

ADAM-6520

**5-Port Industrial 10/100 Mbps
Ethernet Switch**

User Manual

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This Manual Covers the Following Models

- ADAM-6520
- ADAM-6520I
- ADAM-6520L

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Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

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.

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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.
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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

- Step 1. Visit the Advantech web site at **www.advantech.com/support** where you can find the latest information about the product.
- Step 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

Document Feedback

To assist us in making improvements to this manual, we would welcome comments and constructive criticism. Please send all such - in writing to: support@advantech.com

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Overview

This chapter gives an overview of the ADAM-6520 series' features and full specifications.

Sections include:

- Introduction
- Features
- Specifications
- Ordering Information

Chapter 1 Overview

1.1 Introduction

ADAM-6520 modules are a 5-port industrial-grade 10/100 Mbps Ethernet switch for fast and cost-efficient network expansion. They connect up to 5 workstations and auto-detect both 10 and 100 Mbps network speeds. Moreover, ADAM-6520 modules support auto crossover to provide a flexible networking environment, connecting to the network via any port.

ADAM-6520 modules provide three methods for mounting in an industrial environment: DIN rail, wall/panel, or piggyback stacking. ADAM-6520 modules have a flexible input voltage range of $+10\sim 30\text{ V}_{\text{DC}}$ at the terminal block. ADAM-6520 operates from $-10\sim 70^{\circ}\text{C}$ and ADAM-6520L from $0\sim 60^{\circ}\text{C}$, while ADAM-6520I is from -40 to 85°C . The above features make ADAM-6520 modules more stable and reliable than normal Ethernet switches. Thus, ADAM-6520 modules are especially suitable for industrial environments with Ethernet networking like: semiconductor factories, warehouses, conveyor belt systems and more.

1.1.1 High-Speed Transmission

ADAM-6520 modules include a switch controller that automatically senses transmission speeds (10/100 Mbps). RJ-45 interface also supports auto-detection, so MDI or MDI-X is automatically selected and a crossover cable is not required. All Ethernet ports have memory buffers that support the store-and-forward mechanism, assuring that data is properly transmitted.

1.1.2 Flexible Mounting

Due to its versatility and innovative design, ADAM-6520 modules can be fixed in three ways: DIN rail, panel and piggyback mounting.

1.1.3 Protection for Power Line & Ethernet Port

The power line of ADAM-6520 modules support supports up to $3000\text{ V}_{\text{DC}}$ surge protection, which secure equipment against unregulated voltage and make systems safer and more reliable. Meanwhile, $4000\text{ V}_{\text{DC}}$ ESD protection for the Ethernet ports makes ADAM-6520 modules (not including ADAM-6520L) more suitable for harsh environments.

1.1.4 Wide Operating Temperature Range

The operating temperature of ADAM-6520 is from -10~70° C, and ADAM-6520L is from 0~60° C, while ADAM-6520I offers a very wide range from -40 to 85° C. With such wide ranges you can use ADAM-6520 modules in some of the harshest industrial environments that exist.

1.1.5 Easy Troubleshooting

There are six LED indicators supplied to aid troubleshooting for ADAM-6520 modules. Each port has a pair of LEDs to indicate link status and port activity. That makes it easy to indicate link status, power failure and data reception for on-site diagnostics.

1.2 Features

- Provides 5 x 10/100 Mbps Ethernet ports with RJ-45 connector
- Supports full/half duplex flow control
- Supports MDI/MDI-X auto crossover
- Provides broadcast storm protection
- Embedded switch controller, supports auto-negotiation
- Embedded memory buffer, supports store-and-forward transmission
- Supports +10 ~ 30 V_{DC} voltage
- Provides 3000 V_{DC} surge protection for power line
- Provides 4000 V_{DC} Ethernet ESD protection (except ADAM 6520L)
- Provides flexible mountings: DIN rail, panel, piggyback stacking
- Supports wide-range operating temperature
- 64 KB of SRAM on chip for frame buffering (ADAM-6520L: 48KB)
- Integrated address Look-Up Engine, supports 1K absolute MAC addresses (ADAM-6520L: 2K)

1.3 Specifications

Communications

Standard	IEEE 802.3, IEEE 802.3u
LAN	10/100Base-TX
Transmission Distance	100 m
Transmission Speed	up to 100 Mbps

Interface

Connectors	5 x RJ-45
LED Indicators	Power, Link/Speed

Power

Power Connectors	2-pin removable screw terminal
Power	ADAM-6520L: Max. 3W
Consumption	ADAM-6520/6520I: Max. 2.4W
Power Input	Unregulated 10 ~ 30 V DC

Mechanism

Dimensions (WxHxD)	70x102x27 mm
Enclosure	IP30, ABS+PC with solid mounting kits
Mounting	DIN 35 rail, stack, wall

Protection

ESD Protection	4,000 V DC (Ethernet) (ADAM-6520/6520I only)
Surge Protection (EFT)	3000 V DC (Power)

Environment

Operating Temperature	ADAM-6520 : -10~70° C (14 ~ 158° F), Stack : -10 ~ 60° C (14 ~ 140° F) ADAM-6520L:-10 ~ 60° C (14~140° F) Stack:-10~55° C (14 ~ 131° F) ADAM-6520I: -40~85°C(-40~185° F), Stack : -40 ~ 75° C (-40 ~ 167° F)
Storage Temperature	ADAM-6520/ADAM-6520L : -20~80° C (-4 ~ 176° F) ADAM-6520I: -50~95°C(-58~203°F)
Operating Humidity	20 ~ 95% (non-condensing)
Storage Humidity	0 ~ 95% (non-condensing)
MTBF	1,580,000 hrs

Certifications

Safety	UL 60950-1, CAN/CSA-C22.2 No.60950
EMC	U.S.A.: FCC Part 15 CISPR 22 EU: EN55011, EN55022 Class A, EN61000-3-2/2, EN55024 IEC61000-4-2/3/4/5/6/8/11

1.4 Ordering Information

- **ADAM-6520** 5-Port Industrial 10/100 Mbps Ethernet Switch
- **ADAM-6520I** 5-Port Industrial 10/100 Mbps Ethernet Switch w/
Wide Operating Temp.
- **ADAM-6520L** 5-Port Industrial 10/100 Mbps Unmanaged Ethernet
Switch

Installation

In this chapter, you will be given an overview of the ADAM-6520 series hardware installation procedure.

Sections include:

- Packing List
- Top / Front / Rear View
- LED Indicators
- Connecting the Hardware
- Network Connection
- Power Connection

Chapter 2 Installation

2.1 Packing List

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately.

- 1 x ADAM-6520
- 1 x INET CD-ROM
- 1 x DIN-rail mounting kit
- 1 x Panel mounting bracket

2.2 Top / Front / Rear View

2.2.1 Dimensions (units:mm)

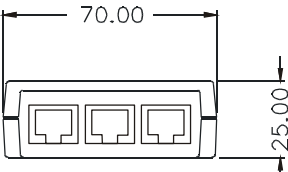


Figure 2.1: Top View

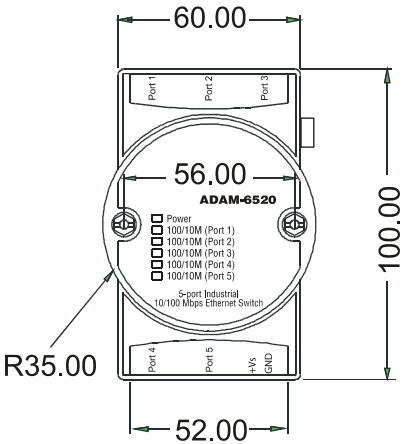


Figure 2.2: Front Panel

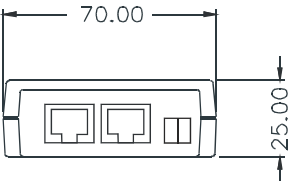


Figure 2.3: Rear View

2.3 LED Indicators

There are six network status LEDs located on the top panel of ADAM-6520 modules, one for power, and one for each of the network ports.

<i>Table 2.1: ADAM-6520 Module LED Definitions</i>			
LED	Color	State	Description
Power	Green	On	Power is on
		Off	Power is off
Link/Speed (Port 1 ~5)	Green (link)	On	Connect to network
		Flashing	Networking is active
		Off	Disconnected from network
	Orange (speed)	On	Link to 100 Mbps network
		Off	Link to 10 Mbps network

2.4 Mounting

Through versatility and innovative design, ADAM-6520 modules can be:

- Fixed to a wall or panel
- Fixed to a DIN-rail.
- “Piggyback” stacked

Panel Mounting

ADAM-6520 modules can be attached to a wall using the included brackets. Each bracket comes with four screws; first attach the bracket to the bottom of ADAM-6520 modules. Next, screw the bracket to the wall.

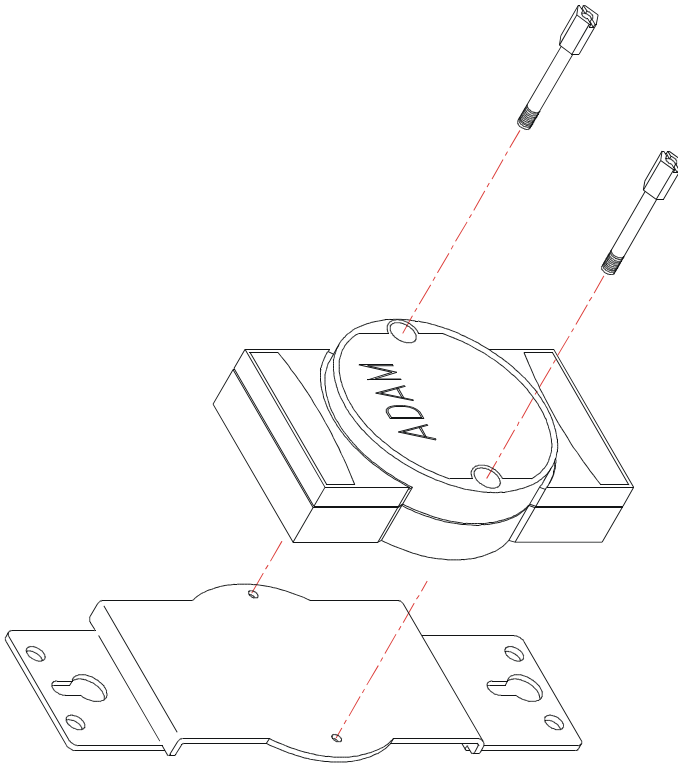


Figure 2.4: Panel Mounting

DIN-rail Mounting

You can mount ADAM-6520 modules on a standard 35 mm DIN-rail. First, use two screws to attach the DIN-rail bracket to the ADAM-6520 modules. Because ADAM-6520 modules use special hex head slotted shoulder screws, the tops of the screws will be even with the front of the module. Snap the module onto the DIN-rail.

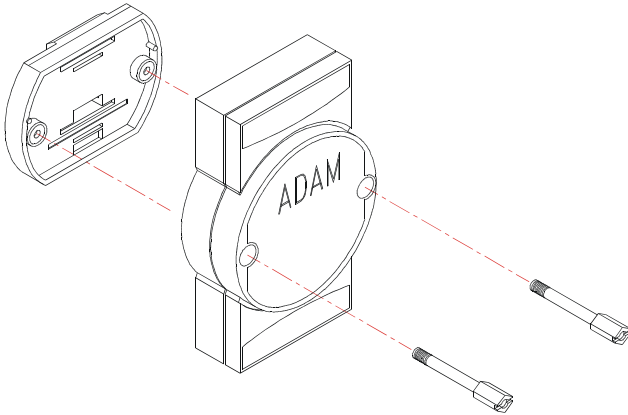


Figure 2.5: DIN-rail Mounting

Piggyback Stack

Several ADAM-6520 modules can be stacked as seen in the figure below

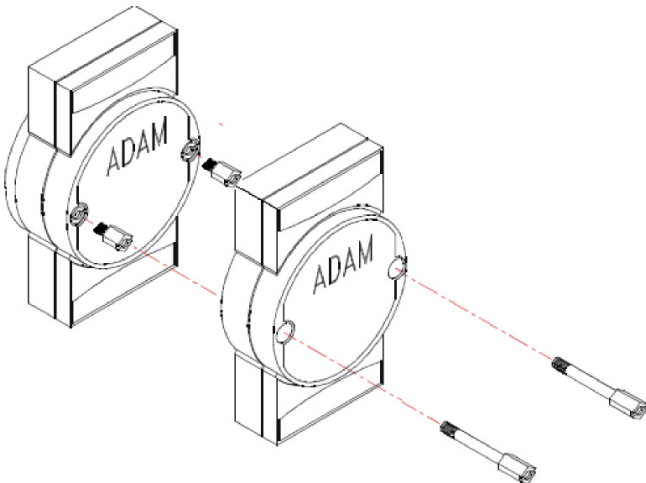


Figure 2.6: Piggyback Stacking

2.5 Network Connection

2.5.1 Connection to Devices

Each of the switch's twisted-pair ports can be used to connect to a controller or other devices. Use a straight-through twisted-pair cable with RJ-45 connectors on both ends. The twisted-pair cable extended from a twisted-pair port is called a "twisted-pair segment". It can be up to 100 meters long. You can connect any RJ-45 (MDI-X) station port on the switch to any device that uses a standard network interface such as a workstation or server.

2.5.2 Connection to other Hubs or Switches

ADAM-6520 modules have five RJ-45 ports that support connections to 10 or 100 Mbps Ethernet networks, and half or full-duplex operation.

ADAM-6520 modules can be connected to other hubs or switches via a two-pair straight through cable or crossover cable. The connection can be made from any port on ADAM-6520 modules (MDI-X) to other hubs or switches by either their MDI-X port or uplink MDI port.

ADAM-6520 modules support auto-crossover, so each port allows you to connect switches together and expand an existing network easily using either straight through or a crossover Ethernet cable. You can connect any RJ-45 (MDI-X) port on the switch to a device like a switch, bridge or router.

2.6 Power Connection

Follow these simple steps to connect ADAM-6520 to power supplies.

1. Connect the power cable to the two connectors.
2. Connect the power cable to a power adapter.

