



## Industrial Monitors and Controllers

Advantech's FPM series industrial monitors and UNO-1100H embedded automation computers, have both passed Class I, Division 2 Group A,B, C, D certification, which extends their use to hazardous applications. The FPM series are rugged platforms that offer advanced functionality over traditional HMI. The UNO-1100H series are industrial-proven fanless platforms with no internal cabling and no moving parts. The UNO-1100H series with a wide power input range also provide dual Ethernet to assure reliability and security. With these benefits, the FPM series and UNO-1100H series are the best devices for use in tough demanding environments.

### Industrial Monitors



Model Name	FPM-8151H
Display	Size (diagonal)
	15" XGA
	Resolution
	1024 x 768
	Colors
Viewing Angle	16.2 M
	160, 140
	Luminance
Direct VGA Input	350
	Yes
DVI Input	Yes
Touchscreen (optional)	Resistive
OSD (onscreen display)	Yes
Power Adapter(voltage, AC)	100-240 V
DC Power Input (voltage)	24 V <sub>DC</sub>
Front Panel Ingress Protection	NEMA4/IP65
Operating Temperature	-20 ~ 60°C (-4 ~ 140°F)
Dimensions (W x H x D)	422 x 338 x 68 mm (16.61" x 13.31" x 2.68")
Certifications	Class I Division 2 Groups ABCD T4, UL, CCC, CE, FCC Class A, RoHS, BSMI

### Stainless Steel Enclosures

The FPM-8151H is designed with robust anodizing coated aluminum front bezel and 316L stainless steel rear cover.

### Designed for Control Cabinets

The UNO-1100H series feature a compact size, DIN-rail mounted, and front-accessible I/O that make installation within a control cabinet very easy.

### DIN-rail Embedded Automation Computers



Model Name	UNO-1140FH	UNO-1150GH/1150GHE	UNO-1172AH
CPU	Advantech EVA-X4150 SoC, 486SX grade, 150MHz	AMD Geode LX800, 500 MHz	Intel Atom D510, 1.66 GHz
Onboard RAM	64M Industrial SDRAM	256M DDR SDRAM	2GB DDR2 SDRAM
Battery-Backup SRAM	-	-	1 MB
Display	VGA	VGA	VGA
Audio	-	Yes	Yes
Serial Ports	4 x Iso. RS-232/485 4 x Iso. RS-485	2 x RS-232/422/485 2 x RS-232 (one pin header reserved)	2 x RS-232/422/485 2 x RS-232 (pin header)
Ethernet Ports	1 x 10/100Base-T	2 x 10/100Base-T	3 x 10/100/1000Base-T
USB Ports	2	2	4
Expansion	PC/104 (reserved)	UNO-1150GH: N/A UNO-1150GHE: 2 x PCI-104, 1 x Mini PCI	UNO-1172AH: 1 x Mini PCIe
CompactFlash Slots	One Internal	One Internal	One internal
Power Input Range	10 (Min.) ~ 30 V <sub>DC</sub> (Max.)	10 (Min.) ~ 36 V <sub>DC</sub> (Max.)	10 (Min.) ~ 36 V <sub>DC</sub> (Max.)
Operating Temperature	-20 ~ 75°C (-4 ~ 167°F)	-10 ~ 60°C (14 ~ 140°F)	-10 ~ 65°C (14 ~ 149°F)
Power Consumption	10 W	15 W	24 W
Dimensions (W x H x D)	71 x 152 x 139 mm (2.8" x 6" x 5.5")	71 x 152 x 139 mm (2.8" x 6" x 5.5")/ 96.5 x 152 x 139 mm (3.8" x 6" x 5.5")	85.5 x 152 x 139 mm (3.4" x 6" x 5.5")
Certifications	Class I Division 2 Groups ABCD T4A	Class I Division 2 Groups ABCD T3A	Class I Division 2 Groups ABCD T5
UL, CCC, CE, FCC Class A, RoHS			



### Battery-backup SRAM

The onboard battery-backup SRAM saves runtime process data in the event of a power failure. In addition, the SRAM can act as a data buffer that helps to reduce CF access time and extend product lifetime.



### Flexible Expansion

With Mini PCI, PCI-104 and PC/104+, the UNO-1100H series enable users to easily integrate wireless connections and Fieldbus I/O modules in a single package.

## Regional Service & Customization Centers

China	Taiwan	Netherlands	Poland	USA/ Canada
Kunshan 86-512-5777-5666	Taipei 886-2-2792-7818	Eindhoven 31-40-267-7000	Warsaw 48-22-33-23-730	Milpitas, CA 1-408-519-3800

## Worldwide Offices

### Greater China

<b>China</b>	<b>Toll Free</b>	<b>800-810-0345</b>
Beijing		86-10-6298-4346
Shanghai		86-21-3632-1616
Shenzhen		86-755-8212-4222
Chengdu		86-28-8545-0198
Hong Kong		852-2720-5118

### Taiwan

<b>Toll Free</b>	<b>0800-777-111</b>
Rueiguang	886-2-2792-7818
Yang Guang	886-2-2792-7818
Shing-Tien	886-2-2218-4567
Taichung	886-4-2378-6250
Kaohsiung	886-7-229-3600
Hsinchu	886-3-543-0569

### Asia Pacific

<b>Japan</b>	<b>Toll Free</b>	<b>0800-500-1055</b>
Tokyo		81-3-6802-1021
Osaka		81-6-6267-1887

<b>Korea</b>	<b>Toll Free</b>	<b>080-363-9494</b>
Seoul		82-2-3663-9494

### Singapore

Singapore	65-6442-1000
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<b>Malaysia</b>	<b>Toll Free</b>	<b>1800-88-1809</b>
Kuala Lumpur		60-3-7724-3555
Penang		60-4-397-3788
		60-4-397-4188

<b>Indonesia</b>		
Jakarta		62-21-7690525

<b>Thailand</b>		
Bangkok		66-2-248-3140

### India

<b>Toll Free</b>	<b>1800-425-5070</b>
Bangalore	91-80-2337-4567

<b>Australia</b>	<b>Toll Free</b>	<b>1300-308-531</b>
Melbourne		61-3-9797-0100
Sydney		61-2-9482-2443

### Europe

<b>Germany</b>	<b>Toll Free</b>	<b>00800-2426-8080</b>
Münich		49-89-12599-0
Düsseldorf		49-211-97477-0

<b>France</b>		
Paris		33-1-4119-4666

### Italy

Milano	39-02-9544-961
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<b>Benelux &amp; Nordics</b>		
Breda		31-76-5233-100
Roosendaal		31-165-550-505

<b>UK</b>		
Oxfordshire		44-1491-681144

<b>Poland</b>		
Warsaw		48-22-33-23-740 / 41

### Russia

<b>Toll Free</b>	<b>8-800-555-01-50</b>
Moscow	7-495-232-1692

# Advantech's Class I, Division 2 Certified Products

## Solutions for Hazardous Applications



- Industrial Monitors
- Industrial Communication
- Embedded Automation Computers
- Data Acquisition & Control Modules



## About Advantech



Founded in 1983, Advantech is a leader in providing trusted innovative embedded & automation products and solutions. Advantech offers comprehensive system integration, hardware, software, customer-centric design services, and global logistics support; all backed by industry-leading front and back office e-business solutions. We cooperate closely with our partners to help provide complete solutions for a wide array of applications across a diverse range of industries. Advantech has always been an innovator in the development and manufacturing of high-quality, high-performance computing platforms, and our mission is to empower these innovations by offering trustworthy ePlatform products and services. With Advantech, there is no limit to the applications and innovations our products make possible.

## Certification Definition - Class I, Division 1 & 2

Hazardous locations are areas where potential hazards (e.g. fires, explosions, etc.) may exist under normal or abnormal conditions because of the presence of flammable gases or vapors, flammable liquids, combustible dusts or ignitable fibers. According to the NEC (National Electrical Code), there are three types of hazardous locations categorized by Class I (gases, vapors, and liquids), Class II (dusts), and Class III (fibers and flyings). Division 1 means normally explosive and hazardous and Division 2 means not normally present in an explosive concentration but may accidentally exist.

Class I is directly related to the oil and gas market applications, such as petroleum refineries, gasoline storage, dispensing areas and utility gas plants. According to the ignition temperature of the substance, its explosion pressure, and other flammable characteristics, the gases and vapors of Class I locations are broken into four groups by the Codes: A, B, C, and D. Temperature classes also exist to designate the permissible surface temperature of electrical equipment which allows them to operate normally in the surrounding atmosphere.

CLASSES	GROUPS	DIVISIONS	
		1	2
Class I : Gases, vapors, and liquids	A: Acetylene B: Hydrogen, gases or vapors of equivalent hazard C: Ethyl-ether vapors, ethylene, or cyclo-propane D: Gasoline, hexane, naptha, benzene, butane, propane, alcohol, etc.	Normally explosive and hazardous	Not normally present in an explosive concentration (but may accidentally exist)
TEMPERATURE CLASSES			
• T6 85 ~ 100°C (185 ~ 212°F) • T5 100 ~ 135°C (212 ~ 275°F) • T4 135 ~ 200°C (275 ~ 392°F)		• T3 200 ~ 300°C (392 ~ 572°F) • T2 300 ~ 450°C (572 ~ 842°F) • T1 450°C + (842°F +)	

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## Data Acquisition Modules

Advantech's FM approved remote I/O modules, including repeaters, converters, and both RS-485-based and Ethernet-based remote data acquisition modules, provide ideal industrial automation, control, and measurement solutions for harsh environments and demanding applications. With wide operating temperatures and multiple mounting methods, Advantech's ADAM series can be implemented in diverse applications, making the system always connected and reliable. The Advantech ADAM-3000 series also consist of cost-efficient, field configurable, isolated signal conditioning modules that can be easily installed to protect instruments and process signals from the harmful effects of most electrical interferences.

### RS-485 I/O Modules - Analog Input/Output

					
Model Name	ADAM-4015/4015T	ADAM-4117	ADAM-4118	ADAM-4019+	ADAM-4024
Description	6-ch RTD Module with Modbus/ 6-ch Thermistor Module with Modbus	Robust 8-ch Analog Input Module with Modbus	Robust 8-ch Thermocouple Input Module with Modbus	8-ch Universal Analog Input Module with Modbus	4-ch Analog Output Module with Modbus
Resolution	16 bit				12 bit
Channel	AI: 6 differential	AI: 8 differential			AO: 4; DI: 4
AI Sampling Rate	10 Hz	10/100 Hz (total)		10 Hz	-
Certifications	Class I Division 2 Groups ABCD T5, RoHS, UL, CE, FCC				

### RS-485 I/O Modules - Digital Input/Output

Model Name	ADAM-4150	ADAM-4051	ADAM-4055	ADAM-4056S/4056SO	ADAM-4168/4069	ADAM-4080
Description	Robust 15-ch Digital I/O Module with Modbus	16-ch Isolated Digital Input Module with Modbus	16-ch Isolated Digital I/O Module with Modbus	12-ch Sink Type Isolated Digital Output Module with Modbus /12-ch Source Type Isolated Digital Output Module with Modbus	Robust 8-ch Relay Output Module with Modbus / 8-ch Power Relay Output Module with Modbus	2-ch Counter/ Frequency Module
Channel	DI: 7; DO: 8; Counter: 7 (32-bit)	DI: 16	DI: 8; DO: 8	DO: 12 (ADAM-4056S: Sink; ADAM-4056SO: Source)	DO: ADAM-4168: 8 Relay ADAM-4069: 8 Power Relay	DO: 2; Counter: 2
Counter Input Frequency	3 Hz	-	-	-	-	50 kHz
Certifications	Class I Division 2 Groups ABCD T5, RoHS, UL, CE, FCC					

#### Wide Temperature & Power Input Range

With an operating temperature ranging from -40~ 85°C (-40 ~ 185°F) and power input between 10~48 V<sub>DC</sub>, ADAM-4100 robust RS-485-based I/O modules can work under severe conditions and be used in demanding applications.

#### Dual Watchdog Timer

All ADAM-4000 robust family modules provide two watchdog timers. The system watchdog will reboot the system when the module hangs, and the communication watchdog will re-initialize the RS-485 network if there is no communication for a specific time.

#### Advanced Security & Reliability

ADAM-6000 Peer-to-Peer output modules cannot be controlled by non-authorized PCs, but only by its paired input module. Meanwhile, when communication between pairs of ADAM-6000 modules is broken, the digital output module can generate pre-defined values to ensure communications.

#### Multiple Mounting Mechanisms


Most ADAM modules support versatile mounting methods, such as DIN-rail mounting, wall mounting and piggybacking, to fit various demands in the field. Customers no longer need to face mounting issues when installing and, more importantly, all necessary mounting kits are included in the package.

### Product Guide

#### Ethernet I/O Modules

Model Name	ADAM-6015	ADAM-6017	ADAM-6024	ADAM-6050	ADAM-6052	ADAM-6060
Description	7-ch Isolated RTD Input Modbus TCP Module	8-ch Isolated Analog Input Modbus TCP Module with 2-ch DO	12-ch Isolated Universal Input/Output Modbus TCP Module	18-ch Isolated Digital I/O Modbus TCP Module	16-ch Source-type Isolated Digital I/O Modbus TCP Module	6-ch Digital Input and 6-ch Relay Modbus TCP Module
Resolution	16 bit		AI: 16 bit; AO: 12 bit	-	-	-
AI/O Channel	AI: 7	AI: 8	AI: 6; AO: 2	-	-	-
AI Sampling Rate	-	10 S/s	-	-	-	-
DI/O Channel	-	DO: 2 (Sink)	DI: 2; DO: 2 (Sink)	DI: 12; DO: 6 (Sink)	DI: 8; DO: 8 (Source)	DI: 6; DO: 6 Relay
Certifications	Class I Division 2 Groups ABCD T5, RoHS, UL, CE, FCC					

#### Repeaters/ Converters

				
Model Name	ADAM-4510I	ADAM-4520I	ADAM-4521	ADAM-4541/4542+
Description	Robust RS-422/485 Repeater	Robust RS-232 to RS-422/485 Converter	Addressable RS-422/485 to RS-232 Converter	Multi-mode/Single-mode Fiber Optic to RS-232/422/485 Converter
Network	RS-422/485	RS-232/422/485		
Communication Speed (bps)	1,200 ~ 115.2k			
Communication Distance	Serial: 1.2 km			ADAM-4541: 2.5 km ADAM-4542+: 15 km
Isolation Voltage	3,000 V <sub>DC</sub>		1,000 V <sub>DC</sub>	-
Certifications	Class I Division 2 Groups ABCD T5, RoHS, UL, CE, FCC (ADAM-4510I/4520I/4542+)			

#### Isolated Signal Conditioning Modules

Model Name	ADAM-3011	ADAM-3013	ADAM-3014	ADAM-3016	ADAM-3112	ADAM-3114
Description	Isolated Thermocouple Input Module	Isolated RTD Input Module	Isolated DC Input/Output Module	Isolated Strain Gauge Input Module	Isolated AC Voltage Input Module	Isolated AC Current Input Module
Input Type	J, K, T, E, S, R, B Type Thermocouple	Pt or Ni Type RTD	±10 mV, ±50 mV, ±100 mV, ±0.5 V, ±1 V, ±5 V, ±10 V, 0~10 mV, 0~50 mV, 0~100 mV, 0~0.5 V, 0~1 V, 0~5 V, 0~10 V, 0~20mA, ±20mA	Electrical input: ±10, ±20, ±30, ±100 mV Excitation voltage: 1~10 V (60 mA max.)	0~120, 0~250, 0~400 V <sub>AC</sub> 0~120, 0~250, 0~400 V <sub>DC</sub>	0~5 A <sub>AC</sub> , 0~5 A <sub>DC</sub>
Output Type	0~10 V	0~5 V, 0~10 V, 0~20 mA	±5 V, ±10 V, 0~10 V, 0~20 mA	±5 V, ±10 V, 0~10 V, 0~20 mA	0~5 V <sub>DC</sub>	0~5 V <sub>DC</sub>
Certifications	Class I Division 2 Groups ABCD T5 (ADAM-3011/3013/3016/3112/3114), T6 (ADAM-3014), RoHS, CE					

## Industrial Communication

Advantech provides interconnected solutions with Industrial Networking, Device Connectivity, and Industrial Wireless Technology. With industrial-grade product design, Advantech's ICOM products have passed the harsh tests of various vertical markets, such as IEC 61850 for substation automation, EN50155 for railway automation, and UL508 safety for industrial control equipment. In order to fulfill the connecting needs of hazardous applications, Advantech offers a comprehensive line of UL approved Class I, Division 2 Groups A, B, C, D industrial communication solutions, including Industrial Ethernet Switches, Media Converters, Serial Device Servers and Modbus Gateways.

### Managed Ethernet Switches

Model Name	EKI-7758F	EKI-7656C/CI	EKI-7657C	EKI-7559SI/MI	EKI-2748FI/CI	EKI-2548I/MI
Description	4G+4SFP Gigabit Managed Redundant Industrial Ethernet Switch	16+2G Combo Port Gigabit Managed Redundant Industrial Ethernet Switch	7+3G Combo Port Gigabit Managed Redundant Industrial Ethernet Switch with 2 x DI/O	8+2 SC-type Fiber Optic Managed Redundant Industrial Ethernet Switch with Wide Temperature	8Gx Managed Ethernet Switch with Wide Temperature	8Tx Managed Ethernet Switch with Wide Temperature
Ports Number	8	18	10	10	8/8	8
10/100Base-T(X)	-	16	7	8	-	8/6/6
100BaseFX	-	-	-	2	-	0/2/2
10/100/1000Base-T(X)	4	2	3	-	4/6	-
1000Base-SX/LX/LHX/XD/ZX/EZX	4	2	3	-	4/2	-
Control	VLAN/GVRP, QoS, IGMP Snooping/Query, LACP, Rate Limit					
Certifications	Class I Division 2 Groups ABCD T4, UL/cUL 60950-1, FCC, CE, RoHS				Class I Division 2 Groups ABCD T4, UL 508, FCC, CE, RoHS	

### Unmanaged Ethernet Switches

Model Name	EKI-2728MI	EKI-2728	EKI-2525/2528	EKI-2525M	EKI-2526M/S
Description	6Gx+2G Multi-mode Unmanaged Ethernet Switch with Wide Temperature	8-port Gigabit Unmanaged Industrial Ethernet Switch	5/8-port Unmanaged Industrial Ethernet Switch	4+1 100FX Port Multi-mode Unmanaged Industrial Ethernet Switch	4+2 100FX Port Multi-mode/Single-mode Industrial Ethernet Switch
Ports Number	8	8	5/8	5	6
10/100Base-T(X)	-	-	5/8	4	4
100BaseFX	-	-	-	1	2
10/100/1000Base-T(X)	6	8	-	-	-
1000Base-SX/LX/LHX/XD/ZX/EZX	2	-	-	-	-
Certifications	Class I Division 2 Groups ABCD T4, UL 508, FCC, CE, RoHS	Class I Division 2 Groups ABCD T4, UL/cUL 60950-1, FCC, CE, RoHS			






### Serial Device Servers

Model Name	EKI-1351	EKI-1352	EKI-1521	EKI-1522	EKI-1524
No. of Ethernet Port	WLAN	WLAN	2	2	2
No. of Serial Port	1	2	1	2	4
Ethernet Interface	802.11 b/g	802.11 b/g	10/100 Mbps	10/100 Mbps	10/100 Mbps
Serial Type	RS-232/422/485				
Connector	Ethernet Serial	SMA	SMA	RJ45 DB9	RJ45
Baud Rate	50 ~ 921.6 kbps , any baud rate setting				
Operating Mode	Virtual COM, TCP Server, TCP Client, UDP, Peer to Peer, AT Command, and RFC2217 modes				
Driver	32-bit/64-bit Windows 2000/XP/Vista/7, Windows Server 2003/2008, Windows CE 5.0/6.0, and Linux				
Certifications	Class I Division 2 Groups ABCD T4, UL/cUL 60950-1, FCC, CE, RoHS				

### Programmable Device Servers

Model Name	EKI-1121L	EKI-1122L
No. of Ethernet Port	2	2
No. of Serial Port	1	2
Ethernet Interface	10/100 Mbps	10/100 Mbps
Serial Type	RS-232/422/485	RS-232/422/485
CPU	ARM7	ARM7
CPU Speed	80 MHz	80 MHz
Flash	8 MB	8 MB
SDRAM	16 MB	16 MB
OS	uClinux 2.4	uClinux 2.4
Certifications	Class I Division 2 Groups ABCD T4, FCC, CE, RoHS	

### Modbus Gateways

					
Model Name	EKI-1221D	EKI-1222D	EKI-1221	EKI-1222	EKI-1224
No. of Ethernet Ports	2	2	2	2	2
No. of Serial Ports	1	2	1	2	4
Ethernet Interface	10/100Mbps				
Serial Type	RS-232/422/485, software selectable				
Ethernet Feature	Daisy-Chain Connectivity		Dual Ethernet Redundancy		
Configuration	Windows Configuration Utility, Web-Browser Console				
Operating Mode	Modbus RTU Master, Modbus RTU Slave, Modbus ASCII Master, and Modbus ASCII Slave modes				
Baud Rate	50 bps ~ 921.6 kbps				
Certifications	Class I Division 2 Groups ABCD T4, FCC, CE, RoHS		Class I Division 2 Groups ABCD T4, UL/cUL 60950-1, FCC, CE, RoHS		

### Media Converters

Model Name	EKI-2741F/SX/LX/LXI	EKI-2541M/S
Description	10/100/1000TX to Fiber Optic Gigabit Industrial Media Converters	10/100TX to Multi-mode / Single-mode SC Type Fiber Optic Industrial Media Converters
Ports Number	2	2
10/100Base-T(X)	-	1
100BaseFX	-	1
10/100/1000 Base-T(X)	1	-
1000Base-SX/LX/LHX/XD/ZX/EZX	1	-
Certifications	Class I Division 2 Groups ABCD T4, UL/cUL 60950-1, FCC, CE, RoHS	

#### Redundant Power Input

To reduce the risk of power failure, Advantech provides +12 ~ 48 V<sub>DC</sub> dual power inputs. With power reserve protection which can prevent the switch device broken by wrong power wiring.

#### Wide Temperature

Advantech's Ethernet Switches and Media Converters support an extended operating temperature range of -40 ~ 75°C (-40 ~ 167°F) to withstand extreme environments and ensure system uptime in harsh environments.

#### X-Ring Technology

With X-Ring technology, Advantech's managed switches construct a steady and reliable network. When any error occurs in the communication network, the switch should smoothly switch to the redundant backup line in just 10ms.