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	16.2 M (RGB 8-bits) or 262k colors (RGB 6-bits)
	Viewing Angle	160, 140
	Luminance	350
Direct VGA Input		Yes
DVI Input		Yes
Touchscreen (optional)		Resistive
OSD (onscreen display)		Yes
Power Adapter(voltage, AC)		100-240 V
DC Power Input (voltage)		24 V_DC
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

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_DC (Max.)	10 (Min.)~36 V_DC (Max.)	10 (Min.)~36 V_DC (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	

Stainless Steel Enclosures

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

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.

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.

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

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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-4011	ADAM-4012	ADAM-4013	ADAM-4016	ADAM-4017	ADAM-4018	ADAM-4021
Description	1-ch Thermocouple Input Module	1-ch Analog Input Module	1-ch RTD Input Module	1-ch Analog Input/ Output Module	8-ch Analog Input Module	8-ch Thermocouple Input Module	1-ch Analog Output Module
Resolution	16 bit						12 bit
AI Channel	1 differential				8 differential		-
AI Sampling Rate	10 Hz						-
Direct Sensor Input	J, K, T, E, R, S, B Thermocouple	-	RTD	-	-	J, K, T, E, R, S, B Thermocouple	-
AO Channel	-	-	-	1	-	-	1
Voltage/ Current Output	-	-	-	Voltage: 0~10 V; Current: 30 mA	-	-	Voltage: 0~10 V; Current: 0~20 mA, 4~20 mA
DI/O Channel	DI: 1; DO: 2		-	DO: 4	-	-	-
Isolation	3,000 V_{DC}						
Watchdog Timer	Yes (System)						
Certifications	Class I Division 2 Groups ABCD T5 (ADAM-4011/4012/4013/4016/4017/4021), T6 (ADAM-4018), RoHS, UL, CE, FCC						

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

Model Name	ADAM-4050	ADAM-4052	ADAM-4053	ADAM-4060	ADAM-4080
Description	15-ch Digital I/O Module	8-ch Isolated Digital Input Module	16-ch Isolated Digital Input Module	4-ch Relay Output Module	2-ch Counter/Frequency Module
Channel	DI: 7; DO: 8; Counter: 7 (32-bit)	DI: 8	DI: 16	DO: 4 Relay	DO: 2; Counter: 2
Counter Input Frequency	3 Hz	-	-	-	50 kHz
Isolation	-	5,000 V_{rms}	-	-	2,500 V_{rms}
Watchdog Timer	Yes (System)				
Certifications	Class I Division 2 Groups ABCD T5 (ADAM-4050/4052/4060/4080), T6 (ADAM-4053), RoHS, UL, CE, FCC				

Repeaters/ Converters

Model Name	ADAM-4510	ADAM-4520	ADAM-4521	ADAM-4541
Description	Robust RS-422/485 Repeater	Robust RS-232 to RS-422/485 Converter	Addressable RS-422/485 to RS-232 Converter	Multi-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_{DC}		1,000 V_{DC}	-
Certifications	Class I Division 2 Groups ABCD T5, RoHS, UL, CE, FCC (ADAM-4510/4520/4541)			

Isolated Signal Conditioning Modules

Model Name	ADAM-3011	ADAM-3014
Description	Isolated Thermocouple Input Module	Isolated DC Input/Output Module
Input Type	J, K, T, E, S, R, B Type Thermocouple	±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
Output Type	0~10 V	±5 V, ±10 V, 0~10 V, 0~20 mA
Certifications	Class I Division 2 Groups ABCD T5, RoHS, CE	Class I Division 2 Groups ABCD T6, RoHS, CE

Wide Temperature & Power Input Range
With an operating temperature ranging from –40~ 85°C (-40 ~ 185°F) and power input between 10~48 V_{DC}, 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.

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/SI/MI
Description	4G+4SFP Gigabit Managed Redundant Industrial Ethernet Switch	16+2G Combo Port Gigabit Managed Redundant Industrial Ethernet Switch	7+3G Combo Port Giga-bit 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	SMA	SMA	RJ45	RJ45	RJ45
	Serial	DB9				
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_{DC} 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.