

PC-based Controllers & I/O Modules

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APAX-5000 Series



Introduction

APAX-5000 series controllers are designed for industrial automation applications which require both an IPC's openness and a PLC's robustness. Leveraging powerful embedded computing technology, the APAX-5000 series features a fanless design with high performance CPU and supports many popular peripherals such as USB, LAN, COM port and DVI-I. In addition they include an SD slot for storage and two custom extension slots with PCI bus signals are reserved for the integration of 3rd-party special function cards.

APAX-5000 series is fully Ethernet-enabled which allows users to deploy the I/O modules in many combinations, like direct stack or daisy chain. APAX-5000 series supports both DIN-rail and wallmounting which makes the installation very flexible. Furthermore, all APAX-5000 I/O modules comply with high noise immunity, just like a standard PLC. The user-friendly design of this series also includes slice I/O, high density I/O with LEDs, hot swap and stackable functionality.

APAX high performance CPU controllers (APAX-5570XPE/5571XPE) include Windows XP Embedded OS built-in, while APAX-5520CE's comes with Windows CE. The control program of APAX-5500 series can be developed with the .NET class library including Win32 and WinCE OS so users can quickly develop their applications by using Microsoft Visual Studio .NET under a single and familiar programming environment.

Key Features

CPU Module Scalability

The APAX family offers various CPU modules with different processors in order to meet different requirement of control tasks.

APAX-5571: Intel Celeron M CPU, 1.5 GHz processor

APAX-5570: Intel Celeron M CPU, 1 GHz processor

APAX-5520: Intel XScale PXA270, 520 MHz processor

Besides APAX-5000 CPU modules, APAX-6000 will offer higher performance CPUs for more computing performance required in the future.

System Composition

APAX-5000 series consists of power modules, CPU modules, couplers and I/O modules. All I/O modules inserted on the backplanes can be stacked together and connected to CPU modules or couplers to form a complete system. With the 1-slot or 2-slot backplanes, users can select the appropriate I/O number depending on their need.

Flexible Topology for Expansion

APAX-5000 I/O modules are connected together via Ethernet bus. Each backplane offers one expansion port. Using a standard Ethernet cable to connect the expansion port on two backplanes, a remote expansion with local-bus speed is built, and the distance can be up to 100 m. In addition, any standard Ethernet switch can be used between two backplanes. Therefore, you can build line, tree or star topologies for I/O expansion ---- all with fast local-bus speed. The implementation of Ethernet switches not only enhances the flexibility of I/O expansion, it also increases the expansion distance. For example, if there are 3 Ethernet switches between two I/O stations, the expansion distance can be at least 400 m. (When fiber optic ports are available on the Ethernet switch, the distance can be much longer.)

High Density and Deterministic I/O

Up to 24 digital channels or 12 analog channels are provided on single module. With such high density I/O numbers, the update time for data from 32 digital input modules (up to 1536 digital input channels) can be guaranteed. The update rate is also guaranteed to transfer data to 32 digital output modules (up to 1536 digital output channels). This feature ensures system real-time ability.

Hot Swap I/O Design

Backplanes carry communication and power to I/O modules. This design makes the I/O modules able to be hot swapped when the system is powered-on and running. Engineers can easily change modules without shutting down the whole system. This saves the system management and troubleshooting costs.

Intelligent I/O Module

APAX-5000 I/O modules can execute on-module processing and calculation, allowing them to become intelligent I/O modules. Controlling LED status to display module information or digital filters are a couple examples of leveraging the extra processing capacity.

Reliable Clamp Type Terminal Blocks

All APAX-5000 I/O modules offer clamp type terminal blocks. Compared to traditional screw type terminal blocks, clamp type terminal blocks can save wiring time up to 75%. Clamp type terminal blocks have higher resistance to shock vibration, without wire damage or measurable contact interruption. Besides, clamp type terminal block connections don't require checking or retightening, which helps save wiring maintenance costs.

Software Support

APAX-5000 series software support can satisfy both PC-based and PLC-based programmers. The .NET class library can satisfy the programmers who are familiar with high level programming languages using Microsoft Visual Studio .NET. The PLC-based users can leverage KW-Software MULTIPROG which supports IEC-61131-3 compliant PLC programming languages.

APAX-5000 Series

APAX-5000 Series: Versatile, Modular and Flexible

Dual CPU Modules

Combining an APAX-5570XPE/5571XPE module with an APAX-5520KW module provides two CPUs to perform different tasks. APAX-5520KW module, with KW SoftLogic, focuses on logic or process control. APAX-5570XPE/5571XPE, with high computing power, can execute tasks that need more computing resources, such as HMI/SCADA, recipes, databases, communications, etc. Separating HMI/SCADA from the control process makes the system more reliable. Even in the event of an operating system crash on the APAX-5570XPE/5571XPE, the control algorithm will keep running, preventing from unexpected damage.



Changeable CPU Modules

APAX-5000 I/O modules offer the best scalability, saving I/O investments. Different CPU modules can be used to connect to the same I/O hardware, remaining the same I/O performance. Changing better CPU increases the computing ability of the system. There is no need to change the I/O modules and software program. This helps to save the system construction and installation cost and time.



Compact PACs

For some applications, APAX-5520KW can act as a standalone controller. The control logic, through IEC 61131-3 programming environment, is running on the APAX-5520KW to control the I/O modules stacked. The compact size and high density I/O modules give the best utility for limited spaces.

Couplers for Different Industrial Protocols

APAX-5000 series provide a variety of couplers. By the means of different realtime Ethernet and fieldbus couplers, the I/O modules can become remote I/O systems, and communicate with PC or controller through specific industrial protocol, such as Modbus/TCP, PROFINET, EtherNet/IP, etc. The same I/O hardware can be linked into different industrial networks, saving system stock costs.





APAX-5570XPE APAX-5571XPE PC-based Controller with Celeron® M CPU

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Features

- Intel[®] Celeron[®] M 1 GHz or 1.5 GHz CPU processor
- Expands I/O by connecting with APAX-5000 I/O modules
- DVI-I supports dual display
- Dual power input for redundancy with power-fail relay
- 1 x RS-232 and 1 x isolated RS-422/485 port
- Windows® XP Embedded ready platform
- Combine with APAX-5520KW to deliver dual CPU architecture
- Provides .NET class libraries for Microsoft VS .NET development environment to control I/O modules

Introduction

APAX-5570XPE/5571XPE is a controller with high performance Intel Celeron M grade CPU. Built-in Windows XP Embedded operating system makes APAX-5570XPE/5571XPE a ready application platform to shorten development time. Connecting with other APAX-5000 I/O modules, APAX-5570XPE/5571XPE can become a complete control system. By .NET class libraries for the I/O modules, developers can build their applications under Microsoft Visual Studio .NET development environment in shortest time.

Specifications

General

-		
•	Cooling System	APAX-5570XPE: Fanless, heatsink only APAX-5571XPE: Heatsink with fan
•	Mounting	DIN-rail, wall
•	Dimensions (W x H x D)	270 x 142 x 126 mm
•	Weight	APAX-5570XPE: 2.42 kg APAX-5571XPE: 2.46 kg
•	Power Consumption	APAX-5570XPE: 30 W @ 24 V _{DC}
	(Typical, without inserted module)	APAX-5571XPE: 45 W @ 24 V _{DC}
•	Power Input	18 ~ 30 V _{DC}
•	Dual Power Input	Yes
•	Power Reversal	Yes
•	Real-time Clock	Yes
S	oftware	
•	Operating System	Windows XP Embedded
•	Watchdog Timer	Yes
S	ystem Hardware	
•	CPU	APAX-5570XPE: Intel Celeron M 1 GHz (non-cache) APAX-5571XPE: Intel Celeron M 1.5 GHz (1 MB L2 cache)
•	System Chipset	Intel 915 GME
	BIOS	Flash 4 MB
•	Memory	512 MB DDR2 DRAM on board (Dual channel mode)
•	Battery Backup RAM	1 MB
•	LED Indicators	Power, Run, Error, Battery
•	Display	DVI-I supports DVI and VGA for dual display
•	Audio	Mic-in, Line-out
	Storage	1 x SD card slot
•	Reset Button	Yes

Communication

- Serial Ports Serial Port Isolation
- 1 x RS-232, 1 x Isolated RS-422/485 2500 V_{DC} (RS-422/485 only)

RS-232: 50 bps ~ 115.2 kbps

- Protection Baud Rate

LAN

RS-422/485: 50 ~ 230400 bps 2 x RJ-45 Port, 10/100/1000 Mbps

4 x USB 2.0

USB Ports

Environment

- Operating Temperature 0 ~ 55° C
- Storage Temperature -25 ~ 75° C
- Relative Humidity 5~95% (non-condensing)

Ordering Information

- APAX-5570XPE
- PC-based Controller w/ Celeron M 1 GHz, XPe
- APAX-5571XPE
- PC-based Controller w/ Celeron M 1.5 GHz, XPe
- APAX-5343
- Power Supply for APAX-5570 Series

APAX-5570XPE APAX-5571XPE



113.90

-125.30

263.49 -



APAX-5520CE

PC-based Controller with XScale CPU



Features

- Onboard XScale[®] PXA270 520 MHz processor
- 64 MB SDRAM on board, 32 MB Flash
- Expands I/O by connecting with APAX-5000 I/O modules •
- Windows CE .NET ready platform
- 1 x VGA port for display and 1 x USB port
- 1 x CompactFlash slot for data storage
- 2 x 10/100 Mbps LAN and 1 x RS-485
- Provide .NET class libraries for Microsoft VS .NET development environment to control I/O modules

Introduction

APAX-5520CE is a very compact and cost effective controller with XScale PXA270 CPU. The built-in Windows CE operating system makes APAX-5520CE a ready application platform to shorten development time. Connecting with other APAX-5000 I/O modules, APAX-5520CE can become a standalone control system. By .NET class libraries for the I/O modules, developers can build their applications under Microsoft Visual Studio .NET development environment in shortest time.

Specifications

Control System

- CPU
- XScale PXA270 520 MHz Memory Flash 32M bytes, SDRAM 64M bytes

Yes

Yes

- Battery Backup Memory 512 KB
- Operating System Windows CE.NET
- Real-time Clock
- Watchdog Timer
- Control Software .NET class library with utility DB15 connector
- VGA
- USB Ports 1 x USB 1.1
- 1 x Type II CompactFlash card slot (internal) Storage

Communication (Ethernet)

- LAN 2 x RJ-45 Port, 10/100 Mbps
- Protocol Modbus/TCP Server and Client

Communication (Serial)

- Medium
- RS-485 (2-wire)
- Maximum Nodes 32 (in RS-485 daisy-chain network)
- Modbus/RTU Master and Slave Protocol

General

- Dimensions (W x H x D) 30 x 139 x 100 mm
- Weiaht
- Power Consumption 4.5 W @ 24 V_{DC} (typical)

210 g

Environment

- Operating Temperature 0 ~ 60° C
- **Storage Temperature** -25 ~ 75° C
- Relative Humidity 5 ~ 95% (non-condensing)

Ordering Information

- APAX-5520CE
- PC-based Controller with XScale CPU, WinCE 2-slot Backplane Module
- APAX-5002
- APAX-5343E
- Power Supply for APAX Expansion Module

APAX-5070 APAX-5090P APAX-5095P

Modbus/TCP Communication Coupler

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

2-port CANopen Module



Specifications

General

- Dimensions $(W \times H \times D)$
 - 190 g

Communication

Protocol

Weight

- LAN
- Modbus/TCP 1 x 10/100 Mbps (2 RJ-45 connector for daisy chain connection)

30 x 139 x 100 mm

Environment

- Operating 0~60°C Temperature
- Storage Temperature -25 ~ 75° C
- Relative Humidity 5 ~ 95% (non-condensing)

Ordering Information

- APAX-5070
- APAX-5002
- APAX-5343E



Specifications

General

- Card Interface COM1. COM2: RS-232/422/485 COM3, COM4: RS-232 Dimensions 30 x 139 x 100 mm (W x H x D) Weight 180 g
- Connectors
- 4 x RJ-48 Power Consumption 2 W @ 5 V_{DC} (typical)

5, 6, 7, 8

1, 1.5, 2

GND

128 bytes

None, even, odd

50 bps ~ 230.4 kbps

RS-485: Data+, Data-

RTS/CTS, Xon/Xoff

RS-232: TxD, RxD, RTS,

CTS, DTR, DSR, DCD, RI,

RS-422:Tx+, Tx-, Rx+, RX-

Communications

- Data Bits
- Stop Bits .
- Parity
- **Baud Rate** .
- Data Signals .
- Flow Control

Protection (For COM1, COM2)

- 15 kV
- EFT Protection
- Isolation Protection 2,500 V_{DC}

Protection (For COM3, COM4)

ESD Protection 15 kV

Environment

- Operating 0~60°C Temperature
- Storage Temperature -25 ~ 75° C
- **Relative Humidity** 5 ~ 95% (non-condensing)

4-port RS-232/422/485

Communication Module

Ordering Information

APAX-5090P





 Connectors 2 x DB9 Power Consumption 2 W @ 5 V_{DC} (typical)

Communications

Card Interface

 $(W \times H \times D)$

Dimensions

Weight

Protocol Speed

General

Specifications

- Supports PDO transmission mode
- Supports NMT and SDO communication object
- Supports Heartbeat producer and consumer
- Supports Emergency objects

Protection

Isolation Protection 2,500 V_{DC}

Environment

- Operating $0 \sim 60^{\circ} \text{ C}$ Temperature
- Storage Temperature -25 ~ 75° C
- Relative Humidity 5 ~ 95% (non-condensing)

Ordering Information

- APAX-5095P
- 2-port CANopen Module

CANopen (CiA DSP341)

800. 1.000 kbit/s

10, 20, 50, 125, 250, 500,



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- 2-slot Backplane Module Power Supply for APAX Expansion Module
- Modbus/TCP Communication Coupler
 - FIFO
 - ESD Protection
 - 2,500 V_{DC}

APAX-5000 I/O Module **Selection Guide**



Modul	e Name	APAX-5013	APAX-5017	APAX-5017H	APAX-5018	APAX-5028	APAX-5040	APAX-5045	APAX-5046	APAX-5060	APAX-5080
_	 	8-ch BTD	12-ch Al	12-ch High	12-ch	8-ch AO	24-ch DI	24-ch DI/0	24-ch D0	12-ch Relay	4-ch High
Description		Module	Module	Speed Al Module	Thermocouple Input Module	Module	Module	Module	Module	Module	Speed Counter Module
	Number of inputs	8	12	12	12	-	-	-	-	-	-
	Resolution	16-bit	16-bit	12-bit	16-bit	-	-	-	-	-	-
nalog Input	Sampling Rate (samples/ second)	10 (Total)	10 (Total)	1000 (per channel)	10 (Total)	-	-	-	-	-	-
	Voltage Input	_	±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V	±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 1,000, Balco, Ni 518)	-	-	Thermocouple (Type J, K, T, E, R, S, B)	-	-	-	-	-	-
	Number of outputs	-	-	-	-	8	-	-	-	-	-
Analog Output	Resolution	-	-	-	-	14-bit	-	-	-	-	-
	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	-	-	-	-	-
Input	Number of inputs	-	-	-	-	-	24	12	-	-	4
gital	For signal "O"	-	-	-	-	-	-3 ~ 5 V	-3 ~ 5 V	-	-	0 ~ 3 V
ā	For signal "1"	-	-	-	-	-	15 ~ 30 V	15 ~ 30 V	-	-	10 ~ 30 V
	Number of inputs	-	-	-	-	-	-	-	-	-	4
nput	Counting Range	-	-	-	-	-	-	-	-	-	32-bit + 1-bit overflow
Counter I	Counter Frequency (max.)	-	-	-	-	-	-	-	-	-	1 MHz
	For signal "O"	-	-	-	-	-	-	-	-	-	0 ~ 3 V
	For signal "1"	-	-	-	-	-	-	-	-	-	10 ~ 30 V
t a	Number of outputs	-	-	-	-	-	-	12	24	12	4
)utpr	Туре	-	-	-	-	-	-	Sink	Sink	Relay (Form A)	Sink
	Rated Load Voltage	-	-	-	-	-	-	$24 V_{\text{DC}}$	$24 V_{\text{DC}}$	$250 V_{AC}$, $30 V_{DC}$	$24 V_{\text{DC}}$
lsolati Chann Backp	ion between lels and lane					2,50	IO V _{DC}				
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APAX-5013 APAX-5017 **APAX-5018**

8-ch RTD Module



12-ch Analog Input Module

12-ch Thermocouple Input Module



- **ADVANTECH** 13-9
- **APAX-5001** 1-slot Backplane Module APAX-5002 2-slot Backplane Module
 - APAX-5343E

- Power Supply for APAX Expansion Module

- APAX-5343E
- Power Supply for APAX Expansion Module

APAX-5017H APAX-5028



12-ch High Speed Analog Input Module

8-ch Analog Output Module



APAX-5017H

Specifications

General

- Dimensions (W x H x D) 30 x 139 x 100 mm
- Weight 175 g
- Power Consumption 3.5 W @ 24 V_{DC} (typical)

Analog Input

- Channels
- Input Impedance Input Type
 - V, mV, mA

2MQ (Voltage), 120Q (Current)

1,000 sample/second (per channel)

12

- Input Range ±500 mV. ±10 V. 0 ~ 10 V. 0 ~ 20 mA. 4 ~ 20 mA
- Configure Different Yes **Range for Each Channel**
- Accuracy

±0.1% or better (voltage) ±0.2% or better (current) 12-bit

±25 ppm/° C

±6 µV/° C

- Resolution
- Sampling Rate Span Drift
- Zero Drift

Protection

- Over Voltage Protection ±35 V_{DC}
- Isolation Between 2,500 V_{DC}
- **Channels and Backplane**

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

Environment

- Operating Temperature 0 ~ 60° C
- Storage Temperature -25 ~ 75° C
- Relative Humidity 5 ~ 95% (non-condensing)

Ordering Information

- APAX-5017H 12-ch High Speed Analog Input Module
- APAX-5001 1-slot Backplane Module
- APAX-5002 2-slot Backplane Module
- APAX-5343E Power Supply for APAX Expansion Module

Specifications

NEW

General

- Dimensions (W x H x D) 30 x 139 x 100 mm
- Weight
- Power Consumption 3.5 W @ 24 V_{DC} (typical)

175 g

8

V, mA

0 ~ 20 mA, 4 ~ 20 mA

±2.5 V, ±5 V, ±10 V, 0 ~ 2.5 V, 0 ~ 5 V, 0 ~ 10 V,

Analog Output

- Channels
 - Output Type
- **Output Range**
- **Configure Different** Yes
- **Range for Each Channel**
- Resolution 14-bit .
 - ±0.1% of FSR Accuracy
- Settling time about 500 µs
- Slew Rate 0.7 V_{DC}/µs (per channel)
- Span Drift ±60 ppm/° C
- Zero Drift ±275 mV/° C (Voltage) ±250 mV/° C (Current)
- **Drive Voltage** $15 V_{DC}$ (Current Mode)
- Load (Current Mode) 0~500Ω

Protection

- Isolation Between 2,500 V_{DC} **Channels and Backplane**
- Short Circuit Protection

Environment

- Operating Temperature 0 ~ 60° C
- Storage Temperature -25 ~ 75° C
- Relative Humidity 5 ~ 95% (non-condensing)

Ordering Information

- APAX-5028 APAX-5001
 - 1-slot Backplane Module
- APAX-5002 2-slot Backplane Module
- APAX-5343E Power Supply for APAX Expansion Module

8-ch Analog Output Module





APAX-5040 APAX-5045



24-ch Digital Input Module

24-ch Digital Input/Output Module



Ad\antech [3-]]

APAX-5046 APAX-5060 APAX-5080



24-ch Digital Output Module

12-ch Relay Output Module

4-ch High Speed Counter Module



Specifications

General

- Dimensions $(W \times H \times D)$
- Weight
- Power Consumption
- Status Display
- **Digital Output**
- Channels
- Output Voltage Range
- Normal Output 0.5 A (per channel)

Current Protection

- Isolation Between 2,500 V_{DC} **Channels and Backplane**
- Short Circuit Protection
- Thermal Shutdown Protection

Environment

- Operating 0~60°C Temperature
- Storage Temperature -25 ~ 75° C
- Relative Humidity 5 ~ 95% (non-condensing)

Ordering Information

- APAX-5046
- Module APAX-5001 1-slot Backplane Module
- APAX-5002
- APAX-5343F
- 2-slot Backplane Module

24-ch Digital Output

Power Supply for APAX Expansion Module



30 x 139 x 100 mm

195 g

Specifications

General

- Dimensions $(W \times H \times D)$
- Weight
- Power Consumption $2 \text{ W} @ 24 \text{ V}_{DC}$ (typical) . Status Display
 - LED per channel On: Logic level 1 Off: Logic level 0

Relay Output

- Channels
- . **Relay Type**
- Switching Capacity and Lifetime of the Contact (For Resistive Load)
 - 30,000 operations (5 A @ 250 V_{AC}, 10 operations/minute at 8° C)
 - 70,000 operations (5 A @ 30 V_{DC}, 10 operations/ minute at 85° C) 60,000 operations (5 A @ 250 VAC)

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Form A (SPST)

- UL: 100,000 operations (5 A @ 30 V_{DC}) 20,000,000 operations Mechanism.
- (no load, 300 operations/min)
- Breakdown Voltage 500 V_{AC} (50/60 Hz)
- Contact Resistance $30 \text{ m}\Omega \text{ (maximum)}$
- . Insulation Resistance1 GQ (minimum) at 500 V_{DC}

Protection

 Isolation Between 2,500 V_{DC} **Channels and Backplane**

Environment

- . Operating $0 \sim 60^{\circ} \text{ C}$ Temperature
- Storage Temperature -25 ~ 75° C
- **Relative Humidity** 5 ~ 95% (non-condensing)

Ordering Information

- APAX-5060
- APAX-5001
- APAX-5002
- APAX-5343E
- 12-ch Relay Output Module 1-slot Backplane Module 2-slot Backplane Module Power Supply for APAX Expansion Module



Specifications

APAX-5080

General

- Dimensions 30 x 139 x 100 mm (W x H x D) Weight 170 a Power Consumption 2.5 W @ 24 V_{DC} (typical) LED per channel
- Status Display
- (for DI, DO channel) On: Logic level 1

C€ FCC

Off: Logic level 0

Counter/Frequency Input

- Channels
- 8 (Up Pulse, Freauency) 4 (Pulse and Direction, Up/Down Pulse, A/B Phase)

For "0" signal: 0 ~ 3 Vnc

For "1" signal: 10 ~ 30 V_{DC}

- **Counting Range** 32-bit + 1-bit overflow
- Minimum Pulse Width 1 µs 1 MHz (max)
- **Counter Frequency**
- Input Voltage

Digital Input

- Channels Type
- Input Voltage
- Sink (Wet contact) For "O" signal: 0 ~ 3 V_{DC} For "1" signal: 10 ~ 30 V_{DC}

4

Digital Output

- Channels 4 (Sink Type)
- Output Voltage Range 8 ~ 35 V_{DC}
- Normal Output Current 0.5 A (per channel)

Protection

- Isolation Between 2.500 Vpc
- **Channels and Backplane**
- Short Circuit Protection (For DO channel) Thermal Shutdown Protection (For DO channel)

Environment

APAX-5

APAX-5

APAX-5

APAX-5

- Operating Temperature 0 ~ 60° C
- Storage Temperature -25 ~ 75° C
- Relative Humidity 5 ~ 95% (non condensing)

Ordering Information

4-ch High Speed Counter
Module
1-slot Backplane Module
2-slot Backplane Module
Power Supply for APAX
Expansion Module

24 (Sink Type) $8 \sim 35 V_{DC}$

30 x 139 x 100 mm

LED per channel

On: Logic level 1

Off: Logic level 0

2.5 W @ 24 V_{DC} (typical)

165 g

- - VDF

APAX-5343 APAX-5343E APAX-5001/5002

Power Supply for APAX-5570 Series

Power Supply for APAX Expansion Modules

1-slot/2-slot Backplane Module





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.



ADAM-5000 Series -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.

ADAM-5000 Series -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.



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_{DC}. 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.





Panel/Wallmounting

Flat surface system mounting





Node ID Setting

8-pin dip switch configuration



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

ADAM-5000 Controller **Selection Guide**



System	ADAM-5510M	ADAM-5510E	ADAM-5510/TCP	ADAM-5510E/TCP	ADAM-5550CE				
CPU		80	188		AMD Geode GX533 (GX2)				
RAM		640 KB 128 MB DDR SDRAM							
Flash ROM		256 KB -							
Flash Memory		256	S KB		-				
Flash Disk		11	MB		-				
0\$		ROM	-DOS		WinCE 5.0				
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 (T)	(, RX, GND)		RS-232				
COM4		1	RS-232/485						
I/O Slots	4	8	4	8	8				
Power Consumption		4	W		12 W				
Isolation									
Communication		2,500 V _{DC} (C	OM2 RS-485)		$\begin{array}{c} \text{2,500 } V_{\text{DC}} \mbox{ (COM2 RS-485)} \\ \text{1,000 } V_{\text{DC}} \mbox{ (COM4 RS-485)} \end{array}$				
Communication Power			3,000 V _{DC}						
I/O Module	3,000 V _{DC}								
Diagnosis			-						
Status Display		Power, CPU, Com	munication, Battery		Power, User define				
Self Test			Yes, while ON						
Software Diagnosis			Yes						
Communication									
Network	RS-23	32/485	Ethernet	Ethernet (2 x RJ-45)					
Speeds	1,200 bps ~	115.2 kbps	10/100	10/100 Mbps					
Max. Distance	4,000 fee	t (1.2 km)	150) m	150 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	-				
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			$+10 \sim +30 \ V_{\text{DC}}$						
Environment									
Operating Temperature		-10 ~ 70° C	(14 ~ 158° F)		0 ~ 55° C (32 ~ 131° F)				
Storage Temperature			-25 ~ 85° C (-13 ~ 185° F)						
Humidity		Γ	5 ~ 95%	· · · · · ·					
Page	13-24	13-24	13-22	13-22	13-20				



Controller Selection Guide

Sustam	ADAM 5000/405					
System	ADAM-5000/485					
	88108	δυΙδά	RISC			
NAIVI	-	-	41			
Flash Ruiw (User AP)	-	-	012	NB		
(Data Storage)	-	-		-		
Flash Disk	-	-		-		
0\$	-	-	real-ti	me OS		
Timer BIOS	=	-		-		
Real-time Clock	-	-		-		
Watchdog Timer		Ŷ	es			
COM1/COM2	RS-485	RS-485	RS-485 (Modbus)		
COM3 (Programming)	TX, R	X, GND				
I/O Slots	4	8	4	8		
Power Consumption	3	W	4.0 W	5.0 W		
Isolation		1	r			
Communication	$2,500 V_{\text{DC}}$	3,000 V _{DC}	RS-485: Ethernet:	1,500 V _{DC} 3,000 V _{DC}		
Communication Power		3,00	0 V _{DC}			
I/O Module		3,00	0 V _{DC}			
Diagnosis						
Status Display	Power, CPU, Communication Power, CPU, Error Diagnostic, Communication					
Self Test	Yes, while ON					
Software Diagnosis		Ŷ	es			
Communication	÷					
Interface	RS-232/485 (2-wire)	RS-232/485 (2-wire)	Ethe	ernet		
Speeds (bps)	1,200, 2,400, 4,800, 9,600, 192 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 with	out 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	TCI	2/IP		
Max. Nodes	128	128	Depend on	IP address		
Protocols	ADAM ASCII/Modbus Protocol	ADAM ASCII/Modbus Protocol	Modbu	us/TCP		
Remote I/O	-	-	20 nodes Mo	dbus devices		
Power Requirements		+10 ~ -	+30 V _{DC}			
Environment						
Operating Temperature		-10 ~ 70° C	(14 ~ 158° F)			
Storage Temperature		-25 ~ 85° C (-13 ~ 185° F)			
Humidity		5 ~	95%			
	5~95%					

Ethernet I/O

Building Automation

ADAM-5000 I/O Module Selection Guide

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Module		ADAM- 5013	ADAM- 5017	ADAM- 5017P	ADAM- 5017UH	ADAM- 5018	ADAM- 5018P	ADAM- 5024	ADAM-5050	ADAM-5051/ Adam-5051d/ Adam-5051S	ADAM-5052	ADAM- 5053S
	Resolution	16 bit	16 bit	16 bit	12 bit	16 bit	16 bit	-	-	-	-	-
	Input Channel	3	8	8	8	7	7	-	-	-	-	-
	Sampling Rate	10	10	10	200K	10	10	-	-	-	-	-
Analog Input	Voltage Input	-	±150 mV ±500 mV ±1 V ±5 V ±10 V	$\begin{array}{c} \pm 150 \text{ mV} \\ \pm 500 \text{ mV} \\ \pm 15V \\ \pm 10V \\ \pm 5 \text{ V} \\ \pm 1 \text{ V} \\ 0 \sim 150\text{mV} \\ 0 \sim 500\text{mV} \\ 0 \sim 1V \\ 0 \sim 5V \\ 0 \sim 10V \\ 0 \sim 15\text{ V} \end{array}$	±10 V 0 ~ 10 V	±15 mV ±50 mV ±100 mV ±500 mV ±1 V ±2.5 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	4 ~ 20 mA	-	-	-	-	-
	Direct Sensor Input	Pt or Ni RTD	-		-	J, K, T, E, R, S, B	J, K, T, E, R, S, B	-	-	-	-	-
Ħ	Resolution	-	-		-	-	-	12 bit	-	-	-	-
og Outpi	Voltage Output	-	-		-	-	-	0 ~ 10 V	-	-	-	-
Anal	Current Output	-	-		-	-	-	0 ~ 20 mA 4 ~ 20 mA	-	-	-	-
nput and Output	Digital Input Channels	-	-		-	-	-	-	16 DIO	16 16 w/LED (5051D/5051S)	-	32
Digital I Digital	Digital Output Channels	-	-		-	-	-	-	selectable)	-	8	-
5	Channels	-	-		-	-	-	-	-	-	-	-
unter (3 bit)	Input Frequency	-	-		-	-	-	-	-	-	-	-
ទ	Mode	-	-		-	-	-	-	-	-	-	-
MM	Channels	-	-		-	-	-	-	-	-	-	-
CO	Туре	-	-		-	-	-	-	-	-	-	
Isolatio	n	3,000 V _{DC}	3,000 V _{DC}	3,000 V _{DC}	3,000 V _{DC}	3,000 V _{DC}	3,000 V _{DC}	3,000 V _{DC}	-	2,500 V _{DC} (5051S)	5,000 V _{RMS}	2,500 V _{DC}
Page 13-29				13-30		13-31			13-32			

I/O Module Selection Guide

	Module	ADAM-5055S	ADAM-5056/ ADAM-5056D	ADAM-5056S/ ADAM-5056SO	ADAM-5057S	ADAM-5060	ADAM-5068	ADAM-5069	ADAM-5080	ADAM-5081	ADAM-5090/ ADAM-5091	ADAM-5095	Automation Software
Input gital ut	Digital Input Channels	8 w/LED	-	-	-	-	-	-	-		-	-	2
Digital and Dig Outp	Digital Output Channels	8 w/LED	16 16 w/LED (5056D)	16 w/LED	32	6 relay (2 form A/ 4 form C)	8 relay (8 form A)	8 power relay (form A)	-		-	-	Touch Panel PC
	Channels	-	-	-	-	-	-	-	4	8	-	2	
nter (32-bit)	Input Frequency	-	-	-	-	-	-	-	5000 Hz (max)	5 Hz ~ 1 MHz max. (frequency mode) 1 MHz max. (counter mode)	-	-	Industrial Panel PC
Coun	Mode	-	-	-	-	-	-	-	Frequency, Up/Down Counter, Bi-direction Counter	Frequency, up/down, Bi-direction, up, A/B Phase, Counter	-	-	Fanless Box PC
сомм	Channels	-	-	-	-	-	-	-	-	-	4	-	Ethernet Switch
	Туре	-	-	-	-	-	-	-	-	-	RS-232	CAN	
Isolation		2,500 V _{DC}	-	2,500 V _{DC}	2,500 V _{DC}	-	-	4,000 V _{RMS}	1,000 V _{RMS}	2,500 V _{DC}	-	1,000 V _{DC}	Device Server
Page		13-32		13-33			13-34		13	-35	13-	-28	

Model		ADAM-5202	ADAM-5240	ADAM-5030				
	Number of Axes	-	4	-				
Axes	Linear Interpolation	-	V	-				
	2-Axis Circle Interpolation	-	V	-				
	Encoder Channels	-	4	-				
	Limit switch Input Channel	-	8	-				
	Home Input Channel	-	4	-				
s	Emergency stop Input Channel	-	1	-				
ction	Slow Down Limit Switch	-	8	-				
Fun	General Purpose DI Channel	-	-	-				
nced	Servo On Output Channel	-	4	-				
dvar	General Purpose DO Channel	-	4	-				
A	Position Compare Event	-	V	-				
	Remote Motion	V	-	-				
	Remote I/O	V	-	-				
	Board ID	-	-	-				
Con	nectors	2 x RJ-45,	100-PinSCSI-II	-				
Wir	ing Board	-	ADAM-3952	-				
Ren	note Slave Module	AMAX-2752SY/2754SY/2756SY AMAX-2241/2242/2243	-	-				
e	Туре	-	-	SD (Secure Digital Card)				
torag	Channel	-	-	2				
S	Size	-	-	2 GB (Max)				
8	Туре	-	-	V2.0 (compliant)				
Ĕ	Channel	-	-	2				
Sup	ported Controller		ADAM-5550KW					
Pag	e	13-36						



ADAM-5550CE

8-slot PC-based Controller with GX2 CPU



AMD Geode GX533 (GX2)

1 x CompactFlash® Card (Internal)

Modbus/RTU and Modbus/TCP

128 MB DDR SDRAM with 1 MB Battery Backup

2 x 10/100 Base-T Ethernet Interface with RJ-45

2,500 V_{DC} (COM2 RS-485)/1,000 V_{DC} (COM4 RS-485)

Power, User define

Windows® CE 5.0

8 slots

Yes

Yes

connectors

Yes

Features

- Support 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 Modbus/RTU Master and Modbus/TCP (Server/Client) Protocol
- Support .NET class library in Windows CE
- Supports SD Storage I/O Module
- Supports AMONet Master Module
- Supports Motion Control Modules
- Remote I/O expansibility
- Rich support to ADAM-5000 I/O Modules

Introduction

ADAM-5550CE is a PC-based Controller designed for control tasks which require Industrial PC computing performance with a PLC form factor and I/O module design. ADAM-5550CE offers an AMD Geode GX533 CPU along with control specific features such as watchdog timer, battery backup RAM. ADAM-5550CE features .NET class library which supports Microsoft Visual Studio .NET programming languages under WinCE 5.0, so users can develop control application and HMI software with their own familiar programming environment. With the built-in VGA port, no longer will users be required to build up additional SCADA PC's in their applications. This compact and powerful PC-based controller has been widely applied in variety of industrial automation applications especially ranging from machine automation to SCADA applications.

Specifications

Control System

- CPU
- I/O Capacity
- LED Indicators
- Memory
- Operating System
- Real-time Clock
- Watchdog Timer

Communications

- Comm. Protocol
- Medium

Protection

- Communication
- Power Reversal Protection

Power

- Power Consumption
- Power Input
- 12 W @ 24 Vdc (not including I/O modules) Unregulated +10 to +30 V_{DC}

General

Certificate
 Connectors
 1 x RS-232/485 (COM1)
 1 x RS-485 (COM2)
 1 x RS-232 (COM3)
 1 x RS-232 (COM3)
 2 x USB 1.1 ports (KB/Mouse via USB Ports)
 1 x VGA (1024 X 768 Resolution)
 Dimensions
 355 x 110 x 75 mm
 Enclosure
 ABS+PC
 Plug-in Screw Terminal Accepts 0.5 mm² to 2.5 mm², 1 - #12 or 2 - #14 to #22 AWG

Environment

- Humidity 5% to 95%, non-condensing
- Operating Temperature $0 \sim 55^{\circ} \text{ C} (32 \sim 131^{\circ} \text{ F})$
- Storage Temperature 25 ~ 85° C (-13 ~ 185° F)

Ordering Information

- ADAM-5550CE
- 8-slot PC-based Controller with GX2 CPU







Controller Features

ADAM-5550CE is designed for control tasks which need Industrial PC's computing performance and PLC's robustness. Its multiple functionalities include discrete, analog and motion functions. The .NET class libraries provide a flexible and easy-to-use software solution for versatile applications. ADAM-5550CE supports Modbus protocol which allows data exchange with various Modbus devices.

Visualization

ADAM-5550CE has a built-in VGA port which can directly connect to a display. So HMI function can be integrated into this controller. ADAM-5550CE can be operated with or without display/keyboard/mouse which can meet different requirements of applications.

Widely Used IT Technology

ADAM-5550CE supports widely used IT technology of industrial PC. For remote monitoring function, the built-in web server can provide local I/O status for internet access and email alarm function can send alarm message to dedicated email addresses when there is any alarm occurs. For remote maintenance function, the built-in FTP server provides service for uploading application program or downloading data logging files.

Dual Ethernet Ports

ADAM-5550CE provides two Ethernet ports for different application requirements such as redundant Ethernet connection for reliability concern or separated network connections for security concern. Both of the functions are possible to be implemented by customer's application program.

Remote I/O Expansibility

ADAM-5550CE supports not only Modbus/RTU Master function via serial ports, but also the Modbus/TCP Client to retrieve data from remote I/O, and Modbus/TCP Server to exchange data with other Modbus devices via Ethernet port. This Modbus feature is very useful when the control system needs expand the remote I/O modules or connect to other controllers.

Rich Support to ADAM-5000 I/O Modules

Most of the ADAM-5000 I/O modules are supported by ADAM-5550CE including analog I/O modules, digital I/O modules, and motion control module. Besides the ADAM-5000 I/O modules, ADAM-5550CE supports new modules including SD slot, COM port with shared interrupt, high speed counter and high density DI/O modules.

AMONet Motion Control Module

AMONet Module supports two RS-485 master ports, and transfers data between host and slaves directly without any operations in between. Each port of the master can control up to 2048 I/O points, 64 axes, or a combination of I/O points and axes for motion control. The master ports support up to 20 Mbps transfer rate and a maximum communication distance of up to 100 meters. The communication between master and slave is based on a customized RS-485 solution that saves wires, covers a long distance, supports high-speed communication and has time-deterministic features. Various functions can be chosen on the slave modules, and standard industrial DIN rail mounting design makes it easy to distribute them in the field.

Motion Control Module

ADAM-5550CE supports stepping/pulse-type servo motor control module, which is designed for general-purpose applications. The servo motor control module's intelligent NOVAR MCX314-motion ASIC comes built-in with a variety of motion control functions, such as 2/3-axis linear interpolation, 2-axis circular interpolation, T/S-curve acceleration/ deceleration rate and more. It performs these motion control functions without processor loading during driving.

ADAM-5510/TCP ADAM-5510E/TCP

4-slot PC-based Controller with Ethernet

8-slot PC-based Controller with Ethernet



Features

- 10/100Base-T Ethernet interface
- Supports Web Server function
- Supports Email Alarm function
- Supports FTP Server and Client functions
- Supports Modbus/TCP Server and Client function libraries
- Supports Modbus/RTU Master and Slave function libraries
- 1.5 MB Flash ROM (960 KB for user applications)
- 640 KB SRAM (384 KB for battery backup)
- ROM-DOS operating system
- Watchdog timer and real-time clock
- 4 serial communication ports
- 4 or 8 I/O slot expansion

RoHS CEFCC

Introduction

In the ADAM-5510 series of PC-based programmable controllers, Advantech has introduced Ethernet-enabled features. The new 4-slot ADAM-5510/TCP and 8-slot ADAM-5510E/TCP support HTTP server, FTP server, and e-mail alarm functions. These functions can be used to monitor a system via the Internet, acquire data through an FTP connection and send alarms to designated e-mail addresses if a critical situation emerges. Both products also support Modbus/TCP server/client functions. The ADAM-5510/TCP and ADAM-5510E/TCP can work as a Modbus/TCP client to retrieve data from remote I/Os, and Modbus/TCP server to connect with the HMI/SCADA software.

Specifications

Control System

-	CPU	16-bit processor
•	I/O Slots	ADAM-5510/TCP: 4
		ADAM-5510E/TCP: 8
•	LED Indicators	Power, CPU, communications, and battery
•	Memory	Flash disk: 1 MB (960 KB for user applications)
		Flash memory: 256 KB
		FIASTI KUIVI: 250 KB DAM: 640 KD SDAM (204 KD for botton) backup DAM
	Opprating System	DOM DOC
2	Deal time Cleak	NOM-DOS Voc
2	Watehdog Timor	Voc
1		
•	Communications (Etr	iernet)
	LAN	10/100Base-T
	Transmission Distance	100 m
•	Communications (Se	rial)
•	Max. Nodes	256 (in RS-485 daisy-chain network)
•	Transmission Distance	1.2 km (4000 feet)
•	Transmission Speed	1200 bps ~ 115.2 kbps
P	rotection	
•	Communication Line Isolation	2,500 V_{DC} (COM2 only)
•	Communication Power Isolation	3,000 V _{DC}
•	I/O Module Isolation	3,000 V _{DC}
S	oftware	
•	C Library	Borland C++ 3.0 for DOS

Power

- Power Consumption
- Power Input
- General

Certifications

- Connectors
- CE, FCC class A ADAM-5510/TCP: 1 x DB9-M for RS-232 (COM1) ADAM-5510E/TCP: 1 x DB9-M for RS-232/485 (COM1) 1 x Screw terminal for RS-485 (COM2) 1 x DB9-F for RS-232/Programming (COM3) 1 x DB9-M for RS-232/485 (COM4) 1 x Screw-terminal for power input 1 x RJ-45 for LAN 4-slot: 231 x 110 x 75 mm 8-slot: 355 x 110 x 75 mm ABS+PC DIN 35 rail, stack, wall

4 W @ 24 Vdc (not including I/O modules)

Unregulated 10 ~ 30 V

Unregulated 10 ~ 30 Vpc

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Environment

Dimensions

Enclosure

- Mounting

- Humidity 5 ~ 95%, noncondensing
- Operating Temperature $-10 \sim 70^{\circ}$ C (14 $\sim 158^{\circ}$ F)
- Storing Temperature -25 ~ 85° C (-13 ~ 185° F)

Ordering Information

- ADAM-5510/TCP
 ADAM-5510E/TCP
- 4-slot PC-based Controller with Ethernet 8-slot PC-based Controller with Ethernet



ADAM-5510/TCP ADAM-5510E/TCP



Feature Details

Supports Powerful Ethernet Features

ADAM-5510/TCP and ADAM-5510E/TCP are Ethernet-enabled Programmable Controllers. The new 4-slot ADAM-5510/TCP and 8-slot ADAM-5510E/TCP support HTTP server, FTP server, and e-mail alarm functions. These functions can be used to monitor a system via the Internet, acquire data through an FTP connection and send alarms to designated e-mail addresses if a critical situation emerges.

Enable Ethernet Connectivity with Other Devices

ADAM-5510/TCP and ADAM-5510E/TCP support both Modbus/TCP Server function library and Modbus/TCP Client function library. The ADAM-5510/TCP and ADAM-5510E/TCP can work as a Modbus/TCP client to retrieve data from remote I/O modules, and Modbus/TCP server to connect with the HMI/SCADA software.

More Data Memory & I/O Slots to Support Versatile Applications

The ADAM-5510/TCP and ADAM-5510E/TCP offer more than enough spare memory for developing complex logic or data storage applications, such as data recording, which is difficult for traditional controllers. The ADAM-5510/TCP and ADAM-5510E/TCP feature 1.5 MB flash memory and 640 KB SRAM (up to 384 KB battery backup memory). ADAM-5510/TCP and ADAM-5510E/TCP also support up to 4 or 8 I/O slots for I/O modules, which can provide more flexibility and I/O points for user's applications.

Complete I/O Module and C Library Support

The ADAM-5510/TCP and ADAM-5510E/TCP support industrial I/O modules including digital I/O, analog I/O, counter and special purpose I/O modules such as Thermocouple and RTD. It also offers well-stocked Borland C libraries, including system resources function, I/O functions, communication functions, socket functions, Modbus/TCP functions, Modbus/RTU functions and the functions of Ethernet features. All the functions have sample programs which can save development time and efforts.

Supports Four Communication Ports

The ADAM-5510/TCP and ADAM-5510E/TCP has four independent communication ports. That means they can simultaneously communicate with one RS-232/485 device (COM1), one RS-485 device (COM2), one RS-232 3-wire device (COM3), and one RS-232/485 device (COM4). They also support Modbus/RTU master function library for connecting Modbus remote I/O modules and Modbus/RTU slave function library for connecting to HMI/SCADA software.

Multiple RS-232 Port Support

The ADAM-5090 is a 4-port RS-232 module that is equipped with 4 RS-232 ports, which make it especially suitable for bi-direction communication. It can simultaneously read/write data from other third-party devices such as barcode readers or PLCs, as long as they have an RS-232 interface. Furthermore, commands can be issued through the ADAM-5090 to control other devices. It is fully integrated with the ADAM-5510/TCP and ADAM-5510E/TCP, and transmits data through RS-232 ports. The whole integrated system supports Modbus/RTU master function, which can connect and issue commands to control Modbus remote I/O devices by Modbus/RTU protocol.

ADAM-5510M ADAM-5510E



4-slot PC-based Controller with RS-485

8-slot PC-based Controller with RS-485



Features

- Supports Modbus/RTU Master and Slave function libraries
- Windows-based utility
- Control flexibility with C programming
- Complete set of I/O modules
- Built-in 1.5 MB Flash and 640 KB SRAM
- Built-in real-time clock and watchdog timer
- ROM-DOS operating system
- 4 serial communication ports
- 4 or 8 I/O slot expansion

Introduction

The ADAM-5510M AND ADAM-5510E 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-5510M AND ADAM-5510E application programs may be written and compiled in Borland C++ 3.0, and downloaded to the ADAM-5510M AND ADAM-5510E. With the power of the ADAM-5510M AND ADAM-5510E, users can easily accomplish specialized functions, which are difficult with traditional controllers. Each ADAM-5510M AND ADAM-5510E system can handle up to 4 or 8 I/O slots (up to 64 or 128 I/O points).

Specifications

Control System

•	CPU I/O Slots LED Indicators Memory Operating System Real-time Clock Watchdog Timer	16-bit microprocessor ADAM-5510E: 8 ADAM-5510M: 4 Power, CPU, communications and battery 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) ROM-DOS (MS-DOS 6.22 Compatible) Yes Yes
C	ommunications	E
-	Max. Nodes Transmission Distance Transmission Speed	256 (in RS-485 daisy-chain network) 1.2 km (4000 feet) 1,200 bps ~ 115.2 kbps
P	ower	(
•	Power Consumption	4 W @ 24 Vdc (not including I/O modules) Unregulated 10 ~ 30 V
•	Power Input	Unregulated 10 ~ 30 V_{DC}
Sı •	o ftware Support C Library	Borland C++ 3.0 for DOS
P	rotection	
•	Communication Power Isolation	3,000 V _{DC}
•	Communication Line Isolation	2,500 V _{DC} (COM2 only)

General

•	Certifications Connectors	CE ADAM-5510E: 1 x DB9-M for RS-232/485 (COM1) ADAM-5510M: 1 x DB9-M for RS-232 (COM1) 1 x Screw terminal for RS-485 (COM2) 1 x DB9-F for RS-232/Programming (COM3) 1 x DB9-M for RS-232/485 (COM4) 1 x Screw-terminal for power input
•	Dimensions	4-slot: 231 x 110 x 75 mm 8-slot: 355 x 110 x 75 mm
•	Enclosure Mounting	ABS+PC DIN 35 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-5510MADAM-5510E
- 4-slot PC-based Controller with RS-485 8-slot PC-based Controller with RS-485

Power Reversal Yes
 Protection

AD\ANTECH PC-based Controllers & I/O Modules



ADAM-5510M ADAM-5510E



Why PC-based Control?

Today, more and more major manufacturers are gaining a competitive edge by replacing their factory floor PLC "black boxes" and utilizing the latest advances in automation control technology. One of the major drawbacks of the PLC is its proprietary nature. Not only is the PLC proprietary, but so is everything associated with it – the hardware, the operating system, the programming methods, the networks, the processors, the I/O, and more. Once you have selected a PLC supplier, you are essentially locked into their product line. This exclusivity limits how far you can expand your operations – and expand your business

– since you can only grow as far as your supplier's technology will let you. On the other hand, PC-based controllers are designed as an open structure with advanced capabilities for computing, communication and controlling. There will be no more limitation to user's further integration and expansion.

PC-based "C" Programmable Controller

The design of the ADAM-5510M and ADAM-5510E are based on the experience of various needs in industrial control. The ADAM-5510M and ADAM-5510E adopt a popular RS-485 bus, which can work either as a standalone unit or within a distributed control system. The user only needs to write a program in C to run on the ADAM-5510M and ADAM-5510E for a general-purpose application.

Windows-based Utility for Configuring I/O Modules

The ADAM-5510M and ADAM-5510E utility is fully-Windows based so users can configure the I/O modules and download control program under Windows environment easily. In order to provide a convenience operation environment for former users, the Windows Utility keeps the DOS mode operation interface too.

More Data Memory and I/O Slots to Support Versatile Applications

The ADAM-5510M and ADAM-5510E offer plenty of spare memory for developing complex logic or data storage applications, such as data recording, which is difficult for traditional controllers. The ADAM-5510M and ADAM-5510E features 1.5 MB flash memory and 640 KB SRAM (up to 384 KB battery backup memory). ADAM-5510M and ADAM-5510E also support up to 4 or 8 I/O slots for I/O modules, which can provide more flexibility and I/O points for user's applications.

Modbus/RTU Master and Slave Function Libraries

The ADAM-5510M and ADAM-5510E has four independent communication ports. That means they can simultaneously communicate with one RS-232/485 device (COM1), one RS-485 device (COM2), one RS-232 3-wire device (COM3), and one RS-232/485 device (COM4). They also support Modbus/RTU master function library for connecting Modbus remote I/O modules and Modbus/RTU slave function library for connecting to HMI/SCADA software.

Complete I/O Module and C Library Support

The ADAM-5510M and ADAM-5510E support industrial I/O modules including digital I/O, analog I/O, counter and special purpose I/O modules such as Thermocouple and RTD. It also offers well-stocked Borland C libraries, including system resources function, I/O functions, communication functions and Modbus/RTU functions. All the functions have sample programs which can save the developing time and efforts.

Multiple RS-232 Port Support

The ADAM-5090 is a 4-port RS-232 module that is equipped with 4 RS-232 ports, which make it especially suitable for bi-direction communication. It can simultaneously read/write data from other third-party devices such as barcode readers or PLCs, as long as they have an RS-232 interface. Furthermore, commands can be issued through the ADAM-5090 to control other devices. It is fully integrated with the ADAM-5510M and ADAM-5510E, and transmits data through RS-232 ports. The whole integrated system supports Modbus/RTU master function, which can connect and issue commands to control Modbus remote I/O devices by Modbus/RTU protocol.



ADAM-5000L/TCP **ADAM-5000/TCP**

4-slot Distributed DA&C System for Ethernet

8-slot Distributed DA&C System for Ethernet



32-bit ARM RISC

RAM: 4 MB

Real-time OS

ADAM-5000L/TCP: 4 ADAM-5000/TCP: 8

Features

- ARM 32-bit RISC 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 8 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_{DC} 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 .NET Class LIB to develop applications

Introduction

ADAM-5000L/TCP and ADAM-5000/TCP care both Ethernet-based I/O systems. Without a repeater, ADAM-5000L/TCP and ADAM-5000/TCP can cover a communication distance up to 100 m. This allows remote configuration via Ethernet and eight 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

- I/O Slots
- Flash ROM: 512 KB Memory
- Operating System LED Indicators

Power (3.3 V. 5 V) CPU Communication (Link, Active, 10/100 Mbps, Tx, Rx) Batterv

Communications (Ethernet)

- Comm. Distance 100 meters w/o repeater Comm. Protocol Modbus/TCP, TCP, UDP, IP, ARP
- Up to 100 Mbps Data Transfer Rate
- . Event Response Time
- < 5 ms 1 x 10/100Base-T (RJ-45) Interface UTP, category 5 or greater
- Wiring

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 Max. Nodes 12 (in RS-485 daisy-chain network for Remote I/O connection) Power Power Consumption 4.0 W @ 24 Vdc (ADAM-5000L/TCP)
- (not including I/O modules) 5.0 W @ 24 Vdc (ADAM-5000/TCP) (not including I/O modules) Power Input Unregulated 10 ~ 30 V_{DC}

Software

- .NET Class LIB
- Windows Utility
- stream, alarm setting Modbus/TCP OPC Server

Protection

- **Communication Line** $3.000 V_{\text{DC}}$ Isolation
- I/O Module Isolation 3.000 V_{DC}
- LAN Communication $1.500 V_{DC}$
- **Overvoltage Protection** Yes Yes
- Power Reversal Protection

General

 Certifications 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 1 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 35 rail, wall

Environment

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



Network setting, I/O configuration & calibration, data

Esis Pty Ltd

Ph 02 9481 7420

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

CDI
U LD

. Distance

- I/O Slots
- LED Indicators
- Watchdog Timer

Communications

- Command Format Communication
- ASCII command/response protocol, Modbus/RTU RS-485: 1.2 km (4000 feet)

1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6, and 115.2

Data Format Asynchronous. 1 start bit, 8 data bits, 1 stop bit, no parity

4.0 W @ 24 Vdc (ADAM-5000E)

(not including I/O modules)

Unregulated 10 ~ 30 V_{pc}

16-bit 80188 microprocessor

Power, CPU, communications

ADAM-5000/485: 4

ADAM-5000E: 8

1.6 sec. (System)

- Programming link: RS-232 (3-wire: TX, RX, GND) Network Protocols Communication: RS-485 (2-wire)
- Reliability Check Communication error checking with checksum 128 (in RS-485 daisy-chain network)
- Max. Nodes
- Speeds (kbps)

Power

•	Power Consumption	3 W @ 24 Vdc (ADAM-5000/485)
		(not including I/O modules)

Power Input

Software

 Driver Support Windows DLL, OPC Server, Wonderware InTouch, Intellution, iFIX, Citect, Advantech Studio, ADAMView

Protection

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

3,000 V_{DC}

General

Protection

- Certifications 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 35 rail, wall, rack (with mounting kit) Environment 5~95%, non-condensing
- Humidity
- Operating Temperature -10 ~ 70° C (14 ~ 158° F)
- **Storing Temperature** -25 ~ 85° C (-13 ~ 185° F)

Ordering Information

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



Esis Pty Ltd Ph 02 9481 7420 ESIS www.esis.com.au



4-port RS-232 Module

2-port CAN Module with Isolation Protection





Specifications

General

- Certifications
- Connectors
- LED Indicators
- Power Consumption

Communications

- Data Bits
- Data Signals
- Parity
- Ports
- UARTs
- Speed
- Stop Bits
- 1, 1.5, 2 Support standard Com Port with Share interrupt (ADAM-5091)

CE

4 x RJ-45

0.6 W (max.)

5, 6, 7, 8

4

none, even, old

50 ~ 115.2 kbps

TX, RX (each port)

TxD, RxD, RTS, TS, DTR, DSR, DCD, RI, GND

Note:

For ADAM-5510 Series, ADAM-5510KW Series, and ADAM-5511 only (ADAM-5090) For ADAM-5550 Series (ADAM-5091)

1 x 16C954 (128-byte FIFO)

Ordering Information

- ADAM-5090
- 4-port RS-232 Module
- ADAM-5091 4-port RS-232 Module with Share Interrupt
- OPT1A 1 m RJ-48 to Male DB9 Cable
- OPT1D 30 cm RJ-48 to Male DB9 Cable

Specifications

General

- Connector LED Indicator
- Power Consumption

Communications - CA

•	CAN Controller	SJA-1000
•	CAN Transceiver	82C250
•	Protocol	CAN2.0 A/B
•	Signal Support	CAN-H, CAN-L
•	Speed	1Mbps

2 x DB9-M

1 W (max.)

TX (Yellow), RX (Green) For Each Port

Protection

Isolation Protection 1,000 V_{DC}

Note: only for ADAM-5550 series

Ordering Information

ADAM-5095

2-port CAN Module with Isolation Protection

ADAM-5013 ADAM-5017 ADAM-5017P



3-ch RTD Input Module

8-ch Analog Input Module 8-ch Analog Input Module with **Independent Input Range**



Specifications

General

- Certifications
- Connectors
 - 1 x Plug-in screw terminal (# 14 ~ 22 AWG)

CF

- Power Consumption 1.1 W (max.)

RTD Input

- Accuracy ±0.1% or better Bandwidth 13.1 Hz @ 50 Hz 15.72 Hz @ 60 Hz Channels 3 CMR @ 50/60 Hz 150 dB Input Connections 2.3 or 4 wire Input Impedance 2 MΩ
- PT100 or Ni RTD Input Type
- NMR @ 50/60 Hz 100 dB 16-bit
- Resolution
- **RTD Types and Temperature Ranges** IEC RTD 100 ohms

Pt	-100° C	to	+100° C	a=0.00385
Pt	0° C	to	+100° C	a=0.00385
Pt	0° C	to	+200° C	a=0.00385
Pt	0° C	to	+600° C	a=0.00385
JIS RTD 100 ohms				
Pt	-100° C	to	+100° C	a=0.00392
Pt	0° C	to	+100° C	a=0.00392
Pt	0° C	to	+200° C	a=0.00392
Pt	0° C	to	+600° C	a=0.00392
Ni R	TD			
Ni	-80° C	to	+100° C	
Ni	0° C	to	+100° C	
Sampling Rate		10 sampl	es/sec. (total)	
Spar	n Drift		±0.01° C/	∕° C
Zero	Drift		±0.015° (C/° C

Protection

 Isolation Voltage 3000 V_{DC}

Ordering Information

- ADAM-5013
- 3-ch RTD Input Module



CE. FM

±0.1% or better

13.1 Hz @ 50 Hz

8 differential

Voltage: 2 MQ

Current: 120Ω (Build-in

120 Ω register for Current

±150 mV, ±500 mV, ±1 V,

±5 V, ±10 V; ±20 mA

10 samples/sec. (total)

Withstands overvoltage

92 dB min.

input)

16-bit

±25 PPM/° C

±6 µV/° C

3,000 V_{DC}

up to ±35 V

mV, V, mA

15.72 Hz @ 60 Hz

1 x Plug-in screw terminal

Specifications

General

- Certifications
- Connectors
- (# 14 ~ 22 AWG) Power Consumption 1.25 W (max.)

Analog Input

- Accuracy Bandwidth
- Channels

.

- CMR @ 50/60 Hz
- Input Impedance .
- Input Type
- Input Range
- Resolution
- Sampling Rate
- Span Drift
- Zero Drift

Protection

- Isolation Voltage Fault and Overvoltage
 - Protection

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

Ordering Information

ADAM-5017

8-ch Analog Input Module



Specifications

General

- Certifications
- Connectors
- (#14 ~ 22 AWG) • Power Consumption 1.25 W (max.)

CF

better

better

8 differential and

Voltage: 20 MQ

for Current Input)

mV, V (supports

±15 V. ±20 mA.

10 samples/sec

±25 ppm/° C

4 ~ 20 mA

16 bits

independent

92 dB min.

Input)

mΑ

Analog Input

- Accuracy
- Channels
- CMR @ 50/60 Hz
- Input Impedance
- Input Type
- Input Range
- Resolution
- Sampling Rate
 - - ±6 µV/° C
- High Common Mode 200 V_{DC}

Protection

- $\pm 60 \ V_{\text{DC}}$ Over Voltage Protection
- Built-in TVS/ESD Protection
- Isolation Voltage 3,000 V_{DC}
- Note: Does not support ADAM-5510KW

Ordering Information

ADAM-5017P

8-ch Analog Input Module w/ Ind. Input Range

CE • Fanless Box PC Ethernet Switch 1 x Plug-in terminal block . Voltage mode : ±0.1% or Current mode : ±0.2% or configuration channels Current: 120Ω (Build-in 120Ω. register for Current uni-polar and bipolar), 0~150 mV, 0~500 mV, PC-based Controller 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V, 0 ~ 15 V, ±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, RS-485 I/O Ethernet I/C Building Automation . Video Surveillance

Automation Software

Touch Panel PC

1



ADAM-5017UH **ADAM-5018** ADAM-5018P

8-ch Ultra High Speed Analog Input Module

7-ch Thermocouple Input Module 7-ch Thermocouple Input Module with Independent Input Range



Ordering Information

ADAM-5017UH

13-30

8-ch Ultra High Speed Analog Input Module







Ordering	Information
ADAM-5018P	7-ch Thermo. Input N
	w/ Ind. Input Range

ermo. Input Module nput Range

ADAM-5024 **ADAM-5050** ADAM-5051/D/S



4-ch Analog Output Module

16-ch Universal Digital I/O Module

16-ch Digital Input Module



Specifications

General

- Certifications
- Connectors
- CE. FM 1 x Plug-in screw terminal (# 14 ~ 22 AWG)

output

output

mA, V

0~10 V

4

- Power Consumption 2.9 W (max.)

Analog Output

- Accuracy
- Channels
- Current Load
- Resistor Output Type
- Output Range
- Programmable **Output Slope**
- Resolution
- Resolution
- **Span Temperature** Coefficient
- Zero Drift

Protection

Isolation Voltage 3,000 V_{DC}

Ordering Information

Module

- ADAM-5024
- 4-ch Analog Output



CE. FM

16

switch

1 x Plug-in screw terminal

Bit-wise selectable by DIP

(# 14 ~ 22 AWG)

Specifications

General

- Certifications
- Connectors
- Power Consumption 1.2 W (max.)

Digital I/O

- Channels Channel I/O Type
- Digital Input

Dry Contact: Logic level 0: close to GND Logic level 1: open Wet Contact: Logic level 0: 2 V max. Logic level 1: 4 ~ 30 V Open collector to 30 V, 100 mA and 450 mW max. load 300 mW for each channel

- **Ordering Information**
 - 16-ch Universal Digital Input/Output Module



Specifications

General

- Certifications
- Connectors
- LED Indicators ADAM-5051D

ADAM-5051S

- Off: Inactive Power Consumption
 - ADAM-5051: 0.53 W (max.) ADAM-5051D: 0.84 W (max.) ADAM-5051S: 0.8 W (max.)

16

Vmax

CF

AWG)

ADAM-5051/5051D: 1 x

ADAM-5051S: 1 x Plug-in

screw terminal (# 14 ~ 28

On: Input logic level 1

Off: Input logic level 0

Pull-up current: 0.5 mA

(Source Type) -only for

ADAM-5051/5051D: 30

ADAM-5051S: 50 Vmax

Logic level 0: 1 V max. Logic level 1: 3.5 ~ 30 V

Logic level 0: 3 V max.

ADAM-5051/5051D

Input floating

On: Active

Plug-in screw terminal

(# 14 ~ 22 AWG)

Digital Input

- Circuit Type
- Channels
- Input Voltage
- Logic Level ADAM-5051/5051D
 - ADAM-5051S
- Logic level 1: 10 ~ 50 V Protection (Only for ADAM-5051S)
 - **Optical Isolation** 2,500 Vpc Overvoltage
 - 70 V_{DC}

Ordering Information

ADAM-5051

Protection

- ADAM-5051D
- ADAM-5051S

16-ch Digital Input Module 16-ch Digital Input Module w/ LED

16-ch Isolated Digital Input Module w/ LED

Ethernet I/O Building Automation Video Surveillance 13-31

RS-485 I/O

Automation Software

Touch Panel PC

1

•

Fanless Box PC

Ethernet Switch

.

PC-based Controller

CE

- Digital Output
- Power Dissipation

- ADAM-5050
- 0 ~ 500 Ω (source) 0 ~ 20 mA. 4 ~ 20 mA.
- 0.125 ~ 128.0 mA/sec.
- 0.0625 ~ 64.0 V/sec.
- 12-bit

Voltage: ±30 µV/° C

Current: ±0.2 µA/° C

±0.1% of FSR for current

±0.2% of FSR for voltage

±0.015% of FSR ±25 PPM/° C

ADAM-5052 **ADAM-5053S ADAM-5055S**

8-ch Isolated Digital Input Module

32-ch Isolated Digital Input Module

16-ch Isolated Digital I/O Module with LED



Specifications

General

- Certifications
- Connectors
- 1 x Plug-in screw terminal (# 14 ~ 22 AWG)

CF FM

8

Power Consumption 0.27 W (max.)

Digital Input

- Channels
- Input Resistance 3 kΩ/0.5 W
- Logic Level
- Logic level 0: 1 V_{max} Logic level 1: 3.5 ~ 30 V

Protection

Isolation Voltage 5000 V_{BMS}

Ordering Information

ADAM-5052



Specifications

General

- Certifications CE
- Connector 40 pin
- Power Consumption 1 W (max.)

Digital Input

- Channels 32 Channel I/O Type DI 24 Vdc (Sink/Source)

Logic Level

 Overvoltage Protection Note: only for ADAM-5550 Series

Ordering Information

- ADAM-5053S
- ADAM-3920

PCL-10220

20-pin Flat Cable Wiring Board

IDC cable, 1 m



Specifications

General

 Certifications Connectors LED Indicators 	CE 1 x Plug-in screw terminal (# 14 ~ 28 AWG) On: Active
 Power Consumption 	Off: Inactive 0.68 W (max.)
Digital I/O	
 Channels 	16
 Channel I/O Type 	8 DO, 8 DI

Logic Level (DI)

Dry contact: Logic level 0: open Logic level 1: close to GND Wet contact: Logic level 0: 3 V max. Logic level 1: 10 ~ 50 V Open collector to 40 V 200 mA max. load Channel : 1 W max. Total : 2.2 W (8 channels)

Isolation Voltage

Power Dissipation

- Overvoltage Protection
- 2,500 V_{DC} 70 V_{DC} (DI only)
- **Ordering Information** ADAM-5055S

16-ch Isolated Digital I/O Module with LED



$2{,}500 \; V_{\text{DC}}$

- 8-ch Isolated Digital Input Module
- Wet Contact Protection

Logic level 0: 10 V Max. Logic level 1: 19 ~ 35 V

Isolation Voltage

$35 \ V_{\text{DC}}$

- - 32-ch Digital Input Module

40-pin IDC to two 20-pin

Protection

Digital Output

ADAM-5056/D/S **ADAM-5056SO ADAM-5057S**

16-ch Digital Output Module 16-ch Source-type Isolated Digital Output Module with LED

32-ch Isolated Digital Output Module



CF

AWG)

AWG)

16

Specifications

General

- Certifications
- Connectors ADAM-5056/5056D

ADAM-5056S

LED Indicators ADAM-5056D

ADAM-5056S

- Power Consumption
- On: active Off: inactive ADAM-5056:0.53 W (max.) ADAM-5056D: 0.84 W (max.) ADAM-5056S: 0.6 W (max.)

Open collector to 30 V,

Open collector to 40 V,

ADAM-5056/5056D: 30

16-ch Digital Output

16-ch Digital Output

100 mA max. load

200 mA max.

load (sink)

FM (ADAM-5056 only)

1 x Plug-in screw

1 x Plug-in screw

terminal (# 14 ~ 28

On: output logic level "1" Off: output logic level "0"

terminal (# 14 ~ 22

Digital Output

Channels

Digital Output ADAM-5056/5056D

- ADAM-5056S
- Operating Voltage
- Vmax Power Dissipation
- 300 mW for each channel Protection (Only for ADAM-5056S)
- -Optical Isolation 2500 V_{DC}

-Overvoltage Protection 70 Vpc

-Power Dissipation 300 mW

Ordering Information

•	ADAM-5056

- ADAM-5056D
- Module with LED ADAM-5056S
 - 16-ch Sink Type Iso. DO Module w/ LED

Module



Specifications

General

- Certifications
- Connectors
- LED Indicator
- On: active Off: inactive
- Power Consumption 0.6 W (Max.)

Digital Output

- Channels
- Digital Output .
- Power Dissipation

Protection

- Optical Isolation $2,500 \; V_{\text{DC}}$
- Overvoltage Protection $70 V_{DC}$

Ordering Information

16-ch Source Type Iso. DO Module w/ LED



Specifications

ADAM-5057S

General

 Certifications Connectors

LED Indicator

1 x 40 pin (wiring line)

CF

32

On: active Off: inactive

of ADAM-3920R

 Power Consumption 1W (Max.)

Digital Output

- Channels
- Digital Output

Protection

Protection

 Optical Isolation 2,500 V_{DC} Overvoltage $70 V_{DC}$

Relay Spec. of ADAM-3920R

- Contact Rating 10A @ 250 V_{AC}
 - 10A @ 30 V_{DC} $100 \text{ m}\Omega$
- Contact Resistance Operation Time 15 ms
- **Relay Type SPST** (Form A) .
- Release Time
- 5 ms max Life Expectancy 1.7 x 10⁵ at related load
- Insulation Resistance $1G\Omega @ 500 V_{DC}$
- Power Input $+24 V_{\text{DC}}$
- DIN 35 rail, wall, rack (with Mounting
 - mounting kit)

Module

Relay Board

IDC cable, 1m

Note: ADAM-5057S must connect with 2 units of ADAM-3920R via PCL-10220

Note: only for ADAM-5550 Series

Ordering Information

- ADAM-5057S
- ADAM-3920R
- PCL-10220



Automation Software

Touch Panel PC

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- Total : 2.2 W (8 channels)

- ADAM-5056SO
- 16

Open collector to 40 V. 200 mA max. load (source) Channel : 1 W max.

1 x Plug-in screw terminal

(# 14 ~ 28 AWG)

ADAM-5060 ADAM-5068 ADAM-5069

6-ch Relay Output Module



8-ch Relay Output Module

8-ch Power Relay Output Module with LED



Specifications

General

- Certifications
- Connectors
 - 1 x Plug-in screw terminal (# 14 ~ 22 AWG)

FM (ADAM-5060 only)

2 x form A, 4 x form C

CE

• Power Consumption 1.8 W (max.)

Relay Output

- Breakdown Voltage 500 V_{AC} (50/60 Hz)
- Channels
- 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_{nc}
- Relay Off Time 2 ms (typical)
- Relay On Time 3 ms (typical)
- Total Switching Time 10 ms

Ordering Information

ADAM-5060

6-ch Relay Output Module



Specifications

General

- Certifications
- Connectors
- (# 14 ~ 22 AWG) • Power Consumption 1.8 W (max.)

Relay Output

- Breakdown Voltage 500 V_{AC} (50/60 Hz)
- Channels 8 x form A
- . **Contact Rating**
- Insulation Resistance1 GΩ min. @ 500 Vnc 3 ms
- **Relay Off Time** . (typical)
- **Relay On Time** 7 ms (typical)
- Total Switching Time 10 ms

Ordering Information

ADAM-5068



Specifications

General

_		
•	Certifications	CE, FCC class A
•	Connectors	1 x Plug-in screw terminal (# 14 ~ 22 AWG)
•	LED Indicator	On: Active Off: Non-active
•	Power Consumption	2.2 W (max.)

Relay Output

- Breakdown Voltage 750 V_{AC} (50/60 Hz)
- 8 x form A Channels
- AC: 250 V @ 5 A Contact Rating
 - DC: 30 V @ 5 A
- Insulation Resistance 1 G Ω @ 500 V_{pc}
- Relay On Time 5 ms
- Relay Off Time 5.6 ms

Ordering Information

ADAM-5069

8-ch Power Relay Output Module w/ LED

1 x Plug-in screw terminal

CF

- - AC: 120 V @ 0.5 A DC: 30 V @ 1 A

8-ch Relay Output Module

ADAM-5080 ADAM-5081



RoHS COMPLIANT 2002/16/EC

4-ch Counter/Frequency Module

4-ch High Speed Counter/Frequency Module



Specifications

General

- Certifications
- Connectors
- Power Consumption

Counter/Frequency

- Counter Aux. Function Initial preset, hi-low alarm setting, alarm digital output

- Channels
- Input Frequency
- Input Level
- Isolation Input Level
- Isolation Voltage
- Maximum Count
- 4,294,967,295 (32 bits) - Minimum Input Current 2 mA (isolated)
- Minimum Pulse Width 500 µs (frequency mode) .
 - 100 µs (counter mode)

1,000 V_{RMS}

CE, FM

4

1.5 W (max.)

mapping, overflag

Isolated or TTL level

Logic level 0: 1 Vmax

Logic level 1: 3.5 ~ 30 V

1 x Plug-in screw terminal (# 14 ~ 22 AWG)

0.3 ~ 1,000 Hz max. (frequency mode)

5,000 Hz max. (counter mode) TTL only

- Counter (up/down, bi-direction) frequency Modes Programmable Digital 1 ~ 65,000 µsec (Noise Filter Function) Filter
- TTL Input Level
 - Logic level 0: 0 ~ 0.8 V Logic level 1: 2.3 ~ 5 V
- Note: Does not support ADAM-5550 Series

Ordering Information

ADAM-5080

4-ch Counter/Frequency Module

ADAM-5081

Specifications

NEW

General

- Certifications CE **Power Consumption** 1.1 W (Max.) LED Power/Communication Indicator Channels 4 Maximum Count 4,294,967,295 (32 bit) 5 Hz ~ 1 MHz max. (frequency mode) Input Frequency 1 MHz max. (counter mode) Input Level Isolated or TTL level Minimum Pulse Width 1µsec. (frequency mode) 1µsec. (counter mode) - Minimum Input Current 2 mA (isolated) Isolation Input Level Logic level 0: +3 Vdc (max), Logic level 1: +10 Vdc to 30 Vdc TTL Input Level Logic level 0: 0 Vdc to 0.8 Vdc, Logic level 1: 2.3 Vdc to 5 Vdc Isolation voltage 2,500 V_{RMS} Modes Counter (up/down, bi-direction, up, A/B Phase), Frequency Initial preset, hi-low alarm setting, alarm digital output - Counter Aux. Function mapping, overflag
- Programmable Digital 1 ~ 65,000 µsec (Noise Filter Function) Filter

Note:

For ADAM-5550 Series, ADAM-5000/485, ADAM-5000E, ADAM-5000/TCP, ADAM-5510M, ADAM-5510/TCP and ADAM-5510E/TCP.

Ordering Information

ADAM-5081

4-ch High Speed Counter/Frequency Module



ADAM-5202 ADAM-5240 **ADAM-5030**



2-port AMONet Master Module 4-axis Stepping/Pulse-type Servo **Motor Control Module**

2-slot SD Storage Module



Specifications

General

- Certifications CF Power Consumption 0.5 W (Max.) Connectors RJ-45 LED Indictors Active, Error (Each Port) Number of Rings 2 • Transmission Speed 2.5, 5, 10 or 20 Mbps with automatic data flow control Serial Interface Half duplex RS-485 with transformer isolation Cable Type CAT5 UTP/STP Ethernet cable Surge Protection 10 kV Communication Max. 100 m (20 Mbps/32 slave modules) or 50 m (20 Mbps/64 slave modules) Distance Communication 2 Rings with Max. 128 Slave (1 Ring with 64 slaves) Module Number
- Operating 0 ~ 50° C (32 ~ 122° F) Temperature

Note: only for ADAM-5550 Series

Ordering Information

ADAM-5202

2-ring AMONet Master Module

NEW RoHS COMPLIANT 2002/95/EC CE ADAM-5240

CE 1.1 W (Max.) 100-pin SCSI-II female 0 ~ 60° C (32 ~ 140° F) 5 ~ 95 % RH non-condensing (cfactor LEC CO.0.2)

2/3-axis Linear Interpolation/2-axis Circular Interpolation

±2, 147, 483, 646 for each axis

(refer to IEC 68-2-3)

DC +12 ~ 24 Vdc

1PPS ~ 4MPPS

1PPS ~ 4MPPS Pulse /Direction (1-pulse, 1- direction type)

Up/Down (2-pulse type)

T/S-curve Acceleration/

nEXOP + and nEXOP

4 Axis

Specifications

General

- Certifications **Power Consumption**
- Connectors
- Operating Temperature Relative Humidity

Motion

- Number of Axis External Power input
- Range
- . Speed
- **Continuous Interpolation** 1PPS ~ 2MPPS Speed
- **Drive Output Pulses**
- Range Pulse Output Type
- Speed Curve

 - Encoder Pulse Input Type Quadrature (A/B phase or
- Protection
 - Input Range 5 V ~ 30 V

External Signals Driving

.

- Input Signal
- Max Input Frequency Protection

100 Hz 1,000 Vdc Photo coupler isolation

- **External Deceleration/Instantaneous Stop Signal** Input Signal nIN1 ~ 3
- Max Input Frequency
- 4 kH7 1,000 Vdc Photo coupler isolation Protection
- **Input Pulse for Servo Motor Drives**
 - nALArm (servo alarm) Input Signal nINPOS (position command
 - completed)
- **General Purpose Output Signal**
- Ouput Signal nOUT4 ~ 7
- **Emergency Stop**
- Input Signal
- Protection
- and RC filtering Note: only for ADAM-5550 Series

Ordering Information

ADAM-5240



EMG - one emergency stop input

1000 Vdc Photo coupler isolation

for ADAM-5240



Specifications

General

- Certification
- Power Consumption 0.5 W (Max)
- Storage Type SD (Secure Digital Card)

CF

- Storage Number 2 USB Type
 - USB Rev 2.0 (Compliant) 2

0 ~ 55° C (32 ~ 131° F)

- USB Number Operating
- Temperature
- Max Storage 1 GB x 2
- Format FAT-16
- PCI Bus Interface
- Note: only for ADAM-5550 Series

Ordering Information

- ADAM-5030
- 2-slot SD Storage Module

13-36 PC-based Controllers & I/O Modules AD\ANTECH

- Deceleration **Input Pulse for Encoder Interface**
 - Up/Down) Counts per Encoder Cycle X1, X2 ,X4 (A/B phase only) 1,000 Vdc isolation

PWR-242 PWR-243 PWR-244



DIN-rail Power Supply

Panel Mount Power Supply

Panel Mount Power Supply



Specifications

Input

- Input Current 1.2 A max.
- Inrush Current (cold) 20 A/110 V_{AC}
 - 40 A/220 V_{AC} 47 ~ 63 Hz
- Input Frequency
- Input Voltage
- Short Protection

Output

- Output Current 2.1 A max. +24 V_{DC} ±10%
- Output Voltage
- Overload Protection

General

- Certifications
- Connectors
- Dimensions (L x W x H)
- Enclosure
- MTBF
- Operating
- Temperature

Ordering Information

- PWR-242
- **DIN-rail Power Supply**

 $90 \sim 264 V_{AC}$ wide input

range

CE, UL

Screw-terminal

Sheet metal

85,000 hrs

181 x 113 x 60 mm

(7.01" x 4.43" x 2.35")

0 ~ 50° C (32 ~ 122° F)





Specifications

Input

- Input Current 1.4 A max.
- Inrush Current (cold) 20 A/110 V_{AC} 40 A/220 V_{AC}
- Input Frequency
- Input Voltage
- Short Protection

Output

- Output Current
- Output Voltage
- **Overload Protection** .

General

- Certifications .
- Connectors
- Dimensions
- (L x W x H)
- Enclosure
- MTBF

- **Dimensions** CASE NO: CSO72 MATERIAL: IRON Unit: mm



Specifications

Input

- Input Current 1.4 A max.
- Inrush Current (cold) 25 A/110 V_{AC}
- 50 A/220 V_{AC} Input Frequency 47 ~ 63 Hz
- Input Voltage 100 ~ 240 V_{AC}
- Short Protection

Output

- Output Current Output Voltage
- Overload Protection

General

- Certifications
- Connectors
- Dimensions
- (L x W x H) Enclosure
- MTRF
- - Operating Temperature

Ordering Information

- PWR-244
- Panel Mount Power Supply



Ethernet Switch . $+24 V_{DC} \pm 10\%$ Screw-terminal 198 x 99 x 35 mm

Touch Panel PC

1

Fanless Box PC

(7.80" x 3.90" x 1.38") Sheet metal 70,000 hrs

4.2 A max.

CE. UL

0~50° C (32~122° F)

AD\ANTECH 13-37

- Operating Temperature

- **Ordering Information**
 - Panel Mount Power Supply

- PC-based Controlle RS-485 I/O Ethernet I/O **Building Automation**

Control I/O

- Screw-terminal 128 x 97 x 40 mm (5" x 3.8" x 1.6") Sheet metal 0 ~ 50° C (32 ~ 122° F)
- 78,000 hrs

47 ~ 63 Hz

3 A max.

CE, UL

+24 V_{DC} ±10%

 $85 \sim 132 V_{AC}$ or

 $170 \sim 264 V_{AC}$, (switchable)

- PWR-243

PWR-343 APAX-5343 APAX-5343E

Power Supply Module

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

...



Specifications

Input

- Rated Voltage
- Voltage Range $90 \sim 264 V_{AC}$
- Input Current
- 1.5 A (at rated load)

50 A

72 watt

24 Vpc

115/230 V_{AC}

- Input Frequency Range 47 ~ 63 Hz
- Inrush Current

Output

- Output Power
- Rated Voltage
- Rated Output Current 3 A ≥ 88%
- Efficiency

Protection

- Isolation Protection (In/Out)
- Over Voltage Protection
- Over Load Protection
- Short Circuit Protection

General

- Dimensions (W x H x D) 60 x 151 x 115 mm
- Operating Temperature $0 \sim 50^{\circ} \text{ C}$
- Storage Temperature -20 ~ 75° C
- Humidity 5 ~ 95% (non-condensing)

Ordering Information

- PWR-343
- Standalone Power Supply

Specifications

Input

Rated Voltage

APAX-5343

NEW

- Voltage Range
- Input Current 1.5 A (at rated load)
- Input Frequency Range 47 ~ 63 Hz

Inrush Current 50 A

Output

- Output Power 72 watt
- Rated Voltage $24 V_{DC}$
- Rated Output Current

Isolation Protection (In/Out)

General

- Dimensions (W x H x D) 75 x 151 x 115 mm
- Operating Temperature 0 ~ 50° C
- Storage Temperature -20 ~ 75° C
- Humidity 5~95% (non-condensing)

Ordering Information

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

- 3 A

115/230 VAC

 $90 \sim 264 V_{AC}$

≥ 88% Efficiency

- Protection
- Over Voltage Protection
- Over Load Protection
- Short Circuit Protection

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