

Programmable Automation Controllers

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To view all of Advantech's Programmable Automation Controllers, please visit www.advantech.com/products.



SoftLogic I/O Control

HMI/SCADA

Programmable Automation Controllers (PAC)

Advantech PAC Solutions

Advantech provides a full range of PAC solutions for the industrial market. According to CPU computing performance, Advantech offers Macro, Proto and Micro PAC to fulfill different application requirements.

Macro PAC System

APAX-6571KW features the latest low-power Intel Atom CPU delivering high computing capabilities. It offers rich interfaces to integrate various devices to the same control platform. Besides, it can execute I/O processing through IEC 61131-3 SoftLogic as well as HMI/SCADA, database, or data analysis tasks on the same platform.

Proto PAC System

APAX-5570XPE/5571XPE features Celeron M CPU, and the built-in Windows XP Embedded makes it an open development platform. Combining APAX-5520KW (offering IEC 61131-3 compliant programming environment) with APAX-5570XPE/5571XPE provides a dual CPU architecture. APAX-5520KW concentrates on I/O control processing, while APAX-5570XPE/5571XPE executes other tasks such as HMI/SCADA, database, recipe, communication, etc. The first dual CPU architecture in PAC market helps the control system more reliable, and benefits from APAX-5000 I/O modular design and flexible expansion topology. For applications that don't need to separate HMI/SCADA from I/O control, APAX-5570KW/5571KW is the ideal alternative solution with IEC 61131-3 programming environment.

Micro PAC System

ADAM-5550KW, with AMD Geode GX533 CPU, provides the same PAC features through built-in IEC 61131-3 programming language. It is an ideal cost-effective solution for control applications which don't require high computing ability. With the built-in VGA port and HMI/SCADA software, there is no need to build separate control and HMI/SCADA system. Using APAX-5520KW or APAX-5620KW as a standalone controller with APAX-5000 I/O modules is an alternative cost-effective and compact solution. Users can benefit from modular design and flexible expansion.



PAC Characteristics

Multi-domain Functionality on a Single Platform

- PAC's will play a major role in different application domains by adhering to open industry standards and providing multidiscipline programming and functionality

Single Developing Tool for Various Form Factors

- A single programming tool provides transparent access for all parameters and functions within the entire system. A single platform can combine PLC, SoftLogic, remote input/output (I/O), motion control, PID control and data handling
- Requires only a one-time design, and then can easily leverage the control know-how into different control platforms to meet versatile automation projects needs

Supports IEC 61131-3 Programming Languages

- Includes: Ladder Diagram, Function Block, Sequential Function Chart, Structure Text and Instruction List which covers almost all PLC programming languages
- Cross language support for three graphical languages to simplify control programs

Multiple Speeds with Deterministic I/O

- Cyclic tasks allow user to configure interval and priority, and different cyclic tasks can have different interval
- Guaranteed I/O update time

VGA Port

- No need additional Human Machine Interface, the system can connect directly to display to save lots of cost

Seamless Integration between SoftLogic and HMI Software

- SoftLogic creates single tagging database and HMI software shares the same tagging database

Transfer Data and Information via Ethernet and IT Standard Technology

- Utilization of Ethernet, Internet and IT standards such as FTP, Web Server, Email Alarm, SQL, and OPC

Standard Communication

- Multi-vendor data exchange by utilizing de-facto standard such as Modbus

Open and Modular Architecture

- Flexible for upgrade and maintenance
- Easy to expand local and remote I/O modules

Storage Function

- PAC storage function can be set for your assigned time and conditions

Complex Control Functions

- Complex control algorithms need powerful floating point calculations and large memory capacity
- The software development tool provides PID Function Block and allows users to develop custom function blocks with proprietary complex controls, such as Fuzzy Logic Control and Neural Network Control

Remote Maintenance

- Operators can access the supplier's Web site, allowing technicians to diagnose and troubleshoot problems directly from the plant floor by PAC's Web-based monitoring and maintenance function



Features

- IEC 61131-3 programming languages
- Intuitive programming with a clear project structure
- Cross-compiling: FBD, LD and IL can be cross-compiled to each other
- Multi user functionality shortens programming time
- Management of distributed controls
- Network variables: Easy and powerful configuration of distributed communication
- Powerful debugging tools: Online changes, PLC simulation, overwriting & forcing, breakpoints, watch windows & recipes, logic analyzer, and cross reference
- Online program download

Introduction

Advantech's Programmable Automation Controllers (PAC) leverage KW-Software's Multiprog and ProConOS as a single development tool with the SoftLogic control kernel. Requiring only a one-time design, users can easily leverage the control know-how into different control platforms to meet versatile automation projects needs. KW SoftLogic also creates single tagging database and HMI Software, such as WebAccess and Advantech Studio, all the features can help users to save the visible and invisible cost.

Multiprog supports all IEC 61131-3 programming languages. Depending on the task to be handled, your experience and company standards, you may choose one of the five standardized programming languages. The use of Multiprog offers you many advantages. Our long-term experience in the automation industry guarantees you a sophisticated software product.

Specifications

Hardware Requirements

Device	Minimum	Recommended
IBM compatible PC with Pentium Processor	200 MHz	350 MHz
System RAM	64 MB	128 MB
Hard Disk	60 MB free memory space	
CD-ROM drive		
VGA Monitor Color Settings	256 colors	True color
Resolution	800 x 600	1024 x 768
RS-232 interface	Optional	
Mouse	Recommended	

Advantech Hardware Supported

- APAX-6000 Series
- APAX-5000 Series
- ADAM-5550KW Series
- ADAM-5510KW Series

Software Requirements

- Microsoft® Windows NT 4.0 SP5 or Windows 2000/XP
- Microsoft Internet Explorer 5.02 or above

IEC 61131-3 Programming Languages

- Instruction List (IL)
- Structured Text (ST)
- Function Block Diagram (FBD)
- Ladder Diagram (LD)
- Sequential Function Chart (SFC)
- All programming languages can be mixed within one project

Ordering Information

- **MPROG-ADV46E** KW Multiprog Advanced v4.6 (64 kbyte I/O)*
- **MPROG-BAS46E** KW Multiprog Basic v4.6 (128 bytes I/O)*
- **MPROG-ADV46UE** Upgrade Ver. of KW Multiprog Advanced v4.6 (64 kbyte I/O)
- **MPROG-BAS46E** Upgrade Ver. of KW Multiprog Basic v4.6 (128 bytes I/O)

Notes:

Using MPROG-BAS46E Basic (128 Bytes I/O), programmer can leverage 1024 points DI/O (128 Bytes*8), or 32 (APAX and ADAM-5550KW series)/64 (ADAM-5510KW series) points AI/O, or mix of DI/O and AI/O

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APAX PAC Selection Guide



System	APAX-5520KW	APAX-5620KW	APAX-5570KW	APAX-5571KW	APAX-6571KW
CPU	XScale PXA270 520 MHz		Celeron M 1 GHz	Celeron M 1.5 GHz	Atom 1.6 GHz
Memory	Flash 32 MB, SDRAM 64MB		512 MB DDR2 DRAM		1GB DDR2 SDRAM
Storage	1 x CF slot (internal)		1 x SD card slot		1 x CF slot (internal)
Local Display	VGA		DVI-I		DVI-I
USB Ports	1 x USB 1.1		4 x USB 2.0		2 x USB 2.0
Audio	-		Mic in, Line out		Mic in, Line in, Line out
Cooling System	Fanless		Fanless	with Fan	Fanless
Power Input	18 ~ 30 V _{DC}		18 ~ 30 V _{DC}		10 ~ 30 V _{DC}
Diagnostics LED	Power, Battery, Run, Error				Power, Battery, IDE, Over Temperature Alarm, 4 x Programmable LED
Real-time Clock	Yes				
Watchdog Timer	Yes				
Operating System	Windows CE .NET				
Control Software	IEC 61131-3 (LD, FB, SFC, ST & IL 5 language) KW Multiprog and ProConOS				
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	2		2
Speed	10/100 Mbps		10/100/1000 Mbps		10/100/1000 Mbps
Protocol	Modbus/TCP				
Communication (Serial)					
COM 1	RS-485	RS-485	RS-232		RS-232/422/485
COM 2	-	RS-485	RS-422/485		RS-232/422/485
CANopen Ports	-	2	-		-
Protocol	Modbus/RTU, CANopen (APAX-5620KW only)				
Isolation					
Communication	2500 V _{DC} (RS-485)	2500 V _{DC} (CAN & RS-485)	2500 V _{DC} (RS-422/485 only)		-
Environment					
Operating Temperature	-10 ~ 55° C (when mounted vertically)				-10 ~ 50° 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 60068-2-64/60068-2-6: 2 Grms @ 5 ~ 500 Hz (Random, operating) 2 G @ 5 ~ 500 Hz (Sine, non-operating)		IEC 60068-2-64 IEC 60068-2-6: 2 Grms @ 5 ~ 500 Hz (Random, operating) 2 G @ 5 ~ 500 Hz (Sine, non-operating)
Shock Protection	IEC 60068-2-27: 20 G @ wall mount		IEC 60068-2-27: 30 G @ wall mount		IEC 60068-2-27: 50 G @ wall mount
Power Supply Module (optional)	APAX-5343E		APAX-5343		PWR-343
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*: APAX DI/O modules can use ID numbers 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

APAX Communication and Motion 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	Ethernet/IP
	Data Transfer Rates	10/100 Mbps	100 Mbps	10/100 Mbps
	Connected I/O Modules		32 (max.)*	
	Digital Signals		2048 (max.)	
	Analog Signals		512 (max.)	
General	Connector	2 x RJ-45 (2-channel switch, share same IP address)		
	Topology	Line or star wiring		
	Operating Temperature	-10 ~ 55° C (when mounted vertically)		
	Storage Temperature	-40 ~ 70° C		
	Relative Humidity	5 ~ 95% (non-condensing)		
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Communication and Motion Modules



Module Name		APAX-5090P	APAX-5095P	APAX-5202P
Description		4-port RS-232/422/485 Communication Module	2-port CANopen Module	2-port AMONet Master Module
Serial Communication	Baud Rate	50 bps ~ 230.4 kbps	-	-
	Data Bits	5, 6, 7, 8	-	-
	Stop Bits	1, 1.5, 2	-	-
	Parity	None, even, odd	-	-
CANopen Communication	Data Transfer Rates	-	10, 20, 50, 125, 250, 500, 800, 1,000 kbit/s	-
Motion	Transmission Speed	-	-	2.5, 5, 10 or 20 Mbps
	Slaves Number	-	-	1 Ring: 64 (max.) 2 Rings: 128 (max.)
General	Interface	2 x RS-422/485 2 x RS-232/422/485	2 x CANopen	2 x AMONet
	Connector	26-pin clamp-type terminal	DB9	RJ-45
	Operating Temperature	-10 ~ 55° C (when mounted vertically)		
	Storage Temperature	-40 ~ 70° C		
	Relative Humidity	5 ~ 95% (non-condensing)		
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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)	10 (Total**)	12 (Total**)	1000 (per channel)	12 (Total**)	-
	Input Resolution	16-bit	16-bit	12-bit	16-bit	-
	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, Balo, 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 Slew Rate	-	-	-	-	0.7 VDC/μs (per channel)
	Voltage Output	-	-	-	-	±2.5 V, ±5 V, ±10 V, 0 ~ 2.5 mV, 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 ~ 70° C				
	Relative Humidity (non-condensing)	5 ~ 95%				
	Power Consumption (typical)	2.5 W @ 24 V _{DC}	4 W @ 24 V _{DC}	3.5 W @ 24 V _{DC}	3.5 W @ 24 V _{DC}	3.5 W @ 24 V _{DC}
	Isolation between channels and backplane	2500 V _{DC}				
Power Supply Module (optional)	APAX-5343E					
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*: 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.



Module Name		APAX-5040	APAX-5045	APAX-5046	APAX-5060	APAX-5080
Description		24-ch DI Module	24-ch DI/O Module	24-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 _{DC}	24 V _{DC}	-	-	24 V _{DC}
	Input Voltage Range (signal "0")	-5 ~ 5 V _{DC}	-5 ~ 5 V _{DC}	-	-	0 ~ 3 V _{DC}
	Input Voltage Range (signal "1")	15 ~ 30 V _{DC} -15 ~ -30 V _{DC}	15 ~ 30 V _{DC} -15 ~ -30 V _{DC}	-	-	10 ~ 30 V _{DC}
	Rated Input Current	3 mA (typical)	3 mA (typical)	-	-	10 mA (typical)
	Input Filter	3 ms	3 ms	-	-	3 ms
	Over Voltage Protection	Yes	Yes	-	-	Yes
Counter Input	Counter Channels	-	-	-	-	4 or 8 (depends on mode)
	Rated Input Voltage	-	-	-	-	24 V _{DC}
	Input Voltage Range (signal "0")	-	-	-	-	0 ~ 3 V _{DC}
	Input Voltage Range (signal "1")	-	-	-	-	10 ~ 30 V _{DC}
	Rated Input Current (signal "1")	-	-	-	-	5 ~ 15 mA (typical)
	Counting Range	-	-	-	-	32-bit + 1-bit overflow/underflow
	Counter Frequency	-	-	-	-	1 MHz (max.)
	Counter Gate and Alarm Function	-	-	-	-	Yes
Over Voltage Protection	-	-	-	-	Yes	
Digital Output	DO Channels	-	12	24	12	4
	Output Type	-	Sink	Sink	Relay (Form A, SPST)	Sink
	Rated Output Voltage	-	24 V _{DC}	24 V _{DC}	250 V _{AC} , 30 V _{DC}	24 V _{DC}
	Rated Output Current (signal "1")	-	0.5 A	0.5 A	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 ~ 70° C				
	Relative Humidity (non-condensing)	5 ~ 95%				
	Power Consumption (typical)	2 W @ 24 V _{DC}	2.5 W @ 24 V _{DC}	2.5 W @ 24 V _{DC}	2 W @ 24 V _{DC}	2.5 W @ 24 V _{DC}
	Isolation between channels and backplane	2500 V _{DC}				
	Channel Status LED	Yes (per channel)				
	Fail Safe Value	-	Yes (DO channel)	Yes	Yes	Yes (DO channel)
	Power Supply Module (optional)	APAX-5343E				
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APAX-5520KW

Micro PAC 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
- Combines with APAX-5570XPE/5571XPE to deliver dual CPU functionality
- Supports real-time control tasks under Windows CE .NET through ProConOS
- Supports IEC-61131-3 programming languages through Multiprog
- 1 x CompactFlash slot for data logging
- 1 x 10/100 Mbps LAN and 1 x RS-485 ports

Introduction

APAX-5520KW can operate in two different ways. APAX-5520KW can be inserted on the backplane, and control I/O modules which are stacked together. In this way, the APAX-5520KW performs as standalone controller since it can run process program by itself. The second way is to combine APAX-5520KW and APAX-5570XPE/5571XPE to form dual CPU architecture. Installing APAX-5520KW on the expansion slot of APAX-5570XPE/5571XPE or on the expansion backplane, the CPU of APAX-5520KW can concentrate on the I/O control process. Since there is no other tasks bothering CPU of APAX-5520KW, its control ability can deliver the best performance, providing the real-time execution. The CPU of the APAX-5570XPE/5571XPE controller can execute other tasks such as HMI/SCADA, recipe, database, communication with other system, data logging, etc. This architecture can deliver more reliability to system when HMI software makes XP Embedded system hang on the the APAX-5570XPE/5571XPE controller, since APAX-5520KW will still continuously execute its task. APAX-5520KW with industrial standard IEC 61131-3 programming tool, Multiprog KW software and stable ProConOS, makes engineers develop their applications in shortest time and save their time-to-market.

Specifications

System Hardware

- **CPU** 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 (internal)
- **Connected I/O Modules** 32 (max.)*
- **Digital Signals** 2048 (max.)
- **Analog Signals** 512 (max.)

Communication (Ethernet)

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

Communication (Serial)

- **Medium** 1 x isolated RS-485
- **Maximum Nodes** 32 (in RS-485 daisy-chain network)
- **Protocol** Modbus/RTU Master and Slave
- **Isolation Protection** 2500 V_{DC}

Software

- **Operating System** Windows CE .NET
- **Control Software** KW Multiprog (development tool)
ProConOS (runtime kernel)

General

- **Certifications** 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_{DC} (typical)

Environment

- **Operating Temperature** -10 ~ 55° C (when mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)
- **Shock Protection** 20 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-5520KW** Micro PAC with XScale CPU, KW
- **MPROG-ADV46E** KW Multiprog Advanced v4.6 (64K bytes I/O)
- **MPROG-BAS46E** KW Multiprog Basic v4.6 (128 bytes I/O)
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module

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

APAX-5570KW APAX-5571KW

Proto PAC with Celeron® M CPU

NEW



Introduction

APAX-5570KW/5571KW is a Programmable Automation Controller designed for control tasks which require Industrial PC computing performance with a PLC's robustness. APAX-5570KW/5571KW features a high performance Intel Celeron M grade CPU with built-in Windows CE. NET operating system, which allows developing local HMI software under popular programming environments like Microsoft Visual Studio.NET or using standard HMI software like WebAccess. With the local DVI or VGA display, no longer will users be required to develop additional SCADA PC's in their applications. APAX-5570KW/5571KW also bundled KW-Software ProConOS which can prove the deterministic performance of control tasks under Windows CE. NET. The KW-Software Multiprog programming tool can support 5 standard IEC 61131-3 programming languages so PLC users can develop control tasks with their own familiar programming languages. This powerful PAC is ideal for a variety of applications ranging from machine automation to SCADA/HMI applications.

Specifications

General

- **Certifications** CE, FCC class A
- **Cooling System** APAX-5570KW: Fanless, heatsink only
APAX-5571KW: Heatsink with fan
- **Mounting** DIN-rail, wall mount (panel mount)
- **Dimensions (W x H x D)** 270 x 142 x 126 mm
- **Enclosure** ABS+PC
- **Weight** APAX-5570KW: 2.42 kg
APAX-5571KW: 2.46 kg
- **Power Consumption (Typical, without inserted module)** APAX-5570KW: 30 W @ 24 V_{DC}
APAX-5571KW: 45 W @ 24 V_{DC}
- **Power Input** 18 ~ 30 V_{DC} (Dual Power Input)
- **Power Reversal** Yes
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **Connected I/O Modules** 32 (max.)*
- **Digital Signals** 2048 (max.)
- **Analog Signals** 512 (max.)

System Hardware

- **CPU** APAX-5570KW: Intel Celeron M 1 GHz (non-cache)
APAX-5571KW: Intel Celeron M 1.5 GHz (1 MB L2 cache)
- **System Chipset** Intel 915 GME
- **Memory** 512 MB DDR2 DRAM on board (Dual channel mode)
- **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 (SD card size: up to 16 GB)
- **Reset Button** Yes

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 ports
- Easy to develop local HMI software under Windows® CE. NET
- Supports real-time control tasks under Windows CE. NET through ProConOS
- Supports IEC 61131-3 programming languages through Multiprogram
- SD card slot for data logging

Software

- **Operating System** Windows CE. NET
- **Control Software** KW Multiprog (development tool)
ProConOS (runtime kernel)

Communication

- **Serial Ports** 1 x RS-232, 1 x Isolated RS-422/485
- **Serial Port Isolation** 2,500 V_{DC} (RS-422/485 only)
- **Serial Baud Rate** RS-232: 50 bps ~ 115.2 kbps
RS-422/485: 50 ~ 230400 bps
- **LAN Ports** 2 x RJ-45 Ports, 10/100/1000 Mbps
- **USB Ports** 4 x USB 2.0

Environment

- **Operating Temperature** -10 ~ 55° C (when mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)
- **Shock Protection** 30 G @ wall mount, half sine, 11 ms
(Confirms to IEC 60068-2-27)
- **Vibration Protection** 2 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-5570KW** Proto PAC w/ Celeron M 1 GHz, KW
- **APAX-5571KW** Proto PAC w/ Celeron M 1.5 GHz, KW
- **APAX-5343** Power Supply for APAX-5570 Series
- **MPROG-ADV46E** KW Multiprog Advanced v4.6 (64K bytes I/O)
- **MPROG-BAS46E** KW Multiprog Basic v4.6 (128 bytes I/O)

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ADAM-5000 PAC Selection Guide



System	ADAM-5510KW	ADAM-5510KW/TCP	ADAM-5510EKW/TP	ADAM-5550KW
CPU	80188	80188	80188	AMD Geode GX533 (GX2)
RAM	640 KB	768KB	768KB	128 MB DDR SDRAM
Flash ROM	256 KB	256 KB	256 KB	-
Flash Memory	768 KB	768 KB	768 KB	-
Flash Disk	512 KB	512 KB	512 KB	-
OS	ROM-DOS	ROM-DOS	ROM-DOS	WinCE 5.0
Real-time Clock	Yes	Yes	Yes	Yes
Watchdog Timer	Yes	Yes	Yes	Yes
COM1	RS-232	RS-232	RS-232/485	RS-232/485
COM2	RS-485	RS-485	RS-485	RS-485
COM3 (Programming)	RS-232 (TX, RX, GND)	RS-232 (TX, RX, GND)	RS-232 (TX, RX, GND)	RS-232
COM4	RS-232/485	RS-232/485	RS-232/485	RS-232/485
I/O Slots	4	4	8	8
Power Consumption	4 W	4 W	4 W	12 W
Isolation				
Communication	2,500 V _{DC} (COM2 RS-485)	2,500 V _{DC} (COM2 RS-485)	2,500 V _{DC} (COM2 RS-485)	2,500 V _{DC} (COM2 RS-485) 1,000 V _{DC} (COM4 RS-485)
Communication Power	3,000 V _{DC}			
I/O Module	3,000 V _{DC}			
Diagnosis				
Status Display	Power, CPU, Communication, Battery			Power, User define
Self Test	Yes, while ON			
Software Diagnosis	Yes			
Communication				
Network	RS-232/485	Ethernet (RJ-45)	Ethernet (RJ-45)	Ethernet (2 x RJ-45)
Speeds	9,600, 38,400, 57,600 bps and 115.2 kbps	10/100 Mbps	10/100 Mbps	10/100 Mbps
Max. Distance	4,000 feet (1.2 km)	150 m	150 m	150 m
Data Format	N, 8, 1, 1	-	-	-
Max. Nodes	32	32	32	-
Protocol	Modbus/RTU	Modbus/RTU, Modbus/TCP	Modbus/RTU, Modbus/TCP	Modbus/RTU, Modbus/TCP
Remote I/O	Modbus Device	Modbus Device	Modbus Device	Modbus Device
Power Requirements	10 ~ +30 V _{DC}	10 ~ +30 V _{DC}	10 ~ +30 V _{DC}	10 ~ +30 V _{DC}
Environment				
Operating Temperature	-10 ~ 70° C	-10 ~ 70° C	-10 ~ 70° C	0 ~ 55° C
Storage Temperature	-25 ~ 85° C	-25 ~ 85° C	-25 ~ 85° C	-25 ~ 85° C
Humidity	5 ~ 95%	5 ~ 95%	5 ~ 95%	5 ~ 95%
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ADAM-5000 I/O Module Selection Guide

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 _{DC}	3,000 V _{DC}	3,000 V _{DC}	3,000 V _{DC}	3,000 V _{DC}
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*: 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	-	-	-	-	-
Output Channels		-	4	-	-	-	-
Analog Output	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 DIO (bit-wise selectable)	16 (ADAM-5051) 16w/LED (5051D/5051S)	8 w/LED	32
	Digital Output Channels	-	-	-	-	-	-
Isolation		3,000 V _{DC}	3,000 V _{DC}	-	2,500 V _{DC} (5051S)	5,000 V _{RMS}	2,500 V _{DC}
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*: 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.

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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 _{DC}	-	2,500 V _{DC}	2,500 V _{DC}	-
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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 _{RMS}	2,500 V _{DC}	-	1,000 V _{DC}
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Motion and Storage Modules



Model		ADAM-5202	ADAM-5240	ADAM-5030
Axes	Number of Axes	-	4	-
	Linear Interpolation	-	v	-
	2-Axis Circle Interpolation	-	v	-
Advanced Functions	Encoder Channels	-	4	-
	Limit switch Input Channel	-	8	-
	Home Input Channel	-	4	-
	Emergency stop Input Channel	-	1	-
	Slow Down Limit Switch	-	8	-
	Servo On Output Channel	-	4	-
	General Purpose DO Channel	-	4	-
	Position Compare Event	-	V	-
	Remote Motion	V	-	-
	Remote I/O	V	-	-
	Board ID	-	-	-
	Connectors	4 x RJ-45	100-PinSCSI-II	-
	Wiring Board	-	ADAM-3952	-
Remote Slave Module	AMAX-2752SY/2754SY/2756SY AMAX-2241/2242/2243	-	-	
Storage	Type	-	-	SD (Secure Digital Card)
	Channel	-	-	2
	Size	-	-	2 GB (Max)
USB	Type	-	-	V2.0 (compliant)
	Channel	-	-	2
Supported Controller	ADAM-5550KW			
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eHome Platforms

ADAM-5550KW

8-slot Micro PAC with GX2 CPU



Features

- SoftLogic support in Win CE 5.0
- Can be operated with or without display/keyboard/mouse
- Remote monitoring through Web Server and Email Alarm
- Remote maintenance via FTP Server
- Supports Modbus/RTU Master and Modbus/TCP (Server/Client) Protocol
- Supports SQL database
- Supports SD Storage I/O Module
- Supports AMONet Master Module
- Supports Motion Control Module
- Deterministic I/O at 1 ms
- Remote I/O expansibility
- Rich support to ADAM-5000 I/O Modules

Introduction

ADAM-5550KW is a Programmable Automation Controller designed for control tasks which require Industrial PC computing performance with the PLC's robustness. ADAM-5550KW offers an AMD Geode GX533 CPU along with control specific features such as watchdog timer, battery backup RAM and deterministic I/O. ADAM-5550KW features 5 standard IEC - 61131-3 programming languages in CE 5.0, so PLC users can develop control strategies with their own familiar programming languages. The powerful Multiprog KW Software and stable ProConOS have allowed ADAM-5550KW to become the best choice for a Programmable Automation Controller on the market today. With the optional HMI Software and built-in VGA port, no longer will users be required to build up additional SCADA PC's in 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** AMD Geode GX533 (GX2) 330 MHz
- **I/O Capacity** 8 slots
- **LED Indicators** Power, User define
- **Memory** 128 MB DDR SDRAM with 1 MB Battery Backup
1 x CompactFlash® Card (Internal)
- **Operating System** Windows® CE .NET
- **Real-time Clock** Yes
- **Watchdog Timer** Yes

Communications

- **Comm. Protocol** Modbus/RTU and Modbus/TCP
- **Medium** 2 x 10/100 Base-T Ethernet Interface with RJ-45 connectors

Protection

- **Communication** 2,500 V_{DC} (COM2 RS-485)/1,000 V_{DC} (COM4 RS-485)
- **Power Reversal Protection** Yes

Power

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

Software

- **Operating System** Windows CE .NET
- **Control Software** KW Multiprog (development tool)
ProConOS (runtime kernel)

General

- **Certifications** CE, FCC Class A
- **Connectors** 1 x RS-232/485 (COM1)
1 x RS-485 (COM2)
1 x RS-232 (COM3)
1 x RS-232/485 (COM4)
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
- **Mounting** DIN-rail, stack, wall

Environment

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

Ordering Information

- **ADAM-5550KW** Micro PAC w/ GX2, KW, 8-slot
- **ADAM-5550KWAS** Micro PAC w/ GX2, KW, AStudio HMI S/W, 8-slot
- **MPROG-BAS46** KW Multiprog v4.6 (128-byte I/O)
- **MPROG-ADV46** KW Multiprog v4.6 (64k-byte I/O)