 5 | | | | | | | |
| 4x00 28 | 5 | | | 4x00 60 | 5 | ⁵ Remained | i Rea | 4x01 22 | 6 | | | | | | | | | |
| 4x00 29 | 6 | | | 4x00 61 | 6 | Out- | d | 4x01 23 | 7 | Pulse Out | D/M | | | | | | | |
| 4x00 30 | 0 | | | 4x00 62 | Count | | 4x01 24 | 8 | Level Width | R/W | | | | | | | | |
| 4x00 31 | 7 | | 4x00 63 | 7 | | | 4x01 25 | 9 | | | | | | | | | | |
| 4x00 32 | 1 | 1 | | | | | 4x00 64 | I | | | 4x01 26 | 10 | | | | | | |

3.2 Digital Input/Output Modules (ADAM-6350)

The ADAM-6350 is a high-density I/O module with a built-in 10/100BASE-T interface for seamless Ethernet connectivity. The module has 18 digital inputs and 18 digital outputs with 2,500 VDC isolation protection. All inputs have a latch function for handling important signal handling, and they can be used as 3-kHz counter and frequency input channels(DI12~DI17). The outputs support 3 kHz Pulse Output (DO12~DO17).

3.2.1 Specifications

General

- Power Consumption: 4W @ 24 V_{DC}
- Isolation: 2,500 V_{DC}

Digital Input

- Channel: 18
- Dry contact: Logic 0: closed to DGND; Logic 1: open
- Wet contact: Logic 0: 0 ~ 3 V_{DC}, Logic 1: 10 ~ 30 V_{DC}
- DI12~DI17 Supports 3 kHz Counter Input
- DI12~DI17 Supports 3 kHz Frequency Input

Digital Output

- Channel: 18
- Type: Sink 30 V_{DC}, 0.1A max. per channel
- DO12~DO17 Supports 3 kHz Pulse Output

3.2.2 Application Wiring

Digital Output Wiring Digital Input Wiring



Figure 3.1 Application Wiring (Top View)

Example: Wiring in "U"(upper) terminal blocks



Figure 3.2 Application Wiring (Side View)

Note!

It suggest that user use fly-diode when customer use inductive load.

| _ | _ |
|---|---|
| | |
| | |
| | |
| | |



Figure 3.3 DO Output Wiring (Resistive and inductive load)

3.3 Analog Input Modules (ADAM-6317)

The ADAM-6317 is a high-density I/O module with a built-in 10/100BASE-T interface for seamless Ethernet connectivity. The module has 8 analog input, 11 digital inputs and 10 digital outputs with 2,500 VDC isolation protection.

3.3.1 Specifications

Analog Input

- Channels: 8 (differential)
- Sampling Rate: 10 or 100 samples/ second(total)
- Resolution: 16 bits
- Input Range: 0 ~ 150 mV, 0 ~ 500 mV, 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V, ±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, ±20 mA, 0 ~ 20 mA, 4 ~ 20 mA

Digital Input

- Channel: 11
- Dry contact: Logic 0: closed to DGND; Logic 1: open
- Wet contact: Logic 0: 0 ~ 3 V_{DC}, Logic 1: 10 ~ 30 V_{DC}
- DI5~DI10 supports 3 kHz Counter Input
- DI5~DI10 supports 3 kHz Frequency Input

Digital Output

- Channel: 10
- Type: Sink 30 V_{DC}, 0.1A max. per channel
- DO4~DO9 supports 3 kHz Pulse Output

3.3.2 Application Wiring

Analog Input Wiring





Figure 3.4 Analog Input Wiring

Digital Input Wiring

Example: Wiring in "bottom" terminal blocks







Figure 3.6 Digital Output Wiring



Figure 3.7 "U"(Upper) and Bottom Terminal Block

3.4 SSR Relay Output Module Modules (ADAM-6360D)

The ADAM-6360D is a high-density I/O module with a built-in 10/100BASE-T interface for seamless Ethernet connectivity. The module has 8 SSR(Solid-State Relay) relay output, 14 digital inputs and 6 digital outputs with 2,500 VDC isolation protection.

3.4.1 Specifications

SSR(Solid-State Relay) Relay Output(PhotoMOS SPST)

- Channels: 8 (Form A)
- Contact rating(Resistive and Inductive load): 1 A @25°C@30 V_{DC} 0.7A @70°C@30 V_{DC}
- Relay-on time: 1.3 ms
- Relay-off time: 0.8 ms
- Isolation(Relay output to power): 1500 Vrms
- Peak Load Current: 4 A (100 ms (1 pulse))
- Total Power Dissipation: 400 mW / channel
- On-state resistance: 0.5 Ω

Digital Input

- Channel: 14
- Dry contact: Logic 0: closed to DGND; Logic 1: open
- Wet contact: Logic 0: 0 ~ 3 V_{DC}, Logic 1: 10 ~ 30 V_{DC}
- DI8~DI13 Supports 3 kHz Counter Input
- DI8~DI13 Supports 3 kHz Frequency Input

Digital Output

- Channel: 6
- Type: Sink 30 VDC, 0.1A max. per channel
- DO0~DO5 Supports 3 kHz Pulse Output

3.4.2 Application Wiring



Figure 3.8 Relay Output Wiring

Digital Input Wiring





Figure 3.9 Digital Input Wiring

Digital Output Wiring

Example: Wiring in "bottom" terminal blocks



Figure 3.10 Digital Output Wiring



Figure 3.11 "U"(Upper) and Bottom Terminal Block



System Configuration

4.1 System Requirements

Host Computer

- Microsoft Windows 7 or above
- 64 MB RAM
- 100 MB free hard disk space
- Mouse or other pointing device
- 10/100-Mbps Ethernet Card

4.2 Installing Adam/Apax .NET Utility

Adam/Apax .NET Utility is an application provided by Advantech for the configuration and operation of ADAM modules. The installation file is available for free download at http://www.advantech.com (click on Download Area under Service & Support for the latest version). Once installed, a shortcut to the utility will appear on your desktop.



Before installing Adam/Apax .NET Utility, you will need to install .NET Framework 4.5.1 or later.

4.3 Adam/Apax .NET Utility Overview

Adam/Apax .NET Utility is a graphical interface for configuring and operating ADAM modules. The following text instructions describe how to use the utility.

To start Adam/Apax .NET Utility, double-click the shortcut on the desktop or click the icon in the start menu folder. When the program is first opened, the main window will appear as shown in Figure 4.1.

| Menu Bar | |
|--|---|
| <u>F</u> ile <u>T</u> ools <u>S</u> etup <u>H</u> elp | |
| 🕒 🖬 🔍 📽 🖋 🐌 🕨 | ■ 🕄 🗿 Toolbar |
| RFID RFID Serial Favorite Group ADAM4500_5510Series Wireless Sensor Networks RFID Module Tree Display Area | Information Status Display Area Host name: NE090519 Adapter: 10.0.0.100; 192.168.201.105 Connection timeout: 2000 ms Send timeout: Send timeout: 2000 ms Scan interval: Supervisor password: ms Supervisor password: Apply Support Module : [APAX-5070 APAX-5071 APAX-5072 [ADAM-5000 Series] ADAM-5000L/TCP ADAM-5630 [ADAM-6015 ADAM-6017 ADAM-6018 ADAM-6018+ [ADAM-6015 ADAM-6024 ADAM-6024 D ADAM-6050 ADAM-6051 ADAM-6052 ADAM-6060 ADAM-6066 |

Figure 4.1 Adam/Apax .NET Utility Operation Window

As shown in the figure, this window has four main areas: 1) the Menu Bar, 2) the Toolbar, 3) the Module Tree Display Area, and 4) the Status Display Area.

4.3.1 Menu Bar

The menu bar comprises four menus: File, Tools, Setup, and Help. The items under each menu are described as follows:

File Menu

| Open Favorite Group | Allows you to load a saved configuration file for a favorite group. |
|---------------------|--|
| I | , |
| Save Favorite Group | Allows you to save a favorite group into a configuration file. |
| Auto-Initial Group | Checking this option will load the same favorite group configuration |
| Auto-Initial Oroup | next time you launch Adam/Apax .NET Utility. |
| Exit | Exit Adam/Apax .NET Utility. |

Tools Menu

| Search Device | Search for all ADAM modules connected to the host PC. |
|---------------------------------|--|
| Add Devices to Group | Adds ADAM modules to the favorite group; only selected devices in the Module Tree Display Area will be added to the group. |
| Group Configuration | This item is for updating the firmware, configuration, and HTML files of a single module or multiple modules. The configuration file includes settings on device information, general information, P2P and streaming, GCL, and Modbus address XML files. The configuration file can be exported as a Cfg file from the Firmware tab in the Status Display Area. |
| Terminal for Command Testing | Launches a terminal for communicating with ADAM modules via ASCII command and Modbus/TCP. |
| Print Screen | Exports the Adam/Apax .NET Utility screen as an image file |
| Monitor Stream/Event Data | ADAM modules support a datastream function. This allows you to define the host (such as a PC) by IP, and ADAM modules will then periodically transmit their I/O status to the host. The IP address and transmission period can be configured from the Stream tab in the Status Display Area. |

Setup Menu

| Favorite Group | This is for configuring your Favorite group, including adding devices, modifying or deleting current devices, sorting current devices, and diagnosing device connections. |
|--------------------------------|---|
| Refresh Serial and Ethernet | This will cause Adam/Apax .NET Utility to refresh the serial and LAN network connection. |
| Add COM Ports | This is for adding serial COM ports to Adam/Apax .NET Utility (this does not apply to ADAM-6000 modules). |
| Show TreeView | Clicking on this item shows the Module Tree Display Area. |
| Allow Calibration | Select this to enable/disable module calibration. |

Help Menu

| Check Up-to-Date on the Web | Connect to the Advantech download website and checks for the latest version of the utility. |
|-----------------------------|---|
| About | This shows information on the version of Adam/Apax .NET Utility currently installed on your computer. |

4.3.2 Toolbar

The toolbar contains icons for the most commonly used menu items.



Figure 4.2 Adam/Apax .NET Utility Toolbar

From left to right icon are:

- 1. Open favorite group
- 2. Save favorite group
- 3. Search Modules
- 4. Add Devices to Group
- 5. Terminal for Command Testing
- 6. Group Configuration
- 7. Monitor Data Stream/Event
- 8. Print Screen
- 9. Adjust the size of toolbar
- 10. NTP

Click NTP icon and click **Start** to start the NTP process. Adam/Apax .NET Utility uses NTP broadcasting pocket to module for time synchronization.

Note: User must select one Ethernet interface before click NTP icon.

| н | 15 | ς. |
|---|--------|----|
| н | () | , |
| н | \sim | |

| NTP Server Broad | dcast | x |
|------------------|------------------------|---|
| Send NTP | broadcast packet No: 1 | |
| Operations | | |
| | Start | |
| [| Stop | |

4.3.3 Module Tree Display Area



Figure 4.3 Adam/Apax .NET Utility Module Display Area

The Module Tree Display Area is the left part of the main window. There are five major categories in the display area, some of which will be visible only when you have certain modules connected:

| Serial | All serial I/O modules (ADAM-4000, ADAM-4100, and ADAM-5000 RS-485 modules) connected to the host PC will be listed in this category. |
|---------------------------|---|
| Ethernet | All Ethernet I/O Modules (ADAM-5000, ADAM-6000, and ADAM- 6100 TCP modules) connected to the host PC will be listed in this category. |
| Favorite Group | Devices you have added to your personal favorite group are listed under this category, making it easier for you to locate specific mod- ules. The favorite group can contain multiple groups. To create a new group, right-click on Favorite Group and select Add New Group . You will then be prompted to enter a name for the group. To add devices to that group, right-click on the group you have cre- ated and select Add New Device . You will then be prompted to give the new device a name and select the module type from either the Serial Device tab or the Ethernet Device tab. You can also enter the device parameters here. In addition to modifying the group (select Modify Group) and deleting the group (select Delete Group), you can also select diagnose the connection for a group (select Diagnose Connection) by right-clicking on the group name. |
| ADAM-4500_5510Se- ries | Any DOS-based remote controllers (e.g., ADAM-4500 and ADAM- 5510 series) will be listed under this category. |

4.3.4 Status Display Area

The Status Display Area is the main window that you will interact with. All configuration and testing is performed here. The content of this window will vary depending on which items you select in the Module Tree Display Area.
4.4 Configuration of ADAM-6300 Modules

Once an ADAM-6300 module has been connected to the host PC and you have searched for it, you will find it listed in the Module Tree Display Area under the Ethernet category. Select the Ethernet category on the Module Tree Display Area and click the Search Modules icon on the Toolbar. Adam/Apax .NET Utility will then search for all ADAM-6300 modules on the Ethernet network. If this is the first time you have connected the module, its IP will be 10.0.0.1 by default and it will appear under others in the Module Tree Display Area.



If a network firewall is enabled, you might not be able to connect to your ADAM-6300 module. You may need to add an exception for Adam/Apax .NET Utility in Windows Firewall via Windows Control Panel.



The default password is 00000000.



You need to change the IP address of the ADAM-6300 module so that it is the same subnet as the host PC. Enter the correct IP address, subnet address, and default gateway on the Status Display Area and then click Apply Change. A dialog box will appear asking you to enter the password. The default password of ADAM-6300 modules is "00000000" (without quotation marks). After you have entered the correct password, the ADAM-6300 module will be under IP of your host PC. Note that you can change the password later.

When you select the IP address of the ADAM-6300 modules you want to use in Module Tree Display Area, tabs will become available in the Status Display Area. These tabs are for the general configuration of that module. Once you have changed any settings, remember to click Apply or Apply Change. These tabs are detailed in the following sections.

4.4.1 The Information Tab

| formatic irmware | n Networ Version: | rk Administr 1.10 B03 | ation Fi | rmware | OPCUA | Certificates IO Version: | A1.01 B005 | |
|---------------------|----------------------|--------------------------|----------|---------|---------|-----------------------------|------------|-------|
| evice N | ame: | ADAM-6350 | -Alvin5 | | | | | Apply |
| Dev | vice | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
|)escripti | ion | | | | | | | |
| Slot | Module | | Descript | ion | | | | |
| | 6350 | | ADAM- | 6350 OP | CUA mod | ule | | |

It indicates basic information of ADAM-6300 module.

This tab shows the firmware version as well as the device name and device description, both of which can be modified from here. Giving your modules a specific name and description can be useful for when several ADAM-6300 modules are connected to the same network.

Firmware Version

Indicates the current Firmware version of ADAM-6300 module.

Device Name

Means model name of ADAM-6300 module. You also can rename it for recognition if required.

Device Description

You can add comments on this module for recognition.

4.4.2 The Network Tab

| Information Network | Administration | Firmware | OPCUA | Certificates | |
|---------------------|----------------|----------|-------|--------------|-------|
| Network Setting | | | | | |
| MAC Address: | 00-D0-C9-FE- | EE-FC | | | Apply |
| IP Address: | 10.0.0.3 | | | | |
| Subnet Address: | 255.255.255.0 | | | | |
| Default Gateway: | 0.0.0.0 | | | | |

You can set up required network connection on this page.

Network Setting

You can configure the MAC address, IP address, Subnet address, Default gateway.

Note! Static IP mode is set to 10.0.0.1 as default.



4.4.3 The Administration Tab

| Information | Network | Administration | Firmware | OPCUA | Certificates |
|--------------|---------|----------------|----------|-------|--------------|
| Password Se | tting | | | | |
| Old passwor | d: | | | Apply | v change |
| New passwo | rd: | | | Reset | password |
| Verify passw | vord: | | | | |
| | | | | | |



The default password is "00000000".

The **Administration** tab allows you to set the password for the selected ADAM-6300 modules. To change the password, you will need to enter the current password in the Old password box and then enter the new password in the New password and Verify password boxes. The password is required for many configurations and operations, so setting your own password can help ensure system security.

4.4.4 The Firmware Tab

| Information | Network Administration Firmware OPCUA Certificates | |
|-------------|--|----------|
| File Import | | |
| Туре: | System or IO Firmware File $\qquad \lor$ | |
| File: | | Browse |
| | | Download |

Advantech will occasionally release new firmware versions to add or improve the functionality of ADAM-6300 modules. Visit http://www.advantech.com to check for the latest firmware downloads. User can download System or IO Firmware file(Bin).

This is where you can import firmware to your ADAM-6000 module. Click Browse to select the firmware file on your computer. Then, click Download to install the new firmware on the ADAM-6300 module.

4.5 Getting start: The Connection of OPC UA Server and Client

You can refer below flowchart of getting start guide, the connection of OPC UA Server(ADAM-6300) and Client(Adam/Apax .NET Utility).



Figure 4.4 Flowchart of getting start guide, the connection of OPC UA Server(ADAM-6300) and Client(Adam/Apax .NET Utility)

4.5.1 Network and I/O type setting

4.5.1.1 Network setting

1. Connect the module to your PC and execute **Adam/Apax**.**NET Utility** from your desktop or start menu.

2. In the Module Tree Display Area, right-click on the Ethernet group and click **Search Device**.



3. If you see the module under the **Others** group, you need to change the IP address of the ADAM-6300 module so that it is the same subnet as the host PC. Enter the correct IP address, subnet address, and default gateway on the Status Display Area and then click **Apply Change**.

Please input password: 00000000.

The module should now appear under your network domain and will be ready for configuration.

| Serial Ethemet 10.0.0.100 192.168.201.105 Others 172.16.16.230-[ADAM-6350-Alvin5] Favorite Group ADAM4500_5510Series Wireless Sensor Networks RFID | Setting Network setting: MAC address: 00-D0-C9-FE-EE-FC IP address: 10.0.0.2 Subnet address: 255.0.0 Default gateway: 0.0.0 | Apply change |
|---|---|--------------|
| | <u>Tools Setup H</u> elp erial ithermet 10.0.0.100 10.0.0.2-[ADAM-6350-Alvin5] 192.168.201.105 Others | |

4.5.1.2 I/O type setting

Refer to the Module Tree Display Area shown. When you click on the IP address of the ADAM-6300 module you wish to configure, you will see items below the IP address. When you click on the plus and minus control beside the module number, you will be prompted to enter the password for the selected module. Once you have entered the correct password, a list of individual channels (for individual channel configuration) will appear below the module number.



For ADAM-6350-A, DO0 to DO11 only support DO. DO12 to DO17 support DO, pulse output, pulse output continue mode and 3 kHz Pulse Output.



When you click on one of the individual channel items, you can select I/O type mode and click **Apply mode** for this channel or click **Apply to CH12~17** for channel 12~17.

| | ^ | ADAM-6350 DO[12] | setting: | | | |
|--|---|------------------|---|--------------|------------|-------------------|
| □ | | DO mode: | Pulse output DO Pulse output | ~ | Apply mode | Apply to CH 12~17 |
| - 10 DI_02 - 10 DI_03 - 10 DI_04 - 10 DI_05 | | Setting: | Pulse output Conti Low signal width (1~65535) | nue 65535 | • 0.1 ms | Apply change |
| - A DI_06 - A DI_07 - A DI_07 - A DI_08 | | | High signal width (1~65535) | 5000 | • 0.1 ms | |
| - DL_00 - DL_10 - DL_11 - DL_12 | | | Output frequency | 0.14 Hz | Hz | |
| - A DI_13 - A DI_14 - A DI_15 | | | Duty cycle | 7.09 % | \$ | |
| | | | | | | |
| DO_02 DO_03 DO_04 | | Pulse output: | Remain Count: | 0 | Shart | Stop |
| DO_05 | | | Setting Count: | 0 | Start | Stop |

Chapter 4 System Configuration

4.5.2 Connection of OPC UA Server and OPC UA Client

4.5.2.1 Enter port number (OPC UA Client)

EndPoint URL(opc.tcp://10.0.0.5:4840) has been set in default setting of Adam/Apax .NET Utility. Enter 4840 in Port Number if you use other OPC UA client.

| Information | Network | Administration | Firmware | OPCUA | Certificates | Modi | ous Address | | |
|-------------|-------------|-------------------|----------|-------|--------------|----------|-------------|-----------|-----------|
| EndPoint UI | RL: opc.tcj | p://10.0.0.3:4840 | | | H | inable S | ecurity Co | onnect D | isconnect |
| Address | Space | | | | At | tributes | | | |
| | | | | | N | ume | Value | Data Type | |
| | | | | | | | | | |

4.5.2.2 Select Security policy, security mode and authorization

ADAM-6300 supports two security options of sessions(OPC UA client). One is Basic128Rsa15 – Sign and the other is non security session.

- 1. Select security mode
 - A. Click **Enable Security** and click **Connect**, the dialogue window shown, enter root in **Username** and 00000000 in **Password** and click **OK**.

| dPoint URL: opc.icp | ://10.0.0.27:4840 | Enable Security Connect Disconnect |
|---------------------|----------------------|--|
| Address Space | | Attributes |
| | | Name Value Data Type |
| | OPCUA User Security | Check X |
| | Security Policy URI: | http://opcfoundation.org/UA/SecurityPolicy#Basic128Rsa15 |
| | User Name: | root |
| | Password: | ****** |
| Data Access View | _ | |
| | | OV Crevil |

B. The log window shows "BadSecureChannelClosed", since OPC UA client and server need to have bidirectional authentication at first connection.

| formation | Network | Administration | Firmware | OPCUA | Certificates | Modbus A | ddress | | | |
|------------|-------------|-------------------|----------|-------|--------------|--------------|--------|----------|--------|-------|
| indPoint U | RL: opc.tcj | p://10.0.0.27:484 | 0 | | E E | nable Securi | ity C | Connect | Discor | mect |
| Address | Space | | | | Att | ibutes | | | | |
| | | | | | Na | me V | alue | Data Typ | 0e | |
| | | | | | | | | | | |
| | | | | | | | | X | | |
| | | | | UF | CUA Conne | ction Erro | r | ~ | | |
| Data Asa | ess View — | | | | BadS | ecureChar | nelClo | sed | | |
| -Data Acc | | | | | | | | | - | |
| No. | ID | Display Na | ume | Mc | | | | | .d | Value |

- C. Go to Certificate tab for bidirectional authentication.
 - a. Trusting the OPC UA Sever's certificate (on the OPC UA Client): Adam/ Apax .NET Utility automatically trusts ADAM-6300 (sever) certificate. You can see Local in Certificates tab.

| nform | ation | Netw | ork # | dministration | Firmware | OPCUA | Certificates | Modbus Address | |
|-------|---------|-----------|---------|---------------|-----------|--------------|--|----------------|-----------------------|
| ADAM | 1 Lo | ocal | | | | | | | |
| Local | l Certi | ificate 1 | List | | | | | | |
| | N | o. | Status | Name | | | | | |
| • | 1 | | Turnete | a dumata | | | 20 4 10 12 21 20 | DDSC0156240023 | |
| 1 | _ | | TTUSIE | Auvanie | ch AdamAp | ах оныту [л | OABOF5D39 | BD9C01903&2033 | 46CEF3F5BE6125D6J.der |
| | - | | TTUSIE | Auvanie | ch AdamAp | ax o muty (i | OABOF5D59 | BD)C019038203 | 46CEF3F3BE6125D6J.der |
| | | | TTUSIC | Auvaine | ch AdamAp | ax o mity [i | OKBOF3D39 | BD9C0190982095 | 46CEF3F5BE6125D6J.der |
| | | | TTUSIE | Auvane | ch AdamAp | ах отшту [л | OABOF5D39 | DDC0170382033 | 40CEF3F3Eb125D6J.der |
| | | | 11036 | Auvane | ch AdamAp | ax Uturty [J | OABOF5D59 | BD3C01303A203 | 40CBF3F3BE0125D0J.0er |
| | | | 11036 | Auvane | ch AdamAp | ax Uturiy [J | OKEOL 3D39 | BD9C01903A203 | 40CBF3F3BE0123D0J.0er |
| | | | Troste | Auvane | cn AdamAp | ex o antà li | OKEOL 3D 39 | BD3C01303A2033 | 40CBF3F3BE0123D0J.0er |
| V | /iew (| ertifica | itusie | Auvanie | ch AdamAp | ex o muty (| 2000-000 2000-000 2000-000-000-000-000-0 | BD3C01303A203 | 40CBF3F3BB0125D0J.0er |
| V | 7iew C | Certifica | ate | Auvane | ch AdamAp | sx o naty (| 0KB0L2D23 | BD2C01903A203 | 40CBF3F3BE0123D0J.0er |

b. Trusting the OPC UA Client's certificate: Please click Trust Certificate in ADAM tab, and ADAM-6300 module will be restarted to make certification take effect. And then you can see Trusted in Status of ADAM Client Certificate List.

| forma | tion Net | work Adm | inistration Firmw | are OPCUA | Certificates | Modbus Address |
|--------|--------------|-----------------|--------------------|-------------|--------------|----------------|
| DAM | Local | | | | | |
| ADAN | ví Client C | Certificate Lis | t | | | |
| | No. | Status | Name | | | |
| • | 1 | Detected | TO A DOPOD SODY | 05001562400 | 22460000000 | DEG125DE day |
| , | 1 | Rejected | F8AB8F3D39B | JSC01503A20 | 5540CEF5F51 | BE0125D0.0e1 |
| Max. o | rertificates | Rejected | Trusted, 8 Rejects | d | 55400027575 | 52012520.001 |

Please click Trust Certificate to trust client's certificate.

| DAM | Local | | | |
|----------------------|--|---------------------|--|---|
| DAN | 4 Chent C | ertificate Lis | t | |
| | No. | Status | Name | |
| | 1 | Rejected | F8AB8F3D39BD5C01563A203346CEF3F5BE6125D6.der | |
| | | | | |
| ax. o Vi | ertificates ew Certifi Siggto Data | amount : 8 icate | Trusted, 8 Rejected Trust Certificate Delete Certificate Require Module Restart | × |
| ax. o Vi Certi | ertificates ew Certifi ficate Deta | amount : 8 icate | Trusted, 8 Rejected Trust Certificate Delete Certificate Require Module Restart Trust Certification Ok! Do you want to restart module to make Certification take effect? | × |

This certificate of status was changed to Trusted.

| | ation | Network | Adm | inistration | Firmware | OPCUA | Certificates | Modbus Address |
|------|---------------------|-------------------------|---------|------------------------|----------|----------|--------------|----------------|
| ADAN | 4 Lo | cal | | | | | | |
| ADA | M Clie | nt Certific | ate Lis | t | | | | |
| | No | . Sta | atus | Name | | | | |
| • | 1 | Tru | sted | FRABE | 3D39BD5C | D1563A20 | 3346CEF3F51 | BE6125D6.der |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Max. | certific | ates amou | unt: 8 | Trusted, 8 | Rejected | | | |
| Max. | certific View Ce | rates amou | unt: 8 | Trusted, 8 Trust Ce | Rejected | Delete | Certificate | |
| Max. | certific View Ce | ates amou ertificate | unt : 8 | Trusted, 8 Trust Ce | Rejected | Delete | Certificate | |

Note!

ADAM-6300 supports 8 trusted certificates. User can click **Delete Cer***tificates* and restart ADAM-6300 to remove certificates you don't needed.

D. Go to **OPC UA** tab to connect this session of OPC UA server and client again.

Click **Enable Security** and click **Connect**, the dialogue window shown, enter root in **Username** and 00000000 in **Password** and click OK.

| Address Space | | Attributes |
|-------------------|----------------------|--|
| | | Name Value Data Type |
| | OPCUA User Security | v Check |
| | Security Policy URI: | http://opcfoundation.org/UA/SecurityPolicy#Basic128Rsa15 |
| | User Name: | root |
| | Password: | **** |
| Data daaraa Visuu | _ | |

E. The connection of ADAM-6300 modules and Adam/Apax .NET Utility (OPC UA client) is successful.

OPC UA tab includes Address Space, Attributes, Data Access View.

Address Space: to provide a standard way for the OPC UA Server to represent objects to the OPC UA Client. Address space is constructed of nodes and references. Nodes contain attributes and properties, and nodes are in in the address space.

- Attributes: the information that presents value of a variable, the read and write permissions of the variable, a textual description of the variable for node.
- Data Access View: to monitor changes of node's attributes
- **Subscriptions and Monitored Items:** User establishs subscription in OPC UA server to monitor the value of monitored items in a periodic time.

| ndPoint U Address | RL: opc.tcp | ://10.0.0.27:4840 | | Attributes | Connect Disco | onnect | | |
|----------------------|--|---|---------|--|--|------------------|--|---|
| | Objects Server Digital Digital Objectal O | Input Output O0_DOValue 01_DOValue 02_DOValue 03_DOValue 04_Mode 04_DOValue 04_PulseStart | | Name NodeId NodeClass BrowseName DisplayName Description WriteMask UserWriteMask EventNotifier | Value ns=1;s=/ObjectsFolder Object 1:Digital_Output Digital_Output 0 0 None | a/Digital_Output | Data T Nodele Int32 Qualifi Localiz Localiz UInt32 UInt32 Byte | 'ype d zed Nami zed Text 2 2 |
| | ⊕ � DO_ | _04_PulseWidthLow | * | < | | | | |
| Data Acc | ess View | 1 2000 - 00 - 0000 | Liberto | 1-0350 (2000) 440 | 1 | L and a second | | |
| No. | ID | Display Name | Mode | Sampling Rate | Deadband | Value | | Quality |

2. Select non security mode

A. Click Connect in OPC UA tab

F. Please start your OPC UA project now

| Information | Network | Administration | Firmware | OPCUA | Certificates | Modbus Adda | ress | |
|--------------|---------------|------------------|----------|-------|--------------|----------------|---------|------------|
| EndPoint URI | L: opc.tcp | ;//10.0.0.3:4840 | | | E E | nable Security | Connect | Disconnect |
| -Address Sp | Address Space | | | | | Attributes | | |
| | | | | | Nau | ne Value | Data I | уре |
| | | | | | | | | |

B. OPC UA tab will show Address Space, Attributes, Data Access View.

| indPoint U Address | JRL: opc.tcp s Space | //10.0.0.27:4840 | | Attributes | Connect Discor | nnect | | |
|-----------------------|---|---|------|--|---|----------------|--|--|
| | Objects Server Server Digital_I Digital_O Digital_O Digital_O Digital_O | nput Dutput 00_DOValue 01_DOValue 02_DOValue 03_DOValue 04_Mode 04_DOValue 04_PulseStart 04_PulseStart | | Name NodeId NodeClass BrowseName DisplayName Description WriteMask UserWriteMask EventNotifier | Value ns=1;s=/ObjectsFolder/ Object 1:Digital_Output Digital_Output 0 0 None | Digital_Output | Data T Nodeld Int32 Qualifi Localiz Localiz UInt32 UInt32 Byte | ype 1 zedNami zedText 2 2 |
| Data Acc | ess View | _ | | | | | | |
| No. | ID | Display Name | Mode | Sampling Rate | Deadband | Value | | Quality |

C. You can start your OPC UA project now.

4.6 I/O Configuration

| | | Digita | al Input | Digita | | |
|------------|-----------------|--|-----------|-----------------|--|-----------------------|
| Model | Analog Input | log but Support DI, Support DI mode Support DI, counter and frequency | | Support DO mode | Support DO, pulse output, pulse output | SSR Relay (VDC) |
| | | | mode | | continue mode | |
| ADAM-6317 | AI0~AI7 | DI0~DI4 | DI5~DI10 | DO0~DO3 | DO4~DO9 | N/A |
| ADAM-6350 | N/A | DI0~DI11 | DI12~DI17 | DO0~DO11 | DO12~DO17 | N/A |
| ADAM-6360D | N/A | DI0~DI7 | DI8~DI13 | N/A | DO0~DO5 | Relay 0~7 |

Please see the below table for I/O channel of ADAM-6300 series.

4.6.1 Analog Input

4.6.1.1 All Channel Configuration

1. Integration Time:

To remove noise from the power supply, analog input modules of ADAM-6300 series feature a built-in filter (50 and 60 Hz). Please follow below steps.

A. Select Al_IntegrationTime and right click Write

| Information | Network | Administration | Firmware | OPCUA | Certificates |
|-------------|-------------|-------------------|----------|---------|--------------|
| EndPoint UI | RL: opc.tcj | p://10.0.0.1:4840 | | | Er Er |
| Address | Space | | | | Attr |
| | Objects | | | | ∧ Nar |
| ÷ | 🧳 Server | | | | |
| ÷ | 🧳 Digital_ | Input | | | |
| ÷ | 🧳 Digital_ | Output | | | |
| ė | 🧳 Analog | Input | | | |
| | 🧼 🗚 | IntegrationTime | | | |
| | 🧳 🗛 | BurnOutEnable | N | Ionitor | |
| | 🧳 AI_ | BumOutValue | V | Vrite | |
| | 🧳 AI_ | 00_Range | P | ofrach | |
| | 🧳 AI_ | 00_Scaled Value | K | erresh | |
| | Δ ΔΤ | 00 ChannalStates | ~ | | |

- B. Enter below value to choose 50/60Hz or High speed.
 - a. 0: 50,60Hz
 - b. 1: High speed

| 🖳 Ent | er Value to Write | - | | × |
|-------|-------------------|---|-------|--------|
| Value | 0 | | | ▲ ▼ |
| 0 | K | | Cance | 1 |

C. Select this Al_IntegrationTime and right click Monitor

| Information | Network | Administration | Firmware | OPCUA | Certific | ates Mod |
|-------------|-------------|----------------------------|----------|-------|----------|---|
| EndPoint UI | RL: opc.tcj | p://10.0.0.1:4840 | | | | Enable S |
| Address | Space | | | | | Attributes |
| ÷ | 🔷 Analog | _Input IntegrationTime | | | ^ | Name |
| | 🔷 AI_ | BumOutEnab | Monit | or | | Nodel |
| | AI_ | BumOutValu 00 Pence | Write. | | | Brows |
| | | 00_Kange 00_ScaledVal | Refres | h | | 🥥 Displa |
| | 🗄 🧼 🖉 🗛 | 00_ChannelStatu | 15 | | | Descri |
| | | U1_Range 01_ScaledValue | | | | Writel UserW |

And you can see this node(Al_IntegrationTime) in Data Access View box. Or you can left click and drag this node(Al_IntegrationTime) in Data Access View box.

| | Analog_Input Analog_Input Analog_Input Al_IntegrationTime Al_BumOutEnable Al_DumOutEnable Al_OO_ScaledValue Al_OO_ChannelStatus Al_OI_Range Al_OI_Range Al_OI_Range Al_OI_Range Al_OI_Range Al_OI_Range Al_OI_ScaledValue Al_OI_ScaledValue Al_OI_ScaledValue Al_OZ_Range Al_OZ_Range Al_OZ_Range Al_OZ_Range Al_OZ_Range Al_OZ_Range Al_OZ_Range | ~ | Name Nod Nod Bro Disp Dest Writ User Valu Date < | leId leClass wseName olayName cription teMask rWriteMask ae aType | Val n5= Var 1:A AI_ 0 0 1 UIn | ue 1 x=={ObjectsFo iable I_Integration? IntegrationTi 116 | lder/Anslo Time ne | ogInput/AI_I | nte gration Time | Data Type NodeId Int32 QualifiedN Localized Unt32 UInt32 Variant NodeId | * |
|------|--|---------------|--|---|---|--|--------------------------|--------------|------------------|---|---|
| Data | Access View | | | | | | | | | | |
| No. | ID | Display Nam | ie. | Mode | Sampling Rate | Deadband | Value | Quality | Timestamp | Last Error | |
| | INTERCOMPANY AND A CONTRACT AND A DATA AND A CONTRACT AND A DATA AND AND A DATA AND A DATA AND A DATA AND AND A DATA AND AND A DATA AND AND AND AND AND AND AND AND AND AN | AI Integratio | on Time | Reporting | 1000 | None | 1 | Good | 14:50:04.000 | | |

2. Burnout

You can enable burn out function, to select **AI_BurnOutEnable** and right click **Write**. It's only support for 4 - 20mA input range.

A. Select Al_BurnOutEnable and right click Write

| Information | Network | Administration | Firmware | OPCUA | Certificat |
|-------------|------------|-------------------|----------|-------|------------|
| EndPoint U | RL: opc.tc | p://10.0.0.1:4840 | | | |
| Address | Space | | | | |
| | 🧳 Analog | _Input | | | ^ |
| | 🔷 AI_ | IntegrationTime | | | |
| | 🗳 🔼 | BurnOutEnable | | | |
| | 🔷 AI_ | BumOutValue | Mor | - 1 | |
| | - 🧼 AI_ | 00_Range | Write | e | |
| | 🕂 🔷 🕂 | 00_Scaled Value | Pofr | ach | |
| | 🕂 💊 🕂 | 00_ChannelStat | Rein | esn | |
| | 🕂 💊 🕂 | 01_Range | | | |
| | 🗄 🥥 🗛 🖳 | 01_Scaled Value | | | |
| | ф 🛆 АТ | 01 ChannalStates | ^ | | |

- B. Select True or False to enable or disable this function.
 - a. True: enable burn out function
 - b. False: disable burn out function

| 🖳 Ente | er Value to Write | - | | \times |
|--------|-------------------|---|---|----------|
| Value | True | | | \sim |
| OI | True False | | _ | |

C. Select this Al_BurnOutEnable and right click Monitor.

| Information | Netwo | ork | Adminis | tration | Firmware | OPCUA | Certi |
|-------------|--------|---------|-------------|----------|----------|-------|-------|
| EndPoint UI | RL: 01 | polito; | p://10.0.0. | 1:4840 | | | |
| Address | Space- | | | | | | |
| | 🧳 Ana | alog | Input | | | | ^ |
| | 🥥 | AI_ | Integratio | nTime | | | |
| | 🥥 | AI_ | BumOut | mahla | | | _ |
| | 🥥 | AI_ | BumOut | 1 | Monitor | | |
| | 🥥 | AI_ | 00_Rang | 1 | Write | | |
| | ÷ 🧳 | AI_ | 00_Scale | | | | |
| | ÷ 🧳 | AI_ | 00_Char | | Kefresh | | |
| | ÷ 🥥 | AI_ | 01_Range | | | | |
| | ÷ 🧳 | AI_ | 01_Scaled | Value | | | |
| | ÷ 🧳 | AI_ | 01_Cham | nelStatu | s | | |
| | ÷ 🔷 | AI | 02_Range | | | | |
| | ÷ 🧳 | AI_ | 02_Scaled | lValue | | | ~ |

3. Burnout value:

If you select up scale, you will see the value FFFF in Modbus address when

open circuit happens. Otherwise, it will show 0000 as down scale. It's only support for 4 - 20mA input range.

A. Select Al_BurnOutValue and right click Write

| Information | Network | Administration | Firmware | OPCUA | Certifica |
|-------------|---------|----------------|----------|-------|-----------|
| EndPoint U | | | | | |
| | ~ | | | | |

| Address Space | |
|-------------------------|---------|
| 🚊 🧳 Analog_Input | ^ |
| 🥥 AI_IntegrationTime | |
| 🧳 AI_BurnOutEnable | |
| 🖗 AI_BurnOutValue | |
| 🔗 AI_00_Range | Monitor |
| 😥 🧳 AI_00_Scaled Value | Write |
| 😥 🤣 AI_00_ChannelStat | Pofrach |
| 😥 🥥 AI_01_Range | Refresh |
| 😥 🤣 AI_01_Scaled Value | |
| 😥 🧳 AI_01_ChannelStatus | \$ |
| 🕀 🥥 AI_02_Range | |
| 💀 🔗 AI_02_Scaled Value | ~ |

- B. Enter below value to choose up scale or down scale.
 - a. 0: down scale
 - b. 1: up scale

| 🖳 Ent | er Value to Write | - | | \times |
|-------|-------------------|---|------|----------|
| Value | 1 | | | • |
| 0 | K | | Cano | el |

C. Select Al_BurnOutValue and right click Monitor





You need to enter **1** in **AI_BurnOutEnable** to enable burn out fuction at first. And then you can select up scale or down scale.

4.6.1.2 Individual Channel Configuration

1. Input range

This node allows you to set a different range for each channel.

A. Select AI_(Channel)_Range and right click Write

| Information | Network | Administration | Firmware | OPCUA | Certificates |
|-------------|-----------|--------------------|----------|--------|--------------|
| EndPoint UI | RL: opc.t | cp://10.0.0.1:4840 | | | En En |
| Address | Space — | | | | Attri |
| ÷ | 🥥 Analo | g_Input | | | ^ Nan |
| | 🔷 A | [_IntegrationTime | | | 01 |
| | 🧳 A | I_BumOutEnable | | | |
| | 🗳 A | I_BumOutValue | | | |
| | 🧼 🗚 | [_00_Range | | | |
| | ÷ 🧳 🗚 | [_00_Scaled Value | M | onitor | 1 |
| | ÷ 🧳 🗚 | [_00_ChannelStatu | s W | rite | 1 |
| | 🗄 🧳 🗚 | [_01_Range | R | efresh | 1 |
| | ÷ 🧳 🗚 | [_01_Scaled Value | | circon | I |
| | 🗄 🧳 🔺 | [_01_ChannelStatu | s | | -=Q1 |
| | ÷ 🧳 A | [_02_Range | | | 🥥 1 |
| | 🕂 🧼 🕂 | [_02_Scaled Value | | | V 🔷 1 |

B. Enter below value to choose different input ranges.

| 🖳 Ente | er Value to Write | - | | × |
|--------|-------------------|---|-----|----------|
| Value | 75 | | | A |
| 0 | K | | Can | cel |

| Enter Value | Input Range |
|-------------|-------------|
| 7 | 4~20 mA |
| 8 | ± 10 V |
| 9 | ± 5 V |
| 10 | ± 1 V |
| 11 | ± 500 mV |
| 12 | ± 150 mV |
| 13 | ± 20 mA |
| 72 | 0 ~ 10 V |
| 73 | 0 ~ 5 V |
| 74 | 0 ~ 1 V |
| 75 | 0 ~ 500 mV |
| 76 | 0 ~ 150 mV |
| 77 | 0 ~ 20 mA |

C. Select this Al_(Channel)_Range and right click Monitor And you can see this node Al_(Channel)_Range in Data Access View box

| Information Net | vork Admini | stration | Firmware | OPCUA | Certif |
|--|--|---------------------------|-----------------|-------|--------|
| EndPoint URL: | opc.tcp://10.0.0 |).1:4840 | | | |
| Address Space | | | | | |
| | nalog_Input AI_Integrati AI_BumOut AI_BumOut AI_BumOut | onTime Enable Walue | | | ^ |
| ÷ 🧳 | AI_00_Scal | N | Ionitor | | |
| ÷ 4 | AI_00_Cha AI_01_Ran AI_01_Scal | V R | /rite efresh | | |
| . (. (. (| AI_01_Chau AI_02_Ran; | melStatu ge | s | | |

2. Al_(Channel)_ScaledValue:

You can see the scaled value if you select this **AI_(Channel)_ScaledValue** and right click **Monitor**

| Information | Network | Administra | tion | Firmware | OPCUA | Cer |
|-------------|------------|---------------|------|----------|-------|-----|
| EndPoint U | RL: opc.tc | p://10.0.0.1: | 4840 | | | |
| Address | Space | | | | | |
| | 🧳 Analog | _Input | | | | ~ |
| | 🥥 AI_ | Integration | lime | | | |
| | 🧳 AI_ | BurnOutEn | able | | | |
| | 🔷 AI_ | BumOutVa | lue | | | |
| | 🧳 AI_ | 00_Range | | | | |
| | 🕂 🌾 🗐 | 00_Scaled V | alue | | | |
| | 🕂 🧼 🕂 | _00_Ch | M | onitor | | |
| | 🕂 🧳 🕂 | 01_Ra | W | rite | | 1 |
| | 🕂 🔷 🕂 | 01_Sca | | | | |
| | 🕂 🔷 🕂 | 01_Ch | Re | etresh | | |
| | 🕂 🔷 🕂 | 02_Range | | | | |
| | 🕂 🧳 🕂 | 02_Scaled V | alue | | | ~ |

3. Al_(Channel)_ChannelStatus:

You can see the scaled value if you select this **AI_(Channel)_ChannelStatus** and right click **Monitor**.



You can see the Value of this Al_(Channel)_ChannelStatus in Data Access View.

- a. 0: good
- b. 4: under range(4-20mA only)
- c. 8: burn out(4-20mA only)

Information Network Administration Firmware OPCUA Certificates Modbus Address

| Add | ress Space | | Attributes | | | | | | | |
|--------|--|-----------|--|--|--|-------------------------------|--------------------|-------------|--------------|---|
| | Analog Input Al_Integration Time Al_BunDoutEnable Al_DumDoutValue Al_D0_Range Al_00_ChannelStatus Al_01_Range Al_01_Range Al_01_Range Al_01_Range Al_01_Range Al_01_Range Al_02_Range | * | Name Nodeld NodeCl Displayl Descript WriteM- UserWr Value DataTyp < | ass Name Name tion ask ask iteMask | Value ns=1;==K Variable 1:AI_00_0 AI_00_0 0 0 0 UInt16 | DbjectsFolde: _ChannelStat | r/AnslogInp tus | ut/AI_00_C} | uannelStatus | Data Typ Nodeld Int32 Qualified Localizer Localizer UInt32 UInt32 Variant Nodeld |
| Data . | Access View | | | | | | | | | |
| No. | ID | Display N | ame | Mode | Sampling Rate | Deadband | Value | Quality | Timestamp | Last H |
| 1 | ObjectsFolder/AnalogInput/AI 00 ChannelStatus | AT 00 Ch | hannelStatus | Reporting | 1000 | None | 0 | Good | 17:05:22.00 | 0 |

4.6.2 Digital input

Please see the below table for I/O channel of ADAM-6300 series.

| | | Digita | l Input | Digita | | |
|------------|-----------------|------------|-------------|------------|---------------|--------------|
| Model | Analog Input | | Support DI, | | Support DO, | SSR |
| | | Support DI | counter and | Support DO | pulse output, | Relay |
| | | mode | frequency | mode | pulse output | (VDC) |
| | | | mode | | continue mode | |
| ADAM-6317 | AI0~AI7 | DI0~DI4 | DI5~DI10 | DO0~DO3 | DO4~DO9 | N/A |
| ADAM-6350 | N/A | DI0~DI11 | DI12~DI17 | DO0~DO11 | DO12~DO17 | N/A |
| ADAM-6360D | N/A | DI0~DI7 | DI8~DI13 | N/A | DO0~DO5 | Relay 0~7 |

4.6.2.1 DI mode introduction

There are two type of DI channels in ADAM-6300. The first type of DI channel is only to support DI mode, the second type of DI channel is to support DI, counter, frequency mode. The latter channel supports 3 kHz counter input and 3 kHz frequency input.

4.6.2.2 DI configuration in OPC UA tab

- 1. DI mode:
 - A. Select **DI_(channel)_DIValue** and right click **Monitor** to monitor this DI status.

| Information | Network | Administration | Firmware | OPCUA | Certifi |
|-------------|---|---|-----------------|-------|---------|
| EndPoint UI | RL: opc.tcj | p://10.0.0.50:484 | 0 | | |
| Address | Space | | | | |
| | Digital Digital DI DI DI DI DI O D D O D D O D D O D | Input 00_DIValue 01_DIValue 02_DIValue 03_DIValue 04_DIValue | | | ^ |
| | | 05_DIValue 05_EnableIm | Monite | or | |
| | ⊕… � DI_ ⊕… � DI_ ⊕… � DI_ | 05_EnableFil 05_FilterWid 05_FilterWid | Write Refres | h | |
| | 🕂 🧳 DI_ | 05_CounterStart | | | ~ |

Data Access View

Chapter 4 System Configuration

- B. Invert signal
 - a. Select DI_(channel)_EnableInvert and right click Write

| Information | Network | Administration | Firmware | OPCUA | Certificate |
|-------------|------------|--------------------|----------|-------|-------------|
| EndPoint UI | RL: opc.tc | p://10.0.0.50:4840 |) | | |
| Address | Space | | | | A |
| | 🥥 Digital_ | Input | | | ^]) |
| | 🗄 🧳 DI_ | 00_DIValue | | | |
| | 🗄 🧳 DI_ | 01_DIValue | | | |
| | 🗄 🧳 DI_ | 02_DIValue | | | |
| | 🗄 🧳 DI_ | 03_DIValue | | | |
| | 🗄 🧳 DI_ | 04_DIValue | | | |
| | 🔷 DI_ | 05_DIValue | | | |
| | 🧼 DI | 05_EnableInvert | | | |
| | 🗄 🧳 DI_ | 05_EnableFilter | Mo | nitor | |
| | 🗄 🥥 DI_ | 05_FilterWidthLo | Wri | te | |
| | 🗄 🧳 DI_ | 05_FilterWidthH | Ref | resh | |
| | 🗄 🧳 DI_ | 05_CounterStart | Iter | reall | |

b. Select **True** or **False** to enable or disable this function. The default setting is false.

| 🖳 Enter Value to Write | | - | × |
|------------------------|-----------------|---|--------|
| Value | True | | \sim |
| 0 | True I False | | |

c. Right click to select Monitor to monitor this function.

| Information | Network | Administration | Firmware | OPCUA | Certifica |
|-------------|-------------|--------------------|----------|-------|-----------|
| EndPoint U | RL: opc.tc; | p://10.0.0.50:484(|) | | |
| Address | Space | | | | |
| | 🥥 Digital_ | Input | | | ^ |
| | 🗄 🧳 DI_ | 00_DIValue | | | |
| | 🗄 🧳 DI_ | 01_DIValue | | | |
| | 🗄 🧳 DI_ | 02_DIValue | | | |
| | 🗄 🧳 DI_ | 03_DIValue | | | |
| | 🗄 🧳 DI_ | 04_DIValue | | | |
| | 🔷 DI_ | 05_DIValue | | | |
| | 🖗 DI_ | 05_EnableInvert | | | |
| | 🕂 🧳 🕂 | 05_EnableFilter | Mo | nitor | |
| | 🕂 🧳 DI_ | 05_FilterWidthL | Writ | e | |
| | 🕂 🥥 DI_ | 05_FilterWidthH | | | |
| | 🕂 🖓 DI_ | 05_CounterStart | Ref | resh | |

C. Digital filter

It contains minimum high signal width and minimum low signal width (1-65535) for filtering the noise.

a. Select DI_(channel)_EnableFilter and right click Write

| Information | Network | Administration | Firmware | OPCUA | Certificate |
|-------------|------------|--------------------|----------|-------|-------------|
| EndPoint UI | RL: opc.tc | p://10.0.0.50:4840 |) | | |
| Address | Space | | | | A |
| | 🧳 Digital_ | Input | | | ^ P |
| | 🗄 🧳 DI_ | 00_DIValue | | | |
| | 🗄 🧳 DI_ | 01_DIValue | | | |
| | 🗄 🧳 DI_ | 02_DIValue | | | |
| | 🗄 🧳 DI_ | 03_DIValue | | | |
| | 🗄 🧳 DI_ | 04_DIValue | | | |
| | 🧳 DI_ | 05_DIValue | | | |
| | 🔷 DI_ | 05_EnableInvert | | | |
| | 🕂 🗳 🚺 | 05_EnableFilter | Ma | nitor | |
| | 🕂 🧳 🛛 DI_ | 05_FilterWidthL | IVIO | nitor | |
| | 🕂 🧳 🕂 DI_ | 05_FilterWidthH | Wri | te | |
| | 🕂 🖓 🕂 | 05_CounterStart | Ref | resh | 4 |
| Data Acce | ss View | | _ | | |

b. Select True or False to enable or disable this function. The default setting is false.

| 🖳 Ente | er Value to Write | - | × |
|--------|-------------------|---|------------|
| Value | True | | \sim |
| 0 | True I False | | |
| | | | |

c. Select DI_(channel)_FilterWidthLow and DI_(channel)_FilterWidth-High

You can define the filter width in the low signal width(right click **Write** in selected **DI_(channel)_FilterWidthLow**), and high signal width(right click

Write in selected **DI_(channel)_FilterWidthHigh**), to enter **0~65535**(The unit is 0.1ms).

| Information | Network | Administration | Firmware | OPCUA | Certifi | ates 1 |
|-------------|------------|--------------------|----------|---------|---------|--------|
| EndPoint UF | RL: opc.tc | p://10.0.0.50:484(|) | | | Ena |
| Address | Space | | | | | Attrib |
| (| 👂 Digital_ | Input | | | ^ | Nam |
| (| 🗄 🧳 DI_ | 00_DIValue | | | | A M |
| (| 🗄 🧳 DI_ | 01_DIValue | | | | A M |
| | 🗄 🧳 DI_ | 02_DIValue | | | | |
| | 🗄 🧳 DI_ | 03_DIValue | | | | V B |
| | 🗄 🧳 DI_ | 04_DIValue | | | | I D |
| | 🧳 DI_ | 05_DIValue | | | | 🥥 D |
| | 🧳 DI_ | 05_EnableInvert | | | | 🥥 V |
| | 🧳 DI_ | 05_EnableFilter | | | | 🥥 U |
| | 🧳 DI | 05_FilterWidthLo | A WC | Appitor | | V |
| | 🧳 DI_ | 05_FilterWidthH: | igh | nonitor | | D |
| (| ÷ 🧳 DI_ | 05_CounterStart | V | Vrite | | - 1 |
| Data Acce | ss View | | F | Refresh | | 1 |

| 🖳 Ent | er Value to Write | _ | | × |
|-------|-------------------|---|-----|---------|
| Value | 2 | | | |
| C | K | | Can | cel |

d. After above setting, left click and drag each of nodes of DI_(channel)_EnableFilter, DI_(channel)_FilterWidthLow and DI_(channel)_Filter-WidthHigh to Data Access View, and start to monitor these nodes. 2. Counter mode:

A counter counts the number of pulse numbers of a digital signal from the selected channel and then records.

A. Select **DI_(channel)_CounterStart**, and right click **Write**, click **True** to start counter and click **False** to close counter. The default setting is True.



| 🖳 Enter Value to Write | | - | × |
|------------------------|-----------------|---|--------|
| Value | True | | \sim |
| 0 | True I False | | |

B. Select DI_(channel)_CounterValue

- a. When **DI_(channel)_CounterValue** is added **Data Access View**, the current count value of the selected channel will be displayed in the **Value** of **Attributes** of this **DI_(channel)_CounterValue**.
- b. You can right click to select Write and enter 0 to clean current counter value.



| 🖳 Ent | er Value to Write | - | | × |
|-------|-------------------|---|-------|----|
| Value | 0 | | | • |
| C | K | | Cance | el |

C. Select DI_(channel)_CounterRemain

The function of counter remain is to keep last counter value when power off.

a. Right click Write

| Information | Network | Administration | Firmware | OPCUA | Certificate |
|-------------|---|--|----------|-------|-------------|
| EndPoint UI | RL: opc.tc | p://10.0.0.50:484(| D | | |
| Address | Space | | | | A |
| ÷ | Digital Digital DI D | Input 00_DIValue 01_DIValue 02_DIValue 03_DIValue 04_DIValue 05_DIValue 05_EnableInvert | | | |
| | ⊕… 🗭 <u>DI</u> ⊕… 🧳 DI | 05_EnableFilter 05_FilterWidthL | Mo | nitor | |
| | 🗄 🥥 DI_ | 05_FilterWidthH | Writ | te | 4 |
| Dub A | 🐏 🥥 DI_ | 05_CounterStart | Ref | resh | ¢ |

b. Select **True** or **False** to enable or disable the function.

| 🖳 Ent | er Value to Write | - | × |
|-------|-------------------|---|--------|
| Value | True | | \sim |
| C | True I False | | |

D. You can add the nodes of **EnableInvert, EnableFilter**, **FilterWidthLow**, **FilterWidthHigh** functions in **Counter mode** if user need these functions.

3. Frequency mode:

When Frequency is selected, the module will calculate the frequency of the digital input signal for the selected channel.

A. Select **DI_(channel)_FrequencyValue** and right click **Monitor**

| Information | Network | Administration | Firmware | OPCUA | Certificates |
|-------------|------------|-------------------|----------|---------|--------------|
| EndPoint UI | RL: opc.tc | p://10.0.0.50:484 | 0 | | En: |
| Address | Space | | | | Attri |
| | - 🧳 DI_ | 05_DIValue | | | ^ Nam |
| | 🔷 DI_ | 05_EnableInvert | | | 41 |
| | 🔷 DI_ | 05_EnableFilter | | | |
| | 🔷 DI_ | 05_FilterWidthL | ow | | |
| | 🔷 DI_ | 05_FilterWidthH | igh | | |
| | 🔷 DI_ | 05_CounterStart | | | 1 |
| | 🔷 DI_ | 05_CounterRetai | in | | 🛛 🖓 I |
| | 🔷 DI_ | 05_CounterValu | e | | ו 🥥 ו |
| | 🧳 DI | 05_FrequencyVa | lue | | |
| | 🗄 🧳 DI_ | 06_DIValue | | Monitor | |
| | 🗄 🧳 DI_ | 06_EnableInvert | 1 | Write | |
| | 🗄 🧳 DI_ | 06_EnableFilter | | Refresh | |
| -Data Acce | ss View — | | _ | | |

B. The current frequency value of the selected channel will be displayed in the Value of Attributes of this DI_(channel)_ FrequencyValue in Data Access View.

| Address Same | | Enable Securi | ty Conne | CI Disconi | lect | | | | |
|--|-------------------|--|-------------------|---|--|-------------------|-----------------|-------------------------|---|
| Image: Spectrum Image: Optimized state Image: Optimized state Image: Optimized state Image: Optimized state <td< th=""><th>~</th><th>Name Nodeld NodeClass DisplayNan DisplayNan WriteMask UserWriteN Value DataType <</th><th>ue ue lasik</th><th>Value ns=1;==Obje Variable 1:DL_05_Freq DL_05_Freq 0 0 0 0 0 UInt32</th><th>ectsFolder/Di equency∀alu uency∀alue</th><th>gitalInput/D e</th><th>I_05_Freque</th><th>mcy∀alue</th><th>Data T: ' Nodeld Int32 Qualifis Localiz Localiz UInt32 UInt32 Variant Nodeld</th></td<> | ~ | Name Nodeld NodeClass DisplayNan DisplayNan WriteMask UserWriteN Value DataType < | ue ue lasik | Value ns=1;==Obje Variable 1:DL_05_Freq DL_05_Freq 0 0 0 0 0 UInt32 | ectsFolder/Di equency∀alu uency∀alue | gitalInput/D e | I_05_Freque | mcy∀alue | Data T: ' Nodeld Int32 Qualifis Localiz Localiz UInt32 UInt32 Variant Nodeld |
| Data Access View | | 01 | | | | | | | |
| No. ID 1 /ObjectsFolder/DigitalInput/DI_05_FrequencyValue | Display DI_05_ | Name FrequencyValue | Mode Reporting | Sampling Rate 1000 | Deadband None | ∀alue O | Quality Good | Timestam; 14:14:00.0 | p Las 000 |

C. You can add the nodes of **EnableInvert**, **EnableFilter**, **FilterWidthLow**, **FilterWidthHigh** functions in **Counter mode** if user need these functions.

4.6.3 Digital Output

Please see the below table for I/O channel of ADAM-6300 series.

| | Analog | Digita | al Input | Digital Output | | SSR Relay (VDC) |
|------------|---------|--------------------|---|--------------------|---|-----------------------|
| Model | Input | Support DI mode | Support DI, counter and frequency mode | Support DO mode | Support DO, pulse output, pulse output continue mode | |
| ADAM-6317 | AI0~AI7 | DI0~DI4 | DI5~DI10 | DO0~DO3 | DO4~DO9 | N/A |
| ADAM-6350 | N/A | DI0~DI11 | DI12~DI17 | DO0~DO11 | DO12~DO17 | N/A |
| ADAM-6360D | N/A | DI0~DI7 | DI8~DI13 | N/A | DO0~DO5 | Relay 0~7 |

4.6.3.1 DO mode introduction

There are two type of DO channels in ADAM-6300. The first type of DO channel is only to support DO mode, the second type of DO channel is to support DO, pulse output, pulse output continue mode. The latter channel supports 3 kHz pulse output.

4.6.3.2 DO configuration in OPC UA tab

1. DO mode selection:

There are three DO modes including DO, Pulse output continue, Pulse output modes. To generate a continuous pulse train or finite number of pulses is Pulse Output Continue (for a pulse train), and Pulse Output is for a finite number of pulses.

A. Select DO_(channel)_Mode and right click Write

| Information | Network | Administration | Firmware | OPCUA | Certific |
|-------------|-------------|-------------------|-----------|-------|----------|
| EndPoint UI | RL: opc.tcj | p://10.0.0.55:484 | 0 | | |
| Address | Space | | | | r |
| | 🗄 🧳 DO | _08_DOValue | | | ^ |
| | 🗄 🧳 DO. | _09_DOValue | | | |
| | 🗄 🥥 DO | _10_DOValue | | | |
| | 🗄 🧳 DO | _11_DOValue | | | |
| | 🧼 DO | 12_Mode | | | |
| | 🔷 DO | _12_DOV | Monitor | | |
| | 🔷 DO | _12_Pulse | Mirito | | |
| | 🔷 DO | _12_Pulse | write | | |
| | Ø DO | _12_Pulse | Refresh | | |
| | 🗄 🧳 DO, | 12_PulseOutCo | unt | | - |
| | 🧳 DO | _12_PulseRemai | ningCount | | |
| | 🗄 🧳 DO | _13_Mode | - | | ~ |

- B. Enter below value to choose DO mode
 - a. 0: DO mode
 - b. 1: Pulse output mode

c. 2: Pulse output continue mode

| 🖳 Ent | er Value to Write | - | | \times |
|-------|-------------------|---|-----|----------|
| Value | 0 | | | • |
| C | K | | Can | cel |

C. Select this **DO_(channel)_Mode** and right click **Monitor**

| Information | Network | Administration | Firmware | OPCUA | Certificates | Modbus | Addres |
|-------------|--|--|------------------|--------|---------------------|--|-----------------|
| EndPoint UI | RL: opc.tc | p://10.0.0.55:4840 |) | | E | nable Secu | rity |
| Address | Space | | | | Att | ributes | |
| | DO DD D | _08_DOValue _09_DOValue _10_DOValue _11_DOValue _12_Mode | | | A Na | me NodeId NodeClass BrowseNa DisplayNa | s ome ome |
| | Ø DO | 12_PulseS 12_PulseV | Monitor Write | | | Descriptio WriteMasl | n k |
| | → DO → O | 12_Pulse\ 12_Pulse(| Refresh | | Ø | UserWrite Value | Mask |
| | | _12_PulseRemain _13_Mode | ungCount | | ✓ | DataType | |
| Data Acce | ss View — | | | | | | |
| No. ID | Display N | lame Mode | Sampling | Rate D | eadband V | Quality | Times |

And you can see this node(**DO_12_Mode**) in **Data Access View**. Or you can left click and drag this this node(**DO_12_Mode**) in **Data Access View** box.

| Address Space | ~ | Attributes Name Nodel Disple Descr Write User Value DataT < | id Class beName byName iption Mask #niteMask ype | Value ns=1 ≫ Variabi 1:DO_12 0 0 2 UInt16 | =VDbjectsFold le 12_Mode }_Mode | en/DigitalOut | putDO_12_Mod | Data Type Nodeld Int32 QualifiedNama LocalizedText UInt32 UInt32 Variant Nodeld > | ¢ > |
|---------------|--------------|--|---|--|--|---------------|--------------|--|-----|
| In ID | Display Name | Mode | Sampling Rate | Deadband | Value | Quality | Timestamp | Last Error | |

- 2. DO mode:
 - A. Select DO_(channel)_DOValue and right click to select Write

| Information | Network | Administration | Firmware | OPCUA | Cert |
|-------------|-------------|-------------------|-----------|-------|------|
| EndPoint U | RL: opc.tcj | p://10.0.0.55:484 | 0 | | |
| Address | Space | | | | |
| | 🗄 🥥 DO | _08_DOValue | | | ^ |
| | 🕂 🔗 DO | _09_DOValue | | | |
| | 🔃 🧼 🗩 DO | _10_DOValue | | | |
| | 🗄 🧳 DO | _11_DOValue | | | |
| | 🔷 DO | _12_Mode | | | |
| | 🧼 DO | _12_DOV_alue | | | _ |
| | 🔷 DO | _12_Pulse | Monitor | | - 11 |
| | 🔗 DO | _12_Pulse | Write | | |
| | 🖌 DO | _12_Pulse | Refrech | | -1 |
| | 🕀 🥥 DO | _12_Pulse | Refresh | | -11 |
| | 🕂 🖓 🗹 | _12_PulseRemain | ningCount | | |
| | 吏 🧳 DO, | _13_Mode | | | ~ |

B. And select **True** to turn on the DO. The default setting is false, which means DO off.

| 🖳 Ente | er Value to Write | | × |
|--------|-------------------|--|--------|
| Value | True | | \sim |
| 01 | True False | | |

C. Right click to select **Monitor** to monitor this DO status.

| Information | Network | Administration | Firmware | OPCUA | Certific |
|-------------|---|--|------------------|-------|----------|
| EndPoint U | RL: opc.tcj | p://10.0.0.55:484 | 0 | | [|
| Address | Space | | | | |
| | DO D | _08_DOValue _09_DOValue _10_DOValue _11_DOValue _12_Mode | | | ^ |
| | 🖉 DO | _12_PulseS | Monitor | • | |
| | DO DO DO DO DO | _12_Pulse \\ _12_Pulse \\ _12_Pulse O | Write Refresh | | |
| | ⊕… � DO ⊕… � DO | _12_PulseRemain _13_Mode | ningCount | | ~ |

3. Pulse output mode:

Pulse output is for a finite number of pulses. Please follow below steps to implement pulse out function.

A. Select **DO_(channel)_Mode**, and right click to select **Write** and enter **1**.

| | 110//10/10/10/10/10 | Firmware | OFCOA | Certific |
|------------|--|---|---|--|
| L: opc.tcj | ;//10.0.0.55:484 | 40 | | |
| pace | | | | |
|) 🧳 DO | _08_DOValue | | | ^ |
|) 🥥 DO | _09_DOValue | | | |
|) 🧳 DO | _10_DOValue | | | |
|) 🧳 DO | _11_DOValue | | | |
| 🧳 DO | _12_Mode | | | _ |
| 🧳 DO | _12_DOV | Monitor | | |
| 🥥 DO | _12_Pulse | Write | | |
| 🥥 DO | _12_Pulse | | | |
| 🥥 DO | _12_Pulse | Refresh | | |
|) 🥥 DO_ | _12_PulseOutCo | unt | | _ |
|) 🧳 DO | 12_PulseRemai | iningCount | | |
| 🥥 DO | 13_Mode | | | ~ |
| | iopc.tcj iace iace iopc.tcj iopc.tcj<td> opc.tcp://10.010.55:483 opc.tcp://10.010.55:483 opc.tcp://10.010.55:483 opc.10_DOValue opc.10_DOValue opc.11_DOValue opc.12_Mode opc.12_Pulse opc.13_Mode </td><td>.: opc.tcp://10.0.0.5534840 acce DO_09_DOValue DO_10_DOValue DO_11_DOValue DO_12_Mode DO_12_Pulse DO_12_Pulse DO_12_Pulse DO_12_Pulse DO_12_Pulse DO_12_Pulse DO_12_Pulse DO_12_Pulse DO_12_Pulse DO_13_Mode</td><td>.: opc.tcp://10.010.555:4840 acce DO_09_DOValue DO_10_DOValue DO_11_DOValue DO_12_Mode DO_12_Pulse DO_13_Mode</td> | opc.tcp://10.010.55:483 opc.tcp://10.010.55:483 opc.tcp://10.010.55:483 opc.10_DOValue opc.10_DOValue opc.11_DOValue opc.12_Mode opc.12_Pulse opc.13_Mode | .: opc.tcp://10.0.0.5534840 acce DO_09_DOValue DO_10_DOValue DO_11_DOValue DO_12_Mode DO_12_Pulse DO_12_Pulse DO_12_Pulse DO_12_Pulse DO_12_Pulse DO_12_Pulse DO_12_Pulse DO_12_Pulse DO_12_Pulse DO_13_Mode | .: opc.tcp://10.010.555:4840 acce DO_09_DOValue DO_10_DOValue DO_11_DOValue DO_12_Mode DO_12_Pulse DO_13_Mode |

| 🖳 Ent | er Value to Write | - | | × |
|-------|-------------------|---|-----|----------|
| Value | 1 | | | A |
| 0 | K | | Can | cel |

B. Select DO_(Channel)_ PulseWidthLow and DO_(Channel)_ PulseWidth-High

You can define the pulse width in the low signal width(right click **Write** in selected **DO_(Channel)_PulseWidthLow)**, and high signal width(right click **Write** in selected **DO_(Channel)_PulseWidthHigh**), to enter **0~65535**(The unit is 0.1ms). The frequency and duty cycle of the pulse output signal will be calculated automatically.

| Information | Network | Administration | Firmware | OPCUA | Certific | cates 1 |
|-------------|----------------------|---|------------|---------|----------|---|
| EndPoint UI | RL: opc.tcj | p://10.0.0.55:4840 |) | | [| Ena |
| Address | Space | | | | | Attrib |
| | 2 DO 2 DO 2 DO | _12_Mode _12_DOValue _12_PulseStart | | | ^ | Name |
| | DO | 12_Pulse WidthL 12 Pulse WidthH | ow ligh | Monitor | | |
| | 🕀 🧳 DO | _12_PulseOutCou | unt | Write | | |
| | | _12_PulseRemain _13_Mode | uing | Refresh | | , v |
| | • · · • DO | 13_DOValue 13_PulseStart 13_PulseWidthL | .ow | | | ♀ U: ■♀ V: ♀ D: |
| | | _13_PulseWidthH | ligh | | ~ | < |

| 🖳 Ent | er Value to Write | - | | × |
|-------|-------------------|---|------|----|
| Value | 65535 | | | • |
| 0 | K | | Canc | el |

C. Select **DO_(Channel)_PulseOutputCount**, and right click **Write** the counter number. (The range is **0~4294967295**)

| Information | Network | Administration | Firmware | OPCUA | Certifi | cates |
|-------------|------------|--------------------|----------|---------|---------|--------|
| EndPoint UI | RL: opc.tc | p://10.0.0.55:484(| 0 | | | Ens |
| Address | Space | | | | | Attrit |
| | 🧼 DO | _12_Mode | | | ^ | Nam |
| | 🔷 DO | _12_DOValue | | | | 🤷 N |
| | 🥥 DO | _12_PulseStart | | | | |
| | 🧳 DO | _12_Pulse WidthL | /ow | | | |
| | 🧳 DO | _12_Pulse WidthH | ligh | | | V E |
| | 🖗 DO | _12_PulseOutCov | unt | | | I 🖉 P |
| | 🔷 DO | _12_PulseRemain | ning(| Monitor | | |
| | 🗄 🧳 DO | _13_Mode | | Write | | |
| | 🗄 🧳 DO | _13_DOValue | | Pofrach | | |
| | 🗄 🧳 DO | _13_PulseStart | | Refresh | | |
| | 🗄 🧳 DO | _13_Pulse WidthL | wo. | | | 🧼 D |
| | 🕂 🧳 DO | _13_Pulse WidthF | High | | ~ | < |

| | • |
|-----|-----|
| Can | cel |
| | Can |

D. Select **DO_(Channel)_PulseStart**, and right click Write the True to start DO pulse.

| Information | Network | Administration | Firmware | OPCUA | Certifica | |
|-------------|--|--------------------------------------|-------------|-------|-----------|--|
| EndPoint UI | RL: opc.tcj | p://10.0.0.55:484 | 0 | | | |
| Address | Space | | | | | |
| | ✓ DO ✓ DO ✓ DO | _12_Mode _12_DOValue | | | ^ | |
| | 🔗 DO | DO 12 PulseStart DO 12 PulseWidt | | | | |
| | - 🥥 DO | 12_Pulse Widtl | Write | · | | |
| | 0 DO | _12_PulseOutC _12_PulseRems_ | Refre | esh | | |
| | | 13_Mode | - | | | |
| | | _13_PulseStart | | | | |
| | ⊕… 🖌 DO ⊕… 🧳 DO | _13_Pulse WidthF _13_Pulse WidthF | ,ow High | | ~ | |

| 🔡 Enter Value to Write | | - | × |
|------------------------|---------------|---|---|
| Value | True | | ~ |
| OI | True False | | |

E. After above setting, left click and drag each of nodes of DO_(channel)_Mode, DO_(Channel)_ PulseWidthLow, DO_(Channel)_Pulse-WidthHigh, DO_(Channel)_PulseOutputCount, DO_(Channel)_PulseStart, DO_(Channel)_PulseRemainingCount to

Data Access View, and start to monitor these nodes. You can see the remaining counter in DO_(Channel)_PulseRemaining-Count.

| ndPoi | at URL: opc.tcp://10.0.0.55:4840 | Enable Security Connect | Disco | nnect | | | | |
|--------|---|---|---|---|-------------|----------|--|--|
| Add | ress Space | Attributes | | | | | | |
| | | Name NodeClass BrowseName DisplayName Description WriteMask UserWriteMask Volue DestType < | Value ns=1>=/OI Variable 1:DO_14_ DO_14_Pr 0 0 True Boolean | bjectsFolder/Digit PulæStart IlæStart | alOutput/DO | _14_Puls | EStart N D C L U U V V N | Nata Type IodeId at32 ValifiedNe occalizedTe occalizedTe IInt32 IInt32 Variant NodeId |
| Data . | Access View | | | | | | | |
| No. | ID | Display Name | Mode | Sampling Rate | Deadband | Value | Quality | Timesta: |
| 2 | /ObjectsFolder/DigitalOutput/DO_14_PulseWidthLow | DO_14_Pulse WidthLow | Reporting | 1000 | None | 10000 | Good | 16:13:5. |
| 3 | /ObjectsFolder/DigitalOutput/DO_14_Pulse WidthHigh | DO_14_Pulse WidthHigh | Reporting | 1000 | None | 10000 | Good | 16:13:5 |
| 4 | ObjectsFolder/DigitalOutput/DO_14_PulseOutCount | DO_14_PulseOutCount | Reporting | 1000 | None | 100 | Good | 16:14:0 |
| | /ObjectsPolder/DigitalOutput/DO_14_PulseKemainingCoun | DO_14_PulseRemainingCount | Keporting | 1000 | None | 88 | Good | 10:14:1 |

4. Pulse output continue mode

Pulse output Continue (for a pulse train) is to generate a continuous pulse train or finite number of pulses. Please follow below steps to implement pulse out function.

A. Select **DO_(channel)_Mode**, and right click to select **Write** and enter **2**.

| Information | Network | Administration | Firmware | OPCUA | Certific |
|-------------|-------------|----------------------------|------------|-------|----------|
| EndPoint UI | RL: opc.tcj | p://10.0.0.55:484 | 40 | | |
| Address | Space | | | | |
| | 🗄 🧳 DO | _08_DOValue | | | ^ |
| | ⊕ | _09_DOValue _10_DOValue | | | |
| | 🕂 🧼 DO | _11_DOValue | | | |
| | Ø DO | _12_DOV | Monitor | | |
| | - 00 DO | _12_Pulse _12_Pulse | Write | | |
| | 🧳 DO | _12_Pulse | Refresh | | |
| | | _12_PulseRema | iningCount | | |
| | 🕂 🥥 DO | _13_Mode | | | ~ |

| 🖳 Ent | er Value to Write | - | | × |
|-------|-------------------|---|-----|-----|
| Value | 2 | | | • |
| C | ιK | | Can | cel |

B. Select DO_(Channel)_PulseWidthLow and DO_(Channel)_PulseWidth-High

You can define the pulse width in the low signal width(right click **Write** in selected **DO_(Channel)_ PulseWidthLow**), and high signal width(right click **Write** in selected **DO_(Channel)_PulseWidthHigh**), to enter **0~65535**(The unit is 0.1ms). The frequency and duty cycle of the pulse output signal will be calculated automatically.

| Information Netwo | rk Administration | Firmware | OPCUA | Certifi | cates 1 |
|-------------------|------------------------|----------|---------|--------------|---------|
| EndPoint URL: OP | c.tcp://10.0.0.55:4840 |) | | | Ena |
| Address Space | | | | | Attrib |
| 🥥 | DO_12_Mode | | | ^ | Name |
| 🧼 | DO_12_DOValue | | | | 4 M. |
| 🧼 | DO_12_PulseStart | | | | A M. |
| 🧼 | DO_12_Pulse WidthL | /ow | Manihan | | |
| 🧼 . | DO_12_Pulse WidthH | ligh | wonitor | | î |
| ÷ 🧳 | DO_12_PulseOutCou | unt | Write | | ľ |
| ÷ 🧼 | DO_12_PulseRemain | ung | Refresh | | ľ |
| ÷ 🧳 | DO_13_Mode | _ | | | Y |
| ÷ 🧳 | DO_13_DOValue | | | | 🥥 U: |
| ÷ 🧳 | DO_13_PulseStart | | | | =Q V; |
| 主 🥥 | DO_13_Pulse WidthL | wo. | | | 🥥 D: |
| ÷ 🧼 | DO_13_Pulse WidthH | ligh | | \checkmark | < |

| 🖳 Ent | er Value to Write | _ | | × |
|-------|-------------------|---|-----|-----|
| Value | 65535 | | | • |
| 0 | K | | Can | cel |

C. Select **DO_(Channel)_PulseStart**, and right click **Write** the **True** to start DO pulse.

| Information | Network | Administration | Firmware | OPCUA | Certifica |
|----------------------|-------------|--------------------------------------|-------------|-------|-----------|
| EndPoint UI | RL: opc.tc; | p://10.0.0.55:4840 | D | | |
| Address | Space | | | | |
| | Ø DO | _12_Mode 12_DOValue | | | ^ |
| | 🖉 DO | 12_PulseStart | Mon | itor | |
| | Ø DO | _12_PulseWidtl | Write | ə | |
| | Ø DO | _12_PulseOutC 12_PulseRems_ | Refre | esh | |
| | • O | _13_Mode | | | |
| | | _13_DOValue _13_PulseStart | | | |
| | | _13_Pulse WidthL _13_Pulse WidthH | .ow High | | ~ |
| | 1 | | | | |
| 🖳 Enter Va | alue to Wr | rite | - | | × |
| Value Tru | le | | | | ~ |
| OI <mark>Fals</mark> | e xe | | | | |

D. After above settings, left click and drag each of nodes of DO_(channel)_Mode, DO_(Channel)_ PulseWidthLow, DO_(Channel)_Pulse-WidthHigh, DO_(Channel)_PulseStart to Data Access View, and start to monitor these nodes.

Chapter 4 System Configuration

4.6.4 SSR Relay Output

- 1. SSR Relay Output mode:
 - A. Select **SSR_(channel)_RelayValue** and right click to select **Write**



B. And select **True** to turn on the relay. The default setting is false, which means relay off.

| 🖳 Ente | er Value to Write | — | \times |
|--------|-------------------|---|----------|
| Value | True | | \sim |
| 0 | True False | | |

C. Right click to select **Monitor** to monitor this SSR relay status.

| Information | Network | Administration | Firmware | OPCUA | Certificates |
|--|---|---|----------|--------|---|
| EndPoint UI | RL: opc.tc | p://10.0.0.50:484 |) | | E |
| Address | Space | | | | Att |
| ······································ | Server Digital_Input Digital_Output SSR_Output | | | | |
| | SSR_00_Relay SSR_01_Relay SSR_02_Relay | ₹_00_RelayValue ₹_01_RelayValue | Mo | onitor | |
| | | <pre>L_01_RelayValue</pre> | Wr | ite | |
| | - 🔷 SSF | {_03_RelayValue ₹ 04 RelayValue | Re | fresh | |
| | | C_05_RelayValue C_05_RelayValue C_06_RelayValue C_07_RelayValue | | | |



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