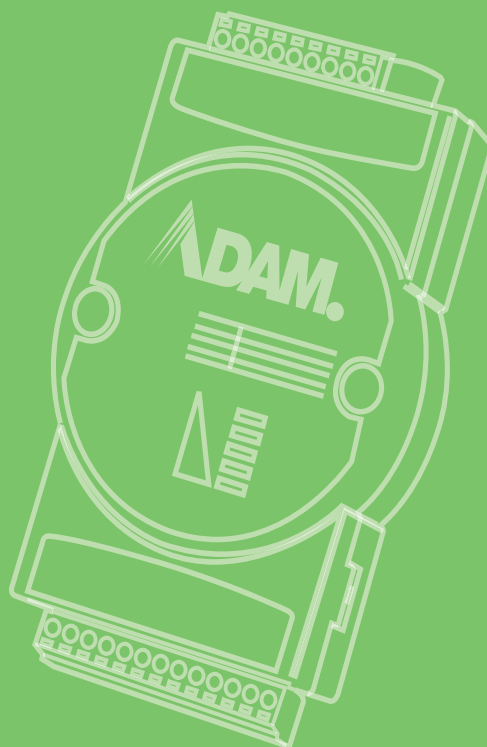


User Manual



ADAM-6100PN Series

PROFINET I/O Modules

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This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

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 merchandise 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.

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 kind of cable is available from Advantech. Please contact your local supplier for ordering information.

FCC Class A

Note: 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 which case the user will be required to correct the interference at his 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 (OS, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.

Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

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:
 15. The power cord or plug is damaged.
 16. Liquid has penetrated into the equipment.
 17. The equipment has been exposed to moisture.
 18. The equipment does not work well, or you cannot get it to work according to the user's manual.
 19. The equipment has been dropped and damaged.
 20. The equipment has obvious signs of breakage.
21. **DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.**
22. **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.**
23. The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

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Chapter 1

Overview

1.1 Introduction

ADAM-6100PN is a series of PROFINET remote I/O modules. PROFINET protocol is very popular in industrial automation applications and all ADAM-6100PN series modules can comply with it. You can easily connect ADAM-6100PN modules to PROFINET masters, like Siemens PLC, through PROFINET protocol. ADAM-6100PN series module supports **Initial mode** and **Normal mode (PROFINET mode)**, that you can set by the DIP switch on the side of ADAM module. Refer to Section 1.3.3 for how to configure it. When you configure the mode as **Initial mode**, you can configure ADAM-6100PN module's IP address and related setting by Advantech APAX/ADAM.Net utility. When you configure the mode as **Normal mode**, ADAM-6100PN modules are ready to communicate with PROFINET master by PROFINET protocol.

1.2 System Architecture

ADAM-6100PN series modules can be daisy-chained in an Ethernet network, making it easier to deploy, and helping improve scalability. You can refer to the figure below to see how a daisy-chain connection works in the network.

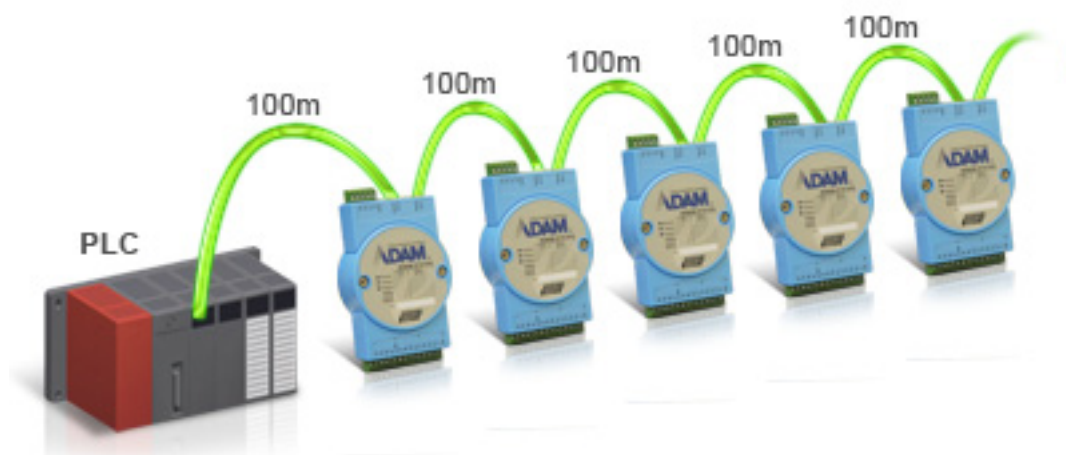


Figure 1.1 ADAM-6100PN Daisy Chain Connections

1.3 Features

1.3.1 Daisy Chain Connection

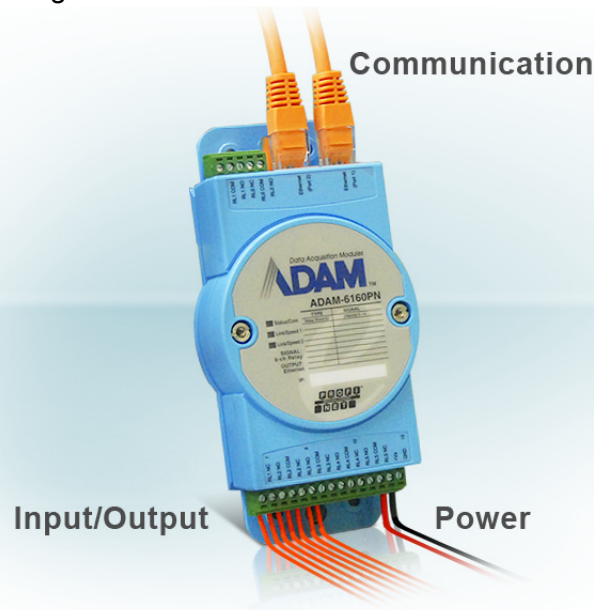
ADAM-6100PN module has built in Ethernet switches to allow daisy chain connections in an Ethernet network, making it easier to deploy, and helping improve scalability. The two Ethernet ports are fully compliant with IEEE 802.3u 10/100Mbps through standard RJ-45 connectors.



Pin	Assignment	Description
1	TD +	Transmit +
2	TD -	Transmit -
3	RD +	Receive +
4	N/C	not used
5	N/C	not used
6	RD -	Receive -
7	N/C	not used
8	N/C	not used

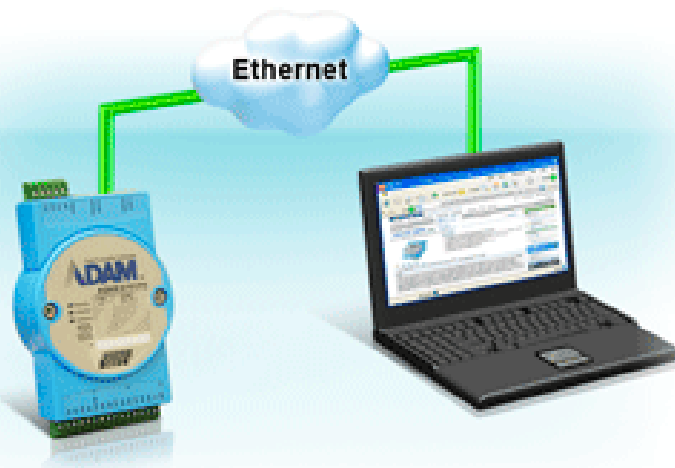
1.3.2 2,500V Isolation Protection

With triple isolation, including power supply, input/output, and Ethernet communication, ADAM-6100PN series ensures I/O data to be controlled correctly, and prevents devices from breaking down.



1.3.3 Ethernet-based Configuration Tool

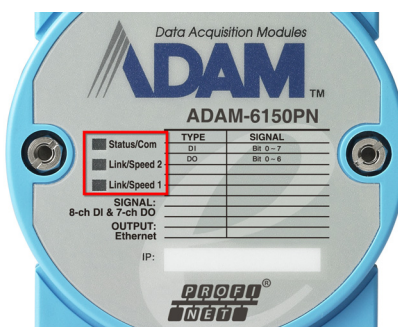
You can configure ADAM-6100PN module as Initial mode or Normal mode by the DIP switch in the side of each module. When ADAM-6100PN module is set as Initial mode, you can use ADAM.Net utility to configure and test the module via Ethernet connection between PC and the module. This can ensure the ADAM-6100PN module is set properly and is working correctly before connecting it to an PROFINET network. When ADAM-6100PN module is set as Normal mode, it can directly communicate with PROFINET master device such as Simens PLC by PROFINET protocol.





1.3.4 Status LED Indicator

There are 3 LED indicators on the front of the ADAM-6100 module-Status/COM, Link/Speed 1, and Link/Speed 2. The Status/COM LED indicates the status of the module. The Link/Speed LEDs indicate the network connections of Ethernet port 1 and port 2. After power on, if the module is not connected to any network, the Status LED and the COM LED will keep ON. Once the module is connected, the Status LED and COM LED will work according to the table below.



Status of the module		
Mode	Status LED (Green)	COM LED (Orange)
Init mode (Utility mode)	Stays OFF	Flashes ON/OFF
Normal mode (PROFINET mode)	Flashes ON/OFF	OFF when no PROFINET communication; ON during PROFINET communication
"Locate" function in normal mode (PROFINET mode)	Flashes ON/OFF at the same time	
Port Communication		
Mode	Link LED (Green)	Speed LED (Orange)
Port 1 connected	Link 1 blinks ON	Speed 1 ON when network speed is 100M
Port 2 connected	Link 2 blinks ON	Speed 2 ON when network speed is 100M

1.3.5 Dimensions

The following diagrams show the dimensions of the ADAM-6100 modules:

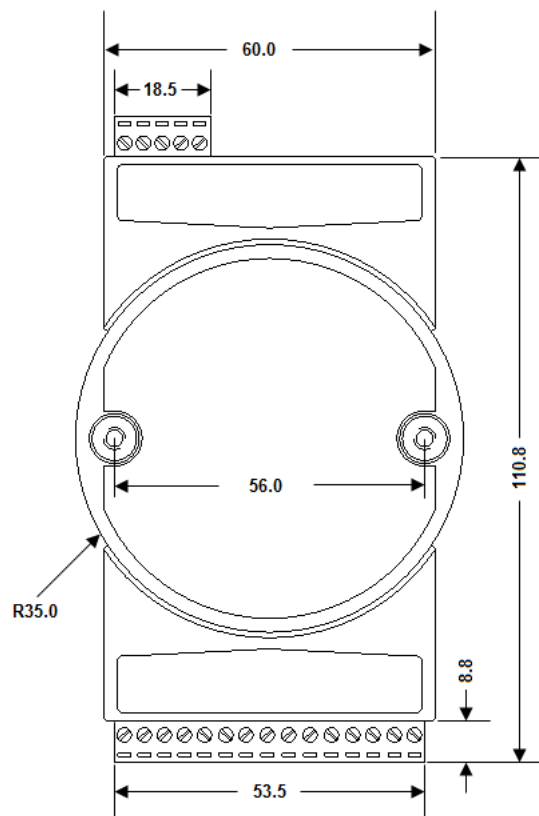


Figure 1.2 ADAM-6100 Front

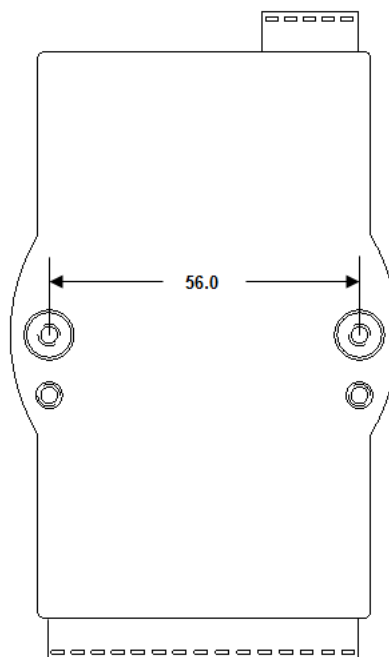


Figure 1.3 ADAM-6100 Back

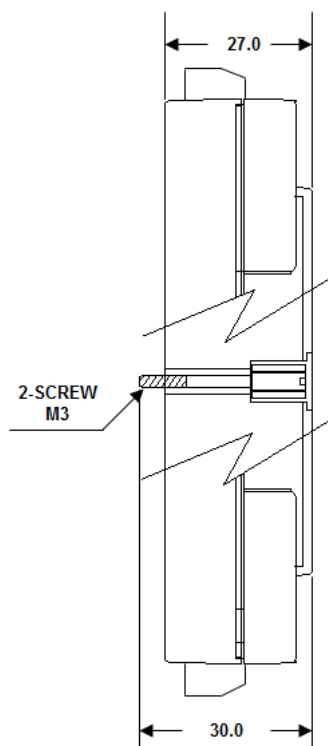


Figure 1.4 ADAM-6100 Side

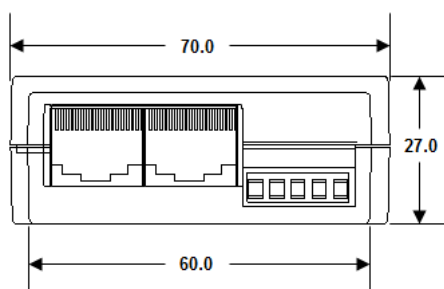


Figure 1.5 ADAM-6100 Top

Chapter 2

Hardware
Installation
Guide

2.1 Determining the Proper Environment

Prior to installing ADAM-6100 modules, please check the following.

2.1.1 Package Contents

Unpack the shipped boxes and make sure that the contents include:

- ADAM-6100 module with one bracket and DIN-rail adapter
- ADAM-6100 module User Manual
- ADAM CD

2.1.2 System Requirements

2.1.2.1 Host Computer

- Microsoft Windows CE/XP/7
- At least 32 MB RAM
- 20 MB of hard disk space available
- VGA color monitor
- 2x or higher speed CD-ROM
- Mouse or other pointing devices
- 10/100 Mbps or higher Ethernet Card

Ethernet Hub (at least 2 ports)

Two Ethernet Cables with RJ-45 connector

Power supply for ADAM-6100 (+10 to +30 V Unregulated)

2.2 Mounting

ADAM-6100 modules are designed as compact units and are allowed to be installed in the field site under the following methods.

2.2.1 Panel Mounting

Each ADAM-6100 Module is packed with a plastic panel mounting bracket. Users can refer the dimensions of the bracket to configure an optimal placement in a panel or cabinet. Fix the bracket first, then, fix the ADAM-6100 module on the bracket.

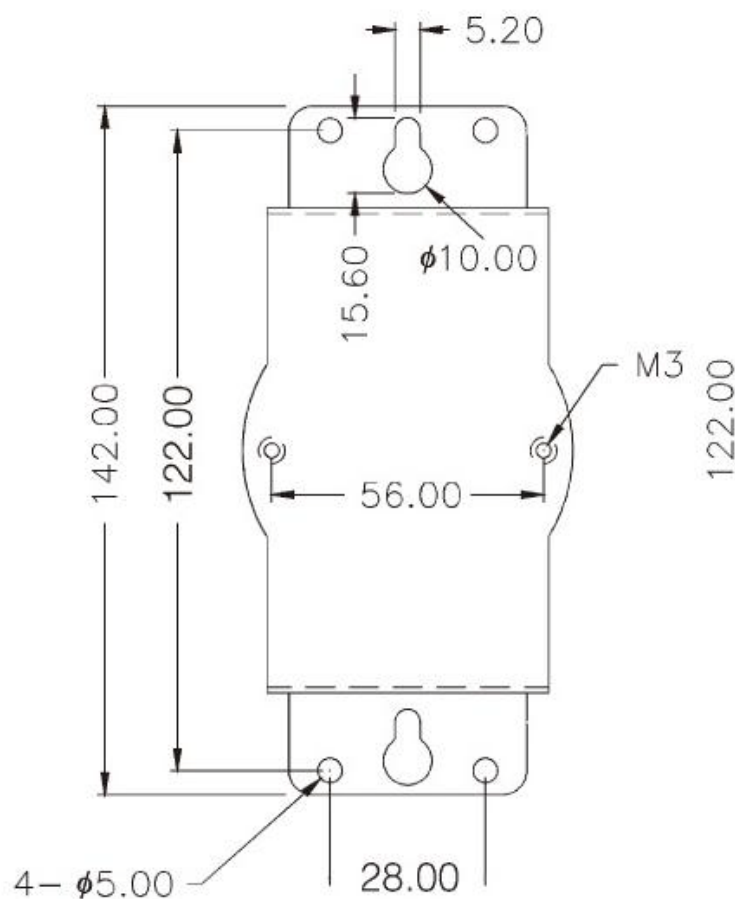


Figure 2.1 Panel Mounting Dimensions

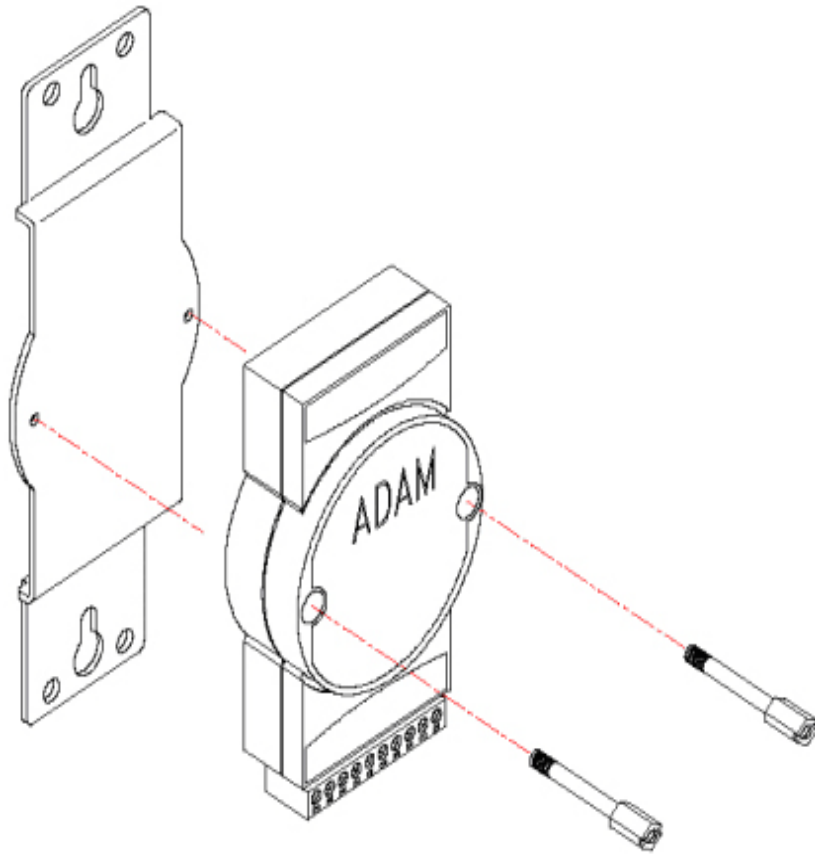


Figure 2.2 Fix Module on the Bracket

2.2.2 DIN-rail mounting

The ADAM-6100 module can also be secured to the cabinet by using mounting rails. Fix the ADAM-6100 module with the DIN-rail adapter as Figure 2-3. Then secure it on the DIN-rail as Figure 2-4. If you mount the module on a rail, you should also consider using end brackets at each end of the rail. The end brackets help keep the modules from sliding horizontally along the rail.

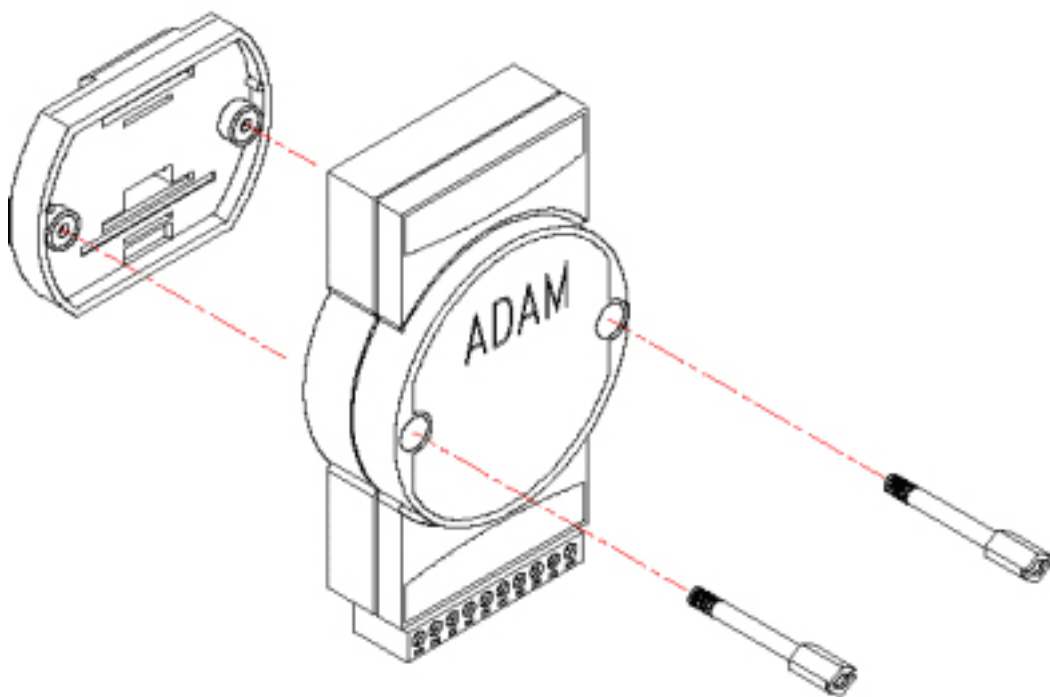


Figure 2.3 Fix Module on the DIN-rail Adapter

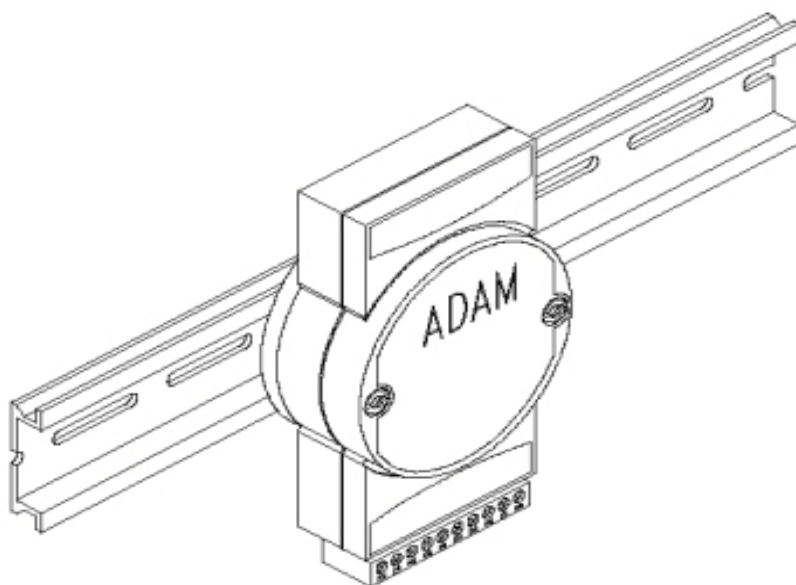


Figure 2.4 Secure Module to a DIN-rail

2.3 Wiring & Connections

This section provides basic information on wiring the power supply, I/O units, and network connection.

2.3.1 Power Supply Wiring

Although the ADAM-6100 systems are designed for a standard industrial unregulated 24 V_{DC} power supply, they accept any power unit that supplies within the range of +10 to +30 V_{DC}. The power supply ripple must be limited to 200 mV peak-to-peak, and the immediate ripple voltage should be maintained between +10 and +30 V_{DC}. Screw terminals +Vs and GND are for power supply wiring.

Note! The wires used should be at least 2 mm.

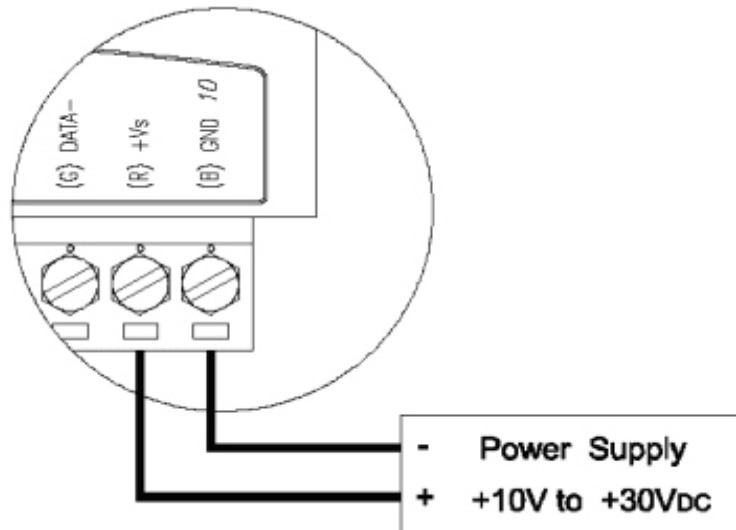


Figure 2.5 ADAM-6100 Module Power Wiring

We advise that the following standard colors (indicated on the modules) be used for power lines:

+Vs (R) Red

GND (B) Black

2.3.2 I/O Module Wiring

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

1. The terminal block accepts wires from 0.5 mm to 2.5 mm.
2. Always use a continuous length of wire. Do not combine wires.
3. Use the shortest possible wire length.
4. Use wire trays for routing where possible.
5. Avoid running wires near high-energy wiring.
6. Avoid running input wiring in close proximity to output wiring.
7. Avoid creating sharp bends in the wires.

Chapter 3

Product Specifications



Figure 3.2 ADAM-6151PN



Figure 3.3 ADAM-6156PN

3.1.2 Specifications

Digital Input

- Channels:
 - ADAM-6150PN: 8
 - ADAM-6151PN: 16
- Dry Contact (Switch: ON):
 - Logic level 0: Open
 - Logic level 1: Close to DGND
- Wet Contact (Switch: OFF):
 - Logic level 0: $0 \sim 3 V_{DC}$ or $0 \sim -3V_{DC}$
 - Logic level 1: $10 \sim 30 V_{DC}$ or $-10 \sim -30 V_{DC}$
- Input Impedance: 10 k Ω
- Transition Time: 0.2 ms

Digital Output

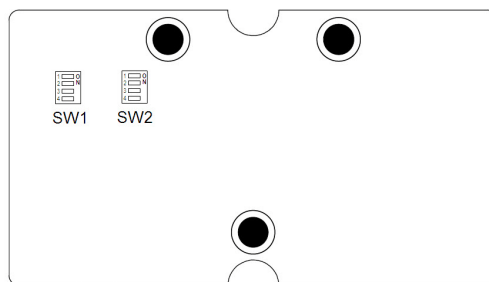
- Channels:
 - ADAM-6150PN: 7
 - ADAM-6156PN: 16
- Output Voltage Range: $8 \sim 35 V_{DC}$
- Normal Output Current: 100 mA (per channel)
- FSV Safety Function

General

- Communication: 10/100 Base-T Ethernet
- Supported Protocol: PROFINET
- Power Input: Unregulated $10 \sim 30 V_{DC}$
- Power Consumption: 2.4 W @ $24 V_{DC}$
- Power Reversal Protection (30V Max.)
- Operating Humidity: 20 ~ 95% RH (non-condensing)
- Storage Humidity: 0 ~ 95% RH (non-condensing)
- Operating Temperature: $-10 \sim 70^{\circ}\text{C}$
- Storage Temperature: $-20 \sim 80^{\circ}\text{C}$

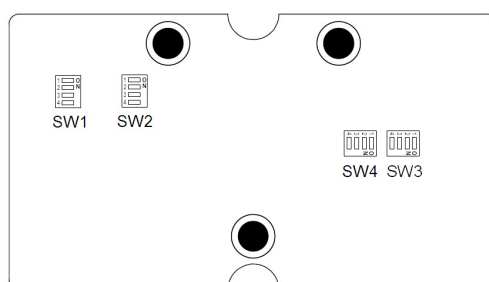
3.1.3 Switch Settings

ADAM-6150PN:



Switch	SW1				SW2			
Position	1	2	3	4	1	2	3	4
DI Channel	Ch3	Ch2	Ch1	Ch0	Ch7	Ch6	Ch5	Ch4
ON	Dry Contact (Default)							
OFF	Wet contact							

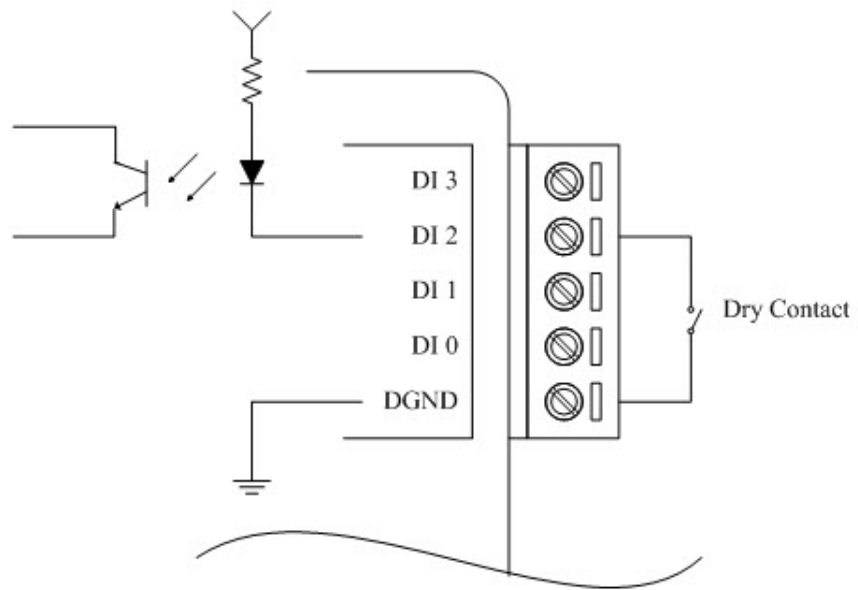
ADAM-6151PN:



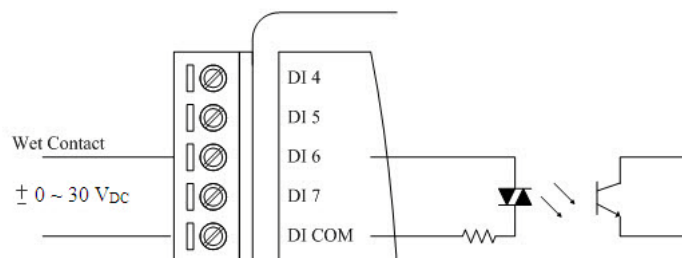
Switch	SW1				SW2			
Position	1	2	3	4	1	2	3	4
DI Channel	Ch3	Ch2	Ch1	Ch0	Ch7	Ch6	Ch5	Ch4
Switch	SW3				SW4			
Position	1	2	3	4	1	2	3	4
DI Channel	Ch11	Ch10	Ch9	Ch8	Ch15	Ch14	Ch13	Ch12
ON	Dry Contact (Default)							
OFF	Wet contact							

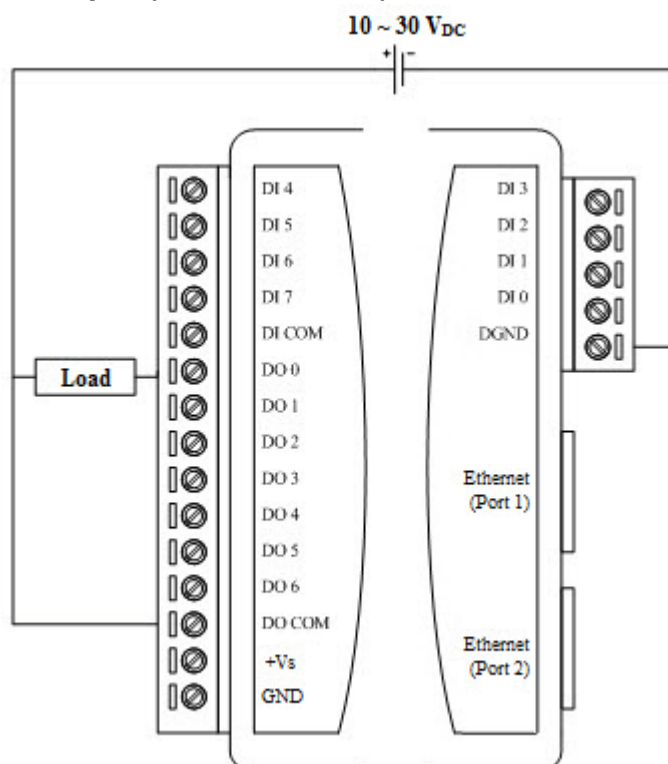
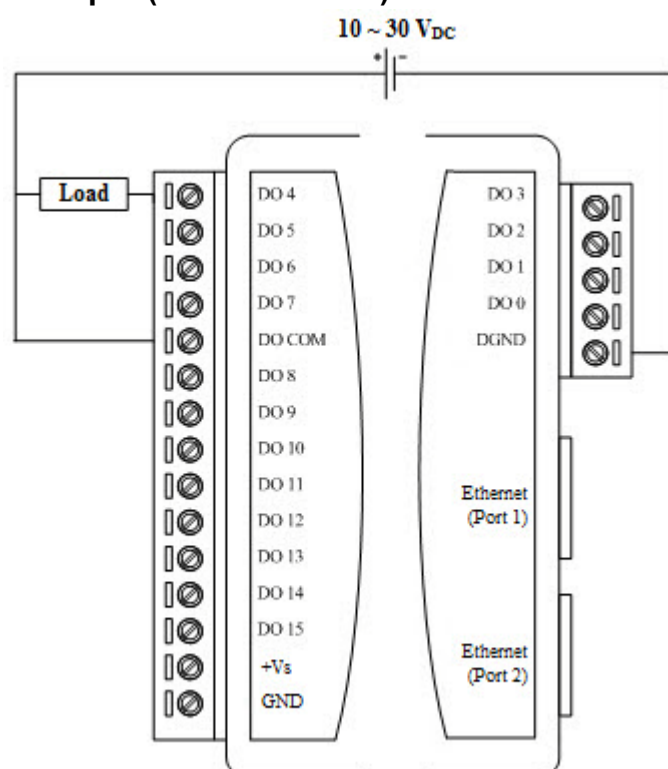
3.1.4 Application Wiring

Isolated Digital Input - Dry Contact



Isolated Digital Input - Wet Contact



Isolated Digital Output (ADAM-6150PN)**Isolated Digital Output (ADAM-6156PN)**

3.2 Relay Modules

3.2.1 Overview

The ADAM-6160PN is a relay module which supports PROFINET protocol. It provides 5 Form C and 1 Form A/B (selectable) relay channels and is excellent for ON/OFF control or low-power switching applications in an PROFINET system.

- ADAM-6160PN: 6-ch Relay Module



Figure 3.4 ADAM-6160PN

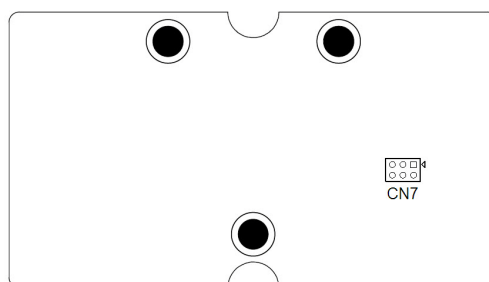
3.2.2 Specifications

Relay

- Channels: 5 Form C and 1 Form A/B (selected by jumper)
- Contact Rating:
 - AC: 250 V @ 5 A
 - DC: 30 V @ 5 A
- Breakdown Voltage:
 - 500 VAC (50/60 Hz)
- Mechanism: 20,000,000 operations
- Relay on time: 7 ms
- Relay off time: 3 ms
- Contact Resistance: 30 mΩ (max.)
- Insulation Resistance: 1 GΩ at 500 V_{DC}
- FSV Safety Function

General

- Communication: 10/100 Base-T Ethernet
- Supported Protocol: PROFINET
- Power Input: Unregulated 10 ~ 30 V_{DC}
- Power Consumption: 3.5 W @ 24 V_{DC}
- Power Reversal Protection (30V Max.)
- Operating Humidity: 20 ~ 95% RH (non-condensing)
- Storage Humidity: 0 ~ 95% RH (non-condensing)
- Operating Temperature: -10 ~ 70°C
- Storage Temperature: -20 ~ 80°C

3.2.3 Jumper Settings

CN7	Relay Ch0 Configuration
	Normally Open (Default)
	Normally Closed

Note! Users need to separate two PC boards to set the jumpers of the ADAM-6160PN.



Note! The two jumpers for CN7 must be moved together.



3.3 Analog I/O Modules

3.3.1 ADAM-6117PN: 8-ch Isolated Analog Input Module

3.3.1.1 Overview

The ADAM-6117PN is a 16-bit, 8-channel isolated analog input module. It accepts millivoltage inputs (± 150 mV, ± 500 mV), voltage inputs (± 1 V, ± 5 V and ± 10 V) and current input (± 20 mA, $0\sim 20$ mA, $4\sim 20$ mA). Each analog channel can be configured to an individual range for a variety of applications.



Figure 3.5 ADAM-6117PN

3.3.1.2 Specifications

Analog Input:

- Channels: 8 (Differential)
- Input Impedance:
 - Voltage: >10 M Ω
 - Current: 120 Ω
- Input Type: V, mV, mA
- Input Range: ± 150 mV, ± 500 mV, ± 1 V, ± 5 V, ± 10 V, ± 20 mA, $0\sim 20$ mA, $4\sim 20$ mA (different range can be configured for each channel in the utility)
- Accuracy:
 - Voltage: $\pm 0.1\%$ or better at 25°C
 - Current: $\pm 0.2\%$ or better at 25°C
- Resolution:

Voltage		Current	
Range	Resolution	Range	Resolution
± 150 mV	16 bit	± 20 mA	15 bit
± 500 mV	16 bit	$0\sim 20$ mA	14 bit
± 1 V	16 bit	$4\sim 20$ mA	14 bit
± 5 V	16 bit		
± 10 V	16 bit		

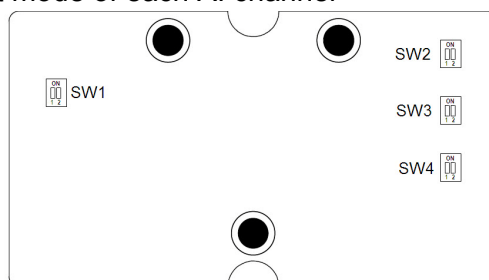
- Sampling Rate: 12 samples/second (total)
- CMR @ 50/60 Hz: 92 dB
- NMR @ 50/60 Hz: 60 dB
- Span Drift: ± 30 ppm/ $^{\circ}\text{C}$
- Zero Drift: ± 6 $\mu\text{V}/^{\circ}\text{C}$
- Isolation Voltage: 2,500 V_{DC}
- High Common Mode: up to 200 V_{DC}

General:

- Communication: 10/100 Base-T Ethernet
- Supported Protocol: PROFINET
- Power Input: Unregulated 10 ~ 30 V_{DC}
- Power Consumption: 3 W max. @ 24 V_{DC}
- Power Reversal Protection (30V max.)
- Operating Humidity: 20 ~ 95% RH (non-condensing)
- Storage Humidity: 0 ~ 95% RH (non-condensing)
- Operating Temperature: $-10 \sim 70^{\circ}\text{C}$
- Storage Temperature: $-20 \sim 80^{\circ}\text{C}$

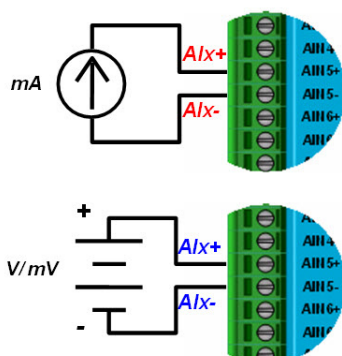
3.3.1.3 Switch Settings

SW1~SW4: Set input mode of each AI channel



Switch	SW1		SW2		SW3		SW4	
Position	1	2	1	2	1	2	1	2
Channel	Ch1	Ch0	Ch3	Ch2	Ch5	Ch4	Ch7	Ch6
ON	Current Mode							
OFF	Voltage Mode (Default)							

3.3.1.4 Application Wiring



3.3.2 ADAM-6124PN: 4-ch Analog Output and 4-ch Digital Input Module

3.3.2.1 Overview

The ADAM-6124PN is a 12-bit, 4-channel analog output module along with 4-channel dry-contact digital input. It provides programmable output ranges on all channels and supports voltage and current outputs, which makes it an ideal output control solution.



Figure 3.6 ADAM-6124PN

3.3.2.2 Specifications

Analog Output:

- Channels: 4
- Output Type: V, mA
- Voltage/Current Range: 5V, 10V, $\pm 5V$, $\pm 10V$, 0~20mA, 4~20 mA (different range can be configured for each channel in the utility)
- Resolution: 12-bit
- Output Impedance: 2.1 Ω
- Output Driving Capacity
 - Voltage: 2k Ω
 - Current: 500 Ω
- Output Settling Time: 20 μ s
- Output Slew Rate: 1.0 V/sec
- Accuracy:
 - Voltage: $\pm 0.1\%$ or better at 25°C
 - Current: $\pm 0.1\%$ or better at 25°C

Digital Input:

- Channels: 4
- Input type: Dry Contact (Close to Iso.GND)

General:

- Communication: 10/100 Base-T Ethernet
- Supported Protocol: PROFINET
- Power Input: Unregulated 10 ~ 30 V_{DC}
- Power Consumption: 3 W (max.) @ 24 V_{DC}
- Power Reversal Protection (30V max.)
- Operating Humidity: 20 ~ 95% RH (non-condensing)
- Storage Humidity: 0 ~ 95% RH (non-condensing)
- Operating Temperature: -10 ~ 70°C
- Storage Temperature: -20 ~ 80°C

Chapter 4

System Configuration Guide

4.1 System Hardware Configuration

As we mentioned in Chapter 2-1, you will need following items to complete your system hardware configuration.

4.1.1 System Requirements

4.1.1.1 Host Computer

- Microsoft Windows CE/XP/7
- At least 32 MB RAM
- 20 MB of hard disk space available
- VGA color monitor
- 2x or higher speed CD-ROM
- Mouse or other pointing devices
- 10/100 Mbps or higher Ethernet Card

4.1.2 Communication Interface

- 10/100 Mbps Ethernet hub (at least 2 ports) and two Ethernet cables with RJ-45 connector
- Crossover Ethernet cable with RJ-45 connector

4.2 Install ADAM.NET Utility Software

Advantech provides a free download of ADAM.NET Utility software for ADAM-6100 modules operation and configuration. You can find the Utility installation file in the CD with your ADAM module, or link to the web site: <http://www.advantech.com> and click into the Download Area under Service & Support site to get the latest version of the ADAM-6100 Series ADAM.NET Utility. Once you download and setup the Utility software, there will be a shortcut of the Utility program on the desktop.

Note! Before installing ADAM.NET Utility, you need to install .NET Framework 2.0 or later.



4.3 ADAM.NET Utility Overview

The ADAM.NET Utility software offers a graphical interface that helps you configure the ADAM-6000 modules. It is also very convenient to test and monitor your remote data acquisition and control system. The following guidelines will give you some brief instructions on how to use this Utility.

4.3.1 ADAM.NET Utility Operation Window

After you have successfully installed ADAM.NET Utility, there will be one shortcut icon on the desktop. Double click the shortcut icon that you should be able to see the operation window as Figure 5.1.

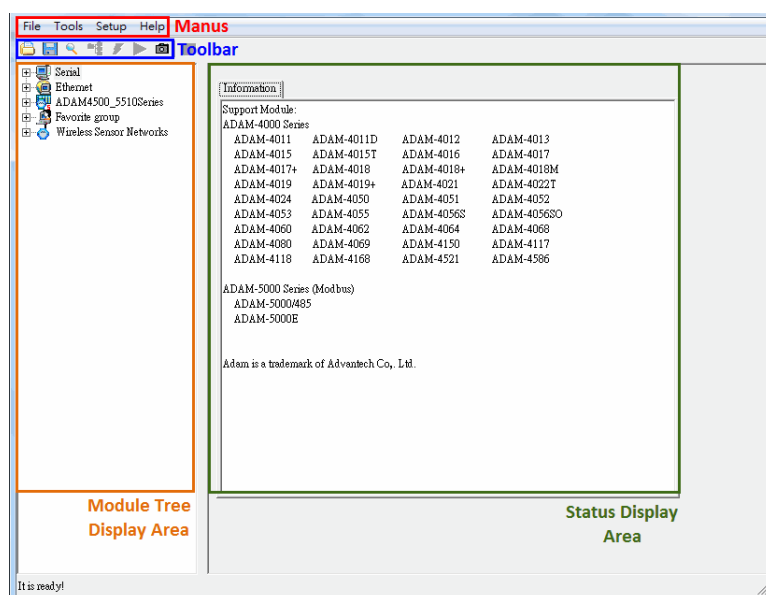


Figure 4.1 ADAM.NET Utility Operation Window

The operation window consists of four areas --- the **Menu**, the **Toolbar**, the **Module Tree Display Area** and the **Status Display Area**.

4.3.1.1 Menu

The menus at the top of the operation window contain:

4.3.1.2 File Menu:

1. Open Favorite Group - You can configure your favorite group and save the configuration into one file. Using this option, you can load your configuration file for favorite group.
2. Save Favorite Group - You can configure your favorite group and save the configuration into one file. Using this option, you can save your favorite group into one configuration file.
3. Auto-Initial Group - If you want to have the same favorite group configuration when you exit ADAM.NET utility and launch it again, you need to check this option.
4. Exit - Exit ADAM.NET Utility.

4.3.1.3 Tools Menu:

1. Search - Search all the ADAM modules you connected. The operation process will be described in Section 5.1
2. Add Devices to Group - You can add ADAM modules to your favorite group by this option. You need to select the device you want to add in the **Module Tree Display** area (it will be described below) first, and then select this option to add.
3. Terminal for Command Testing - ADAM-6000 modules support ASCII command and Modbus/TCP as communication protocol. You can launch the terminal to communicate with ADAM-6000 module by these two protocol directly.
4. DiagAnywhere Searcher - There are multiple Advantech products installed with DiagAnywhere server, which gives user remote control ability through Ethernet. When you choose this option, all devices with DiagAnywhere server in the Ethernet you connected with will be listed.
5. Print Screen - You can save current ADAM.NET Utility screen into an image file by this option.
6. Monitor Stream/ Adam5000 Event Data - ADAM-6000 modules support Data Stream function. You can define the Host (such as a PC) by IP. Then ADAM-6000 modules will periodically send its I/O status to the Host. The IP and period to transfer data is configured in the **Stream** tab of **Status Display** area.
7. Monitor Peer-to-Peer (Event Trigger) - ADAM-6000 modules with Peer-to-Peer function can play as Event Trigger function. You can choose this option to receive message from ADAM-6100 module which is enabled Peer-to-Peer (Event Trigger) function.
8. Monitor GCL IO Data Message - ADAM-6000 modules with GCL function can play as a standalone controller. Users can define logic rules and run the rules on ADAM-6100 module. User can define the logic rule to send out message, depending on the logic condition, to the Host defined by IP.

4.3.1.4 Setup Menu:

1. Favorite Group - You can configure your favorite group including add one new device, modify or delete one current device, sort current devices and diagnose connection to one device.
2. Refresh COM and LAN node - ADAM.NET utility will refresh the serial and LAN network connection situation.
3. Add COM Port Tree Nodes - This option is used to add serial COM ports in ADAM.NET Utility. You won't need to use this option for ADAM-6100/ADADAM-6000 modules.
4. Show TreeView - Check this option to display the **Module Tree Display** area.

4.3.1.5 Help Menu:

1. Check Up-to-Date on the Web - Choose this option, it will automatically connect to Advantech download website. You can download the latest utility there.
2. About Adam.NET Utility - Choose this option, you can see version of ADAM.NET Utility installed on your computer.

4.3.1.6 Toolbar

There are 7 graphical icons on the toolbar for 7 common used options of Menus. Figure 5.2 below shows definition for each graphical icon.

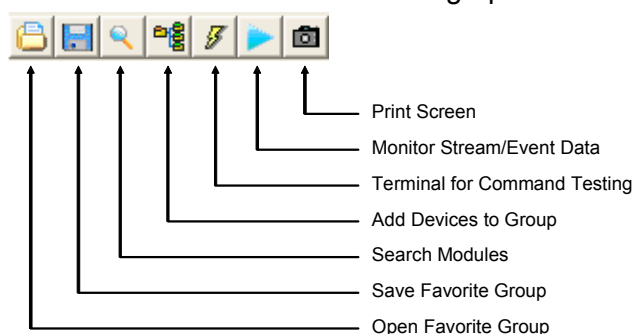


Figure 4.2 ADAM.NET Utility Toolbar

4.3.1.7 Module Tree Display Area

ADAM.NET Utility is one complete software tool that all ADAM remote I/O module and controller can be configured and operated in this utility. The **Module Tree Display** is on the left part of the utility operation window. There are four categories in the **Module Tree Display** Area:

■ Serial

All serial I/O Modules (ADAM-4000 and ADAM-5000 RS-485 serial modules) connected to the host PC will be listed in this category.

■ Ethernet

All Ethernet I/O Modules (ADAM-6000, ADAM-6100 and ADAM-5000 TCP modules) connected to the host PC will be listed in this category.

■ ADAM-4500_5510 Series

This is a DOS interface utility for remote controllers such as ADAM-4500 and ADAM-5510 series.

■ Favorite Group

You can define which devices listed in the three categories above into your personal favorite group. This will make you easier to find your interested modules. Right click on the ADAM device item under the Favorite Group item and you can select **New >> Group** to create a new group. After you create your own group, right click on your group and select **New >> Adam device** to add ADAM devices into your group. You can also select **Diagnose connection** to check the communication.

Note! Remember to choose the correct module in the **Module Type** combo box when you add a new ADAM devices.



■ Wireless Sensor Networks

All wireless I/O Modules (ADAM-2000 modules) connected to the host PC, through wireless gateway, will be listed in this category.

4.3.1.8 Status Display Area

Status Display area, on the right part of utility operation window, is the main screen for operation. When you select different items in **Module Tree Display**, **Status Display** will change dependently. You can do all configurations and test in this area.

4.3.2 Search ADAM-6100 Modules

After you have confirmed the hardware wiring between host PC and your ADAM-6100 module, you can find that module in ADAM.NET Utility. Launch ADAM.NET Utility. Select the **Ethernet** item on the **Module Tree Display** area. Click the **Search Modules** button on the Toolbar. ADAM.NET Utility will then search all ADAM-6000 modules on the Ethernet network. If your ADAM-6100 module is used the first time, its IP will be 10.0.0.1 by default. So you will find it showing on the **Others** item under **Ethernet**

Note!

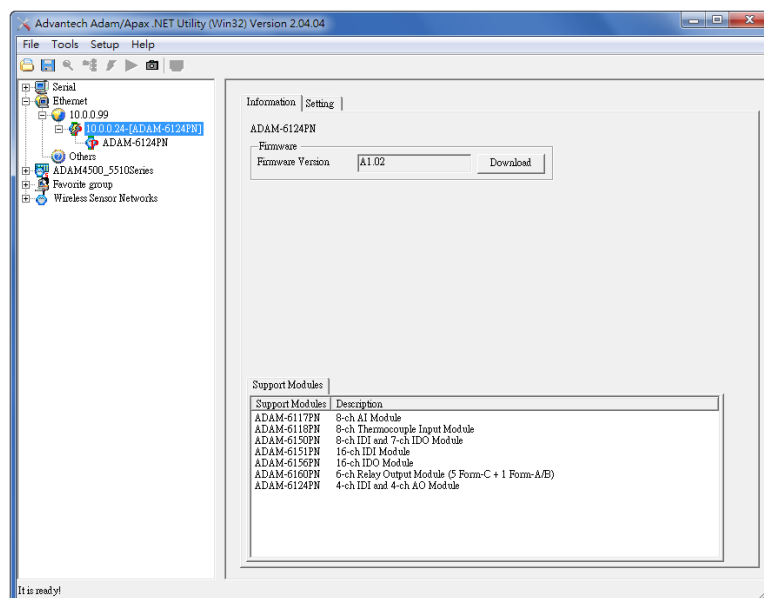


If network Firewall is enabled on your computer, you may not be able to connect with your ADAM-6100 module. You need to add ADAM.NET Utility into lists of Program and Service of the Exception for Windows Firewall in Windows Control Panel.

You need to change IP of the ADAM-6100 modules the same subnet with the host PC. Type the correct **IP address**, **Subnet address**, and **Default gateway** on the **Status Display** area. After complete setting, click the **Apply Change** button. A dialog box appears asking you to type the password. The default password of ADAM-6100 module is 00000000.

You can change the password later. After you type the correct password, the ADAM-6100 module is now under IP of your host PC.

When you select the IP address of the ADAM-6100 modules you want use in **Module Tree Display** area, there will be 8 tabs appearing in the **Status Display** area for you to set up general configuration of that module. Refer to figure below. Once you have changed any configuration, remember to click related **Apply** or **Apply Change** button.



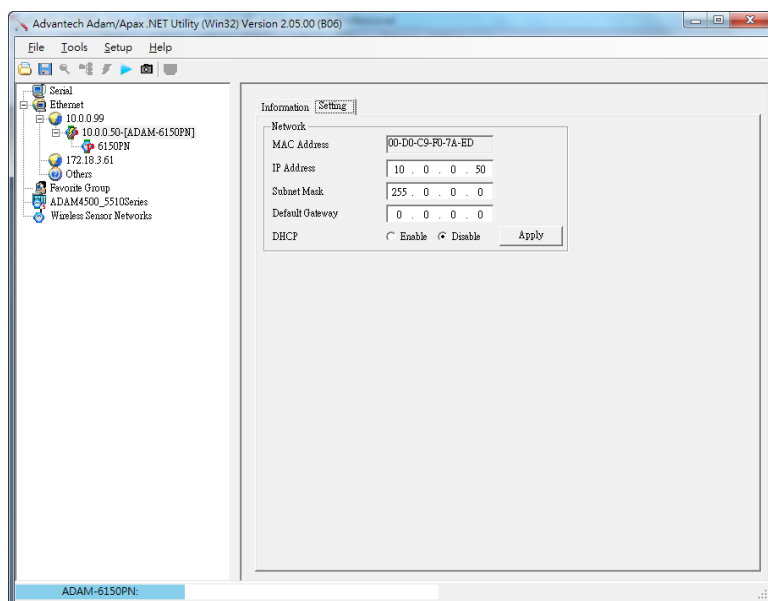
Below is detailed information for the 2 tabs in the **Status Display** area:

4.3.2.1 Information

You can see the **Firmware Version** on the selected ADAM-6100 module in this tab. You can also update the firmware by clicking **Download** button. The latest firmware for ADAM-6100 modules is available on Advantech website: <http://www.advantech.com>

4.3.2.2 Setting

You can change **IP Address**, **Subnet Address**, and **Default Gateway** of selected ADAM-6100 module in this tab. You can also enable or disable DHCP function for ADAM-6100 module.



4.3.3 I/O Module Configuration

After you have completed all general configurations of the ADAM-6100 module described in the previous section, you can then configure and set for input and output channel of the module.

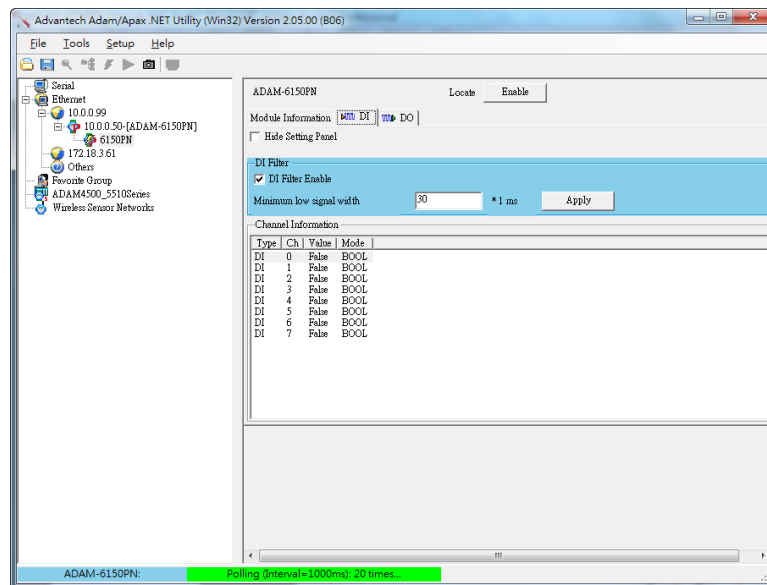


Figure 4.3 Input/Output Configuration and Setting

4.3.4 Operating the ADAM-6100PN in a PROFINET System

After setting of ADAM-6100PN module, you need to set the module to normal mode and repower the module before putting it into a PROFINET system. A GSD(General Station Description) file is necessary to describe the characteristics of ADAM-6100PN modules. You can find the GSD file for ADAM-6100PN modules in the folder **ADAM CD\GSD**.

A document titled "Configure ADAM-6100PN module in SIMENS SIMATIC Manager" is attached in the folder **ADAM CD\ISOP** to demonstrate how to operate ADAM-6100PN module in a PROFINET system using GSD file.

Appendix **A**

PROFINET Mapping Table

A.1 Analog Input and Analog Output Modules

Each ADAM-6100 analog module will use up to 8 WORD address for its data. Each analog channel will occupy one WORD address.

ADAM-6117	Name	Data Type	Data Format
Input	AI Channel 0	Unsigned 16	Bit [15...0]
	AI Channel 1	Unsigned 16	Bit [15...0]
	AI Channel 2	Unsigned 16	Bit [15...0]
	AI Channel 3	Unsigned 16	Bit [15...0]
	AI Channel 4	Unsigned 16	Bit [15...0]
	AI Channel 5	Unsigned 16	Bit [15...0]
	AI Channel 6	Unsigned 16	Bit [15...0]
	AI Channel 7	Unsigned 16	Bit [15...0]

ADAM-6118	Name	Data Type	Data Format
Input	AI Channel 0	Unsigned 16	Bit [15...0]
	AI Channel 1	Unsigned 16	Bit [15...0]
	AI Channel 2	Unsigned 16	Bit [15...0]
	AI Channel 3	Unsigned 16	Bit [15...0]
	AI Channel 4	Unsigned 16	Bit [15...0]
	AI Channel 5	Unsigned 16	Bit [15...0]
	AI Channel 6	Unsigned 16	Bit [15...0]
	CJC Channel	Unsigned 16	Bit [15...0]

ADAM-6124	Name	Data Type	Data Format
Input	DI Channel 0...3	Unsigned 8	Bit [3...0]
Output	AO Channel 0	Unsigned 16	Bit [15...0]
	AO Channel 1	Unsigned 16	Bit [15...0]
	AO Channel 2	Unsigned 16	Bit [15...0]
	AO Channel 3	Unsigned 16	Bit [15...0]

A.2 Digital Input and Digital Output Modules

Each ADAM-6100 digital module will use up to 2 BYTE address for its data. Each BYTE address will contain 8 digital channel data.

ADAM-6150	Name	Data Type	Data Format
Input	DI Channel 0...7	Unsigned 8	Bit [7...0]
Output	DO Channel 0...6	Unsigned 8	Bit [6...0]

ADAM-6151	Name	Data Type	Data Format
Input	DI Channel 0...7	Unsigned 8	Bit [7...0]
	DI Channel 8...15	Unsigned 8	Bit [7...0]

ADAM-6156	Name	Data Type	Data Format
Output	DO Channel 0...7	Unsigned 8	Bit [7...0]
	DO Channel 8...15	Unsigned 8	Bit [7...0]

ADAM-6160	Name	Data Type	Data Format
Output	DO Channel 0...5	Unsigned 8	Bit [5...0]

