

## DIN-Rail IPCs

### APAX-5000 Series

<b>DIN-Rail IPCs Overview</b>		<b>13-2</b>
<b>SoftLogic Control Software</b>		<b>13-4</b>
<b>PC-based Programming Software</b>		<b>13-6</b>
<b>Batch Control Solution</b>		<b>13-7</b>
<b>APAX Series Overview</b>		<b>13-8</b>
<b>APAX System Architecture</b>		<b>13-10</b>
<b>APAX Controller Selection Guide</b>		<b>13-11</b>
<b>APAX I/O Module Selection Guide</b>		<b>13-12</b>
<b>APAX Communication Module Selection Guide</b>		<b>13-14</b>
<b>APAX-6572</b>	Intel® Atom™ D510 1.66 GHz, 2 GB RAM Controller with 3 x LAN, 2 x COM, VGA	<b>13-15</b>
<b>APAX-5580</b>	Intel® Core™ i7/i3/Celeron DIN-Rail PC Controller w/ 2 x GbE, 2 x mPCIe, VGA	<b>13-16</b>
<b>APAX-5430</b>	SATA HDD module	<b>13-17</b>
<b>APAX-5435</b>	mPCIe module to support iDoor	
<b>APAX-5490</b>	4-port RS-232/422/485 Communication Module	<b>13-18</b>
<b>APAX-5495</b>	2-port CANopen Communication Module	
<b>APAX-5520CE/KW</b>	PAC with Marvel XScale® CPU	<b>13-19</b>
<b>APAX-5620CE/KW</b>	PAC with Marvel XScale® CPU and CAN	
<b>APAX-5522PE</b>	IEC 61850-3 Certified RTU Controller	<b>13-20</b>
<b>APAX-5343/E</b>	Power Supply for APAX-5570 Series/ APAX Expansion Modules	<b>13-21</b>
<b>APAX-5001/5002/5002L</b>	1/2/2-slot Backplane Modules	
<b>APAX-5070</b>	Modbus/TCP Communication Coupler	<b>13-22</b>
<b>APAX-5072</b>	EtherNet/IP Communication Coupler	
<b>APAX-5071</b>	PROFINET Communication Coupler	
<b>APAX-5017H</b>	12-ch High Speed Analog Input Module	<b>13-23</b>
<b>APAX-5028</b>	8-ch Analog Output Module	
<b>APAX-5046</b>	24-ch Digital Output Module	<b>13-24</b>
<b>APAX-5046SO</b>	20-ch Source Type DO Module	
<b>APAX-5060</b>	12-ch Relay Output Module	<b>13-25</b>
<b>APAX-5080</b>	4/8-ch High/Low Speed Counter Module	
<b>APAX Controller Support table</b>		<b>13-26</b>

### ADAM-5000 Series

<b>ADAM-5000 Series</b>	Distributed I/O Systems & PC-based Controllers	<b>13-27</b>
<b>ADAM-5000 Controller Selection Guide</b>		<b>13-29</b>
<b>ADAM-5000 I/O Module Selection Guide</b>		<b>13-30</b>
<b>ADAM-5000 Controller Selection Guide</b>		<b>13-31</b>
<b>ADAM-5000 Controller Support Table</b>		<b>13-33</b>
<b>ADAM-5000 Remote I/O System Support Table</b>		<b>13-34</b>
<b>ADAM-5560CE/XPE</b>	7-slot PC-based Controller with Intel® Atom™ CPU	<b>13-35</b>
<b>ADAM-5560KW</b>	7-slot Micro PAC with Intel® Atom™ CPU	
<b>ADAM-5560WA</b>	7-slot Compact SCADA Controller with 600 Tags WebAccess	<b>13-36</b>
<b>ADAM-5510 Series</b>	4/8 slots PC-based Controller	<b>13-37</b>
<b>ADAM-5000/485</b>	4-slot Distributed DA&C System for RS-485	<b>13-38</b>
<b>ADAM-5000E</b>	8-slot Distributed DA&C System for RS-485	
<b>ADAM-5000L/TCP</b>	4-slot Distributed DA&C System for Ethernet	<b>13-39</b>
<b>ADAM-5000/TCP</b>	8-slot Distributed DA&C System for Ethernet	

### ADAM-3600 Series

<b>iRTU Overview</b>		<b>13-40</b>
<b>ADAM-3600-C2G</b>	8AI / 8DI / 4DO / 4-Slot Expansion Wireless Intelligent RTU	<b>13-41</b>
<b>ADAM-3600-A1F</b>	16-ch Digital Input, 8-ch Relay Output with 4-Slot Expansion Module	<b>13-43</b>
<b>ADAM-3617-AE</b>	4-ch Analog Input Module	<b>13-45</b>
<b>ADAM-3618-AE</b>	3-ch Thermocouple Module	
<b>ADAM-3622-AE</b>	2-ch Analog Output Module	
<b>ADAM-3651-AE</b>	8-ch Digital Input Module	<b>13-46</b>
<b>ADAM-3656-AE</b>	8-ch Digital Output Module	
<b>ADAM-3664-AE</b>	4-ch Relay Output Module	



# DIN-Rail IPCs Overview

## Introduction

Advantech offers PAC solutions designed for industrial automation applications which combine the openness and flexibility of PCs with the reliability of traditional automation controllers, such as PLCs. Advantech's offerings include the APAX series, ADAM-5000 series, and Embedded Automation Computers, utilizing sophisticated thermal designs to ensure the system stability. APAX controllers support Windows CE, Windows XP Embedded and Windows 7 operating systems. Advantech's DIN-Rail IPCs are ideal platforms to implement in diverse applications, such as power/energy, transportation, machine automation, factory automation, building automation, facility management system, environment monitoring, and more.

### Real-time DIN-Rail IPCs: APAX Series

APAX series are Ethernet-enabled controllers allowing users to deploy I/O modules in flexible expansion combinations, like direct stack or daisy-chain. The control performance and functionality are not only better than PLCs, but also better than most PC-based controllers. Features including versatile CPU modules, I/O modules designed as reliable as PLC I/Os, high density I/Os with LEDs, hot swap and stackable functionality are delivered. Both C/C++ and .NET library, and IEC 61131-3 languages are provided as programming tools.

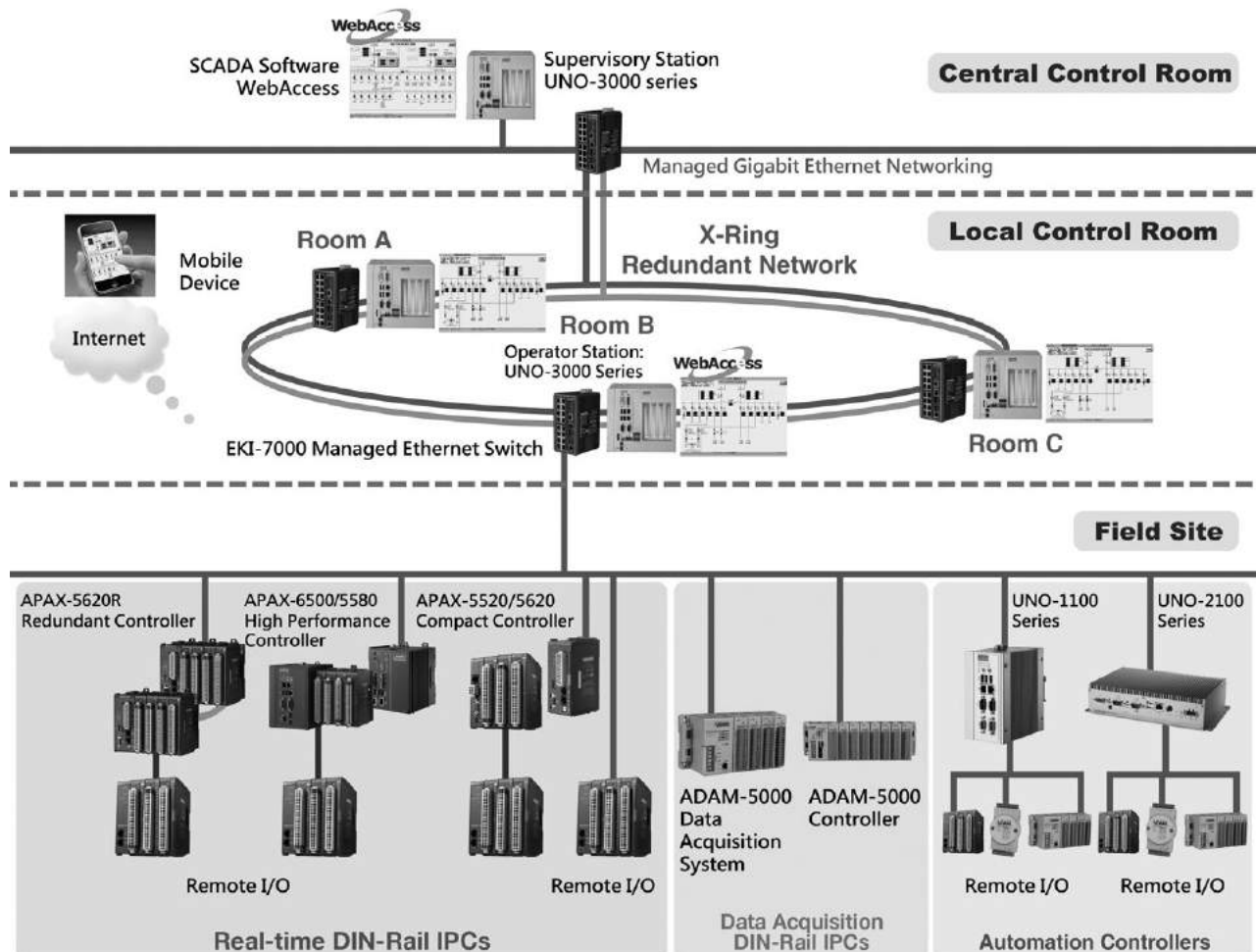
### Data Acquisition DIN-Rail IPCs: ADAM-5000 Series

ADAM-5000 series are modularized I/Os to be inserted on backplanes with fixed slot numbers. Leveraging Advantech's rich experience in industrial data acquisition applications, ADAM-5000 offers a compact control system. Inheriting the reliability and robustness of a PLC system, ADAM-5000 offers the openness and flexibility of a PC, including computing power, networking and storage capability. Both C/C++ and .NET libraries and IEC 61131-3 languages are provided as programming tools.

### Automation Controllers

Advantech's Embedded Automation Computers are designed to fulfill the needs of mission critical automation applications. Their embedded design, industrial automation features and advanced computer technology deliver robustness, reliability and flexibility to satisfy customers who are looking for a rugged and compact computing platform. They support various interfaces to integrate with other devices, such as Ethernet, RS-232/422/485, onboard I/O, extension PC card slots, CAN-bus and more. Through standard Ethernet networking, these computers can link to Advantech remote I/O solutions, such as APAX-5000 high density I/O (through APAX-5070 Modbus/TCP coupler module) or ADAM-6000 series compact modules, to get data and perform control tasks.

## Control System Architecture



## Real-time I/O Control Suitable for Multiple Domain Applications

Currently most PC-based controllers face one major challenge, especially DIN-Rail IPCs systems, which is real-time I/O control. Performance is severely hampered when I/O points increase because the access time also increases, which impacts control precision as well.

Food and beverage companies face shorter production runs on a wide range of products for different vendors, while automotive companies are dealing with changes in customer preference, aggressive competition and rising fuel costs. These industries require a mix of discrete, batch, process and motion control solution. In the past, these applications forced engineers to use multiple controllers: a PLC for discrete control, a motion controller for multi-axis control, and a distributed control system or loop controller for process applications, which has proven time consuming and costly. Advantech DIN-Rail IPCs feature the ability to handle all these tasks with a single control system.

The result is shortened development time through reusable programming tools, lower maintenance costs through reduced parts, better information sharing among applications, and fewer personnel support throughout the plant.

## Information Processing and Networking Capabilities

Advantech DIN-Rail IPCs not only provide excellent real-time I/O control, but also another key benefit for automation applications, information processing. With the ability to perform field operations, data exchanges and valuable information collection, this series is able to execute efficient decision-making. Information processing includes data logging and analysis with storage devices like SD or CF cards, recipe management for batch control, and database exchanges through SQL and OPC. Furthermore, implementing HMI software enables local operation.

This improves control system networking tremendously, allowing the network to share a common protocol at the device level, control level, and information level. It provides the ability to move information from the device level to executives at the enterprise resource planning (ERP) level without new protocols or drivers.

Advantech DIN-Rail IPCs feature a PC-based architecture, delivering significant networking benefits for manufacturers by USB, RS-232, RS-422/485 and Ethernet interfaces. Users can connect to field devices through serial or USB interface to satisfy any kind of application. The Ethernet interface allows users to effectively manage I/O control and information flow throughout the manufacturing and IT enterprise. Leveraging the high computing power of Advantech DIN-Rail IPCs also allows networks to communicate seamlessly on the factory floor with other common sets of IT capabilities like video, data and telephones. Easy access to such information is critical to making decisions about the capacity of an enterprise.

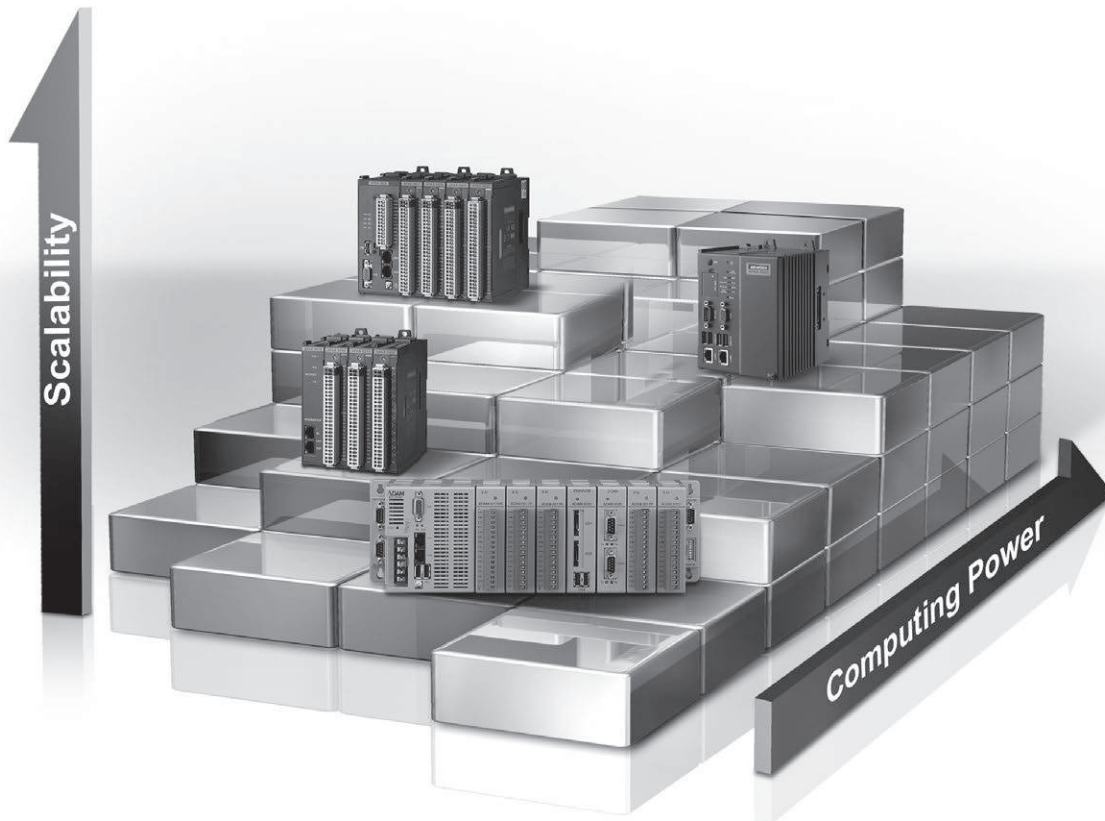
## Scalability

In the past, many PLCs required users to learn different programming software and specify networks depending on the size and complexity of the application. Advantech DIN-Rail IPCs allow users to more closely match the controller to application needs without compromising functionality or learning a new control system. Such scalability reduces the headaches and high costs associated with system redesign, lack of program re-use, and re-training.

## Software

Advantech DIN-Rail IPCs support software to satisfy both PC-based and PLC-based programmers. Leveraging IEC 61131-3 SoftLogic programming environment, PLC programmers can take PLC operations to the next level in many areas, such as communication, information processing, enterprise level database integration, and user interface development.

For PC-based programmers, Advantech offers an open platform solution, with C/C++ and .NET libraries for I/O control and communication functionality. They can satisfy programmers familiar with high level programming languages like Microsoft Visual Studio .NET. In addition, several convenient utilities are offered to save development time.



1	WebAccess+ Solutions
2	Motion Control
3	Power & Energy Automation
4	Automation Software
5	Intelligent Operator Panel
6	Automation Panels
7	Panel PCs
8	Industrial Wireless Solutions
9	Industrial Ethernet Solutions
10	Industrial Gateway Solutions
11	Serial communication cards
12	Embedded Automation PCs
13	DIN-Rail IPCs
14	CompactPCI Systems
15	IoT Wireless I/O Modules
16	IoT Ethernet I/O Modules
17	RS-485 I/O Modules
18	Data Acquisition Boards

# SoftLogic Control Software

## SoftLogic Software

For traditional PLC platforms, the development environment will vary depending on the PLC supplier and they are not compatible with each other. PAC platforms adapt the international standard IEC 61131-3, established to standardize multiple languages, sets of instructions and different concepts existing in the field of automation systems. Therefore, these programming languages which comply with the IEC 61131-3 standard, usually called SoftLogic software, enable users to leverage PLC-world typical programming interface. But they can also benefit from a portability of all platforms and reduce costs of building automation systems.

## Advantech SoftLogic Software: KW MultiProg and ProConOS

Advantech delivers KW-Software's MultiProg development environment and ProConOS runtime kernel for various control platforms, including ADAM-5510 series, ADAM-5550 series and APAX series controllers. KW MultiProg supports all IEC-61131-3 programming language as following:

- Instruction List (IL)
- Structured Text (ST)
- Sequential Function Chart (SFC)
- Function Block Diagram (FBD)

```

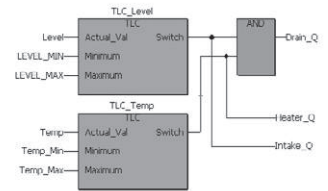
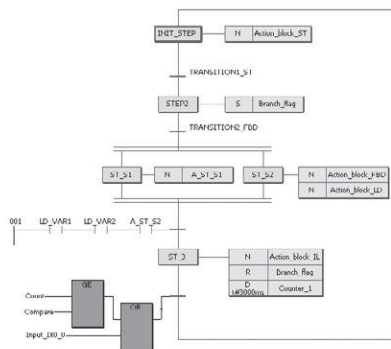
1 LD  %IX0.2
2 AND %IX0.3
3 OR  Action_INIT
4 ST  IL_VAL
5 LD  Input_IX0_0
6 JMPC MANUAL
7
8 (*Timer FB TON*)
9 LD  Timer_start
10 ST TON_IL.IN
11 LD PT_TON_IL
12 ST TON_IL.PT
13 CAL TON_IL
14 LD TON_IL.Q
15 ST Action_INIT
16 STN Timer_start
17 LD TON_IL.ET
18 ST  Timer_value
19

```

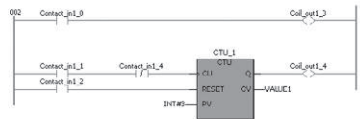
```

1 CASE MODUS OF
2 1: ROBOT_X := ROBOT_X + 200;
3   ROBOT_Z := ROBOT_Z + ADD_ARM ;
4   MODUS:=1;
5   IF ROBOT_X >= RANGE_POS_1 THEN
6     MODUS:=2;
7   END_IF;
8 2: ROBOT_X := ROBOT_X - 200;
9   ROBOT_Z := ROBOT_Z + ADD_ARM ;
10  MODUS:=2;
11  IF ROBOT_X <= RANGE_NEG_1 THEN
12    MODUS:=1;
13  END_IF;
14 END_CASE;
15 ROBOT_Y := ROBOT_X;
16 COUNTER_1 := COUNTER_1+1;
17 IF COUNTER_1 >1000 THEN
18   COUNTER_1 :=0;
19 FND_TF;
20

```



- Ladder Diagram (LD)



### ▪ Graphical Editor

Programmers can work with SFC, FBD, and LD programming languages. The editor supports the mixing of them in a single worksheet. The graphical editor allows the completely free placement of objects. The Edit Wizard helps you when inserting and replacing code elements in worksheets. You can insert keywords and statements, operators, functions and function blocks with the help of the Edit Wizard. In addition, the Wizard simplifies the declaration of own data types.

### ▪ Text Editor

With the text editor, you edit and debug the code in IL and ST programming and define user-defined data types. IntelliSense automatically completes your variable names, structure elements and function block parameters.

### ▪ Variable Grid Editor

In the variables grid, each line represents the declaration of a variable or FB instance. For an optimal overview, variables can be divided into different groups. The attributes of each variable/instance are defined in the respective table columns either by entering or selecting a combo box entry. The variables editor prevents a number of syntactical declaration errors and makes declaration easy and clear.

KW MultiProg has several features which can save your development time and well manage your complicated project:

### ▪ Project Template

A new project can not only be created with the Project Wizard in MultiProg, but also based on a project template. Owing to the practice-orientated template management, you can not only access supplied default templates, but save each own project as template.

### ▪ Cross-Compiling

The basic languages of the IEC 61131-3 standard, i.e. FBD, LD and IL, can be cross-compiled to each other including their comments. Program code which has been written in ST can be compiled to any of the three basic languages.

### ▪ Password Protection

You can protect complete subtrees or individual project nodes in the project tree with a password. Access rights can be restricted for editing the project structure, opening and writing worksheets, downloading to individual configurations or resources and debugging. Each user has to log in using the valid password in order to get full access to a protected project.

### ▪ Multi-user Feature

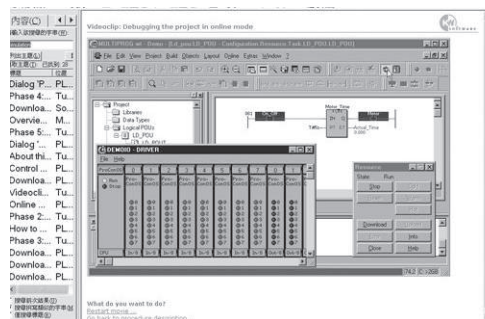
The Multi-user feature provides safe access to project source files while several users are working on the same project at the same time. In order to provide a safe and fast development environment for multiple users, the project is saved as server project on a server PC in the network. Each user can create a client project on his local PC for editing. The respective nodes in the project tree of the client project must be checked out, which means that no other user has write access for these data any longer.

### ▪ Online Assistance in Multiple Languages

The software includes online help systems and documentation, available in English, German, French, Spanish, Japanese and Chinese.

### ▪ Offline Simulation Tools

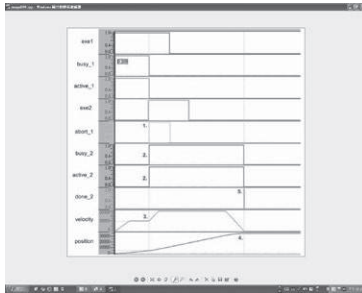
Program simulation is the best debug function for software developers. Before the program is downloaded into the controller, programmers can use this function to simulate programs. The easy-to-use 32 bit simulation offers fast and real-time multitasking test environment. The image below is of the simulation tool function and program with I/O status monitoring. Programmers can set the simulation value to AI or DI channels for checking the program before downloading. By simply clicking on a green input point (LED) you activate a simulator input. The output LEDs represent the actuated signal outputs in the same way.





## Logic Analyzer

The Logic Analyzer is a powerful tool for recording variable values in online mode and representing them in a graph. Using the results delivered by the analyzer, you can evaluate if the program runs as expected.

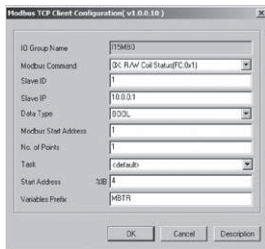


## Advantech Advanced Function Blocks

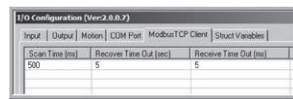
To satisfy automation applications, Advantech also add some add-on features for various dedicated control and automation applications:

- I/O Function Blocks: Used to control I/O with Advantech DIN-Rail IPCs. Including AI/O read FB, AI/O write FB, DI/O read FB, DI/O write FB, I/O error FB.
- SQL Database Function Blocks: Used for data log and analysis.
- Scheduling Function Blocks: Used for time scheduling control in building automation and devices schedule control applications.
- Email Function Blocks: Used for event notification and remote service applications.
- Modbus Communication Driver:

Advantech has provided an interface to monitor and control tags. This interface is accessible via Modbus/TCP as well as Modbus/RTU. The APAX controller can be treated as a Modbus Slave. The APAX Controller reserves approximately 128K Bytes memory space for Modbus use. This shared memory block can store user's data and exchange the data through Modbus/TCP and Modbus/RTU protocol with a HMI/SCADA software.



Modbus TCP Input

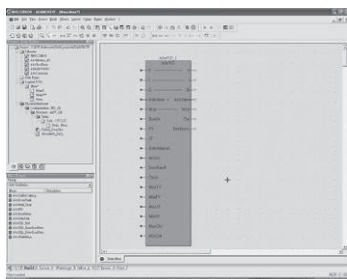


Modbus/TCP Client General Settings

## Auto-Tuning PID Function Blocks

PID function blocks provide auto-tuning functionality. This function block makes use of Proportion, Integral, and Derivative calculations to provide a control cycle function to implement modulation control, and automatically find the optimized P, I, and D parameters.

Using this control function, user can save more time on process control commissioning duty. The totally recommended PID are 32 loops, depending on customer's process application. For the flow and pressure control applications, we recommended up to 16 PID loops.

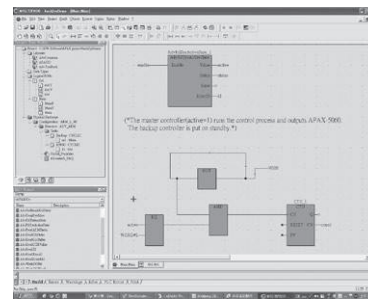


## Online Change

It is not acceptable to stop a machine and shut down processes in order to carry out maintenance work. Not to mention the difficulties that occurs during the debug phase, when constant switching between development and online mode is necessary. Changes of current program can be downloaded to the targeted Advantech DIN-Rail IPCs after compilation and commissioned without having to stop the controller and program execution. This feature enables controller to switch between two process cycles from the "old" to the "new" code after downloading the modified program.

## Backup Function Blocks

APAX-5000 series delivers system backup functionality. To leverage this functionality, two controllers with the same control program, are installed in one system. After both controllers' backup function is enabled, the APAX-5000 system will automatically delegate one of the two controllers as the master controller. The control program should use the function block "AdvRdSysActiveState" to know if its controller is the master controller currently, by the parameter Value. If the Value responses "True", it means the controller is master controller, then the program should execute the control algorithm. If the Value responses "False", it means the controller is backup controller, then its program should do nothing, and simply checking if the master controller is still alive periodically. When it detect the master controller lost, it should executing the control algorithm, making it become the master controller.



## Ordering Information

- MPROG-PRO535E KW Multiprog Pro v5.35 (128k bytes I/O, Win7 support)

- 1 WebAccess+ Solutions
- 2 Motion Control
- 3 Power & Energy Automation
- 4 Automation Software
- 5 Intelligent Operator Panel
- 6 Automation Panels
- 7 Panel PCs
- 8 Industrial Wireless Solutions
- 9 Industrial Ethernet Solutions
- 10 Industrial Gateway Solutions
- 11 Serial communication cards
- 12 Embedded Automation PCs
- 13 DIN-Rail IPCs
- 14 CompactPCI Systems
- 15 IoT Wireless I/O Modules
- 16 IoT Ethernet I/O Modules
- 17 RS-485 I/O Modules
- 18 Data Acquisition Boards

# PC-based Programming Software

## PC-based Programming Software

Advantech DIN-Rail IPCs offers the seamless software integration for automation application. Regarded as SoftPLC, Advantech DIN-Rail IPCs not only leverage KW-Software including LD/FBD/IL/ST and SFC, but also empower many application-oriented & practice-oriented function blocks to different domain fields, such as batch control for food/beverage, auto-tuning PID for temperature control in EFMS, PLCOpen-compliant motion control blocks for a variety of trajectory control and positioning purposes in machine automation. Multi-tasking, runtime error reports and operating mode changes are also possible for DIN-Rail IPCs applications.

For PC-based users, Advantech also offers the .NET function library. System integrators can benefit from flexibility to integrate I/O control, motion control, industrial communication protocols and data process/exchange, database access, HMI interface and SCADA. Plenty of C/C++ and .NET examples save programmer learning time, helping save programmers' development effort and shortening time to market.

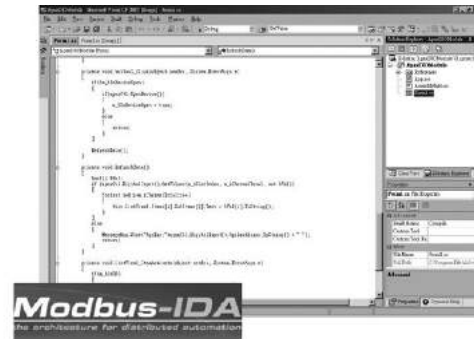
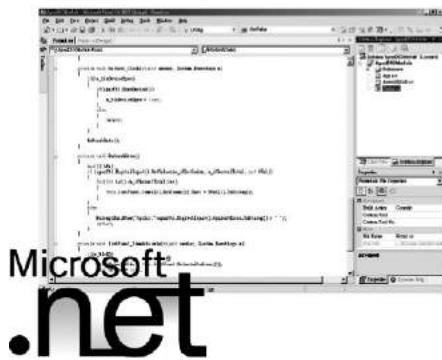


## .NET and C/C++ Library

Advantech's DIN-Rail IPCs series solution offers a complete PC-based platform with Application Programming Interface (API). With C/C++ libraries and .NET class libraries provided by Advantech, PC-based programmers can develop their own programs for industrial control and automation tasks, involving I/O control, system backup function, communication, SQL and scheduling, even integrated with HMI/SCADA interface.

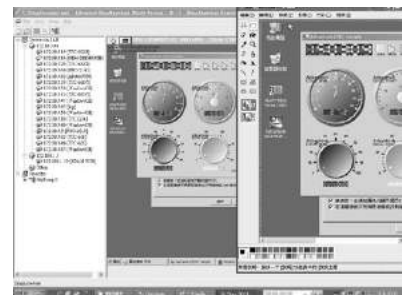
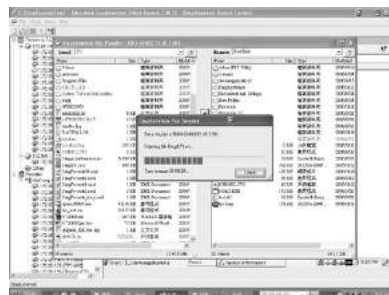
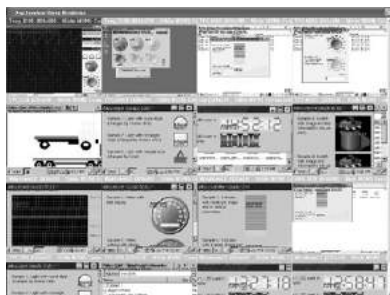
## Modbus Server

Advantech's PAC series offers Modbus/RTU and Modbus/TCP for data exchange purposes. Advantech offers a series of API, including Modbus server/client configuration, easy data access function and callback function for multithread event handling. Plenty of samples programs can help you to easily set up the Modbus communication. Besides, APAX-5570 series and APAX-5520 controller has built-in Modbus server, so any Modbus client (such as HMI) can access to APAX I/O without writing programming.



## DiagAnywhere – Remote Maintenance Software

DiagAnywhere, an abbreviation of "Diagnostic Anywhere", is a networking solution for remotely monitoring and controlling APAX controllers through Windows-based operating systems. It includes the utility on the client side and the server on APAX controllers. Any computer installed with the utility can connect to APAX controllers, seeing what's happens on the controller and performing remote control. It is very convenient that the engineer doesn't need use a screen to operate the controller in the field, and allows them to maintain the system on the remote site. One DiagAnywhere client can monitor and control up to 16 target controllers simultaneously. This useful software tool also supports remote screen snapshots, remote screen recording, file upload and download between utility (on the client computer) and server (APAX controller), favorite devices grouping to manage system more easily, and authentication functionality. All these features help users save maintenance cost and effort.



# Batch Control Solution

## Introduction

The batch control process involves a sequence of metal treatment, semiconductor crystal silicon growing, chemical or biological processes for the conversion and transport of material. The manufacturing processes can be classified as continuous and discrete control manufacturing and be processed step by step in each processes equipment. For example, a typical application is a metal heating treatment furnace: in order to convert metal ingredients for an industrial application, the metal heating process is actioned by different temperature control Set Points (SP) by a time-based, ramp/soak pattern of a PID control loop SP and in each heating period, the metal ingredients will be changed by different temperatures and other conditions.

To classify these industry applications, we call them Batch Control Industries. The control application of the manufacturing process is a combination of continuous and discrete controls. All of these manufacturing processes are time-based flow processes. The control functions are included in a PID closed-loop control that is a continuous process control function. The PID SP pattern generation function is a typical batch control function. The other is a discrete control for logic and sequence control function. Some of the applications need recipe controls and report management.

Target Applications Furnace		
Furnace Applications	Chemical Applications	Healthy Applications
<ul style="list-style-type: none"> <li>Silicon Growing Furnace</li> <li>Metal Heat Treatment Furnace</li> <li>Vacuum Furnace</li> <li>Printed Circuit Board Press</li> </ul>	<ul style="list-style-type: none"> <li>Rubber Process</li> <li>Dyeing Machine</li> <li>Plastics Process</li> <li>Glue Process</li> </ul>	<ul style="list-style-type: none"> <li>Pharmaceutical</li> <li>Food &amp; Beverage</li> <li>Bio-chemical Process</li> </ul>

## Batch Control Function Highlight

### Typical Process/Production Line Diagram

Advantech's batch control system focuses on a single path batch manufacturing process equipment, e.g. a heating treatment furnace for the metal used in semiconductors. Plastic and rubber manufacturing equipment, printed circuit board (PCB) manufacturing equipment or reactors for food & beverage applications. Main application functions focus on:

#### Process Control Functions

- Auto-tuning PID Function
- Temperature Control
- Air/Fluid Ratio Function
- Ramp/Soak Control

#### Motion Control

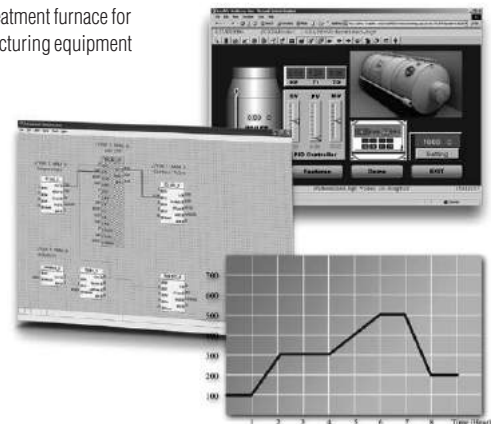
- Position & Speed

#### Recipe Management

- Process Parameter Configuration

#### Batch Report

- Daily, Weekly, Monthly, Yearly



## Key Features



### Guaranteed Real-time Performance

APAX I/O local bus ensures deterministic control. Contributed by the dedicated Digital Signal Processor (DSP) which handles I/O data process without controller's CPU resource, the I/O scan rate can be maintained within 1ms, regardless of the number of I/O points. Programmers can concentrate on their application program development, and the APAX system can perform real-time I/O access automatically.



### Flexible Expansion Architecture

Through expansion ports on backplanes and standard Ethernet cables, a remote expansion with localbus speed can be built, and the distance can be up to 100m. A standard ethernet switch can be used between two backplanes, so line, tree or star topologies can be built for I/O expansion - all with fast local-bus speed. When fiber optic ports are available, the distance can be longer.



### Hot-swappable I/O

APAX backplanes carry communication and power to I/O modules. With a special design, the I/O modules can be hot-swapped when the system is powered-on and running. Engineers can easily change modules without shutting down the system thereby saving system management costs.



### Fail Safe Value

System reliability is critical for batch control applications. APAX output modules feature fail safe value settings, meaning when modules lose communication to the controller, all output channel values will be set as the pre-defined value. This can eliminate risks owing to system communication issues.

- 1 WebAccess+ Solutions
- 2 Motion Control
- 3 Power & Energy Automation
- 4 Automation Software
- 5 Intelligent Operator Panel
- 6 Automation Panels
- 7 Panel PCs
- 8 Industrial Wireless Solutions
- 9 Industrial Ethernet Solutions
- 10 Industrial Gateway Solutions
- 11 Serial communication cards
- 12 Embedded Automation PCs
- 13 DIN-Rail IPCs
- 14 CompactPCI Systems
- 15 IoT Wireless I/O Modules
- 16 IoT Ethernet I/O Modules
- 17 RS-485 I/O Modules
- 18 Data Acquisition Boards

# APAX Series Overview

## Advantech's New Generation DIN-Rail IPCs - APAX Series

APAX series, the new DIN-Rail IPCs from Advantech, integrates control, information processing and networking in a single platform. By leveraging the latest automation technology, APAX series offers a unique system architecture, providing dual controllers for different tasks, same I/O with changeable controllers, and flexible I/O expansion with deterministic performance. All these features make Advantech's DIN-Rail IPCs more reliable, scalable and flexible, satisfying various complicated control and automation applications.





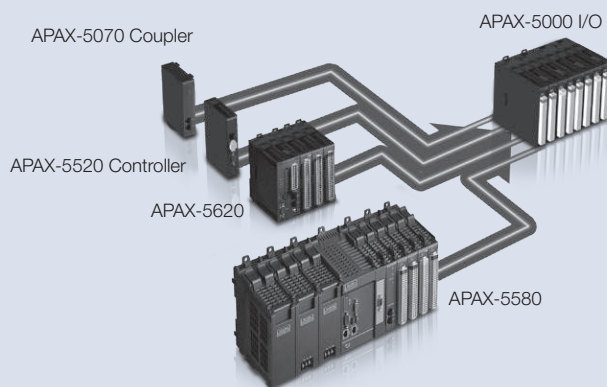
## ► Dual Controllers for Different Tasks

Controller for HMI/SCADA



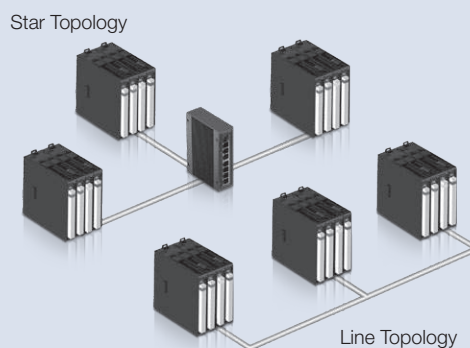
One controller focuses on I/O processing, while another controller can execute other tasks such as HMI/SCADA, database, recipe, image processing, etc. This architecture ensures system reliability since I/O processing won't be affected by other tasks.

## ► Changeable Controllers and Couplers



APAX I/O modules can combine different controllers or couplers to satisfy different applications. Using different couplers, I/O modules can link to various real-time Ethernet and fieldbus systems. It saves investment in I/O and offers scalability for future needs.

## ► Flexible Expansion Topology



All APAX I/O modules are inserted on the backplane. Through the expansion port and Ethernet cable, this decentralized architecture retains high-speed data transfers, so the distributed I/O modules provide real-time performance. Almost any topology, such as line, tree or star, can be easily established. The hot swap capability is also available for remote expansion I/O modules.

1

WebAccess+ Solution

2

Motion Control

3

Power & Energy Automation

4

Automation Software

5

Intelligent Operator Panel

6

Automation Panels

7

Panel PCs

8

Industrial Wireless Solutions

9

Industrial Ethernet Solutions

10

Industrial Gateway Solutions

11

Serial communication cards

12

Embedded Automation PCs

13

DIN-Rail IPCs

14

CompactPCI Systems

15

IoT Wireless I/O Modules

16

IoT Ethernet I/O Modules

17

RS-485 I/O Modules

18

Data Acquisition Boards

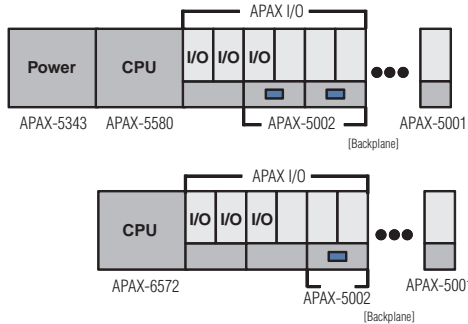
# APAX System Architecture

## Introduction

To simplify the system configuration, Advantech's new APAX-6000 and APAX-5000 series provide easy and flexible way to setup different functions and configurations. There are multiple APAX series system combinations that can be selected to develop reliable control systems as detailed below.

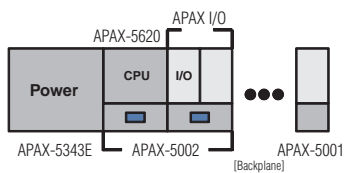
## Application Ready High Performance DIN-Rail IPCs

Advantech's APAX-5580 and 6572 series offers several high performance controllers with Atom and Celeron M grade CPUs. These controllers benefit from the high throughput, openness, flexibility and connectivity brought by PC-based architectures. Contributed by excellent heat dissipation technology with no hard disks, they deliver great system reliability. Various peripheral interfaces such as LAN, USB, DVI, audio, RS-232, RS-422/485, etc, are provided. These high performance DIN-Rail IPCs are suitable for many complex control applications. Besides, its powerful integration ability makes it an ideal platform to integrate video, audio, HMI/SCADA software, database, data processing into one single solution.



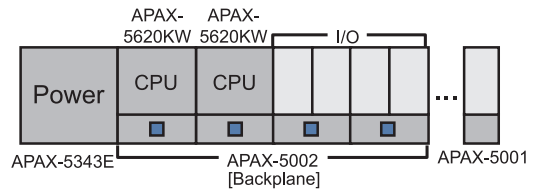
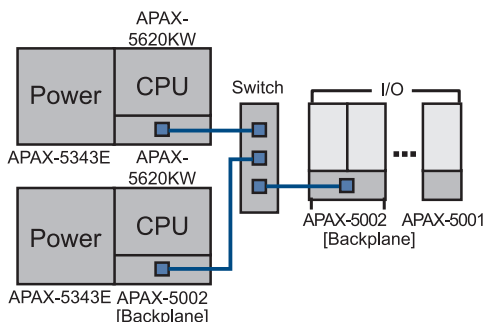
## Robust, Compact DIN-Rail IPCs

APAX-5620 series controllers offer a compact size without fans. These controllers have no rotating parts, helping further increase system reliability. APAX-5520/5620 features a VGA interface, enabling local displays, and its RS-485 and LAN ports offer communication ability with Modbus protocol. CF slot and battery backup RAM can be used for data storage. These features make APAX-5520/5620 as compact and robust as a PLC, but with enhanced displays, connectivity, and storage.



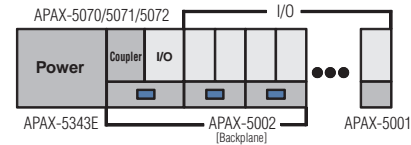
## Redundant System

With the data synchronization, the secondary controller can take over the control tasks at the same position which primary fails within a very short time. Depending on customers request, the power supply can be separated to increase the availability.



## Scalable Systems with Remote I/O

For different fieldbus or real-time Ethernet networks, such as Modbus/TCP, Ethernet/IP, PROFINET, etc, APAX series offers different kinds of couplers for communication. Controllers, HMI, and computers in the same network can access APAX I/O modules through the coupler. Not having to change I/O modules for different fieldbus or real-time Ethernet networks helps ensuring current I/O modules' investment for future demands. These couplers feature daisy-chain design, making installation easier.

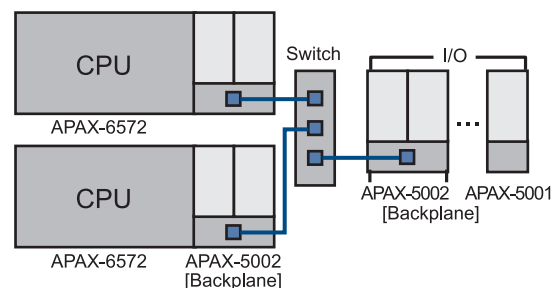


## Reliable Backup System

APAX-5000 series delivers system backup functionality to significantly decrease the risk that the system will fail when the controller crashes. To leverage this, two controllers with the same control program are installed in one system. After both controllers' backup functions are enabled, APAX-5000 will automatically delegate one controller as the master controller.

The master controller will run the control program to execute the control process, while another controller (the backup controller) is put on standby. The master controller periodically sends live messages to the backup controller. If the backup controller does not receive a message from the master controller, it will automatically become the master controller and restart the control process.

If the master controller is switched, it means there was an error happening on the previous master controller. Therefore, engineers can repair or change the previous master controller and re-enable it as the backup controller. Then if the new master controller fails, the new backup controller will automatically take over the control once again. This mechanism ensures the control system will continuously run the control process.



# APAX Controller Selection Guide



System		APAX-5520	APAX-5620	APAX-6572	APAX-5580
CPU		XScale PXA270 520 MHz		Intel Atom D510 1.66 GHz	Intel Core i7-4650U 1.7GHz Dual Core Intel Core i3-4010U 1.7GHz Dual Core Intel Celeron 2980U 1.6GHz Dual Core
Memory		Flash 32 MB, SDRAM 64 MB		2 GB DDR2 DRAM	4GB DDR3L SDRAM
Storage		1 x CF slot		1 x CF slot (internal)	1 x mSATA slot 2 x SD card slots
Local Display		VGA		VGA	VGA
USB Ports		1 x USB 1.1		4 x USB 2.0	2 x USB 2.0, 2 x USB 3.0
Audio		-		Mic in, Line in, Line out	Line Out
Cooling System		Fanless		Fanless	Fanless
Power Input		18 ~ 30 V <sub>DC</sub>		9 ~ 36 V <sub>DC</sub>	24V ± 20%
Diagnostics LED		Power, Battery, Run, Error		Power, IDE, LAN, Serial	PWR, RUN, SATA, UPS, ERR, Over Temp., Abnormal Volt, SYS Recovery
Real-time Clock				Yes	
Watchdog Timer				Yes	
Control Software		C/C++ library and .NET class library for C and .NET programming environment KW IEC 61131-3 SoftLogic programming tool			C/C++ library and .NET class library for C and .NET programming environment CODESYS IEC 61131-3 SoftLogic S/W
Local Real-time I/O Modules				32 (max.)*	
Digital I/O Points				2048 (max.)	
Analog I/O points				512 (max.)	
Communication (Ethernet)	LAN Ports	1	2	3	2
	Speed	10/100 Mbps		10/100/1000 Mbps	10/100/1000Mbps
	Protocol	Modbus/TCP			
Communication (Serial)	COM 1	RS-485	RS-485	RS-232/422/485	RS-232/422/485
	COM 2	-	RS-485	RS-232/422/485	-
	COM 3	-	-	-	-
	CAN Bus	-	2	-	-
Protocol		Modbus/RTU, CANopen (APAX-5620 only)			
Isolation	Communication	2500 V <sub>DC</sub> (RS-485)	2500 V <sub>DC</sub> (CAN & RS-485)	-	-
Environment	Operating Temperature (when mounted vertically)	-10 ~ 55°C		-10 ~ 50°C	-10 ~ 60°C
	Storage Temperature	-40 ~ 70°C			
	Relative Humidity	0 ~ 95 % (non-condensing)			
	Vibration Protection	IEC 60068-2-64/60068-2-6: 1 Grms @ 5 ~ 500 Hz (Random, operating) 2 G @ 5 ~ 500 Hz (Sine, non-operating)		IEC 60068-2-64: 2 Grms @ 5 ~ 500 Hz (Random, operating)	IEC 60068-2-64: 2 Grms @ 5 ~ 500 Hz (Random, operating)
	Shock Protection	IEC 60068-2-27: 20 G @ wall mount		IEC 60068-2-27: 50 G @ wall mount	IEC 60068-2-27: 50 G @ wall mount
Power Supply Module (Optional)		APAX-5343E			
Page		13-19	13-19	13-15	13-16

\*APAX DI/O modules can use ID numbers 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

- 1 WebAccess+ Solutions
- 2 Motion Control
- 3 Power & Energy Automation
- 4 Automation Software
- 5 Intelligent Operator Panel
- 6 Automation Panels
- 7 Panel PCs
- 8 Industrial Wireless Solutions
- 9 Industrial Ethernet Solutions
- 10 Industrial Gateway Solutions
- 11 Serial communication cards
- 12 Embedded Automation PCs
- 13 DIN-Rail IPCs
- 14 CompactPCI Systems
- 15 IoT Wireless I/O Modules
- 16 IoT Ethernet I/O Modules
- 17 RS-485 I/O Modules
- 18 Data Acquisition Boards

# APAX I/O Module Selection Guide



Module Name		APAX-5013	APAX-5017	APAX-5017H	APAX-5018	APAX-5028
Description		8-ch RTD Module	12-ch AI Module	12-ch High Speed AI Module	12-ch Thermocouple Module	8-ch AO Module
Analog Input	AI Channels	8	12	12	12	-
	Input Type*	RTD (2-wire or 3-wire)	V, mV, mA	V, mV, mA	V, mV, mA, Thermocouple	-
	Sampling Rate (Samples/second)	50 Hz filter: 8 (Total**) 60 Hz filter: 10 (Total**)	12/120 selectable (Total**)	1000 (per channel)	12 (Total**)	-
	Input Resolution	16-bit	16-bit (voltage) 14 ~ 15-bit (current)	12-bit	16-bit (voltage) 14 ~ 15-bit (current, thermocouple)	-
	Input Accuracy	±0.1 % of FSR	±0.1 % of FSR (Voltage) ±0.2 % of FSR (Current)	±0.1 % of FSR (Voltage) ±0.2 % of FSR (Current)	±0.1 % of FSR (Voltage) ±0.2 % of FSR (Current)	-
	Voltage Input	-	±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V	0 ~ 500 mV, ±10 V, 0 ~ 10 V	±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V	-
	Current Input	-	±20 mA, 0 ~ 20 mA, 4 ~ 20 mA	0 ~ 20 mA, 4 ~ 20 mA	±20 mA, 0 ~ 20 mA, 4 ~ 20 mA	-
	Direct Sensor Input	RTD (Pt-100, Pt-200, Pt-500, Pt-1000, Balco, Ni 518)	-	-	Thermocouple (Type J, K, T, E, R, S, B)	-
	Wire Burnout Detection	All RTD range	4 ~ 20 mA	4 ~ 20 mA	4 ~ 20 mA and all Thermocouple range	-
Analog Output	AO Channels	-	-	-	-	8
	Output Type*	-	-	-	-	V, mA
	Output Resolution	-	-	-	-	14-bit
	Output Accuracy	-	-	-	-	±0.1 % of FSR
	Output Slew Rate	-	-	-	-	0.7 V <sub>oc</sub> /μs (per channel)
	Voltage Output	-	-	-	-	±2.5 V, ±5 V, ±10 V, 0 ~ 2.5 V, 0 ~ 5 V, 0 ~ 10 V
	Current Output	-	-	-	-	0 ~ 20 mA, 4 ~ 20 mA
	Short Circuit Protection	-	-	-	-	Yes
Fail Safe Value	-	-	-	-	Yes	
General	Weight	170 g	170 g	175 g	170 g	175 g
	Operating Temperature	-10 ~ 60°C (when mounted vertically)				
	Storage Temperature	-40 ~ 85°C				
	Relative Humidity (non-condensing)	5 ~ 95%				
	Power Consumption (typical)	2.5 W @ 24 V <sub>oc</sub>	4 W @ 24 V <sub>oc</sub>	3.5 W @ 24 V <sub>oc</sub>	3.5 W @ 24 V <sub>oc</sub>	3.5 W @ 24 V <sub>oc</sub>
	Isolation between channels and backplane	2500 V <sub>oc</sub>				
	Power Supply Module (optional)	APAX-5343E				
Page	online	online	13-23	online	13-23	

\*Each channel can be configured with different type and range

\*\*Sampling rate value depends on used channel number.

Example: Using 6 channels on APAX-5017, sampling rate for each used channel will be 12/6 = 2 samples/second.



# Selection Guide



Module Name		APAX-5040	APAX-5045	APAX-5046/SO	APAX-5060	APAX-5080
Description		24-ch DI Module	24-ch DI/O Module	24/20-ch DO Module	12-ch Relay Module	4/8-ch Counter Module
Digital Input	DI Channels	24	12	-	-	4
	Input Type	Sink or Source Load	Sink or Source Load	-	-	Source Load
	Rated Input Voltage	24 V <sub>DC</sub>	24 V <sub>DC</sub>	-	-	24 V <sub>DC</sub>
	Input Voltage Range (signal "0")	-5 ~ 5 V <sub>DC</sub>	-5 ~ 5 V <sub>DC</sub>	-	-	0 ~ 3 V <sub>DC</sub>
	Input Voltage Range (signal "1")	15 ~ 30 V <sub>DC</sub> -15 ~ -30 V <sub>DC</sub>	15 ~ 30 V <sub>DC</sub> -15 ~ -30 V <sub>DC</sub>	-	-	10 ~ 30 V <sub>DC</sub>
	Rated Input Current	4.4 mA (typical)	4.4 mA (typical)	-	-	10 mA (typical)
	Input Filter	3 ms	3 ms	-	-	3 ms
	Over Voltage Protection	Yes	Yes	-	-	Yes
Counter Input	Counter Channels	-	-	-	-	8 (Up and Frequency mode) 4 (Pulse/Direction, Up/Down, A/B phase mode)
	Rated Input Voltage	-	-	-	-	24 V <sub>DC</sub>
	Input Voltage Range (signal "0")	-	-	-	-	0 ~ 3 V <sub>DC</sub>
	Input Voltage Range (signal "1")	-	-	-	-	10 ~ 30 V <sub>DC</sub>
	Rated Input Current (signal "1")	-	-	-	-	5 ~ 15 mA (typical)
	Counting Range	-	-	-	-	32-bit + 1-bit overflow/underflow
	Counter Frequency	-	-	-	-	1 MHz (max.)
Digital Output	DO Channels	-	12	24/20	12	4
	Output Type	-	Sink	Sink/Source	Relay (Form A, SPST)	Sink
	Rated Output Voltage	-	24 V <sub>DC</sub>	24 V <sub>DC</sub>	250 V <sub>AC</sub> , 30 V <sub>DC</sub>	24 V <sub>DC</sub>
	Rated Output Current (signal "1")	-	0.5 A	0.5A/1A	5 A	0.5 A
	Short Circuit Protection	-	Yes	Yes	-	Yes
	Thermal Shutdown Protection	-	Yes	Yes	-	Yes
General	Weight	160 g	165 g	165 g	195 g	170 g
	Operating Temperature	-10 ~ 60°C (when mounted vertically)				
	Storage Temperature	-40 ~ 85°C				
	Relative Humidity (non-condensing)	5 ~ 95%				
	Power Consumption (typical)	2 W @ 24 V <sub>DC</sub>	2.5 W @ 24 V <sub>DC</sub>	2.5 W @ 24 V <sub>DC</sub>	2 W @ 24 V <sub>DC</sub>	2.5 W @ 24 V <sub>DC</sub>
	Isolation between channels and backplane	2500 V <sub>DC</sub>				
	Channel Status LED	Yes (per channel)				
	Fail Safe Value	-	Yes (DO channel)	Yes	Yes	Yes (DO channel)
Power Supply Module (optional)	APAX-5343E					
Page	online	online	13-24	13-25	13-25	

- 1 WebAccess+ Solutions
- 2 Motion Control
- 3 Power & Energy Automation
- 4 Automation Software
- 5 Intelligent Operator Panel
- 6 Automation Panels
- 7 Panel PCs
- 8 Industrial Wireless Solutions
- 9 Industrial Ethernet Solutions
- 10 Industrial Gateway Solutions
- 11 Serial communication cards
- 12 Embedded Automation PCs
- 13 DIN-Rail IPCs
- 14 CompactPCI Systems
- 15 IoT Wireless I/O Modules
- 16 IoT Ethernet I/O Modules
- 17 RS-485 I/O Modules
- 18 Data Acquisition Boards

# APAX Communication Module Selection Guide

## Coupler Modules



Module Name		APAX-5070	APAX-5071	APAX-5072
Description		Modbus/TCP Communication Coupler	PROFINET Communication Coupler	EtherNet/IP Communication Coupler
Communication	Protocol	Modbus/TCP	PROFINET RT	EtherNet/IP
	Data Transfer Rates	10/100 Mbps	100 Mbps	10/100 Mbps
	Connected I/O Modules		32 (max.)*	
	Digital Signals		768 (max.)	
	Analog Signals		192 (max.)	
General	Connector	2 x RJ-45 (2-channel switch, share same IP address)		
	Topology	Line or star wiring		
	Operating Temperature	-10 ~ 60°C (when mounted vertically)		
	Storage Temperature	-40 ~ 85°C		
	Relative Humidity	5 ~ 95% (non-condensing)		
Page		13-22	13-22	13-22

\*APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

## Communication Modules



Module Name		APAX-5490	APAX-5495	APAX-5090
Description		4-port RS-232/422/485 Communication Module	2-port CANopen Master Module	4-port RS-232/422/485 Communication Module
Serial Communication	Baud Rate	50 bps ~ 230.4 kbps	-	600 bps ~ 115.2kbps
	Data Bits	5, 6, 7, 8	-	8
	Stop Bits	1, 1.5, 2	-	1, 1.5, 2
	Parity	None, even, odd	-	None, even, odd
CANopen Communication	Data Transfer Rates	-	Max. 1 Mbits/s	-
Motion	Transmission Speed	-	-	-
	Slaves Number	-	-	-
General	Interface	4 x RS-232/422/485	2 x CAN Bus	2 x RS-422/485 2 x RS-232/422/485
	Connector	26-pin clamp-type terminal	DB9	26-pin clamp-type terminal
	Operating Temperature	0 ~ 60°C (when mounted vertically)		
	Storage Temperature	-40 ~ 70°C		
Relative Humidity		5 ~ 95% (non-condensing)		
Page		13-18	13-18	online

Note: APAX-5090P, APAX-5095P and APAX-5202P can only be used by controller with a PCI interface

# APAX-6572

Intel® Atom™ D510 1.66 GHz, 2 GB RAM  
Controller with 3 x LAN, 2 x COM, VGA



## Features

- Intel Atom D510 1.66 GHz CPU
- Onboard 2 GB DDR2 DRAM
- Backup system with two controllers (master and slave) to ensure continuous I/O control
- Expands I/O by connecting with APAX-5000 I/O modules
- Supports Windows WES2009 and Windows CE
- Provides C/C++ and .NET library for I/O control and communication
- Supports real-time control tasks under Windows CE through ProConOS
- 2 x RS-232/422/485 (automatic flow control)
- 3 x 10/100/1000 Mbps LAN, 4 x USB 2.0

## Introduction

The APAX-6572 is a high performance controller with an Intel Atom D510 CPU. By installing Windows WES2009 or Windows CE operating system, it becomes an application ready platform. It is an ideal open control platform which can be combined with APAX I/O modules, and features flexible I/O expansion, real-time I/O control, and powerful computing and networking capability through various interfaces.

## Specifications

### General

- **Certification** CE, FCC Class A
- **Cooling System** Fanless
- **Mounting** DIN-rail, Wall mount (panel mount)
- **Dimensions (W x H x D)** 222 x 155 x 140 mm
- **Enclosure** Aluminum + SECC, ABS + PC (I/O)
- **Weight** 2.6 kg (APAX-6572)
- **Power Consumption** 35 W @ 24 V<sub>DC</sub> (APAX-6572, Typical, Without I/O modules)
- **Power Requirement** 10 ~ 36 V<sub>DC</sub> (e.g +24 V @ 1 A) (Min. 24 W), AT

### System Hardware

- **CPU** Intel Atom D510 1.66 GHz
- **Memory** 2 GB DDR2 DRAM (onboard)
- **Battery Backup SRAM** 1 MB
- **Watchdog Timer** Programmable 7-tier event handler, from 1 ~ 255 seconds for each tier
- **LED Indicators** Power, CF, LAN (Active, Status), Serial (Tx, Rx)
- **Display** VGA (DB15 connector), up to 1600 x 1200 @ 85Hz
- **Audio** Line in, Line out, Mic in
- **Storage** 1 x internal Type I/II CompactFlash card slot

### Software

- **Operating System** Windows WES2009, Windows CE
- **Control Software** C/C++ and .NET library with utility KW MultiProg (development), ProConOS (kernel)
- **Remote Management** Built-in Advantech DiagAnywhere agent Modbus/ASCII master/slave mode KW MultiProg (development), ProConOS (kernel)

### I/O Expansion

- **Accompanied I/O slots** 4 x APAX/PCI combo slots
- **Connected I/O Modules** 32 (max.)\*
- **Digital Signals** 768 (max.)
- **Analog Signals** 192 (max.)

### Communication

- **Serial Ports** 2 x RS-232/422/485 (supports automatic RS-485 data flow control)
- **Serial Baud Rate** 50 ~ 115.2 kbps
- **LAN Ports** 3 x RJ-45 Ports, 10/100/1000 Mbps
- **USB Ports** 4 x USB 2.0

### Environment

- **Operating Temperature** -10 ~ 50°C (when mounted vertically)
- **Storage Temperature** -40 ~ 70°C
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)
- **Vibration Protection** 2 Grms @ 5 ~ 500 Hz (Random, operating, 1hr/axis) (Conforms to IEC 60068-2-64)

## Ordering Information

- **APAX-6572** Intel Atom D510 1.66 GHz, 2 GB RAM Controller
- **PWR-244** Panel Mount Power Supply

### PAC softlogic option (for CTOS only)

- **SQF-P10S2-8G-ETE** Suggested CF 8G CF NR, DMA (-40 ~ 85°C)
- **2070012262** WinCE image with KW support for APAX-6572
- **2010000007** License Agreement for KW ProConOS Embedded

### PC-base controller option (for CTOS only)

- **SQF-P10S2-16G-ETE** Suggested CF 16G CF NR, DMA (-40 ~ 85°C)
- **2070012263** WES2009 MUI for APAX-6572

\*APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

# APAX-5580

## Intel® Core™ i7/i3/Celeron DIN-Rail PC Controller w/ 2 x GbE, 2 x mPCIe, VGA

Preliminary



SUSIAccess RoHS COMPLIANT 2002/95/EC CE FCC

### Features

- 4th Generation Intel® Core™ i7/i3/Celeron Processors up to 1.7 GHz with 4GB/8GB DDR3L Memory
- 2 x GbE, 4 x USB 2.0/3.0, 1 x RS-232 /422/485, 1 x VGA, Audio
- Dual power input and UPS support
- Compact with Fanless Design
- Supports Fieldbus Protocol by iDoor Technology
- 3G/GPRS/GPRS/Wi-Fi Communication by mPCIe
- Chassis Grounding Protection
- LAN Redundancy (Teaming)
- Fault-Protected RS-485 Transceivers With Extended Common-Mode Range
- One button system recovery
- 10 year lifetime RTC battery

### Introduction

Advantech's APAX-5580 is a powerful DIN-Rail PC Controller with an Intel Core i7/i3/Celeron CPU. It is the ideal open control platform to be combined with APAX I/O modules, and features flexible I/O expansion, real-time I/O control, network capability through various interfaces, and support dual power input and UPS module for robust power system. It also has a built-in the standard mini PCI express interface for wireless communication and Advantech's iDoor technology. The APAX-5580 is the best solution for data gateway, concentrator and data server applications, its seamless integration with I/O can save your costs and fulfill a diverse range of automation projects.

### Specifications

#### General

- Certification** CE, FCC
- Dimensions (W x D x H)** 128 x 106 x 110 mm
- Form Factor** Regular Size
- Enclosure** Aluminum Housing
- Mounting** DIN-Rail
- Weight (Net)** 1.8 kg (4.0 lbs)
- Power Requirement** 24 V<sub>DC</sub> ± 20%
- Power Consumption** 28 W (Typical), 72 W(Max)
- OS Support** Microsoft® Windows 7/8, Linux Kernel 3.X

#### System Hardware

- BIOS** AMI UEFI 128Mbit Flash BIOS
- Watchdog Timer** Programmable 256 levels timer interval, from 1 to 255 sec
- Processor** Intel® Core™ i7-4650U ULT 1.7GHz Haswell Dual Core, 4MB L2  
Intel® Core™ i3-4010U ULT 1.7GHz Haswell Dual Core, 3MB L2  
Intel® Celeron 2980U ULT 1.6GHz Haswell Dual Core, 2MB L2
- System Chip** Integrated Intel 8 Series Chipset
- Memory** On-board 4GB (8GB optional)
- Graphics Engine** Intel® HD Graphics 5000/4400
- Ethernet** Intel® i210-IT GbE, 802.1Qav, IEEE1588/802.1AS, 802.3az  
Intel® i218-LM GbE, Intel® AMT, IEEE1588/802.1AS, 802.3az
- LED Indicators** LEDs for Power, battery, LAN (Active, Status), Tx/Rx and HDD
- Storage** 1 x mSATA, 1 x SD, 1 x SD (for OS backup)
- Expansion** 1 x Full-size mPCIe slot, 1 x Half-size mPCIe slot, mPCIe 2.0

#### I/O Interfaces

- Serial Ports** 1 x RS-232/422/485, DB9, 50-115.2kbps
- LAN Ports** 2 x RJ45, 10/100/1000 Mbps IEEE 802.3u 1000Base-T Fast Ethernet
- USB Ports** 4 x USB Ports (2 x USB 2.0, 2 x USB 3.0 compliant)  
1 x internal USB
- Display** 1 x VGA, supports 1920 X 1080 @ 60 Hz 24 bpp
- Audio** Line-Out
- Power Connector** Dual power input and UPS support
- Grounding Protection** Chassis Grounding

#### Environment

- Operating Temperature** - 10 ~ 60°C (-4 ~ 140°F) @ 5 ~ 85% RH with 0.7m/s airflow
- Storage Temperature** - 40 ~ 85°C (-40 ~ 185°F)
- Relative Humidity** 10 ~ 95% RH @ 40°C, non-condensing
- Shock Protection** Operating, IEC 60068-2-27, 50G, half sine, 11ms
- Vibration Protection** Operating, IEC 60068-2-64, 2Grms, random, 5 ~ 500Hz, 1hr/axis (mSATA)

### Ordering Information

- APAX-5580-4C3AE** Intel Celeron 1.6 GHz with 4 GB memory, no external expansion slot
- APAX-5580-433AE** Intel Core i3 1.7 GHz with 4 GB memory, no external expansion slot
- APAX-5580-473AE** Intel Core i7 1.7 GHz with 4 GB memory, no external expansion slot

### Accessories

- APAX-5430** APAX Battery Module
- APAX-5343** AC to DC APAX Power Supply
- APAX-5402-E2A1AE** 2 expansion slots with APAX Bus and PCI express
- APAX-5402-E2A0AE** 2 expansion slots with PCI express only
- SQF-SMSM4-XG-S8E** SQFlash 820 series mSATA MLC 16/32/64/128G (-40~85°C)

### Application Software

	<p>Version : V3.0 or above</p> <p>An innovative remote device management software, allowing efficient remote monitoring, quick recovery &amp; backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.</p>
	<p>Version : V7.1 or above</p> <p>WebAccess, as the core of Advantech's IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.</p>



# APAX-5430

# APAX-5435

## SATA HDD module

## mPCIe module to support iDoor



APAX-5430

FCC CE 

### Specifications

#### General

- **Certification** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 165 g
- **Power Consumption** 2.5 W @ 24 V<sub>DC</sub> (typical)

#### Function

- **Interface** SATA
- **RAID** Supports RAID 0/1
- **Power Supply** 5V:2A  
3.3V:2A
- **Support SATA I/II/III 2.5" HDD/SDD**
- **Support Hot swap**

#### Environment

- **Operating Temperature** -10 ~ 60°C (when mounted vertically)
- **Storage Temperature** -40 ~ 70°C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5430** SATA HDD Module



APAX-5435

 FCC CE 

### Specifications

#### General

- **Certification** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 165 g
- **Power Consumption** 2.5 W @ 24 V<sub>DC</sub> (typical)

#### Function

- **Interface** mini PCI express 2.0 (Support iDoor)  
mSATA
- **Support Hot Plug**

#### Environment

- **Operating Temperature** -10 ~ 60° C (when mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5435** mPCIe Module to support iDoor

1  
WebAccess+ Solutions

2  
Motion Control

3  
Power & Energy Automation

4  
Automation Software

5  
Intelligent Operator Panel

6  
Automation Panels

7  
Panel PCs

8  
Industrial Wireless Solutions

9  
Industrial Ethernet Solutions

10  
Industrial Gateway Solutions

11  
Serial communication cards

12  
Embedded Automation PCs

13  
DIN-Rail IPCs

14  
CompactPCI Systems

15  
IoT Wireless I/O Modules

16  
IoT Ethernet I/O Modules

17  
RS-485 I/O Modules

18  
Data Acquisition Boards

# APAX-5490

# APAX-5495

## 4-port RS-232/422/485 Communication Module

## 2-port CANopen Communication Module



NEW

APAX-5490

RoHS Compliant CE FCC



NEW

APAX-5495

CANopen RoHS Compliant CE FCC

### Specifications

#### General

- **Certification** CE, FCC class A
- **Interface** COM 1, COM 2: RS-232/422/485  
COM 3, COM 4: RS-232/422/485
- **Connectors** 1 x 26-pin clamp-type terminal
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 180 g
- **Power Consumption** 2 W @ 5 V<sub>DC</sub> (typical)

#### Communications

- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even, odd
- **Baud Rate** 50 bps ~ 230.4 kbps
- **Data Signals** RS-232: Tx+, RxD, GND  
RS-422: Tx+, Tx-, Rx+, RX-  
RS-485: Data+, Data-
- **FIFO** 256 bytes
- **Flow Control** Xon/Xoff

#### Protection

- **ESD Protection** 15 kV
- **EFT Protection** 2,500 V<sub>DC</sub>
- **Isolation Protection** 2,500 V<sub>DC</sub> (between COM port and backplane)

#### Environment

- **Operating Temperature** 0 ~ 60°C (mounted vertically)
- **Storage Temperature** -40 ~ 70°C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5490-P4AE** Non Isolation 4-port RS-232/422/485 Comm. Module (Isolation is optional)

Note: APAX-5490 can only be used by controllers with a PCI express interface (ex. APAX-5580)

### Specifications

#### General

- **Certification** CE, FCC class A
- **Interface** 2 x CAN Bus
- **Connectors** DB9
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 180 g
- **Power Consumption** 2 W @ 5 V<sub>DC</sub> (typical)

#### Communications

- **Protocol** CANopen
- **Speed** Max. 1 Mbits/s
- **Supports PDO transmission mode**
- **Supports NMT and SDO communication object**
- **Supports Heartbeat producer and consumer**
- **Supports Emergency objects**

#### Protection

- **Isolation Protection** 2,500 V<sub>DC</sub>

#### Environment

- **Operating Temperature** 0 ~ 60°C (mounted vertically)
- **Storage Temperature** -40 ~ 70°C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5495-P2AE** 2-port CANopen Module

Note: APAX-5495 can only be used by controllers with a PCI express interface (ex. APAX-5580)

# APAX-5520CE/KW APAX-5620CE/KW

PAC with Marvel XScale® CPU

PAC with Marvel XScale® CPU and CAN



APAX-5520CE/KW

RoHS  
CE FCC

## Specifications

### General

- **Certification** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 210 g
- **Power Consumption** 4.5 W @ 24 V<sub>DC</sub> (typical)

### System Hardware

- **CPU** Intel XScale PXA270 520 MHz
- **Memory Flash** 32M bytes, SDRAM 64M bytes
- **Battery Backup Memory** 256 KB file system, 256 KB direct access
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **VGA** DB15 connector
- **SB Ports** 1 x USB 1.1
- **Storage** 1 x Type II CompactFlash card slot

### Software

- **OS Support** Windows CE
- **Control Software** C/C++ and .NET library  
KW Multiprog (development tool)  
KW ProConOS (runtime kernel)

### I/O Expansion

- **Connected I/O Modules** 32 (max.)\*
- **Digital Signals** 768 (max.)
- **Analog Signals** 192 (max.)

### Communication (Ethernet)

- **LAN Ports** 1 x RJ-45 Port, 10/100 Mbps
- **Offers Modbus/TCP Server and Client APIs**

### Communication (Serial)

- **Medium** 1 x Isolated RS-485 (2-wire, isolated)
- **Offers Modbus/RTU Master and Slave APIs**

### Environment

- **Operating Temperature** -10 ~ 55°C (when mounted vertically)
- **Storage Temperature** -40 ~ 70°C
- **Relative Humidity** 5 ~ 95% (non-condensing)

## Ordering Information

- **APAX-5520CE** PAC with Marvel XScale CPU, WinCE
- **APAX-5520KW** PAC with Marvel XScale CPU, KW

### Accessories

- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module

\*APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15



APAX-5620CE/KW

RoHS  
CE FCC

## Specifications

### General

- **Certification** CE, FCC class A
- **Dimensions (W x H x D)** 60 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 310 g
- **Power Consumption** 5 W @ 24 V<sub>DC</sub> (typical)
- **Redundancy** 25ms data sync, 20ms changeover time and 14kbytes for data sync

### System Hardware

- **CPU** Intel XScale PXA270 520 MHz
- **Memory Flash** 32M bytes, SDRAM 64M bytes
- **Battery Backup Memory** 256 KB file system, 256 KB direct access
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **VGA** DB15 connector
- **USB Ports** 1 x USB 1.1
- **Storage** 1 x Type II CompactFlash card slot

### Software

- **OS Support** Windows CE
- **Control Software** C/C++ and .NET library  
KW Multiprog (development tool), KW ProConOS (runtime kernel)

### I/O Expansion

- **Connected I/O Modules** 32 (max.)\*
- **Digital Signals** 768 (max.)
- **Analog Signals** 192 (max.)

### Communication (Ethernet)

- **LAN** 2 x RJ-45 Port, 10/100 Mbps
- **Offers Modbus/TCP Server and Client APIs**
- **Modbus/TCP under KW** Server : 64 connections  
Client : 128 connections

### Communication (Serial)

- **Medium** 2 x Isolated RS-485 (2-wire, isolated)
- **Offers Modbus/RTU Master and Slave APIs**

### Communication (CAN)

- **Medium** 2 x Isolated CAN
- **Protocol** CANopen (DS301/302)
- **Speed maximum** 1 Mbit/s

### Environment

- **Operating Temperature** -10 ~ 55°C (when mounted vertically)
- **Storage Temperature** -40 ~ 70°C
- **Relative Humidity** 5 ~ 95% (non-condensing)

## Ordering Information

- **APAX-5620CE** PAC with Marvel XScale CPU, CAN, WinCE
- **APAX-5620KW** PAC with Marvel XScale CPU, CAN, KW

### Accessories

- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module

1	WebAccess+ Solutions
2	Motion Control
3	Power & Energy Automation
4	Automation Software
5	Intelligent Operator Panel
6	Automation Panels
7	Panel PCs
8	Industrial Wireless Solutions
9	Industrial Ethernet Solutions
10	Industrial Gateway Solutions
11	Serial communication cards
12	Embedded Automation PCs
13	DI/V-Rail IPCs
14	CompactPCI Systems
15	IoT Wireless I/O Modules
16	IoT Ethernet I/O Modules
17	RS-485 I/O Modules
18	Data Acquisition Boards

# APAX-5522PE

## Linux based RTU Controller

NEW



RoHS  
Compliant  
2002/95/EC

CE FCC

### Features

- IEC 61850-3 and IEEE-1613 certified for substation automation application
- XScale PXA270 520 MHz processor
- Wide temperature support (-20 ~ 70°C)
- Supports up to 32 APAX I/O modules
- Time-stamp function support
- Linux OS support
- 2 x LAN ports support

### Introduction

IEC 61850-3 standards specify a number of "hardened" characteristics that network products should meet to withstand the potentially electromagnetically harsh substation environment: such as immunity to electrical surge, electrostatic discharges and other phenomena that would cause non-hardened devices to fail. The APAX-5000PE series modules are IEC 61850-3 compliant and can be used in power & energy applications e.g. smart substation for good protection features.

### Specifications

#### General

- **Certification** CE, FCC class A  
Dielectric Strength and Impulse Tests: IEC60255-5:2000  
EMC Immunity: Electronic Discharge: IEC 61000-4-2:2001, level3  
Radiated RF Immunity: IEC 61000-4-3:2002, 10 V/m  
IEEE C37.90.2-1995, 35 V/m  
Fast Transient, Burst Immunity: IEC 61000-4-4:1995 + A1:2001, 4kV @ 2.5KHz  
Surge Immunity: IEC 61000-4-5:2001, 2kV line to line, 4kV line to earth  
Conducted RF Immunity: IEC 61000-4-6:2004, 10 Vrms  
Magnetic Field Immunity: IEC 61000-4-8:2001, 1000 A/m for 3 seconds, 100 A/m for 1 minute  
DOMF: IEC 61000-4-10:2001, 30 A/m @ 100KHz and 1 MHz  
EMC Emissions  
Conducted Emissions: EN 55011: 2002, Class A  
Radiated Emissions: EN 55011: 2002, Class A
- **Dimensions (W x H x D)** 60 x 139 x 100 mm (without backplane)
- **Enclosure** ABS+PC
- **Weight** 180 g
- **Connectors** DB-9
- **Power Consumption** 2 W @ 5 V<sub>DC</sub> (typical)

#### System Hardware

- **CPU** Intel XScale PXA270 520 MHz
- **Memory Flash** 32 M bytes, SDRAM 64 M bytes
- **Battery Backup Memory** 256 KB file system, 256 KB direct access
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **Storage** 1 x Type II CompactFlash card slot

#### Software

- **OS Support** Linux Kernel 2.6 RT, KW software on WinCE
- **Control Software** API library / MultiProg KW

#### I/O Expansion

- **Connected I/O Modules** 32 (max.)\*
- **Digital Signals** 768 (max.)
- **Analog Signals** 192 (max.)

#### Communication (Ethernet)

- **LAN** 2 x RJ-45 Port, 10/100 Mbps

#### Communication (Serial)

- **Medium** 2 x Isolated RS-232

#### Environment

- **Operating Temperature** -20 ~ 70°C (mounted vertically)
- **Storage Temperature** -40 ~ 85°C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5522PELX** IEC 61850-3 Compliant PAC
- **APAX-5522PEKW** IEC 61850-3 Compliant PAC, KW softlogic on WinCE

#### Accessories

- **APAX-5002L** 2-slot Backplane Module
- **APAX-5350** APAX Power Filter for APAX PE modules

\*APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15



# APAX-5343/E APAX-5001/5002/5002L

## Power Supply for APAX-5570 Series/ APAX Expansion Modules

### 1/2/2-slot Backplane Modules



APAX-5343

APAX-5343E



## Specifications

### Input

- **Rated Voltage** 115/230 V<sub>AC</sub>
- **Voltage Range** 90 ~ 264 V<sub>AC</sub>
- **Rated Input Current** 1.5 A (at rated load)
- **Rated Input Frequency** 50/60 Hz
- **Input Frequency Range** 47 ~ 63 Hz
- **Inrush Current Limit** < 50 A

### Output

- **Output Power** 72 W
- **Power Loss** about 8~9 W (at rated load)
- **Efficiency** > 88% (at rated load)
- **Rated Voltage** 24 V<sub>DC</sub>
- **Rated Output Current** 3 A
- **Output Current Limit** 3.5 ~ 4.3 A
- **Residual Ripple** < 240 mVpp
- **Startup Delay** < 3 second
- **Voltage Rise** 60 ms (typical)

### Protection

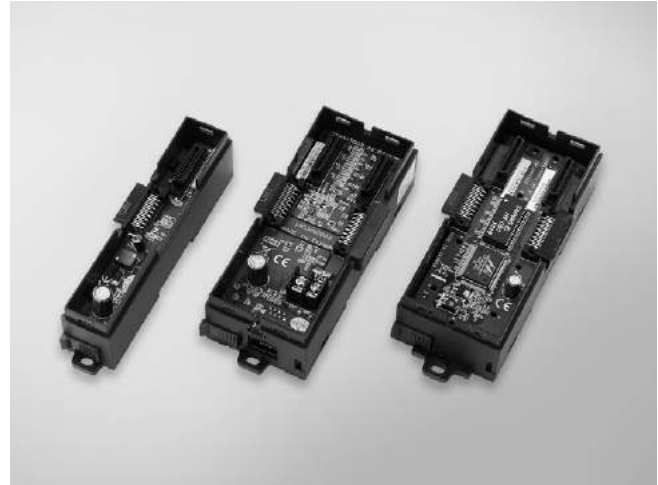
- **Isolation Protection (In/Out)** 42/42 V<sub>DC</sub>
- **Output Over Voltage Protection** shutdown as approximate 25 ~ 27 V<sub>DC</sub>, latch off mode
- **Over Load Protection** auto-recovery mode
- **Short Circuit Protection** auto-recovery mode

### General

- **Certification** CE, FCC class A, UL 508, Energy Star
- **Dimensions (W x H x D)** 75 x 151 x 115 mm
- **Enclosure** PC
- **Operating Temperature** 0 ~ 50°C (mounted vertically)
- **Storage Temperature** -20 ~ 75°C
- **Relative Humidity** 5 ~ 95% (non-condensing)
- **Mounting** DIN-rail, wall mount (panel mount)

## Ordering Information

- **APAX-5343** Power Supply for APAX-5570 Series
- **APAX-5343E** Power Supply for APAX Expansion Module



APAX-5001

APAX-5002/L

APAX-5004L



## Specifications

### General

- **Certification** CE, FCC class A
- **Dimensions (W x H x D)** 28 x 151 x 38 mm (APAX-5001)  
54 x 151 x 38 mm (APAX-5002, APAX-5002L)  
105 x 151 x 38 mm (APAX-5004L)
- **Enclosure** ABS+PC
- **Weight** 70 g (APAX-5001)  
120 g (APAX-5002, APAX-5002L)
- **Mounting** DIN-rail, Wall mount (panel mount)
- **Power Consumption** 0.3 W @ 24 V<sub>DC</sub> (APAX-5001)  
1.3 W @ 24 V<sub>DC</sub> (APAX-5002, APAX-5002L)
- **Power Input** 18 ~ 30 V<sub>DC</sub>
- **Slot Number** 1 (APAX-5001)  
2 (APAX-5002, APAX-5002L)

### Environment

- **Operating Temperature** APAX-5001\*/APAX-5002\*: 0 ~ 60°C  
APAX-5002L\*: -20 ~ 70°C
- **Storage Temperature** -25 ~ 75°C
- **Relative Humidity** 5 ~ 95% (non-condensing)

\*when mounted vertically

## Ordering Information

- **APAX-5001** 1-slot Backplane Module
- **APAX-5002L** 2-slot Backplane Module
- **APAX-5002** 2-slot Backplane Module with RJ-45 Port and 24V<sub>DC</sub> input

	Slot Number	Expansion Port (RJ-45)	Power Input Terminal
APAX-5001	1	N/A	N/A
APAX-5002L	2	N/A	N/A
APAX-5002	2	Yes	Yes

- 1 WebAccess+ Solutions
- 2 Motion Control
- 3 Power & Energy Automation
- 4 Automation Software
- 5 Intelligent Operator Panel
- 6 Automation Panels
- 7 Panel PCs
- 8 Industrial Wireless Solutions
- 9 Industrial Ethernet Solutions
- 10 Industrial Gateway Solutions
- 11 Serial communication cards
- 12 Embedded Automation PCs
- 13 DIN-Rail IPCs
- 14 CompactPCI Systems
- 15 IoT Wireless I/O Modules
- 16 IoT Ethernet I/O Modules
- 17 RS-485 I/O Modules
- 18 Data Acquisition Boards

# APAX-5070 APAX-5072 APAX-5071

## Modbus/TCP Communication Coupler

## EtherNet/IP Communication Coupler

## PROFINET Communication Coupler



### Specifications

#### General

- **Certification** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 190 g
- **Connector** 2 x RJ-45 (2-channel switch, share same IP address)
- **Power Consumption** 2 W @ 5 V<sub>DC</sub> (typical)

#### Communication

- **Protocol** Modbus/TCP
- **Connected I/O Modules** 32 (max.)\*
- **Digital Signals** 768 (max.)
- **Analog Signals** 192 (max.)
- **Data Transfer Rates** 10/100 Mbps
- **Topology** Line or star
- **Isolation Protection** 1,500 V<sub>AC</sub>

#### Environment

- **Operating Temperature** -10 ~ 60°C (mounted vertically)
- **Storage Temperature** -40 ~ 85°C
- **Relative Humidity** 5 ~ 95% (non-condensing)
- **Shock Protection** 10 G @ wall mount, half sine, 11 ms (Confirms to IEC 60068-2-27)
- **Vibration Protection** 1 Grms @ 5 ~ 500 Hz (Random, operating, 1 hr/axis)  
2 G @ 5 ~ 500 Hz (Sine, non-operating, 1 hr/axis) (Confirms to IEC 60068-2-64 and IEC 60068-2-6)

### Ordering Information

- **APAX-5070** Modbus/TCP Communication Coupler

### Specifications

#### General

- **Certification** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 180 g
- **Connectors** 2 x RJ-45 (2-channel switch, share same IP address)
- **Power Consumption** 2 W @ 5 V<sub>DC</sub> (typical)

#### Communications

- **Protocol** EtherNet/IP
- **Connected I/O Modules** 32 (max.)\*
- **Digital Signals** 768 (max.)
- **Analog Signals** 192 (max.)
- **Data Transfer Rates** 10/100 Mbps
- **Topology** line or star
- **Isolation Protection** 1,500 V<sub>AC</sub>

#### Environment

- **Operating Temperature** -10 ~ 60°C (mounted vertically)
- **Storage Temperature** -40 ~ 85°C
- **Relative Humidity** 5 ~ 95% (non-condensing)
- **Shock Protection** 10 G @ wall mount, half sine, 11 ms (Confirms to IEC 60068-2-27)
- **Vibration Protection** 1 Grms @ 5 ~ 500 Hz (Random, operating, 1 hr/axis)  
2 G @ 5 ~ 500 Hz (Sine, non-operating, 1 hr/axis) (Confirms to IEC 60068-2-64 and IEC 60068-2-6)

### Ordering Information

- **APAX-5072** EtherNet/IP Communication Coupler

### Specifications

#### General

- **Certification** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 180 g
- **Connector** 2 x RJ-45 (2-channel switch, share same IP address)
- **Power Consumption** 2 W @ 5 V<sub>DC</sub> (typical)

#### Communication

- **Protocol** PROFINET RT V2.2
- **Connected I/O Modules** 32 (max.)\*
- **Digital Signals** 768 (max.)
- **Analog Signals** 192 (max.)
- **Data Transfer Rates** 10/100 Mbps
- **APAX IO Topology** Line or Star

#### Environment

- **Operating Temperature** -10 ~ 60°C (mounted vertically)
- **Storage Temperature** -40 ~ 85°C
- **Relative Humidity** 5 ~ 95% (non-condensing)
- **Shock Protection** 10 G @ wall mount, half sine, 11 ms (Confirms to IEC 60068-2-27)
- **Vibration Protection** 1 Grms @ 5 ~ 500 Hz (Random, operating, 1 hr/axis)  
2 G @ 5 ~ 500 Hz (Sine, non-operating, 1 hr/axis) (Confirms to IEC 60068-2-64 and IEC 60068-2-6)

### Ordering Information

- **APAX-5071** PROFINET Communication Coupler

#### Accessories

- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module

\*APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

# APAX-5017H

# APAX-5028

## 12-ch High Speed Analog Input Module

## 8-ch Analog Output Module



APAX-5017H

RoHS  
Compliant  
2002/95/EC

CE FCC

### Specifications

#### General

- **Certification** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 175 g
- **Power Consumption** 3.5 W @ 24 V<sub>DC</sub> (typical)

#### Analog Input

- **Channels** 12
  - **Input Impedance** 2 M $\Omega$  (Voltage), 120  $\Omega$  (Current)
  - **Input Type** V, mV, mA
  - **Input Range** 0 ~ 500 mV,  $\pm 10$  V, 0 ~ 10 V, 0 ~ 20 mA, 4 ~ 20 mA
  - **Configure Different Range for Each Channel**
  - **Resolution** 12-bit with accuracy  $\pm 0.1\%$  or better of Full Scale Range (Voltage),  $\pm 0.2\%$  or better of Full Scale Range (Current)
  - **Sampling Rate** 1,000 sample/second (per channel)
- \* Support Integration function to eliminate field site noise at sample rate: 100 sample/second
- **Span Drift**  $\pm 25$  ppm/ $^{\circ}$ C
  - **Zero Drift**  $\pm 6$   $\mu$ V/ $^{\circ}$ C
  - **Wire Burn-out Detection** Yes (4~20 mA only)

#### Protection

- **Over Voltage Protection**
- **2,500 V<sub>DC</sub> Isolation Between Channels and Backplane**

**Note:** The voltage between any two pins must not exceed 15 V

#### Environment

- **Operating Temperature** -10 ~ 60 $^{\circ}$ C (when mounted vertically)
- **Storage Temperature** -40 ~ 70 $^{\circ}$ C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5017H** 12-ch High Speed Analog Input Module



APAX-5028

RoHS  
Compliant  
2002/95/EC

CE FCC

### Specifications

#### General

- **Certification** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 175 g
- **Power Consumption** 3.5 W @ 24 V<sub>DC</sub> (typical)

#### Analog Output

- **Channels** 8
- **Output Type** V, mA
- **Output Range**  $\pm 2.5$  V,  $\pm 5$  V,  $\pm 10$  V, 0 ~ 2.5 V, 0 ~ 5 V, 0 ~ 10 V, 0 ~ 20 mA, 4 ~ 20 mA
- **Configure Different Range for Each Channel**
- **Resolution** 14-bit with accuracy  $\pm 0.1\%$  or better of Full Scale Range
- **Settling time** about 500  $\mu$ s
- **Slew Rate** 0.7 V<sub>DC</sub>/ $\mu$ s (per channel)
- **Span Drift**  $\pm 60$  ppm/ $^{\circ}$ C
- **Zero Drift**  $\pm 275$  mV/ $^{\circ}$ C (Voltage),  $\pm 250$  mV/ $^{\circ}$ C (Current)
- **Drive Voltage (Current Mode)** 15 V<sub>DC</sub>
- **Load (Current Mode)** 0 ~ 500 $\Omega$

#### Protection

- **Short Circuit Protection**
- **2,500 V<sub>DC</sub> Isolation Between Channels and Backplane**

#### Environment

- **Operating Temperature** -10 ~ 60 $^{\circ}$ C (when mounted vertically)
- **Storage Temperature** -40 ~ 70 $^{\circ}$ C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5028** 8-ch Analog Output Module

1	WebAccess+ Solutions
2	Motion Control
3	Power & Energy Automation
4	Automation Software
5	Intelligent Operator Panel
6	Automation Panels
7	Panel PCs
8	Industrial Wireless Solutions
9	Industrial Ethernet Solutions
10	Industrial Gateway Solutions
11	Serial communication cards
12	Embedded Automation PCs
13	DIN-Rail IPCs
14	CompactPCI Systems
15	IoT Wireless I/O Modules
16	IoT Ethernet I/O Modules
17	RS-485 I/O Modules
18	Data Acquisition Boards

# APAX-5046

# APAX-5046SO

24-ch Digital Output Module

20-ch Source Type DO Module



APAX-5046

FCC CE 



APAX-5046SO

FCC CE 

## Specifications

### General

- **Certification** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 165 g
- **Power Consumption** 2.5 W @ 24 V<sub>DC</sub> (typical)
- **Status Display** LED per channel  
On: Logic level 1  
Off: Logic level 0

### Digital Output

- **Channels** 24 (Sink Type)
- **Voltage Range** 8 ~ 35 V<sub>DC</sub>
- **Rated Current Output** 0.5 A (per channel, at signal "1")
- **Leakage Current** 0.1 mA (at signal "0")
- **Switch Rate:** Resistive load: 300 Hz (max.)  
Inductive load: 20 Hz (max.)  
Lamp load: 200 Hz  
(max. at 5W lamp and under 50 Ω, 24 V)

### Protection

- 2,500 V<sub>DC</sub> Isolation Between Channels and Backplane
- Short Circuit Protection
- Thermal Shutdown Protection

### Environment

- **Operating Temperature** -10 ~ 60°C  
(when mounted vertically)
- **Storage Temperature** -40 ~ 70°C
- **Relative Humidity** 5 ~ 95% (non-condensing)

## Ordering Information

- **APAX-5046** 24-ch Digital Output Module
- **APAX-5001** 1-slot Backplane Module
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module

## Specifications

### General

- **Certification** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 165 g
- **Power Consumption** 2.5 W @ 24 V<sub>DC</sub> (typical)
- **Status Display** LED per channel  
On: Logic level 1  
Off: Logic level 0

### Relay Output

- **Channels** 20 (Source Type)
- **Voltage Range** 10~35V<sub>DC</sub>
- **Rated Current Output** 1A(per channel, at signal "1")
- **Leakage Current** 0.1 mA (at signal "0")
- **Switch Rate** Resistive load : 300 Hz (max.)  
Inductive load: 20 Hz (max.)  
Lamp load: 200 Hz  
(max., at 5W amp and under 50 Ω, 24V)

### Protection

- 2,500 V<sub>DC</sub> Isolation Between Channels and Backplane
- Short Circuit Protection
- Thermal Shutdown Protection

### Environment

- **Operating Temperature** -10 ~ 60° C  
(when mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)

## Ordering Information

- **APAX-5046SO** 20-ch Source-Type DO Module
- **APAX-5001** 1-slot Backplane Module
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module

# APAX-5060

# APAX-5080

## 12-ch Relay Output Module

## 4/8-ch High/Low Speed Counter Module

NEW



APAX-5060

FCC CE RoHS

### Specifications

#### General

- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Weight** 195 g
- **Power Consumption** 2 W @ 24 V<sub>DC</sub> (typical)
- **Status Display** LED per channel  
On: Logic level 1  
Off: Logic level 0

#### Relay Output

- **Channels** 12
- **Relay Type** Form A (SPST)
- **Switching Capacity and Lifetime of the Contact (For Resistive Load)**  
VDE: 30,000 operations (5 A @ 250 V<sub>AC</sub>, 10 operations/minute at 8°C)  
70,000 operations (5 A @ 30 V<sub>DC</sub>, 10 operations/minute at 85°C)  
UL: 60,000 operations (5 A @ 250 V<sub>AC</sub>)  
100,000 operations (5 A @ 30 V<sub>DC</sub>)  
Mechanism: 20,000,000 operations (no load, 300 operations/min)
- **Breakdown Voltage** 500 V<sub>AC</sub> (50/60 Hz)
- **Contact Resistance** 30 mΩ (maximum)
- **Insulation Resistance** 1 GΩ (minimum) at 500 V<sub>DC</sub>

#### Protection

- **Isolation Between Channels and Backplane** 2,500 V<sub>DC</sub>

#### Environment

- **Operating Temperature** -10 ~ 60°C (when mounted vertically)  
-20 ~ 70°C (for PE version)
- **Storage Temperature** -40 ~ 70°C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5060** 12-ch Relay Output Module
- **APAX-5060PE** 12-ch Relay Output Module with Wide Temperature

NEW



APAX-5080

FCC CE RoHS

### Specifications

#### General

- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Weight** 170 g
- **Power Consumption** 2.5 W @ 24 V<sub>DC</sub> (typical)
- **Status Display** LED per channel (for DI/O only)  
On: Logic level 1; Off: Logic level 0

#### Counter/Frequency Input

- **Channels & Mode** 8 (Up Counter, High/Low Freq. and Wave Width mode)  
4 (Pulse and Direction, Up/Down Pulse, A/B Phase)  
32-bit + 1-bit overflow
- **Counting Range** 1 μs for High Freq. mode; 1 ms for Low Freq. mode
- **Minimum Pulse Width** 0.1 Hz ~ 10 Hz for Low Freq. mode and Wave Width mode
- **Counter Frequency** 10 Hz ~ 1M Hz for High Freq. mode and other modes
- **Input Voltage** For "0" signal: 0 ~ 3 V<sub>DC</sub>; For "1" signal: 10 ~ 30 V<sub>DC</sub>
- **Accuracy** 0.1% for Low Freq. mode
- **Input Filter** 0.1 us ~ 40 ms

#### Digital Input

- **Channels** 4
- **Type** Sink (Wet contact)
- **Input Voltage** For "0" signal: 0 ~ 3 V<sub>DC</sub>; For "1" signal: 10 ~ 30 V<sub>DC</sub>

#### Digital Output

- **Channels** 4 (Sink Type)
- **Output Voltage Range** 8 ~ 35 V<sub>DC</sub>
- **Normal Output Current** 0.5 A (per channel)

#### Protection

- **Isolation Between Channels and Backplane** 2,500 V<sub>DC</sub>
- **Short Circuit Protection (For DO channel)**
- **Thermal Shutdown Protection (For DO channel)**

#### Environment

- **Operating Temperature** -10 ~ 60°C (when mounted vertically)
- **Storage Temperature** -40 ~ 70°C
- **Relative Humidity** 5 ~ 95% (non condensing)

### Ordering Information

- **APAX-5080** 4/8-ch High Speed Counter Module

1  
WebAccess+ Solutions

2  
Motion Control

3  
Power & Energy Automation

4  
Automation Software

5  
Intelligent Operator Panel

6  
Automation Panels

7  
Panel PCs

8  
Industrial Wireless Solutions

9  
Industrial Ethernet Solutions

10  
Industrial Gateway Solutions

11  
Serial communication cards

12  
Embedded Automation PCs

13  
DIN-Rail IPCs

14  
CompactPCI Systems

15  
IoT Wireless I/O Modules

16  
IoT Ethernet I/O Modules

17  
RS-485 I/O Modules

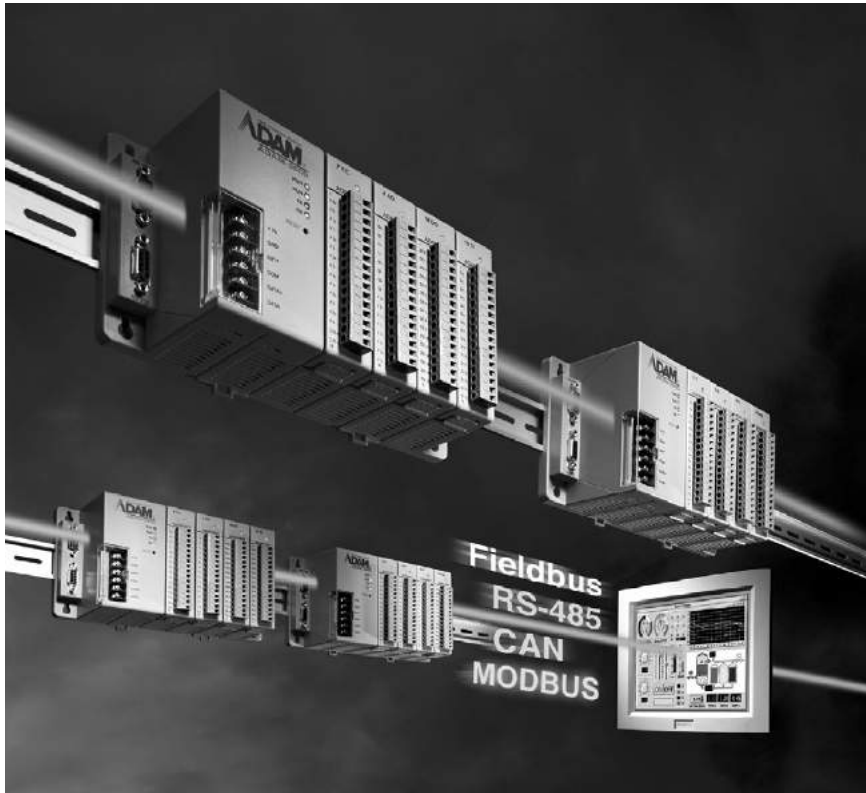
18  
Data Acquisition Boards



# APAX Controller Support table

Type		Performance PAC			Compact PAC			Coupler		
System		APAX-6572	APAX-5580	APAX-5620	APAX-5520	APAX-5522PE	APAX-5070	APAX-5071	APAX-5072	
Function	I/O module	PAC with Intel ATOM™ D510 1.66 GHz	PAC with Intel Core i CPU	PAC with Marvel Xscaler CPU and CAN	PAC with Marvel Xscaler CPU	IEC 61850-3 Certified PAC with Marvel Xscaler CPU	Modbus/TCP Communication Coupler	PROFINET Communication Coupler	EtherNet/IP Communication Coupler	
Analog I/O	APAX-5013	•	•	•	•	•	•	•	•	
	APAX-5017	•	•	•	•	•	•	•	•	
	APAX-5017H	•	•	•	•	•	•	•	•	
	APAX-5018	•	•	•	•	•	•	•	•	
	APAX-5028	•	•	•	•	•	•	•	•	
Digital I/O	APAX-5040	•	•	•	•	•	•	•	•	
	APAX-5045	•	•	•	•	•	•	•	•	
	APAX-5046	•	•	•	•	•	•	•	•	
	APAX-5060	•	•	•	•	•	•	•	•	
	APAX-5080	•	•	•	•	•	•	•	•	
Communication (Serial/CAN/AMAX)	APAX-5090P	•	•	-	-	-	-	-	-	
	APAX-5095P	•	•	-	-	-	-	-	-	
	APAX-5202P	•	•	-	-	-	-	-	-	
Backplane Modules	APAX-5001	•	•	•	•	•	•	•	•	
	APAX-5002/L	•	•	•	•	•	•	•	•	
Power Supply Modules	APAX-5343	-	•	-	-	-	-	-	-	
	APAX-5343E	-	-	•	•	-	•	•	•	
IEC-61850 Certified I/O	APAX-5017PE	•	•	•	•	•	•	-	-	
	APAX-5040PE	•	•	•	•	•	•	-	-	
	APAX-5060PE	•	•	•	•	•	•	-	-	

# ADAM-5000 Series



## Open Network and Fieldbus Solutions for Device Networking

## Introduction

The Fieldbus concept will change the control environment and device characteristics of future control systems in both processing and manufacturing. Compared with traditional systems, the Fieldbus system reduces cost of cabling, commissioning, and installation. In addition, the Fieldbus system has greater reliability.

The ADAM-5000 series, a compact distributed data acquisition and control system, supports the shift toward Fieldbus-based systems. Based on popular Fieldbus data communication structures such as RS-485 and Modbus, the ADAM-5000 series now offers two different DA&C systems that allow field I/O devices to easily connect to PC network applications: the ADAM-5000 DA&C systems and the ADAM-5510 series of PC-based controllers.



## Distributed I/O Systems

### Ethernet-based Data Acquisition and Control System

With the ADAM-5000/TCP as your Ethernet I/O data processing center, you can monitor and control field signals at a speed of 10/100 Mbps. The best field-proven communication performance that can be reached in industrial network environments. Additionally, the popular Modbus/TCP protocol is supported as well.

### RS-485 based Data Acquisition and Control System

The ADAM-5000/485 system is a data acquisition and control system that can acquire, monitor and control data through multi-channel I/O modules. It communicates with a network master over a twisted-pair, multi-drop RS-485 network. Both ADAM ASCII and Modbus/RTU protocols are supported.

## PC-based Controllers

### Ethernet-enabled PC-based Controllers

The ADAM-5510 series of PC-based programmable controllers includes ADAM-5510M, ADAM-5510E, ADAM-5510/TCP and ADAM-5510E/TCP. They feature Intel x86-based CPUs running Datalight ROM-DOS.

Users can use Borland C 3.0 to develop the application program and then download it by Windows-based ADAM-5510 series utility. The Ethernet-enabled feature of ADAM-5510/TCP and ADAM-5510E/TCP enables features like:FTP server, web server, TCP/UDP connections and email alarm. The ADAM-5510 controllers also have high expansion capability by supporting Modbus/RTU master/slave and Modbus/TCP client/server functions.

ADAM-5550CE features AMD GX2 CPU running Windows CE operating system. Users can use Microsoft Visual Studio .NET to develop the application program.

ADAM-5550KW and ADAM-5510KW series allow users leverage IEC 61131-3 SoftLogic programming environment to complete their automation task.

- 1 WebAccess+ Solutions
- 2 Motion Control
- 3 Power & Energy Automation
- 4 Automation Software
- 5 Intelligent Operator Panel
- 6 Automation Panels
- 7 Panel PCs
- 8 Industrial Wireless Solutions
- 9 Industrial Ethernet Solutions
- 10 Industrial Gateway Solutions
- 11 Serial communication cards
- 12 Embedded Automation PCs
- 13 DIN-Rail IPCs
- 14 CompactPCI Systems
- 15 IoT Wireless I/O Modules
- 16 IoT Ethernet I/O Modules
- 17 RS-485 I/O Modules
- 18 Data Acquisition Boards

# Distributed I/O Systems & PC-based Controllers

## Maximum System Design Flexibility

The ADAM-5000's modular design allows users to tailor solutions based on their own requirements. Built-in programmable I/O ranges and alarm outputs enhance flexibility in system design. A variety of communication media such as twisted-pair wiring, radio modems and fiber optics are supported.

## System Maintenance and Troubleshooting

The ADAM-5000 series uses hardware self-test and software diagnosis to monitor system problems. Also included is a watchdog timer that monitors the microprocessor. If the system crashes, the watchdog automatically resets the system. Node ID setting is easily accomplished by setting a DIP switch on the front of the system.

## Easy Installation and Networking

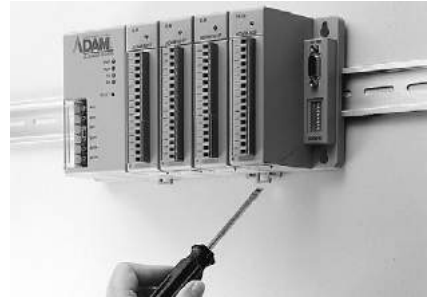
The ADAM-5000 series can be easily mounted on a DIN-rail or on a panel. Signal connections, network modifications and maintenance are simple and quick. Building a multi-drop network only requires a single twisted pair of wires.

## Proven for Industrial Environments

The ADAM-5000 series can operate in industrial environments at temperatures between -10 and 70°C, and can use unregulated power sources between 10 and 30 V<sub>DC</sub>. These units are protected against accidental power supply reversals. A 3-way isolation design (I/O, power & communication) prevents ground loops and reduces the effect of electrical noise in the system.

## Extensive Software Support

The ADAM-5000 series is supported by most standard process controls and HMI software. .NET Class LIB is provided for use with Windows applications. OPC drivers provide links to a wide range of HMI/SCADA software packages such as InTouch, FIX and ICONICS. Advantech data acquisition software and Advantech Studio SCADA/HMI software are both tightly integrated with the ADAM-5000 systems.



DIN-rail Mounting  
Installed on industrial standard DIN-rails



Panel/Wall Mounting  
Flat surface system mounting

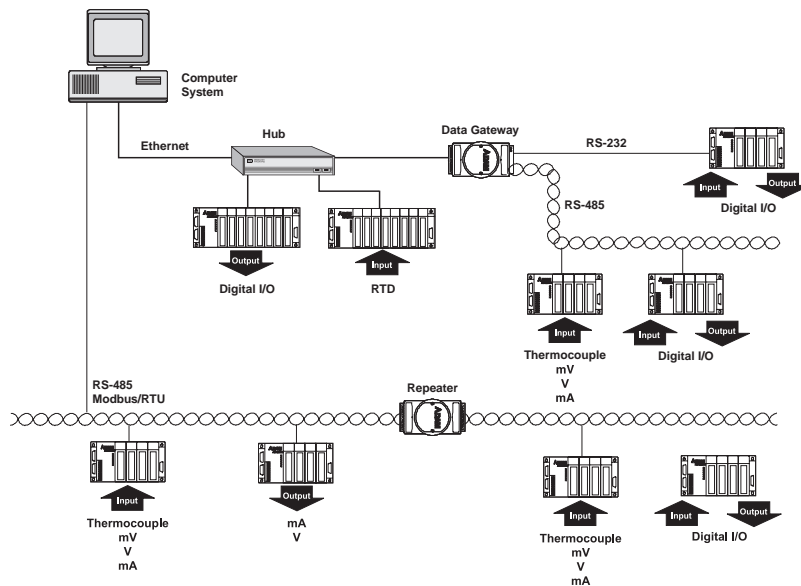


Node ID Setting  
8-pin dip switch configuration



Connection  
Pre-wired plug-in terminals with I/O modules

## Simple & Low Cost Network



# ADAM-5000 Controller Selection Guide



System		ADAM-5510M ADAM-5510KW	ADAM-5510E	ADAM-5510/TCP ADAM-5510KW/TCP	ADAM-5510E/TCP ADAM-5510EKW/TP	ADAM-5560
CPU		80188				Intel Atom Z510P 1.1 GHz
RAM		640 KB				1 GB DDR2 SDRAM
Flash ROM		256 KB				-
Flash Memory		256 KB				-
Flash Disk		1 MB				-
OS		ROM-DOS				WinCE5.0/XP embedded
Control Software		ADAM-5510M: Borland C ADAM-5510KW: KW SoftLogic	Borland C	ADAM-5510/TCP: Borland C ADAM-5510KW/TCP: KW SoftLogic	ADAM-5510E/TCP: Borland C ADAM-5510EKW/TP: KW SoftLogic	ADAM-5560CE: C/C++ and .NET ADAM-5560KW: KW SoftLogic
Real-time Clock		Yes				
Watchdog Timer		Yes				
COM1		RS-232	RS-232/485	RS-232	RS-232/RS-485	RS-232/485
COM2		RS-485				
COM3 (Programming)		RS-232 (TX, RX, GND)				RS-232/485
COM4		RS-232/485				
I/O Slots		4	8	4	8	7
Power Consumption		4 W				17 W
Isolation	Communication	2,500 V <sub>DC</sub> (COM2 RS-485)				2,500 V <sub>DC</sub> (COM2 RS-485) 1,500 V <sub>DC</sub> (COM1, COM3, COM4 RS-485)
	Communication Power	3,000 V <sub>DC</sub>				
	I/O Module	3,000 V <sub>DC</sub>				
Diagnosis	Status Display	Power, CPU, Communication, Battery				Power, User Define
	Self Test	Yes, while ON				
	Software Diagnosis	Yes				
Communication	Interface	RS-232/485		Ethernet (RJ-45)		Ethernet (2 x RJ-45)
	Speeds	1,200 bps ~ 115.2 kbps		10/100 Mbps		10/100 Mbps
	Max. Distance	4,000 feet (1.2 km)		100 m		100 m
	Data Format	N, 8, 1, 1		-		-
	Max. Nodes	32	32	256 for Ethernet, 32 for RS-485	256 for Ethernet, 32 for RS-485	256 for Ethernet, 32 for RS-485
	Protocol	User Defined, Modbus/RTU	User Defined, Modbus/RTU	User Defined, Modbus/RTU, Modbus/TCP	User Defined, Modbus/RTU, Modbus/TCP	Modbus/RTU, Modbus/TCP
	Remote I/O	Modbus Device				
	Power Requirements	10 ~ +30 V <sub>DC</sub>				
Environment	Operating Temperature	-10 ~ 70°C (14 ~ 158°F)				0 ~ 55°C (32 ~ 131°F)
	Storage Temperature	-25 ~ 85°C (-13 ~ 185°F)				
	Humidity	5 ~ 95%				
Dimensions (mm)		231 x 110 x 75	355 x 110 x 75	231 x 110 x 75	355 x 110 x 75	355 x 110 x 75
Page		13-37	13-37	online	online	13-35

- 1 WebAccess+ Solutions
- 2 Motion Control
- 3 Power & Energy Automation
- 4 Automation Software
- 5 Intelligent Operator Panel
- 6 Automation Panels
- 7 Panel PCs
- 8 Industrial Wireless Solutions
- 9 Industrial Ethernet Solutions
- 10 Industrial Gateway Solutions
- 11 Serial communication cards
- 12 Embedded Automation PCs
- 13 DIN-Rail IPCs
- 14 CompactPCI Systems
- 15 IoT Wireless I/O Modules
- 16 IoT Ethernet I/O Modules
- 17 RS-485 I/O Modules
- 18 Data Acquisition Boards

# ADAM-5000 I/O Module Selection Guide



System		ADAM-5000/485	ADAM-5000E	ADAM-5000L/TCP	ADAM-5000/TCP
CPU		80188	80188	RISC CPU	
RAM		-	-	4 MB	
Flash ROM (User AP)		-	-	512 KB	
Flash Memory (Data Storage)		-	-	-	
Flash Disk		-	-	-	
OS		-	-	real-time OS	
Timer BIOS		-	-	-	
Real-time Clock		-	-	-	
Watchdog Timer		Yes			
I/O Slots		4	8	4	8
Power Consumption		3 W		4.0 W	5.0 W
Isolation	Communication	2,500 V <sub>DC</sub>	3,000 V <sub>DC</sub>	RS-485: 1,500 V <sub>DC</sub>	
	Communication Power	3,000 V <sub>DC</sub>			
	I/O Module	3,000 V <sub>DC</sub>			
Diagnosis	Status Display	Power, CPU, Communication		Power, CPU, Error Diagnostic, Communication	
	Self Test	Yes, while ON			
	Software Diagnosis	Yes			
Communication	Interface	RS-232/485 (2-wire)	RS-232/485 (2-wire)	Ethernet	
	Speeds (bps)	1,200, 2,400, 4,800, 9,600, 19.2 K, 38.4 K, 57.6 K, 115.2 K	1,200, 2,400, 4,800, 9,600, 19.2 K, 38.4 K, 57.6 K, 115.2 K	10 M, 100 M	
	Max. Distance	4,000 feet (1.2 km)	4,000 feet (1.2 km)	100 m without repeater	
	Data Format	Advantech protocol: N, 8, 1 Modbus protocol: N, 8, 1 N, 8, 2 E, 8, 1 O, 8, 1	Advantech protocol: N, 8, 1 Modbus protocol: N, 8, 1 N, 8, 2 E, 8, 1	TCP/IP	
	Max. Nodes	128	128	Depend on IP address	
	Protocols	ADAM ASCII/Modbus Protocol	ADAM ASCII/Modbus Protocol	Modbus/TCP	
	Remote I/O	-	-	20 nodes Modbus devices	
	Power Requirements	+10 ~ +30 V <sub>DC</sub>			
Environment	Operating Temperature	-10 ~ 70°C (14 ~ 158°F)			
	Storage Temperature	-25 ~ 85°C (-13 ~ 185°F)			
	Humidity	5 ~ 95%			
Dimensions (mm)		231 x 110 x 75	355 x 110 x 75	231 x 110 x 75	355 x 110 x 75
Page		13-38	13-38	13-39	13-39



## Analog Input/Output Modules



Module		ADAM-5013	ADAM-5017	ADAM-5017P	ADAM-5017UH	ADAM-5018
Analog Input	Resolution	16 bit	16 bit	16 bit	12 bit	16 bit
	Input Channel	3	8	8	8	7
	Sampling Rate	10 (total*)	10 (total*)	10 (total*)	200K**	10 (total*)
	Voltage Input	-	±150 mV, ±500 mV ±1 V, ±5 V, ±10 V	±150 mV, ±500 mV ±15V, ±10V, ±5 V, ±1 V 0 ~ 150mV, 0 ~ 500mV 0 ~ 1V, 0 ~ 5V, 0 ~ 10V 0 ~ 15V	±10 V, 0 ~ 10 V	±15 mV, ±50 mV ±100 mV, ±500 mV ±1 V, ±2.5 V
	Current Input	-	±20 mA	±20 mA, 4 ~ 20mA	0 ~ 20 mA, 4 ~ 20 mA	±20 mA
	Direct Sensor Input	Pt or Ni RTD	-	-	-	J, K, T, E, R, S, B
Isolation		3,000 V <sub>DC</sub>	3,000 V <sub>DC</sub>	3,000 V <sub>DC</sub>	3,000 V <sub>DC</sub>	3,000 V <sub>DC</sub>
Page		online	online	online	online	online

\*Sampling rate value depends on used channel number.

Example: Using 5 channels on ADAM-5017, sampling rate for each used channel will be 10/5 = 2 samples/second.

\*\*The sampling rate vary with the controller.



Module		ADAM-5018P	ADAM-5024	ADAM-5050	ADAM-5051/ ADAM-5051D/ ADAM-5051S	ADAM-5052	ADAM-5053S
Analog Input	Resolution	16 bit	-	-	-	-	-
	Input Channel	7	-	-	-	-	-
	Sampling Rate	10 (total*)	-	-	-	-	-
	Voltage Input	±15 mV, ±50 mV ±100 mV, ±500 mV ±1 V, ±2.5 V	-	-	-	-	-
	Current Input	4 ~ 20 mA	-	-	-	-	-
	Direct Sensor Input	J, K, T, E, R, S, B	-	-	-	-	-
Analog Output	Output Channels	-	4	-	-	-	-
	Resolution	-	12 bit	-	-	-	-
	Voltage Output	-	0 ~ 10 V	-	-	-	-
	Current Output	-	0 ~ 20 mA 4 ~ 20 mA	-	-	-	-
Digital Input and Digital Output	Digital Input Channels	-	-	16 DI/O (bit-wise selectable)	16 (ADAM-5051) 16w/LED (5051D/5051S)	8	32
	Digital Output Channels	-	-		-	-	-
Isolation		3,000 V <sub>DC</sub>	3,000 V <sub>DC</sub>	-	2,500 V <sub>DC</sub> (5051S)	5,000 V <sub>RMS</sub>	2,500 V <sub>DC</sub>
Page		online	online	online	online	online	online

\*Sampling rate value depends on used channel number.

Example: Using 6 channels on ADAM-5017, sampling rate for each used channel will be 12/6 = 2 samples/second.

- 1 WebAccess+ Solutions
- 2 Motion Control
- 3 Power & Energy Automation
- 4 Automation Software
- 5 Intelligent Operator Panel
- 6 Automation Panels
- 7 Panel PCs
- 8 Industrial Wireless Solutions
- 9 Industrial Ethernet Solutions
- 10 Industrial Gateway Solutions
- 11 Serial communication cards
- 12 Embedded Automation PCs
- 13 DIN-Rail IPCs
- 14 CompactPCI Systems
- 15 IoT Wireless I/O Modules
- 16 IoT Ethernet I/O Modules
- 17 RS-485 I/O Modules
- 18 Data Acquisition Boards

# ADAM-5000 I/O Module Selection Guide

## Digital Input/Output Modules



Module		ADAM-5055S	ADAM-5056/ ADAM-5056D	ADAM-5056S/ ADAM-5056SO	ADAM-5057S	ADAM-5060
Digital Input and Digital Output	Digital Input Channels	8 w/LED	-	-	-	-
	Digital Output Channels	8 w/LED	16 (ADAM-5056) 16 w/LED (ADAM-5056D)	16 w/LED	32	6 relay (2 form A/4 form C)
Isolation		2,500 V <sub>DC</sub>	-	2,500 V <sub>DC</sub>	2,500 V <sub>DC</sub>	-
Page		online	online	online	online	online



Module		ADAM-5069	ADAM-5080	ADAM-5081	ADAM-5090/ ADAM-5091	ADAM-5095
Digital Input and Digital Output	Digital Input Channels	-	-	-	-	-
	Digital Output Channels	8 power relay (form A)	-	-	-	-
Counter (32-bit)	Channels	-	4	4/8	-	-
	Input Frequency	-	0.3 ~ 1000 Hz max. (frequency mode) 5000 Hz max. (counter mode)	5 Hz ~ 1 MHz max. (frequency mode) 1 MHz max. (counter mode)	-	-
	Mode	-	Frequency, Up/Down Counter, Bi-direction Counter	Frequency, Counter (Up/Down, Bi-direction, Up, A/B Phase)	-	-
Communication	Channels	-	-	-	4	2
	Type	-	-	-	RS-232	CAN
Isolation		-	1,000 V <sub>RMS</sub>	2,500 V <sub>DC</sub>	-	1,000 V <sub>DC</sub>
Page		online	online	online	online	online

# ADAM-5000 Controller Support Table

Type		PAC			PC-based Controller		
System		ADAM-5560KW	ADAM-5510KW ADAM-5510EKW	ADAM-5510KW/TCP ADAM-5510EKW/TP	ADAM-5560CE	ADAM-5510/TCP ADAM-5510E/TCP	ADAM-5510M ADAM-5510E
Function	I/O Module	7-slot Micro PAC with Atom™ CPU	4/8-slot Softlogic Controller w/ RS-485	4/8-slot Softlogic Controller w/ Ethernet	7-slot PC-based Controller with Atom™ CPU	4/8-slot PC-based Controller with Ethernet	4/8-slot PC-based Controller with RS-485
Analog Input (AI)	ADAM-5013	•	•	•	•	•	•
	ADAM-5017	•	•	•	•	•	•
	ADAM-5017P	•	-	-	•	•	•
	ADAM-5017H	-	•	•	-	•	•
	ADAM-5017UH	•	-	-	•	•	•
	ADAM-5018	•	•	•	•	•	•
	ADAM-5018P	•	-	-	•	•	•
Analog Output (AO)	ADAM-5024	•	•	•	•	•	•
Digital Input (DI)	ADAM-5051	•	•	•	•	•	•
	ADAM-5051D	•	•	•	•	•	•
	ADAM-5051S	•	•	•	•	•	•
	ADAM-5052	•	•	•	•	•	•
	ADAM-5053S	•	-	-	•	-	-
Digital Output (DO)	ADAM-5056	•	•	•	•	•	•
	ADAM-5056D	•	•	•	•	•	•
	ADAM-5056S	•	•	•	•	•	•
	ADAM-5056SO	•	•	•	•	•	•
	ADAM-5057S	•	-	-	•	-	-
Digital I/O	ADAM-5050	•	•	•	•	•	•
	ADAM-5055S	•	•	•	•	•	•
Relay Output	ADAM-5060	•	•	•	•	•	•
	ADAM-5069	•	•	•	•	•	•
Counter/Frequency	ADAM-5080	-	•	•	-	•	•
	ADAM-5081	•	-	-	•	•	•
Comm.	ADAM-5090	-	•	•	-	•	•
	ADAM-5095	•	-	-	•	-	-
Motion	ADAM-5202	•	-	-	•	-	-
	ADAM-5240	•	-	-	•	-	-
SD	ADAM-5030	•	-	-	•	-	-

1	WebAccess+ Solutions
2	Motion Control
3	Power & Energy Automation
4	Automation Software
5	Intelligent Operator Panel
6	Automation Panels
7	Panel PCs
8	Industrial Wireless Solutions
9	Industrial Ethernet Solutions
10	Industrial Gateway Solutions
11	Serial communication cards
12	Embedded Automation PCs
13	DIN-Rail IPCs
14	CompactPCI Systems
15	IoT Wireless I/O Modules
16	IoT Ethernet I/O Modules
17	RS-485 I/O Modules
18	Data Acquisition Boards

# ADAM-5000 Remote I/O System Support Table

Remote I/O System			ADAM-5000/485	ADAM-5000E	ADAM-5000L/TCP	ADAM-5000/TCP
Function	I/O Module	Description	4-slot Distributed DA&C for RS-485	8-slot Distributed DA&C for RS-485	4-slot Distributed DA&C for Ethernet	8-slot Distributed DA&C for Ethernet
Analog Input (AI)	ADAM-5013	3-ch RTD Input	•	•	•	•
	ADAM-5017	8-ch AI	•	•	•	•
	ADAM-5017P	8-ch AI w/ Independent Input Range	•	•	•	•
	ADAM-5017H	8-ch high Speed (1K) AI	•	•	•	•
	ADAM-5017UH	8-ch Ultra high Speed (200K) AI	•	•	•	•
	ADAM-5018	7-ch Thermocouple Input	•	•	•	•
	ADAM-5018P	7-ch Thermocouple Input w/ Independent Input Range	•	•	•	•
Analog Output (AO)	ADAM-5024	4-ch AO	•	•	•	•
Digital Input (DI)	ADAM-5051	16-ch DI	•	•	•	•
	ADAM-5051D	16-ch DI w/ LED	•	•	•	•
	ADAM-5051S	16-ch Isolated DI w/ LED	•	•	•	•
	ADAM-5052	8-ch Isolated DI	•	•	•	•
Digital Output (DO)	ADAM-5056	16-ch DO	•	•	•	•
	ADAM-5056D	16-ch DO w/ LED	•	•	•	•
	ADAM-5056S	16-ch Isolated DO w/ LED	•	•	•	•
	ADAM-5056SO	16-ch Source Type Isolated DO w/ LED	•	•	•	•
Digital I/O	ADAM-5050	16-ch Universal Digital I/O	•	•	•	•
	ADAM-5055S	16-ch Isolated Digital I/O w/ LED	•	•	•	•
Relay Output	ADAM-5060	6-ch Relay Output	•	•	•	•
	ADAM-5069	8-ch Power Relay Output w/ LED	•	•	•	•
Counter/Frequency	ADAM-5080	4-ch Counter/Frequency	•	•	•	•
	ADAM-5081	4-ch High Speed Counter/Frequency	•	•	•	•

# ADAM-5560CE/XPE ADAM-5560KW

## 7-slot PC-based Controller with Intel® Atom™ CPU

## 7-slot Micro PAC with Intel® Atom™ CPU

**NEW**



RoHS  
CE FCC

### Features

- Optional SCADA software WebAccess through CTOS
- Integrated VGA port for local display of HMI software
- Can be operated with or without display/ keyboard/ mouse
- Remote monitoring through Web Server
- Remote maintenance via FTP Server
- Supports .NET class library in Windows CE and XP embedded
- Supports IEC-61131-3 SoftLogic Control Software
- Supports Modbus/RTU (Master/Slave) and Modbus/TCP (Server/Client)
- Supports SD Storage I/O Module
- Remote I/O expansion
- Supports ADAM-5000 I/O Modules

### Introduction

The ADAM-5560 is a Programmable Automation Controller designed for control tasks which require Industrial PC computing performance with a PLC's robustness. The ADAM-5560 offers an Intel Atom CPU along with control specific features such as watchdog timer, battery backup RAM and deterministic I/O. The ADAM-5560KW features 5 standard IEC 61131-3 programming languages in Windows CE, so PLC users can develop control strategies with their own familiar programming languages. The powerful Multiprog KW Software and stable ProConOS have caused the ADAM-5560KW to become the best choice for a Programmable Automation Controller on the market today. Besides, the ADAM-5560CE offers an open platform that helps users to develop their own program using the common eVC and .NET programming environments to build compact and reliable control solutions. With the optional HMI Software and built-in VGA port, users no longer need to build additional SCADA PC's into their applications. This compact and powerful PAC is ideal for a variety of applications ranging from machine automation to SCADA applications.

### Specifications

#### Control System

- **CPU** Intel Atom Z510P
- **I/O Capacity** 7 slots
- **LED Indicators** Power, User defined
- **Memory** 1 GB DDR2 SDRAM  
1 MB Battery Backup  
1 x CompactFlash® Card (Internal, 4GB)
- **Operating System** Windows® CE5.0/Windows XP Embedded
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **Control Software** ADAM-5560CE: eVC and .NET library  
ADAM-5560XPE: .NET library  
ADAM-5560KW: KW Multiprog (development tool)  
ProConOS (runtime Kernel)

#### Communications

- **Comm. Protocol** Modbus/RTU and Modbus/TCP
- **Medium** 2 x 10/100 Base-T w/ RJ-45  
4 x RS-485 w/ DB9

#### Protection

- **Communication** RS-485 Isolation 1.5kV for COM1, COM3 and COM4  
RS-485 Isolation 2.5kV for COM2
- **Power Reversal** Yes

#### Power

- **Power Consumption** 17w @ 24 V<sub>DC</sub> (Not include I/O modules)
- **Power Input** 12 ~ 24 V<sub>DC</sub>, ± 20%

#### General

- **Certification** CE, FCC Class A
- **Connectors** 1 x RS-232/485 (COM1)  
1 x RS-485 (COM2)  
1 x RS-232/485 (COM3)  
1 x RS-232/485 (COM4)  
2 x USB 2.0 ports (KB/Mouse via USB Ports)  
1 x VGA (1024 x 768 Resolution)
- **Dimensions** 355 x 110 x 75 mm
- **Enclosure** ABS+PC
- **Mounting** DIN-rail, wall mount (panel mount)
- **Plug-in Screw Terminal** Accepts 0.5 mm<sup>2</sup> to 2.5 mm<sup>2</sup>, 1 - #12 or 2 - #14 to #22 AWG

#### Environment

- **Humidity** 5% to 95%, non-condensing
- **Operating Temperature** 0 ~ 55°C (32 ~ 131°F)
- **Storage Temperature** -25 ~ 85°C (-13 ~ 185°F)

### Ordering Information

- **Open Platform Solution**  
ADAM-5560 7-slot PC-based Controller with Intel ATOM CPU  
SQF-P10S2-16G-ETE Suggested 16G CF NR, DMA (-40 ~ 85°C)  
2070012906 WES2009 Eng. for ADAM-5560
- **ADAM-5560CE** 7-slot PC-based Controller with Intel ATOM CPU (WinCE5.0)
- **ADAM-5560KW** 7-slot Micro PAC with Intel Atom CPU

- 1 WebAccess+ Solutions
- 2 Motion Control
- 3 Power & Energy Automation
- 4 Automation Software
- 5 Intelligent Operator Panel
- 6 Automation Panels
- 7 Panel PCs
- 8 Industrial Wireless Solutions
- 9 Industrial Ethernet Solutions
- 10 Industrial Gateway Solutions
- 11 Serial communication cards
- 12 Embedded Automation PCs
- 13 DIN-Rail IPCs
- 14 CompactPCI Systems
- 15 IoT Wireless I/O Modules
- 16 IoT Ethernet I/O Modules
- 17 RS-485 I/O Modules
- 18 Data Acquisition Boards



# ADAM-5560WA

## 7-slot Compact SCADA Controller with 600 Tags WebAccess

NEW



WebAccess



### Features

- Bundled with Advantech WebAccess, browser based HMI/SCADA software
- Built-in Windows XP Embedded
- Fanless design with no internal cabling
- Remote monitoring through Web Server
- Remote maintenance via FTP Server
- Supports .NET class library in Windows XP embedded
- Supports more than 200 industrial protocols by 4 isolated comports and 2 LANs
- Onboard system status LED indicators
- Front-accessible design
- Remote I/O expansion
- Supports ADAM-5000 I/O Modules

### Introduction

The ADAM-5560WA is a compact SCADA controller with 7-slots. It is built on Advantech's solid platform and comes pre-installed with WebAccess SCADA software and pre-configured with Windows XP Embedded and the IIS environment. Just plug in the power and a network cable and the web enabled browser-based controller is ready for users to start configuring the SCADA system and IO from a computer. This compact SCADA controller is powered by an Intel Atom Z510P processor. It provides excellent computing power with low power consumption. It also has a direct I/O connection to form a space saving controller system.

### WebAccess Professional Version

- **I/O Tag Number** 600
- **Internal Tag Number** 600
- **Web Client** 1024
- **Alarm Logs** 5000
- **Action Logs** 5000
- **Node** SCADA Node
- **Graphics** Unlimited Number of Graphic Pages, Global Tag Source
- **Number of data logs** Number of I/O Tag Licenses x 2
- **Others** SCADA Redundancy  
TelScript / VBScript / Jscript Language  
Data Transfer and Reporting  
ODBC and SQL Query  
Device Redundancy

### Specifications

#### Control System

- **CPU** Intel Atom Z510P
- **I/O Capacity** 7 slots
- **LED Indicators** Power, User defined
- **Memory** 1 GB DDR2 SDRAM
- **Storage** 1 x CompactFlash® Card (Internal, 4GB)
- **Operating System** Windows XP Embedded (WES2009)
- **Real-time Clock** Yes
- **Watchdog Timer** OS and Application

#### Protection

- **Communication** RS-485 Isolation 1.5kV for COM1, COM3 and COM4  
RS-485 Isolation 2.5kV for COM2
- **Power Reversal** Yes

#### Power

- **Power Consumption** 17W @ 24 V<sub>DC</sub> (Not include I/O modules)
- **Power Input** 12 ~ 24 V<sub>DC</sub>, ± 20%

#### General

- **Certification** CE, FCC Class A
- **Dimensions** 355 x 110 x 75 mm
- **Enclosure** ABS+PC
- **Mounting** DIN-rail, wall mount (panel mount)
- **Plug-in Screw Terminal** Accepts 0.5 mm<sup>2</sup> to 2.5 mm<sup>2</sup>, 1 – #12 or 2 – #14 to #22 AWG

#### I/O Interfaces

- **Serial Ports** 1 x RS-485, Terminal, 50~115.2kbps  
3 x RS-232/485, DB9, 50~115.2kbps
- **LAN Ports** 2 x RJ-45, 10/100Mbps
- **USB Ports** 2 x USB2.0
- **Displays** 1 x VGA, support 1024 x 768

#### Environment

- **Humidity** 5% to 95%, non-condensing
- **Operating Temperature** 0 ~ 55°C (32 ~ 131°F)
- **Storage Temperature** -25 ~ 85°C (-13 ~ 185°F)

### Ordering Information

- **ADAM-5560WA-T600E** 7-slot Compact SCADA Controller with 600 Tags WebAccess (Traditional Chinese)
- **ADAM-5560WA-C600E** 7-slot Compact SCADA Controller with 600 Tags WebAccess (Simplified Chinese)
- **ADAM-5560WA-E600E** 7-slot Compact SCADA Controller with 600 Tags WebAccess (English)

# ADAM-5510 Series

## 4/8 slots PC-based Controller



RoHS  
CE FCC

### Features

- Supports Modbus/RTU, Modbus/TCP Master and Slave function libraries
- Windows-based utility
- Optional support C Programming and IEC-61131-3 standard
- Complete set of I/O modules
- Built-in real-time clock and watchdog timer
- ROM-DOS operating system
- 4 serial communication ports
- Optional support Ethernet Interface with network function, such as Web Server, FTP Server and Email Alarm.
- 4 or 8 I/O slot expansion

### Introduction

The ADAM-5510 Series are ideal for PC-based data acquisition and control applications. They are compact, controllers with an Intel x86- based CPU running Datalight ROM-DOS. Built-in battery backup SRAM is the best choice for complex logic or data storage applications. For professional C/C++ programmers, the ADAM-5510 Series application programs may be written and compiled in Borland C++ 3.0, and downloaded to the controller.

For user who familiar with PLC programing environment, we provide the option for customer to use the KW softlogic which supports 5 standard IEC 61131-3 programming languages, including LD/FB/SFC/IL/ST.

### Specifications

#### Control System

- **CPU** 80188, 16-bit microprocessor
- **I/O Slots** Optional 8 or 4 slots
- **LED Indicators** Power, CPU, communications and battery
- **Memory**
  - Flash disk: 1 MB (960 KB for user applications)
  - Flash memory: 256 KB
  - Flash ROM: 256 KB
  - RAM: 640 KB (up to 384 KB with battery backup)
- **Memory (Softlogic version)**
  - Flash disk: 512KB
  - Flash memory: 768KB
  - Flash ROM: 256KB
  - RAM: 640KB SRAM, 32KB with battery backup (ADAM-5510KW)
  - RAM: 768KB SRAM, 17KB with battery backup (ADAM-5510KW/TCP, ADAM-5510EKW/TP)
- **Operating System** ROM-DOS (MS-DOS 6.22 Compatible)
- **Real-time Clock** Yes
- **Watchdog Timer** Yes

#### Serial Communication

- **Max. Nodes** 256 (in RS-485 daisy-chain network)
- **Distance** 1.2 km (4,000 feet)
- **Speed** 1,200 bps ~ 115.2 kbps (9600, 19200, 38400 bps for Softlogic version)
- **Isolation** 2500 V<sub>DC</sub> (COM2 only)

#### Ethernet Communication

- **Medium** Cat.5 cable with RJ-45 connector
- **Distance** 100 m
- **Speed** 10/100Base-T

#### Power

- **Power Consumption** 4 W @ 24 V<sub>DC</sub> (not including I/O modules)
- **Power Input** Unregulated 10 ~ 30 V<sub>DC</sub>
- **Isolation** 3000 V<sub>DC</sub>
- **Reverse Protection** Yes

#### Software

- **ROM DOS version** C library for Borland C++ 3.0
- **Softlogic version** Development tool : KW Multiprog  
Runtime kernel : ProConOS

#### General

- **Certification** CE, FCC Class A
- **Connectors**
  - COM1 : DB9-M
  - COM2 : Screw terminal(RS-485)
  - COM3 : DB9-F (RS-232/Programming)
  - COM4 : DB9-M (RS-232/485)
- **Dimensions**
  - Power : Screw terminal
  - LAN : RJ-45 (option)
  - 4-slot: 231 x 110 x 75 mm
  - 8-slot: 355 x 110 x 75 mm
- **Enclosure** ABS+PC
- **Mounting** DIN-rail, stack, wall

#### Environment

- **Humidity** 5 ~ 95%, non-condensing
- **Operating Temperature** -10 ~ 70°C (14 ~ 158°F)
- **Storing Temperature** -25 ~ 85°C (-13 ~ 185°F)

### Ordering Information

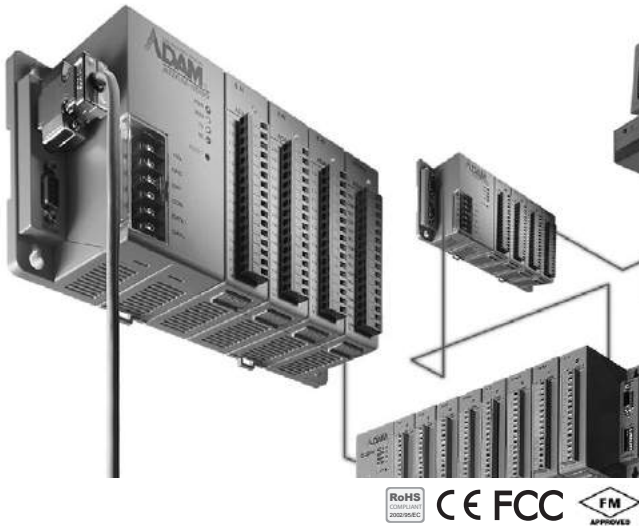
- **ADAM-5510M** 4-slot PC-based Controller
- **ADAM-5510E** 8-slot PC-based Controller
- **ADAM-5510/TCP** 4-slot PC-based Controller with Ethernet
- **ADAM-5510E/TCP** 8-slot PC-based Controller with Ethernet
- **ADAM-5510KW** 4-slot Softlogic Controller
- **ADAM-5510KW/TCP** 4-slot Softlogic Controller with Ethernet
- **ADAM-5510EKW/TP** 8-slot Softlogic Controller with Ethernet
- **MPROG-PRO535E** KW Multiprog Pro v5.35 (128k bytes I/O, Win7 support)

- 1 WebAccess+ Solutions
- 2 Motion Control
- 3 Power & Energy Automation
- 4 Automation Software
- 5 Intelligent Operator Panel
- 6 Automation Panels
- 7 Panel PCs
- 8 Industrial Wireless Solutions
- 9 Industrial Ethernet Solutions
- 10 Industrial Gateway Solutions
- 11 Serial communication cards
- 12 Embedded Automation PCs
- 13 DIN-Rail IPCs
- 14 CompactPCI Systems
- 15 IoT Wireless I/O Modules
- 16 IoT Ethernet I/O Modules
- 17 RS-485 I/O Modules
- 18 Data Acquisition Boards

# ADAM-5000/485 ADAM-5000E

**4-slot Distributed DA&C System for RS-485**

**8-slot Distributed DA&C System for RS-485**



## Features

- RS-485 communication for easy installation and networking
- 4 or 8 slots for up to 128 points data monitoring card control in one module
- Extensive software support, includes windows DLL drivers, OCX drivers, OPC server and popular HMI/SCADA software drivers
- Seamlessly integrated with easy-to-use ADAMView data acquisition software
- Supports ADAM ASCII protocol or Modbus®/RTU protocol
- Supports Modbus/RTU protocol with user-defined Modbus address

## Introduction

The ADAM-5000/485 and ADAM-5000E systems conform to the EIA RS-485 communication standard. This is the industry's most widely used, balanced, bidirectional transmission line standard. RS-485 was specifically developed for industrial applications to transmit and receive data at high rates over long distances.

## Specifications

### Control System

- **CPU** 16-bit 80188 microprocessor
- **I/O Slots** ADAM-5000/485: 4  
ADAM-5000E: 8
- **LED Indicators** Power, CPU, communications
- **Watchdog Timer** 1.6 sec. (System)

### Communications

- **Command Format** ASCII command/response protocol, Modbus/RTU
- **Communication Distance** RS-485: 1.2 km (4000 feet)
- **Data Format** Asynchronous. 1 start bit, 8 data bits, 1 stop bit, no parity
- **Network Protocols** Programming link: RS-232 (3-wire: TX, RX, GND)  
Communication: RS-485 (2-wire)
- **Reliability Check** Communication error checking with checksum
- **Max. Nodes** 128 (in RS-485 daisy-chain network)
- **Speeds (kbps)** 1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6, and 115.2

### Power

- **Power Consumption** 3 W @ 24 V<sub>DC</sub> (ADAM-5000/485)  
(not including I/O modules)  
4.0 W @ 24 V<sub>DC</sub> (ADAM-5000E)  
(not including I/O modules)
- **Power Input** Unregulated 10 ~ 30 V<sub>DC</sub>

### Software

- **Driver Support Windows DLL, OPC Server, Wonderware InTouch, Intellution, iFIX, Citect, Advantech Studio, ADAMView**
- **C and .NET Class Library**

### Protection

- **Communication Line Isolation** 2,500 V<sub>DC</sub> (ADAM-5000/485)  
3,000 V<sub>DC</sub> (ADAM-5000E)
- **I/O Module Isolation** 3,000 V<sub>DC</sub>
- **Transient Protection** RS-485 communication lines, power input
- **Power Reversal Protection** Yes

### General

- **Certification** CE, FM
- **Connectors** 1 x DB9-M/DB9-F/screw terminal for RS-485 (communication)  
1 x DB9-F for RS-232 (configuration)  
1 x Screw-terminal for power input
- **Dimensions (WxHxD)** 4-slot: 231 x 110 x 75 mm  
8-slot: 355 x 110 x 75 mm
- **Enclosure** ABS+PC
- **Mounting** DIN-rail, wall, rack (with mounting kit)

### Environment

- **Humidity** 5 ~ 95%, non-condensing
- **Operating Temperature** -10 ~ 70°C (14 ~ 158°F)
- **Storing Temperature** -25 ~ 85°C (-13 ~ 185°F)

## Ordering Information

- **ADAM-5000/485** 4-slot Distributed DA & C System for RS-485
- **ADAM-5000E** 8-slot Distributed DA & C System for RS-485

# ADAM-5000L/TCP ADAM-5000/TCP

## 4-slot Distributed DA&C System for Ethernet 8-slot Distributed DA&C System for Ethernet



ADAM-5000/TCP    ADAM-5000L/TCP



### Features

- Cortex M4 CPU
- 10/100Base-T auto-negotiation high-speed communication port
- Supports Modbus/TCP for easy integration
- Supports UDP event handling function
- Up to 100 m communication distance w/o repeater
- Allows remote configuration via Ethernet
- Allows concurrent access for 16 host PCs
- 4 I/O slots for up to 64 points and 8 I/O slots for up to 128 points data monitoring and control
- 1500 V<sub>DC</sub> isolation for Ethernet communication
- Built-in watchdog timer for system auto-reset
- Windows utility
  - I/O modules configuration and calibration
  - Network auto searching
  - Data stream setting
  - Current status monitoring and alarm trigger
- Provides C and .NET class library to develop applications
- Support GCL function for easy IO interlocking logic

### Introduction

The ADAM-5000L/TCP and ADAM-5000/TCP are both Ethernet-based I/O systems. Without a repeater, the ADAM-5000L/TCP and ADAM-5000/TCP can cover a communication distance up to 100 m. This allows remote configuration via Ethernet and sixteen PCs can simultaneously access the data. The ADAM-5000L/TCP and ADAM-5000/TCP are the solutions for easy configuration and efficient management. It is an ideal and cost-effective solution for eAutomation architecture.

### Specifications

#### Control System

- **CPU** Cortex M4
- **I/O Slots** ADAM-5000L/TCP: 4  
ADAM-5000/TCP: 8
- **Memory** Flash ROM: 1 MB
- **Operating System** Real-time OS
- **LED Indicators** Power (3.3 V)  
RUN  
Communication (Link, Active, 10/100 Mbps, Tx, Rx)
- **Storage** 1 x MicroSD slot

#### Communications (Ethernet)

- **Data Transfer Rate** Up to 100 Mbps
- **Event Response Time** < 5 ms
- **Interface** 2 x RJ-45 sharing one MAC Address
- **Wiring** UTP, category 5 or greater

#### Communications (Serial)

- **Comm. Distance** RS-485: 1.2 km (4000 feet)  
RS-232: 15 m
- **Comm. Protocol** Modbus/RTU
- **Data Transfer Rate** Up to 115.2 kbps
- **Interface** 1 x DB9-M for RS-485  
1 x DB9-F for RS-485  
1 x DB9-F for RS-232 (System Monitoring)
- **Max. Nodes** 15 (in RS-485 daisy-chain network for Remote I/O connection)

#### Power

- **Power Consumption** 4.0 W @ 24 V<sub>DC</sub> (ADAM-5000L/TCP)  
(not including I/O modules)  
5.0 W @ 24 V<sub>DC</sub> (ADAM-5000/TCP)  
(not including I/O modules)
- **Power Input** Unregulated 10 ~ 30 V<sub>DC</sub>

#### Software

- **API** VS.NET Class Library
- **Windows Utility** Network setting, I/O configuration & calibration, data stream, alarm setting
- **Modbus/TCP OPC Server**

#### Protection

- **Communication Line Isolation** 3.000 V<sub>DC</sub>
- **I/O Module Isolation** 3.000 V<sub>DC</sub>
- **LAN Communication** 1.500 V<sub>DC</sub>
- **Overvoltage Protection** Yes
- **Power Reversal Protection** Yes

#### General

- **Certification** CE, FCC class A
- **Connectors** 1 x DB9-M/DB9-F/screw terminal for RS-485 (communication)  
1 x DB9-F for RS-232 (internal use)  
1 x Screw-terminal for power input  
2 x RJ-45 for LAN
- **Dimensions (W x H x D)** ADAM-5000L/TCP: 231 x 110 x 75 mm  
ADAM-5000/TCP: 355 x 110 x 75 mm
- **Enclosure** ABS+PC
- **Mounting** DIN-rail, wall

#### Environment

- **Operating Humidity** 5 ~ 95%, non-condensing
- **Operating Temperature** - 10 ~ 70°C (14 ~ 158°F)
- **Storage Temperature** - 25 ~ 85°C (-13 ~ 185°F)

### Ordering Information

- **ADAM-5000L/TCP** 4-slot Ethernet-based Distributed DA & C System
- **ADAM-5000/TCP** 8-slot Ethernet-based Distributed DA & C System

- 1 WebAccess+ Solutions
- 2 Motion Control
- 3 Power & Energy Automation
- 4 Automation Software
- 5 Intelligent Operator Panel
- 6 Automation Panels
- 7 Panel PCs
- 8 Industrial Wireless Solutions
- 9 Industrial Ethernet Solutions
- 10 Industrial Gateway Solutions
- 11 Serial communication cards
- 12 Embedded Automation PCs
- 13 DIN-Rail IPCs
- 14 CompactPCI Systems
- 15 IoT Wireless I/O Modules
- 16 IoT Ethernet I/O Modules
- 17 RS-485 I/O Modules
- 18 Data Acquisition Boards

# iRTU Overview

## Introduction

The ADAM-3600 is a new ADAM series for RTU application by leveraging IoT technology. They not only have high environmental adaptability to work in the far and wide remote station. But also the new form factor is very friendly for the installation in control cabinet. The domain focused on-board IO design and the 4 slots IO expansion capability provides the maximum flexibility to serve the application with less IO requirements.

## TagLink, Core Technology for Big-data Application in IoT Era



TagLink is a new technology embedded in ADAM-3600 series product. It is a technology to help user to access data easily and intuitively as a tag. In the IoT Era, data is what customer mainly concern. But for traditional RTU device, user needs to take care about the IO source, scaling, unit translation and communication with other software. With TagLink, user can access the data direct to the ADAM-3600 by the tag name which is with engineering meaning and it will return the physical unit which is well scaled in the ADAM-3600. To achieve it, we provide a configuration utility for user to mapping the IO to configuration easily.

## Vertical Driven Product Development

ADAM-3600 as an intelligent RTU is a terminal unit in every application field. It mainly executes the programmed tasks locally and reports all the status back to the center which could be in the cloud.

To fit in every vertical application, the unit needs to be with certain vertical features such as the domain protocols or algorithm. It is also a trusted embedded platform can carry user's domain intelligence. User can use familiar programming language to do the programming such as C or 5 kinds of PLC language defined by IEC-61131-3.

ADAM-3600-C2G series is designed for Oil&Gas and water market and focus on monitoring the gathering and transmission process in the wide area. It equips the on-board IO which could fulfill most of the application scenario on the field. The modularized expansion IO and communication module provide user maximum flexibility to adapt to the field application. It can also easily integrate to the Advantech WebAccess SCADA software and provide user a complete solution to the target application.

ADAM-3600-A1F series focus on realizing Smart City vision by leveraging IoT technology. Through it, user can access the data from cloud directly by IT oriented language. To secure user's data, it can log data in the SD/USB storage. It also provides user a friendly interface for user to monitor, maintain and upgrade the device.

ADAM-3600 development team will continue cultivating vertical market, and provide new models or firmware upgrade to service the more and more requirement for IoT applications. For any customization requirement, due to the flexible and open system architecture, we can also fulfill rapidly.



# ADAM-3600-C2G

## 8AI / 8DI / 4DO / 4-Slot Expansion Wireless Intelligent RTU

Preliminary



### Features

- High Performance CPU Cortex A8 600MHz
- Low Power DDR3L 256MB RAM
- Embedded Real-time Linux Kernel
- Domain Focused Onboard IO -8AI / 8DI / 4DO
- 4-Slot I/O Expansion
- High I/O Flexibility with 4-slot I/O Expansion
- Multiple wireless options for Zigbee/ Wi-Fi/ 3G/ 4G/ GPRS
- IEC61131-3&C Programming Language
- Modbus & DNP3 Protocol
- Operation Temperature -40~70°C

### Introduction

The ADAM-3600-C2G is an intelligent Remote Terminal Unit with multiple wireless function capability, multiple I/O selection, wide temperature range and support flexible communication protocol for oil, Gas and Water application. In the oil, gas and water application environments the ADAM-3600 is ideal for any other remote inhospitable regions with many devices to be managed remotely

### Features

#### Wide Array of Flexible I/Os

Wide array of on-board I/O and flexible expansion I/O modules supporting different acquisition requirements giving it a high cost performance.



#### Wireless Communication & Protocols

The ADAM-3600 simultaneously supports two mini-PCIe cards (a half-size and a full-size) for Wi-Fi/ 3G/ GPRS/ Zigbee communication which is flexible for wiring in the field. Modbus RTU/TCP and DNP3 protocol support that integrates the ADAM-3600 with more SCADA systems.



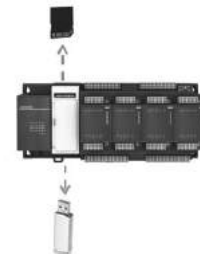
#### Wide Temperature Range

A -40~70°C operating temperature allows the ADAM-3600 to work in harsh environments and reduces the maintenance costs for customers.



#### Remote Firmware Update

The ADAM-3600 can use a USB drive and an SD card to automatically update the firmware so there's no need to bring a computer and execute the configuration program in the field.



#### Intelligent Connectivity Diagnosis Manager (iCD Manager)

Remotely monitor the serial and Ethernet ports status and send the alarm information, during the communication failure, to improve the intelligent monitoring.



#### Node ID for Batch Configuration

Each ADAM-3600 has a node ID as its name to support batch configuration (max.64) with the configuration utility. When an alarm is displayed on the utility, customers can directly find the fault source with the node ID.



- 1 WebAccess+ Solutions
- 2 Motion Control
- 3 Power & Energy Automation
- 4 Automation Software
- 5 Intelligent Operator Panel
- 6 Automation Panels
- 7 Panel PCs
- 8 Industrial Wireless Solutions
- 9 Industrial Ethernet Solutions
- 10 Industrial Gateway Solutions
- 11 Serial communication cards
- 12 Embedded Automation PCs
- 13 DIN-Rail IPCs
- 14 CompactPCI Systems
- 15 IoT Wireless I/O Modules
- 16 IoT Ethernet I/O Modules
- 17 RS-485 I/O Modules
- 18 Data Acquisition Boards

## Specifications

### Control System

- **CPU** Cortex-A8 AM3352
- **Memory** RAM 256MB  
Battery Backup RAM 32KB
- **OS** RT-Linux
- **Storage** MicroSD card / 1GB included for system  
SD card slot / Optional
- **Programming** IEC-61131-3/ Linux C
- **Watchdog** Yes
- **Real-time Clock** Yes
- **Power Consumption** 24V @5W

### Communication

- **Protocol** Modbus/ DNP3
- **Serial Port** 1 x RS232/485- DB9  
2 x RS485- Terminal Block
- **Ethernet Port** 2 x RJ-45 10/100Mbps
- **USB Port** 1 x USB 2.0
- **VGA Port** 1 x D-SUB15
- **LED** System LEDs/ IO LEDs

### Analog Input

- **Channel** 8 differential
- **Resolution** 16-bit
- **Input Type** ±10V, ±2.5V, 0~20mA, 4~20mA
- **Isolation** 2,000 V<sub>DC</sub>

### Digital Input

- **Channel** 8
- **Input Type** Wet Contact Input (Sink)
- **Protection Voltage** +40 V<sub>DC</sub>
- **Insolation** 2,000 V<sub>DC</sub>

### Digital Output

- **Channel** 4
- **Output Type** Open Collector (Sink)
- **Rated Voltage** 8~30V<sub>DC</sub>

### Wireless Communication(Selectable)

- **Interface** Mini-PCIe (1 x Half-Size/ 1 x Full-Size)
- **Wireless Type** Zigbee- UART Signal  
Wi-Fi/3G/GPRS- USB Signal

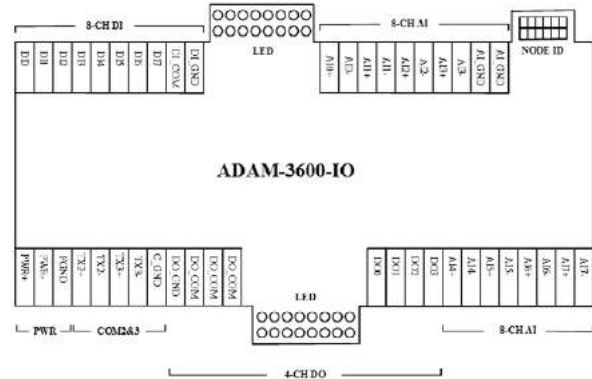
### General

- **Certification** CE/FCC/C1D2
- **Operating Temp.** -40~70°C
- **Storage Temp.** -40~85°C
- **Humidity** 5~95%(no-condensation)
- **Mounting** DIN 35 rail/ Wall Mount

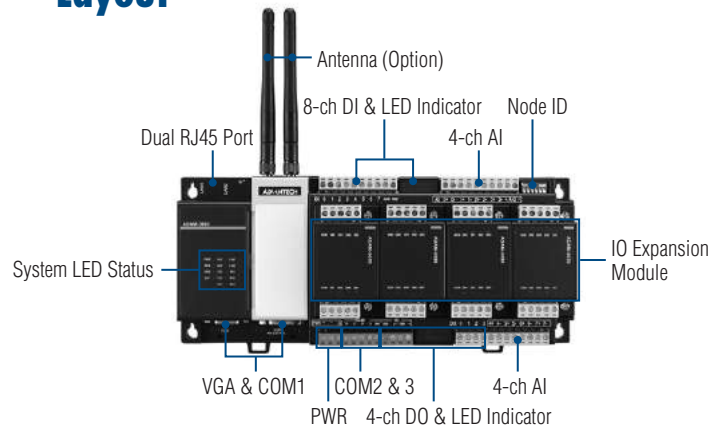
## Ordering Information

- **ADAM-3600-C2GL1AE** 8AI/8DI/4DO/4-Slot Expansion Wireless Intelligent RTU

## Pin Assignment



## Layout



### Wi-Fi Solution (Antenna is not included)

- **EWM-W150H02E** Half-size mini card, Support 802.11bgn
- **1750006043** SMA(M) cable, 15cm

### 3G/GPRS Solution (Antenna and SIM card are not included)

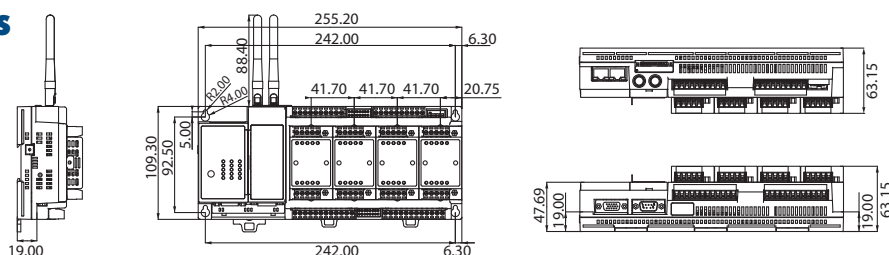
- **EWM-C109F601E** 6-band HSPA Cellular Module with SIM holder
- **1750006264** SMA(F) cable, 15cm

### I/O Expansion Module Selection Table

Unit: Channels

Expansion Module	AI	T.C.	AO	DI	DO	RO
ADAM-3617	4					
ADAM-3618		3				
ADAM-3622			2			
ADAM-3651				8		
ADAM-3656					8	
ADAM-3664						4

## Dimensions



Unit: mm

# ADAM-3600-A1F

## 16-ch Digital Input, 8-ch Relay Output with 4-Slot Expansion Module

### Preliminary



### Features

- 16-ch Digital Input, 8-ch Relay Output on board I/O
- Flexible I/O deployment by 4-slot expansion module
- Datalog by internal memory, SD card, USB
- Support the Access Control function
- Remote monitor, control and configure through a Web browser
- Supports built-in web server and RESTful Web service

### Introduction

The ADAM-3600-A1F is an intelligent I/O module which provides 16 digital inputs, 8 relay outputs and 4 I/O expansion slots to approach different scenarios. With the data log and the data process functions, it can transmit truly useful data to the user. In addition, ADAM-3600-A1F has been built in a Web server. Users could remotely acquire I/O data in any Web service of smart device without routing from SCADA system.

### Features

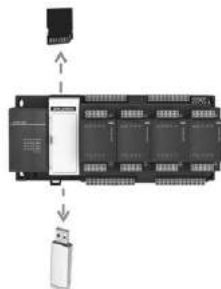
#### Flexible I/O deployment

The ADAM-3600 can approach different scenarios by switching I/O expansion modules. Users can easily change and expand ADAM-3600's I/O deployment by applying on board I/O and switching the I/O expansion modules.



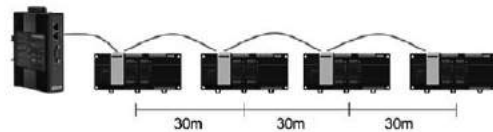
#### Datalog by either a USB storage device or a SD card

The ADAM-3600 is able to log its data either a USB storage device or a SD card for preventing data losses and providing data for analysis.



#### Built-in Switch

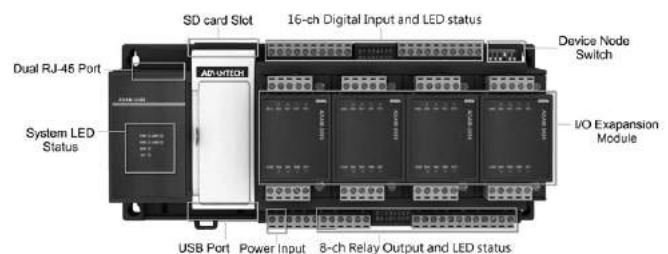
The ADAM-3600 can apply Daisy Chain topology, which can save the wiring costs and space.



#### Remote monitor, control and configure through a Web browser

ADAM-3600-A1F I/O module feature a built-in Web server that can be accessed by using a common Web browser, such as IE, Safari, Chrome, and Firefox. There is a default Web page that is developed by HTML 5 and follow the REST software style. Users who are using remote computers or mobile devices can configure, monitor and control ADAM-3600-A1F module remotely through the Web page. This feature will bring obvious benefit to users in maintenance anywhere over the Ethernet in the local field. Moreover, it could allow programmers to create powerful, custom Web pages by using HTML5 and Java Script.

### Layout



- 1 WebAccess+ Solutions
- 2 Motion Control
- 3 Power & Energy Automation
- 4 Automation Software
- 5 Intelligent Operator Panel
- 6 Automations Panels
- 7 Panel PCs
- 8 Industrial Wireless Solutions
- 9 Industrial Ethernet Solutions
- 10 Industrial Gateway Solutions
- 11 Serial communication cards
- 12 Embedded Automation PCs
- 13 DIN-Rail IPCs
- 14 CompactPCI Systems
- 15 IoT Wireless I/O Modules
- 16 IoT Ethernet I/O Modules
- 17 RS-485 I/O Modules
- 18 Data Acquisition Boards

## Specifications

### Digital Input

- Channel 16
- Wet Contact Logic level 0: 0~5 V  
Logic level 1: 10~30 V
- Max. Input Frequency 3 kHz
- Max. Counter Frequency 3 kHz
- Isolation Protection 2500 V<sub>DC</sub>

### Relay Output

- Channel 8
- Input type Form A
- Contact rating 250 V<sub>AC</sub> @ 5A  
30 V<sub>DC</sub> @ 3A
- Relay on time 10 ms
- Relay off time 5 ms
- Insulation Resistance 1 GΩ
- Maximum Switching 20 operations/minute
- Isolation Protection 2500 V<sub>DC</sub>

### General

- Protocol Modbus/TCP, TCP/IP, UDP, HTTP, DHCP
- LAN 2 x RJ-45 ports , built-in switch
- Watchdog System (1.6 second)  
Communication (programmable)
- Power Input 10V ~ 30V
- LED Indicator System LEDs
- Mounting DIN 35 rail, Wall Mount
- USB Port 1 x USB 2.0
- SD card 1 x Standard SD card slot

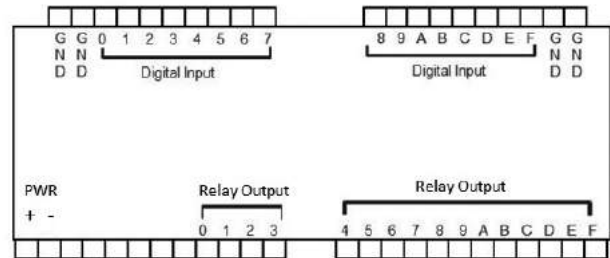
### I/O Expansion

- Accompanied I/O slots 4 x expansion modules
- Digital Signals 56 points (max)
- Analog Signals 16 points (max)

### Environment

- Operating Temperature -40~70°C (-40~150°F)
- Storage Temperature -40~85°C (-40~185°F)
- Operating Humidity 20 ~ 95% RH (non-condensing)
- Storage Humidity 0 ~ 95% RH (non-condensing)

## Pin Assignment



## Ordering Information

- ADAM-3600-A1FNOAE 16-ch Digital Input and 8-ch Relay Output Module with 4 slot Expansion Module

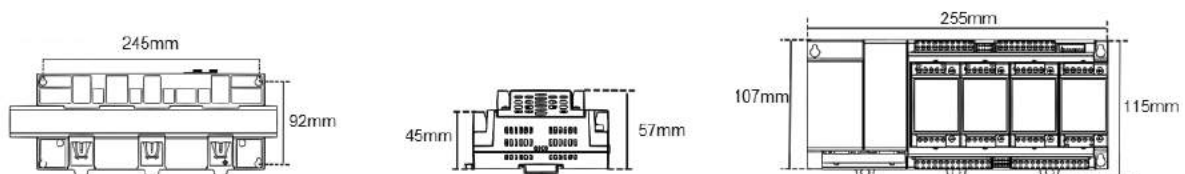
### I/O Expansion Module Selection Table

Unit: Channels

Expansion Module	AI	T.C.	AO	DI	DO	RO
ADAM-3617	4					
ADAM-3618		4				
ADAM-3622			2			
ADAM-3651				8		
ADAM-3656					8	
ADAM-3664						4

## Dimensions

Unit: mm



# ADAM-3617-AE

# ADAM-3618-AE

# ADAM-3622-AE

4-ch Analog Input Module

3-ch Thermocouple Module

2-ch Analog Output Module



ADAM-3617-AE

## Specifications

### General

- Power Consumption 1W (Max)
- Certification CE/FCC C1D2

### Analog Input

- Channel 4, differential
- Input Type Voltage, Current
- Voltage/Current Range  $\pm 10V$ ,  $\pm 2.5V$ , 0~20mA, 4~20mA
- Sampling rate 10 sample/second (total)
- Input Impedance 10M $\Omega$
- Accuracy  $\pm 0.2\%$  or better of FSR (Voltage)  
 $\pm 0.2\%$  or better of FSR (Current)
- CMR @ 50/60 Hz 120 dBs
- NMR @ 50/60 Hz 100 dBs
- Span Drift  $\pm 50$  ppm/ $^{\circ}C$
- Zero Drift  $\pm 6$   $\mu V/^{\circ}C$ ,  $\pm 6$   $\mu A/^{\circ}C$
- Isolation Voltage 2000 V<sub>DC</sub>
- Burn-out detection Yes (Current-only)

### Environment

- Operating Temp. -40 ~ 70 $^{\circ}C$
- Storage Temp. -40 ~ 85 $^{\circ}C$
- Humidity 5 ~ 95% (no-condensation)

## Ordering Information

- ADAM-3617-AE 4-ch Analog Input Module



ADAM-3618-AE

## Specifications

### General

- Power Consumption 1W (Max)
- Certification CE/FCC C1D2

### Thermocouple Input

- Channel 3, differential
- Input Type J, K, T, E, R, S, B Type Thermocouple
- Resolution 16-bit
- Sampling rate 10 sample/second (total)
- Input Impedance 2M $\Omega$
- Accuracy  $\pm 0.2\%$  or better of FSR (Voltage)  
 $\pm 0.2\%$  or better of FSR (Current)
- CMR @ 50/60 Hz 90 dBs
- NMR @ 50/60 Hz 60 dBs
- Span Drift  $\pm 50$  ppm/ $^{\circ}C$
- Zero Drift  $\pm 6$   $\mu V/^{\circ}C$ ,  $\pm 6$   $\mu A/^{\circ}C$
- Isolation Voltage 2000 V<sub>DC</sub>
- Burn-out detection Yes (Current-only)

### Environment

- Operating Temp. -40 ~ 70 $^{\circ}C$
- Storage Temp. -40 ~ 85 $^{\circ}C$
- Humidity 5 ~ 95% (no-condensation)

## Ordering Information

- ADAM-3618-AE 3-ch Thermocouple Module



ADAM-3622-AE

## Specifications

### General

- Power Consumption 1W (Max)
- Certification CE/FCC C1D2

### Analog Input

- Channel 2
- Output Impedance 2.1  $\Omega$
- Output Settling Time 20  $\mu s$
- Driving Load Voltage: 2k $\Omega$   
Current: 500  $\Omega$
- Output Type Voltage, Current
- Output Range 0 ~ 10 V<sub>DC</sub>  
0 ~ 20 mA  
4 ~ 20 mA
- Resolution 12-bit
- Accuracy  $\pm 0.3\%$  of FSR (Voltage) at 25 $^{\circ}C$   
 $\pm 0.5\%$  of FSR (Current) at 25 $^{\circ}C$
- Current Load Resistor 0~500 $\Omega$
- Drift  $\pm 50$  ppm/ $^{\circ}C$
- Isolation Voltage 2000 V<sub>DC</sub>

### Environment

- Operating Temp. -40 ~ 70 $^{\circ}C$
- Storage Temp. -40 ~ 85 $^{\circ}C$
- Humidity 5 ~ 95% (no-condensation)

## Ordering Information

- ADAM-3622-AE 2-ch Analog Output Module

1	WebAccess+ Solutions
2	Motion Control
3	Power & Energy Automation
4	Automation Software
5	Intelligent Operator Panel
6	Automation Panels
7	Panel PCs
8	Industrial Wireless Solutions
9	Industrial Ethernet Solutions
10	Industrial Gateway Solutions
11	Serial communication cards
12	Embedded Automation PCs
13	DIN-Rail IPCs
14	CompactPCI Systems
15	IoT Wireless I/O Modules
16	IoT Ethernet I/O Modules
17	RS-485 I/O Modules
18	Data Acquisition Boards

# ADAM-3651-AE

# ADAM-3656-AE

# ADAM-3664-AE

8-ch Digital Input Module

8-ch Digital Output Module

4-ch Relay Output Module



ADAM-3651-AE



ADAM-3656-AE



ADAM-3664-AE

## Specifications

### General

- **Power Consumption** 1W (Max.)
- **Certification** CE/FCC C1D2

### Digital Input

- **Channel** 8
- **Input Type** Sink (Wet Contact)/Counter
- **Rated Input** >5mA @ 12 V<sub>DC</sub>
- **Current** >10mA @ 24 V<sub>DC</sub>
- **Input Filter** Programmable, Default: 3ms
- **Pulse Input Frequency** 150Hz
- **Over Voltage Protection** +40 V<sub>DC</sub>

### Environment

- **Operating Temp.** -40 ~ 70°C
- **Storage Temp.** -40 ~ 85°C
- **Humidity** 5 ~ 95% (no-condensation)

## Ordering Information

- **ADAM-3651-AE** 8-ch Digital Input Module

## Specifications

### General

- **Power Consumption** 1W (Max.)
- **Certification** CE/FCC C1D2

### Digital Output

- **Channel** 8
- **Output Type** Open Collector (Sink)
- **OC Output**
  - Rated Voltage 8 ~ 30 V<sub>DC</sub>
  - Rated Current 200mA (max load)
- **Over Voltage Protection** +40 V<sub>DC</sub>
- **Pulse Output Frequency** 1KHz
- **Isolation Voltage** 2000 V<sub>DC</sub>

### Environment

- **Operating Temp.** -40 ~ 70°C
- **Storage Temp.** -40 ~ 85°C
- **Humidity** 5 ~ 95% (no-condensation)

## Ordering Information

- **ADAM-3656-AE** 8-ch Digital Output (Sink type) Module

## Specifications

### General

- **Power Consumption** 1W (Max.)
- **Certification** CE/FCC C1D2

### Relay Output

- **Channel** 4
- **Breakdown Voltage** 500 V<sub>AC</sub> (50/60 Hz)
- **Contact Rating**
  - AC: 125 V @ 0.6 A
  - 250 V @ 0.3 A
  - DC: 30 V @ 2 A
  - 110 V @ 0.6 A
- **Insulation Resistance** 1 GΩ min. @ 500 V<sub>DC</sub>
- **Relay Off Time (Typical)** 2 ms
- **Relay On Time (Typical)** 3 ms
- **Total Switching Time** 10 ms

### Environment

- **Operating Temp.** -40 ~ 70°C
- **Storage Temp.** -40 ~ 85°C
- **Humidity** 5 ~ 95% (no-condensation)

## Ordering Information

- **ADAM-3664-AE** 4-ch Relay Output Module