ADVANTECH

Enabling an Intelligent Planet

Advantech IIoT
# Oil & Gas Industry Solution

2020 1H Edition

AGENDA

- Oil & Gas Industry Overview

- Class I, Division 2 Certificate and ATEX Introduction

- Why Advantech

- Key Product Highlights

- Application Stories

- Product Portfolio

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Oil and Gas Industry Overview

Upstream	Midstream	Downstream
Exploration & Production	Transport & Storage	Production Process & Usage

Offshore Oil & Gas Platform

Oil Process & Storage

Oil Transfer - Pipeline

Oil Refining

Onshore Oil Pump Jack

Oil Transport

PETROLEUM

GAS

Gasoline Distribution

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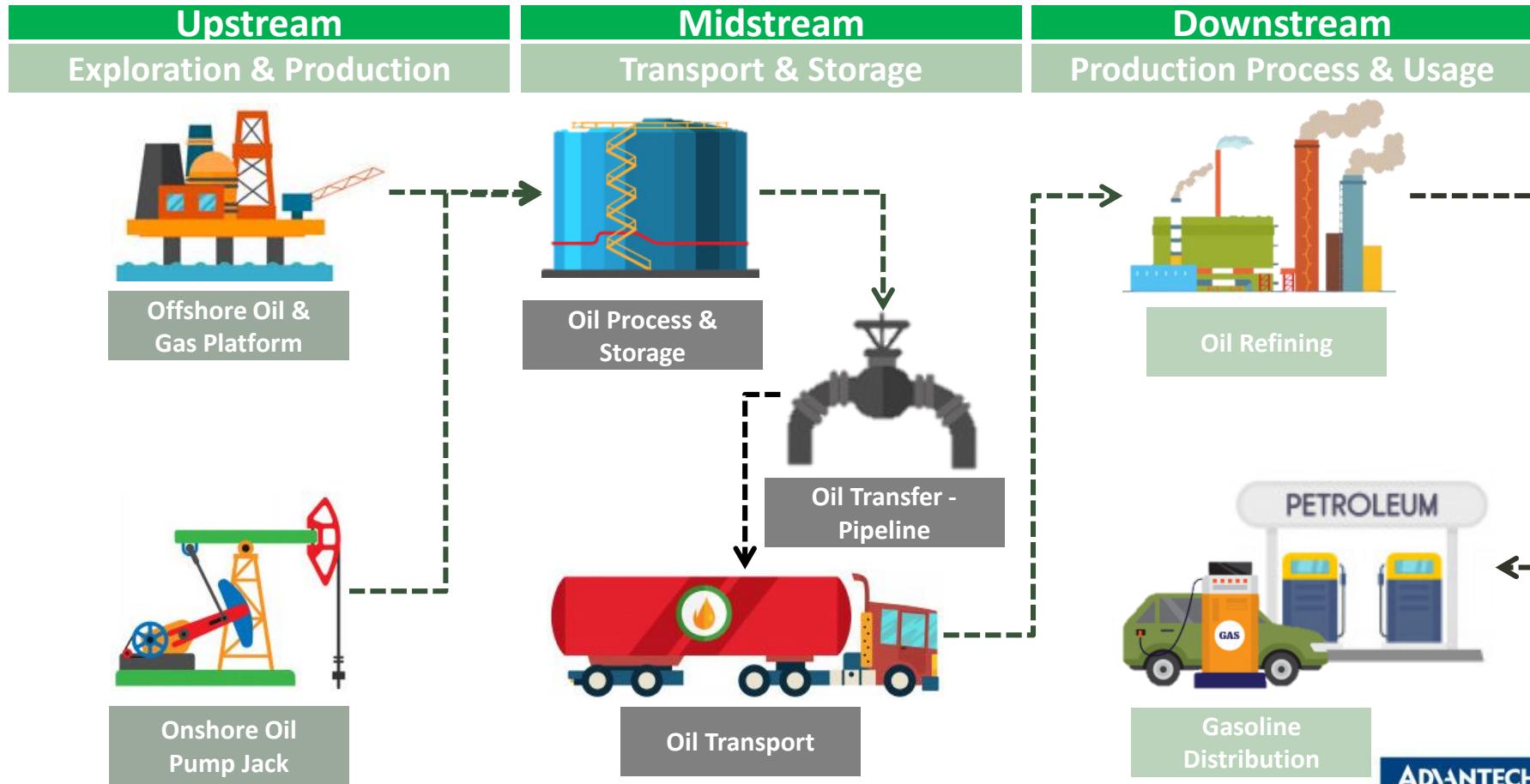
Class I Division 2 Certification

- What is a "hazardous location" ?
- OSHA[1]

  Areas where flammable liquids, gases or vapors or combustible dusts exist in sufficient quantities to produce an explosion or fire.

- NEC[2] / CEC[3]

  An area where a potential hazard (e.g., a fire, an explosion, etc.) may exist under normal or abnormal conditions because of the presence of flammable gases or vapors, combustible dusts or ignitable fibers or flings.

  1. Occupational Safety and Health Administration
  2. National Electrical Code
  3. Canadian Electrical Code

Area Classification – Class Definition

Class I Location
Flammable gases/liquids/vapors

- Petroleum refineries, gasoline storage
- Dry cleaning plants
- Spray finishing areas
- Aircraft hangars and fuel servicing areas

Class II Location
Combustible dust

- Grain elevators, flour and feed mills
- Magnesium or aluminum powders
- Producers of starch or candies
- Spice-grinding plants, sugar plants, and cocoa plants
- Coal/carbon handling or processing areas

Class III Location
Fibers or filings

- Textile mills, cotton gins
- Cotton seed mills, flax processing plants
- Plants that shape, pulverize or cut wood and create sawdust or filings

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Division Definition

Hazardous Materials	Class	Division
Gasses or Vapors	Class I	Division I An explosive mixture continuously present or likely to occur during normal operation
Combustible Dusts	Class II	Division II An explosive mixture that is NOT likely to occur in normal operation…but may be accidentally present
Fibers or Filings	Class III	

Legend in diagram:
1. Class I, Division I Area
2. Class I, Division II Area
3. Non Hazardous Location

ATEX Zone Classification – Gases/Vapors & Dust

Zone 0 (G/V)
Zone 20 (D)

Areas where explosive gas atmospheres are **continuously present** or present for long periods of time.

Zone 2 (G/V)
Zone 22 (D)

Areas where explosive gas atmospheres are **not likely to occur** and if they do, they will only exist for only a short period of time.

Zone 1 (G/V)
Zone 21 (D)

Areas where explosive gas atmospheres are **likely to occur** in normal operation, or can be expected to frequently be present.

Why Advantech

Fulfill all Your Needs for IIOT in the Oil and Gas Industry

Leading Industrial Solution Provider

Electrical Features

- Hold-up time to avoid short circuits
- Over voltage protection
- Power isolation
- Noise protection
- Chassis & ground isolation

Physical Features

- AG coating
- Strict IP66
- Anti-vibration
- PCAP touch with gloves

ODM/OEM Capability

Long term business w/ top-tier companies

MITSUBISHI   EMERSON   FIAT
ExxonMobil
Schlumberger

Solution-Ready Solution

Total bundle solution for domain applications

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WISE-PaaS
IoT Edge Intelligence
WISE-PaaS/EdgeLink
WebAccess/SCADA
WISE-PaaS/DeviceOn
WebAccess/HMI

Security Solution

- BIOS Pre configuration
- Optional TPM 2.0
- Security boot key

Various Certified Products for O & G

- From PC to I/O modules
- Application-oriented design
- UL C1D2 & ATEX certified
- UL 61010

cUL Class I Division II for Group A,B,C,D   Ex ATEX

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# Reliability for Hazardous Environments

Industrial-grade thermal design
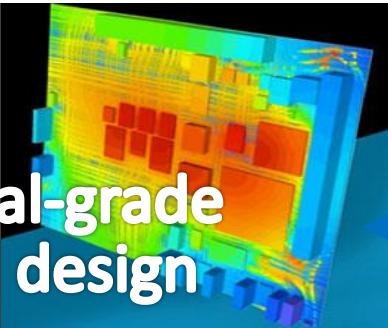
LOW SURFACE TEMPERATURE

Selective electronic components

Cable-free

No cable inside
No friction spark

SPARK-FREE DESIGN

USB holder
Vibration Proof

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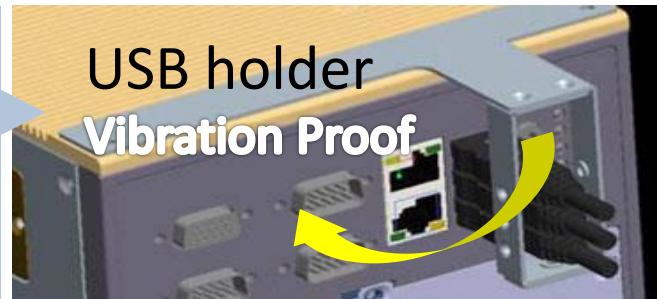
Key Product Highlights
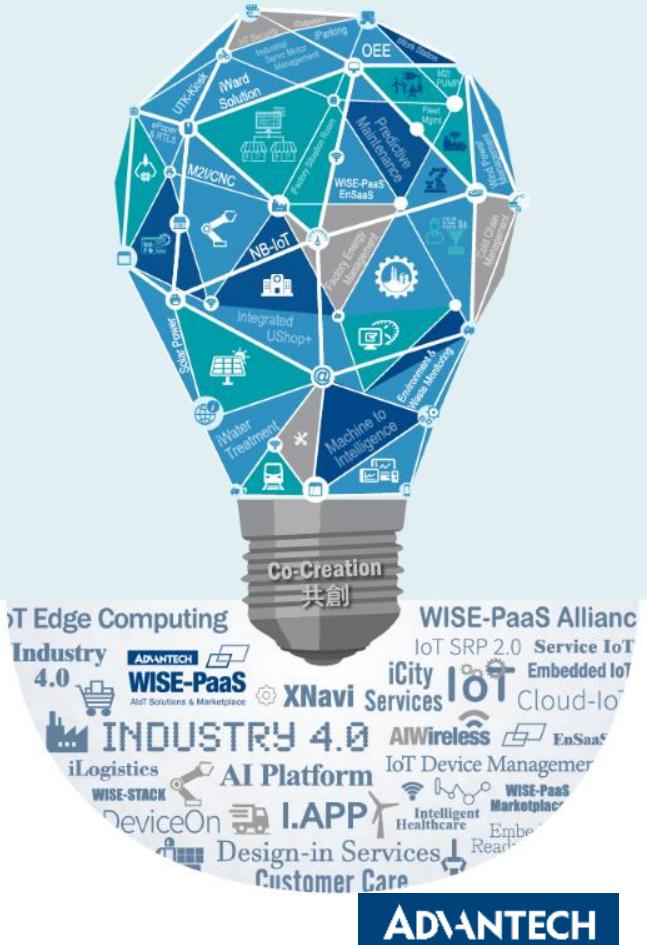
UNO-430 Compelling Features
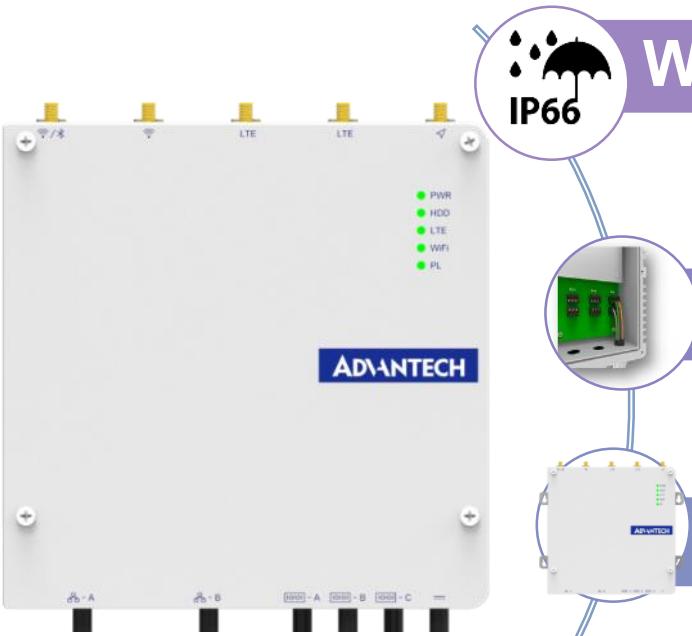
Waterproof

- Designed for harsh environments
- Extreme wide operating temp. -40~70°C
- Dust and powerful water jet protection

IP66

145°
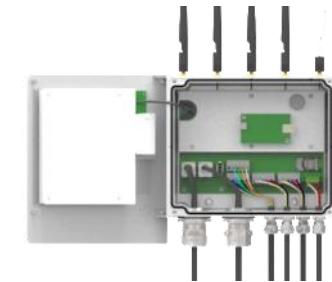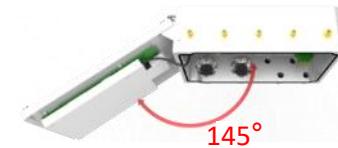
Easy wiring

- Easy maintenance with front door and cable gland design saves special waterproof cabling effort

Installation Anywhere

- Outdoor/ In-cabinet / wall mount
- Wireless mobility for remote communication

Explosion Proof Certificate

- ATEX zone 2 gas/vapor & zone 22 dust
- UL class I division II

c(UL)
Class I Division II
for Group A,B,C,D

ATEX

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User Scenario – Safe Area

Outdoor Standalone Waterproof Computer

	UNO-430
CPU	Intel Atom® E3950 processor
Memory	Built-in 8GB RAM
Storage	1 x M.2 B key 2242 support
Dimension	200 x 200 x 68 mm
Cable Gland	2 x M32, OD: 5~6.6mm 4 x M12, OD: 4.5~6.6mm
Ethernet	2x Ethernet ports (10/100/1000)
Serial	2 x RS-422/485 (isolated) 1 x RS-232 (console)
USB	1 x internal USB
Security	onboard TPM 2.0
Wireless (LTE)	1 x M.2 B key 3042 support
SIM slot (LTE)	1 x standard SIM card slot
Wireless (WiFi/BT)	1 x M.2 E key 2230 support
Power	10-36VDC
Operating Temperature	-40 to 70C
Ingress Protection	IP66
Mounting	Wall mount
O.S.	WIN10/Linux
Certification (General)	UL/CB/CE/FCC class A/ C1D2 + IEC-ATEX standalone

Advantech UNO-430
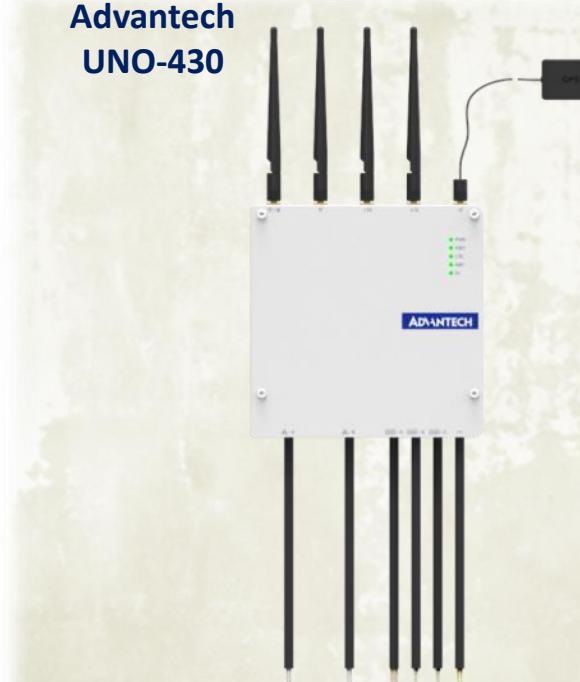
Accessible Connectors
- COM & power input: terminal blocks
- Ethernet: RJ45 port
- USB: Type-A USB port
- SIM: card slot

Outsourcing AC to DC power supply

Equipment Group	Equipment Category	Explosion Protection	Type of Protection	Gas/ Dust Group	Temp. Class	Equipment Group
II	3 (Zone2)	G (Gas)	Ex	ec	IIC	T4
II	3 (Zone22)	D (Dust)	Ex	tc	IIIC	T135°C

Market Segment Trend/ Analysis

Existing Embedded Automation PC
(Open Type)

- ✓ Traditional control & data processing unit centralized installed into cabinet
- ✓ DIN-rail mount inside of cabinet

AC to DC power supply

UNO-1372GH

Waterproof standalone

- ✓ Water and dust proof enclosure
- ✓ Cabinet free design
- ✓ Wall or pole mount anywhere

AC to DC power supply
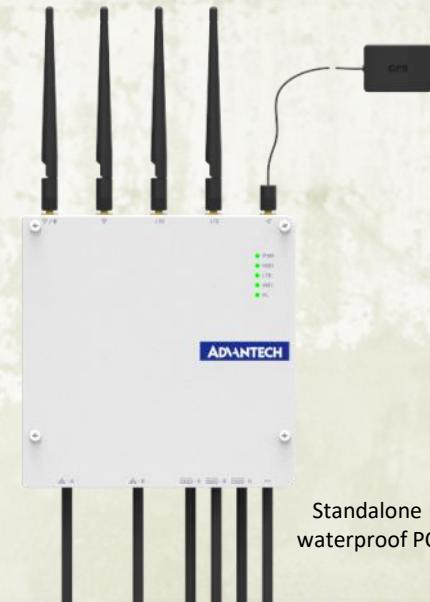
Standalone waterproof PC

TPC-125H/TPC-815H

	TPC-125H/ TPC-155H
CPU	Intel® Atom™ E3845 Quad-Core 1.9GHz
RAM	Default 4GB DDR3L SDRAM (up to 8GB)
Display	Size: 12" and 15"
	Resolution: 1024x768/ 1024x768
	Colors: 16.2M/ 16.7M
	Viewing angle: 178/178; 176/176
	Luminance: 600nits/ 300nits
LAN	10/100/1000BASE-T x 2
I/O	1 x RS-232; 1 x RS-232/422/485 1 x USB 3.0 ; 3 x USB 2.0 1 x iDoor slot 1 x SSD bay; 1 x mSATA
Expansion	1 x Full-size mini PCIe
Power Input	24VDC +/- 20%
Operation Temp.	-20 ~ 60°C (-4 ~ 140 °F)
Dimension	311.8 x 238 x 55.4 /383.2x 307.3 x 55.9 mm
Mounting	Panel mount with front panel IP66
Certifications	BSMI, CCC, CE, FCC Class A, UL C1D2

cUL Class I Division II for Group A,B,C,D

IP66

UL Class 1, Division 2 Certified

Compact I/O

Wide Temp. Range

Front Panel IP66

In-Cabinet Design

Wireless Communication

CPU IP66

CODESYS

WebAccess/HMI
WebAccess/SCADA

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Intelligent Network Connectivity Devices (CID2 certified)

Unmanaged Ethernet Switch

Advantech's unmanaged Ethernet switch series offers the best possible deal for your Ethernet connections. The super-slim IP30 metal casing design provides reliable and compact management that quickly delivers continuous data transmission with a high degree of security, making it an ideal option as your Ethernet solution.

Industrial Protocol Switch

- Compatible with SIMATIC step 7 and TIA portal (PROFINET compatible models)
- PROFITNET models support Media Redundancy Protocol (MRP)
- Faceplate compatible with Rockwell FactoryTalk view (Ethernet/IP compatible models)
- Easy and fast deployment from Advantech IXM technology
- Crucial management functions embedded(multi-functional protocol switch)

Media Converter Industrial Injector

Advantech's fiber & PoE converters, injectors, extenders(Ethernet extender and VDSL extender) and media converters are designed to provide network operators with the most compact, reliable and cost-effective solution for connecting intelligent devices into existing networks, equipment and other m2m applications. Our managed and unmanaged models feature duplex or single fiber and PoE converters.

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Intelligent Network Connectivity Devices (CID2 certified)

Serial-Ethernet Device Server

. Our dual/single Ethernet wired serial device servers bring RS-232/422/485 to your LAN, with various choices of 1–4 serial ports and DIN-rail configurations to suit your rugged field environment. This solution is also equipped with magnetic isolation ability. Being certified by IEEE, our serial device servers can transform your serial devices into Ethernet devices with wired and wireless cellular network functionality.

Industrial Modbus Gateway

Featuring built-in Ethernet switches, Advantech's Modbus gateways provide transparent connectivity between Modbus/ASCII, Modbus/RTU serial devices, and Ethernet-based Modbus/TCP equipment. Our Modbus gateway products provide a simple and cost-effective means for bringing the advantages of remote management and data accessibility to devices that otherwise cannot connect to a network, easily allowing you to convert Modbus/ASCII and Modbus/RTU to Modbus/TCP.

Industrial Cellular Router

Technologies include VPNs, which provide secure remote access for users, network address translation (NAT), which hides users' web servers behind our router, and network-based firewalls which secure infrastructure. Advantech routers provide numerous SKUs for various interface combinations including RS-232/422/485, digital I/O modules, Wi-Fi, dual SIM, SDcard, PoE and USB ports. Users can insert Linux scripts and create multiple configurations and user-defined features using the software toolkit.

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ADAM-4100 Series: Robust Remote I/O Module

■ **Strong Noise Protection**
- EFT (IEC-61000-4-4) Level 4 (highest level)
- Surge(IEC-61000-4-5) Level 4 (highest level)
- Ensures data accuracy

■ **Fits in Harsh Environments**
- Wide operation temperature:-40~85°C
- Wide power input :10~48V DC

■ **Module Stability Ensured**
- Watchdog timer will automatically recover the system once a problem is detected

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ADAM-6000 series: Smart Ethernet Remote I/O Module

- **Supports IoT Protocols**
  - MQTT, SNMP, RESTful, Modbus TCP
  - Easily link with cloud service

- **Peer-to-Peer (P2P) Connection**
  - Easy channel mapping from different I/O without extra programming or controller effort

- **Graphic Condition Logic (GCL)**
  - Users can set up logic rules
  - No additional programming or controllers are needed
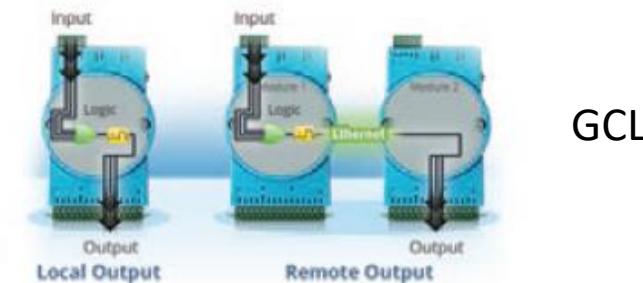
P2P

GCL

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Advantech Class I, Division 2 Data Acquisition Modules

Serial I/O Modules				Ethernet I/O Modules	
Analog I/O Modules	**Digital I/O Modules**	**Robust Remote I/O Modules**	**Converter and Repeaters**	**Analog I/O Modules**	**Digital I/O Modules**
ADAM-4015	ADAM-4051	ADAM-4117	ADAM-4510I	ADAM-6015	ADAM-6050
ADAM-4017+	ADAM-4055	ADAM-4118	ADAM-4520I	ADAM-6017	ADAM-6051
ADAM-4018+	ADAM-4056SO	ADAM-4150		ADAM-6018	ADAM-6052
ADAM-4019+				ADAM-6024	
ADAM-4024					

20 models are certified   More product information can be found HERE

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Application Stories

Drilling Rig Control – Upstream

TPC-125H

- Intel® Atom™ Quad-Core
- In-Cabinet panel mount
- Front panel IP66 dust & water proof
- Resistive touch
- 2 x GbE, 4 x USB, 2 x COM, iDoor, mSATA, 1 x mPCIe, 1 x SATA, 1 x power terminal

- Data acquisition – log and archive activities of rigs and sensors

- Real-time rig monitoring and overall equipment effectiveness (OEE) analysis

- Warning and emergency control

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Outdoor Oil Pipeline Monitoring - Midstream

UNO-430

Outdoor Remote Pipeline Monitoring
- Corrosion monitoring
- Vibration monitoring
- Temperature and humidity monitoring
- Pressure monitoring

- Intel® Atom™ Quad-Core
- Full IP66 for outdoor operations
- Wide operating temp. -20~70℃
- 6 x cable glands for LAN x2, RS-232 x1, RS-424/485 x2, Power x1
- ATEX certified (gas, vapor, and dust)
- UL class I, division II certified

PLC

Pipeline sensors
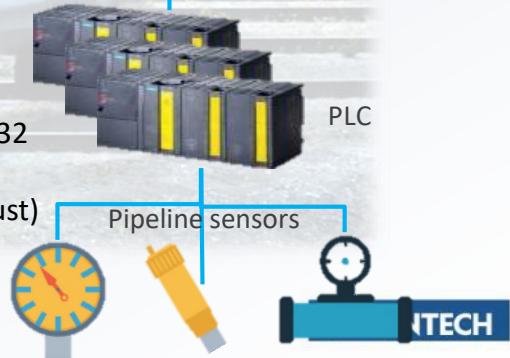
Gas Compressor Control & Monitoring - Midstream

TPC-125H

- Intel® Atom™ Quad-core
- In-cabinet panel mount
- Resistive touch
- 2 x GbE, 4 x USB, 2 x COM, iDoor, mSATA, 1 x mPCIe, 1 x SATA, 1 x power terminal

cUL Class I Division II for Group A,B,C,D

Ethernet

ADAM 4000

PLC

Flow meter   Temp. sensor

- Monitoring engine operational data, such as speed and load control visibility

- Collecting and aggregating data for analysis and overall equipment efficiency

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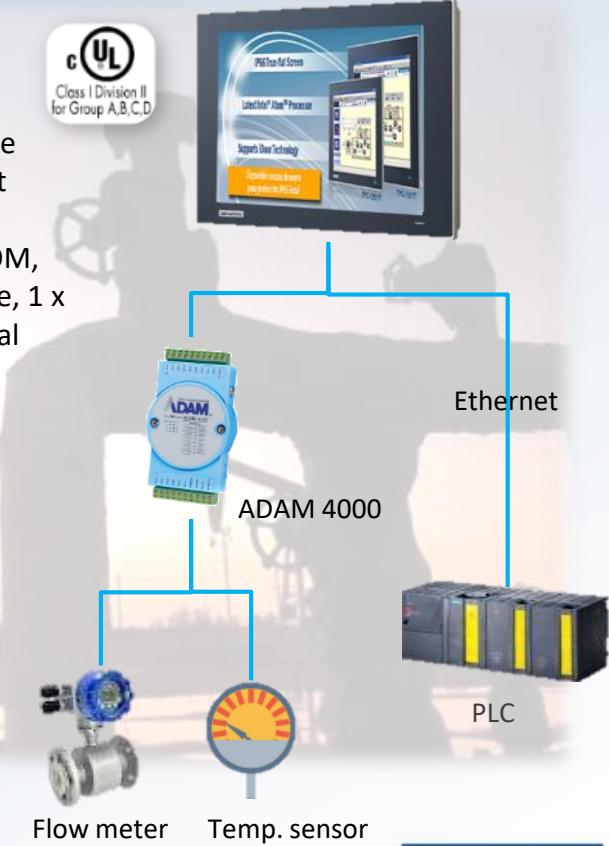
Tank Control & Monitoring - Downstream

UNO-1372GH

- Intel® Atom™ Quad-core
- Control DIN-rail PC
- 3 x GbE, 3 x USB, 2 x COM, 1 x VGA, 1 x HDMI, audio, iDoor, mSATA, 2 x mPCIe, 1 x SATA, 4 x DI, 4 x DO, 1 x power terminal
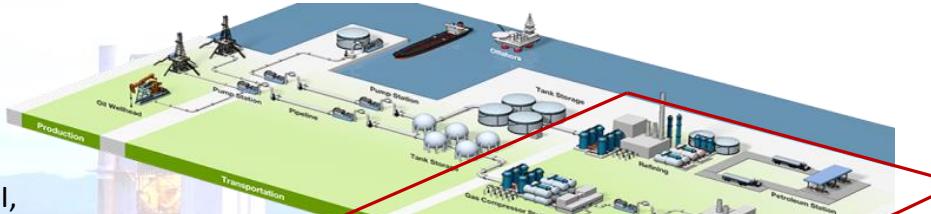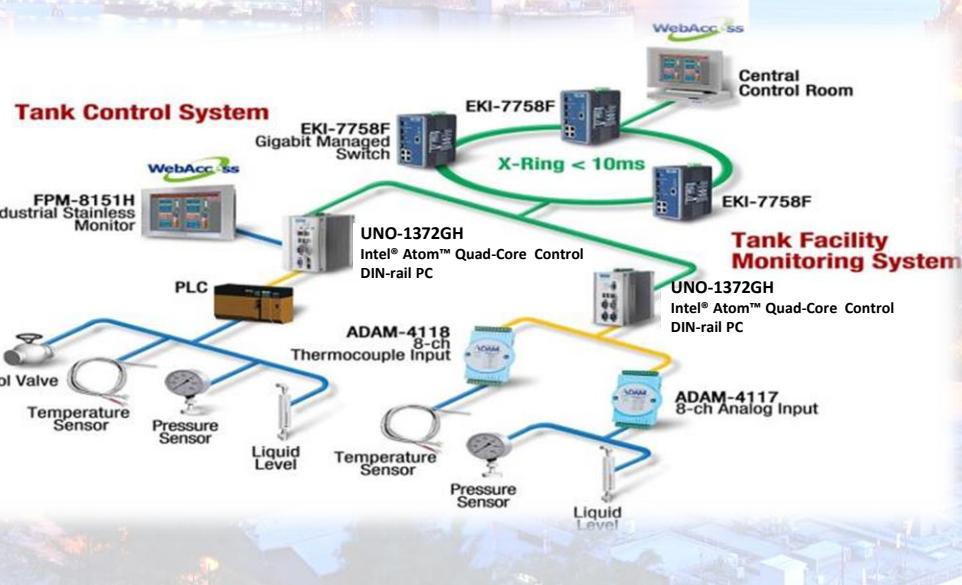
Oil Storage

- Real-time oil tank level monitoring
- System warning and control
- Sensor data collection, integration & transmission

Gasoline KIOSK Application - Downstream

TPC-125H

- Intel® Atom™ Quad-core
- In-cabinet panel mount
- Resistive touch
- 2 x GbE, 4 x USB, 2 x COM, iDoor, mSATA, 1 x mPCIe, 1 x SATA, 1 x power terminal

c(UL)us
Class I Division II
for Group A,B,C,D

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Oil & Gas Application

➢ **Project Background & Requirements**

- The limitation on data packet sizes and transmission bandwidths of DTU modems means they are incapable of supporting video surveillance.
- Securing data transmission is a major focus of this reform.

➢ **System Description**

- 4G routers and switches are installed in the cabinet.
- Staff with a field device can now directly access the device for remote troubleshooting via VPN.

➢ **Why Advantech?**

- Advantech offers special requirements for Internet security.
- Advantech routers and switches support a wide operating temperature range (-40 to 75°C).

➢ **Model Information**

- Model Name: BB-SL30600110-SWH
- Description: SmartStart industrial LTE cellular router for China
- Model Name: EKI-2525M
- Description: 4FE+1FE SC multi-mode unmanaged Ethernet switch

Location: XinJiang, China
HW: Industrial cellular router
Ethernet switch

EKI-2525IM

BB-SL306: Advantech's LTE SmartStart routers

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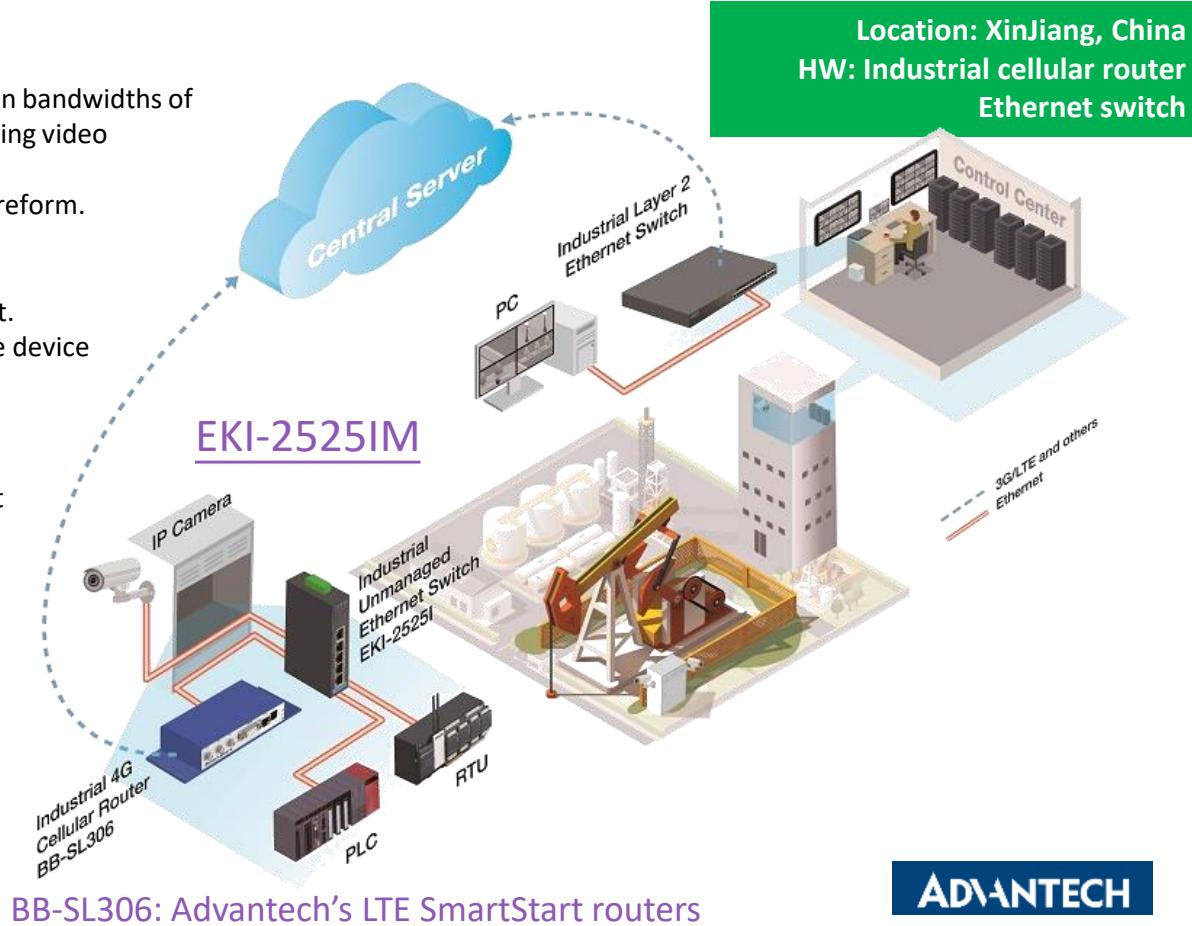
Oil & Gas Application

Wired and wireless communication solution for oil platform

To ensure continuous remote monitoring of drilling platforms, the communication infrastructure needs to be robust and redundant due to the severe hazards and challenges present in oil platform drilling. Advantech Ethernet switch provides a stable communication solution for extreme temperature operation. Combined with EKI-1200 series Modbus gateway and EKI-1500 series device server, they provide a robust industrial grade communication solution for oil PLC and sensors. EKI-2541 series Ethernet-to-fiber media converter provides long distance connectivity. EKI-6333 series Wi-Fi AP and Smartflex cellular router further provide wireless connectivity
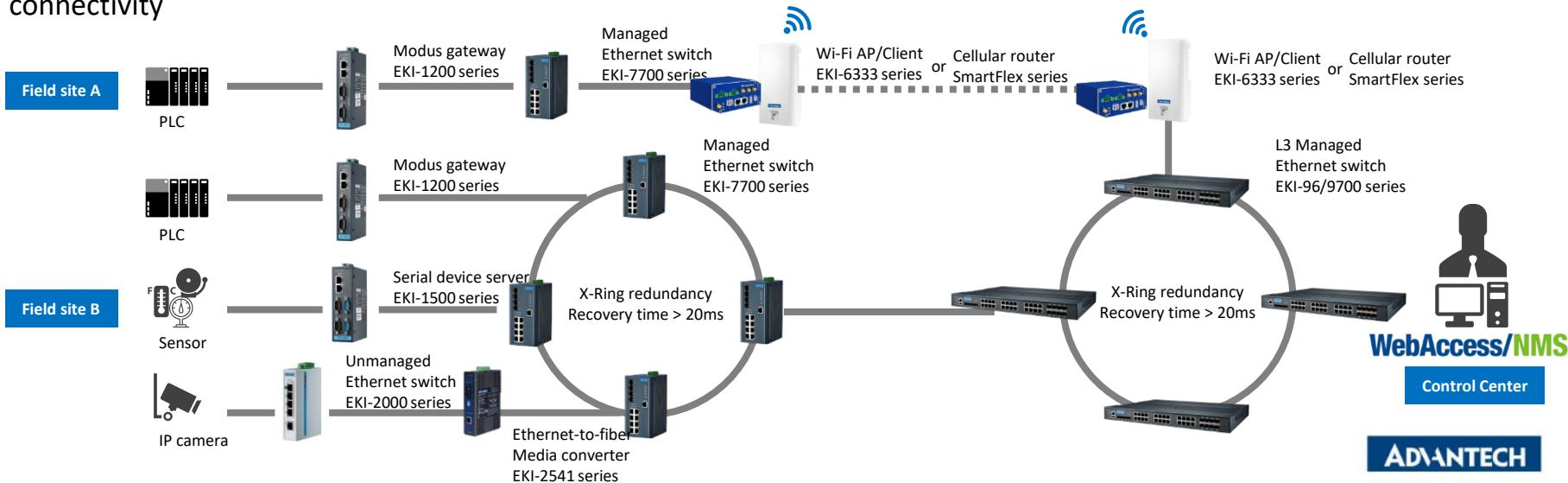
Oil & Gas Application

Wireless solution for oil well pump stations

Pump stations with cellular connectivity solve the problem of oil and gas wells that are located far from existing Ethernet networks. Advantech SmartFlex series cellular routers are simple to deploy and easy to adapt. They can be installed on the facility or in the cabinet to achieve excellent secured communication and allow remote access to monitor production and equipment status in the field. To enhance remote management, WebAccess/VPN and WebAccess/DMP help you strengthen the private network and give you the feasibility for mass deployment and instant monitoring.

WebAccess/VPN
WebAccess/DMP

Control Center

Field site A

Field site B

Field site C

Cellular router
SmartFlex series
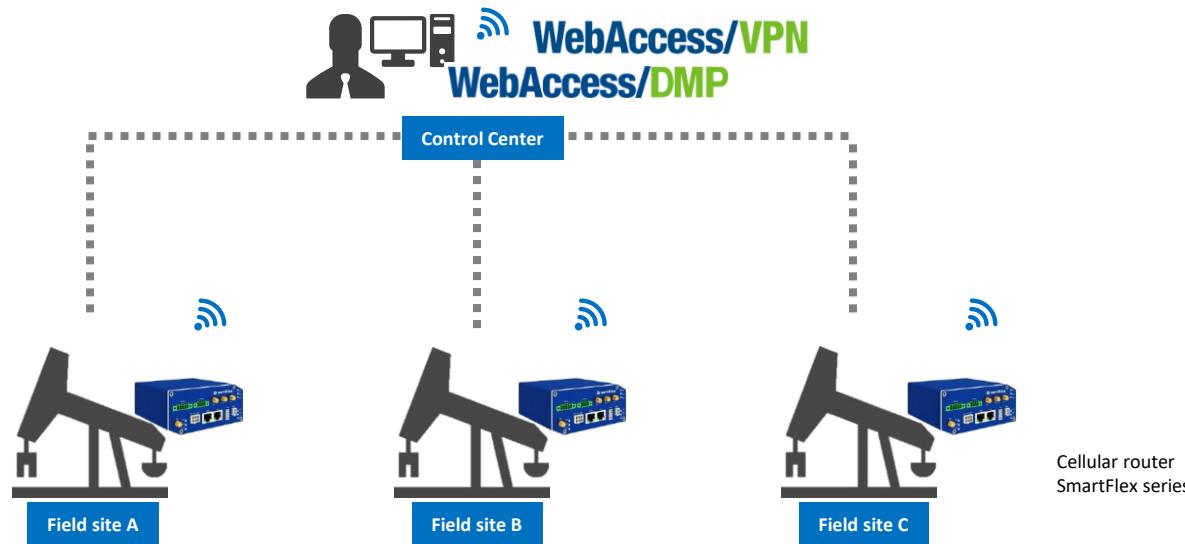
Oil & Gas Application
Transwestern Pipeline Maximizes Gas Chromatography Equipment

CHALLENGE - Transwestern Pipeline Co. provides natural gas to southwest USA. A costly chromatograph gas analyzer was under-used. It communicated via Modbus TCP, while sampling units used Modbus RTU. They explored upgrading the sampling devices to support TCP, but it was unworkable and costly. They needed a way to bridge the TCP and RTU gap.

Model# BB-MESR901
Modbus Ethernet to
Serial Gateway
1 - 10/100 Ethernet RJ45
1 - Serial DB9/TB

Model# BB-MESR902T
Modbus Ethernet to
Serial Gateway
1 - 10/100 Ethernet RJ45
2 - Serial TB

SOLUTION - Transwestern pipeline used Advantech BB-MESR90x Modbus Serial to Ethernet gateways to connect remote RTU devices. The UL C1/D2 gateways allow Modbus ASCII, RTU and TCP devices to communicate freely. Remote RTUs were able to share the chromatograph gas analyzer. In addition, Transwestern Pipeline avoided a huge and unnecessary capital investment.

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Oil & Gas Application
Remote Tank Farm Monitoring

CHALLENGE - A major oil company wanted to monitor tanks, pumps and terminal equipment and send the data to an OSI PI database. Communications had to be reliable with no disruption to process control and to maintain safety. All monitoring equipment had to be non-invasive, easy to install and wireless – in an outdoor environment with many large, metal obstructions.
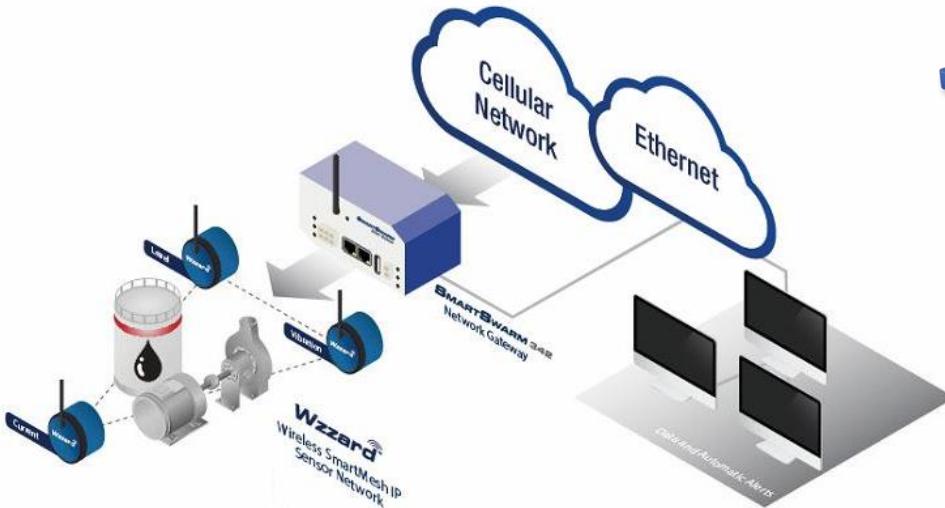
Wzzard Industrial Mesh Sensing Nodes

- Ultra low power 802.15.4e SmartMesh IP communicates with SmartSwarm network gateway via scalable & reliable wireless mesh network
- Connect to standard analog or digital sensors
- Wzzard app to read or configure nodes via Android tablets and phones
- IP67, fiber reinforced polyester PBT enclosure
- UL Class 1/Division 2 rated

SOLUTION - The company chose Advantech's Wzzard Wireless Mesh products. The solution provided a stable, wireless platform to connect sensors and Advantech nodes to an Advantech SmartSwarm Gateway. The Gateway runs third-party data connector software to send data to an OSI PI server. Wzzard's SmartMeshIP wireless mesh provides a stable, reliable connection even in difficult RF conditions.

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More Applications…

Oil and Gas Metering

Wellhead Control

Gas Pressure Control

And more…

Product Portfolio

Class I, Division 2 Certified Products Offerings

Embedded Automation Computers	Industrial Panel PCs & Monitors	Industrial Communication	Data Acquisition Modules	Serial Converters & Repeaters
▪ UNO-430 ▪ UNO-1372GH	• FPM-8151H • TPC-125H • TPC-1881WPH	▪ EKI-7000 Series: Managed Ethernet Switches ▪ EKI-2000 Series: Unmanaged Ethernet Switches ▪ EKI-1000 Series: Serial Device Servers, Programmable Device Servers, Modbus Gateways, Media Converters	▪ ADAM-4000 Series: RS-485 I/O Analog Input / Output Modules and RS-485 I/O Digital Input / Output Modules ▪ ADAM-6000 Series: Ethernet I/O Modules ▪ ADAM-4500 Series: Repeaters / Converters ▪ ADAM-3000 Series: Isolated Signal Conditioning Modules	▪ RS-232 to RS/422/485 Converters ▪ Serial to Fiber Converters ▪ RS-232 Repeaters ▪ RS-422/485 Repeaters

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Class I, Division 2 Certified Products Offerings

USB Converters & Hubs	Ethernet Gateways	Wireless Nodes, Kits
• Industrial isolated USB to serial converters • Industrial USB hubs • Industrial isolated USB hubs	• Industrial Ethernet to serial gateways • Industrial Modbus Ethernet to serial gateways	• Wireless sensing mesh nodes • Wireless sensing starter kits

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Advantech Class I, Division 2 Controllers: UNO-1372GH

	UNO-1372GH
CPU	Intel Atom E3845 1.91GHz, 2MB L2 cache
Onboard RAM	Built-in 4GB DDR3L 1333 MHz (Up to 8GB)
Display	1 x VGA, supports 1920x1200@60Hz 24bpp, 1 x HDMI 1.4a, supports 1920x1080@60Hz 24bpp
OS system	Microsoft® Windows 7/8, WES7,WIN10 Ent. LTSB, AdvLinux
Serial Ports	1 x RS-485, terminal, 50~115.2kbps, 3 x RS-232/485, DB9, 50~115.2kbps
LAN	3 x RJ45, 10/100/1000 Mbps IEEE 802.3u 1000Base-T Fast Ethernet
USB	3 x USB ports (2 x USB2.0, 1 x USB 3.0)
Expansion	2 x full-size mPCIe
Power Input Range	24 W (typical)
Operation Temp.	- 20 ~ 60°C (-4 ~ 140°F) @ 5 ~ 85% RH with 0.7m/s airflow (Industry SSD)
Dimension	85 x 139 x 152 mm (3.3" x 5.5" x 6.0")
Certifications	CE, FCC, UL, CCC, BSMI Class I, Division 2, groups A,B,C,D, hazardous location, temperature code: T4A, ambient temperature range: -20°C - 60°C

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Advantech Class I, Division 2 HMI: FPM-8151H

Model		FPM-8151H
Display	Size (diagonal)	15" XGA
	Resolution	1024 x 768
	Colors	16.2M
	Viewing Angel	160, 140
	Luminance	350
Direct VGA Input		Yes
DVI Input		Yes
Touch-screen (optional)		Resistive
OSD (On-Screen Display)		Yes
Power Adapter (AC)		100-240 V
DV Power Input		24 V_{DC}
Front Panel Ingress Protection		NEMA4/IP65
Operating Temperature		-20 ~ 60℃ (-4 ~ 140℉)
Dimensions (W x H x D)		422 x 338 x 68 mm (16.61" x 13.31" x 2.68")
Certifications		CID2 Group ABCD, T4

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Advantech Class I, Division 2 Industrial Panel PC: TPC-1881WPH

	TPC-1881WPH
CPU	Intel 4th Generation Core i5-4300U 1.9GHz
Onboard RAM	4GB DDR3L 1600MHz SO-DIMM SDRAM (up to 8GB)
Display	Size :18.5
	Resolution:1920 x 1080
	Colors:16.7M
	Viewing angle:170/160
	Luminance:350
LAN	10/100/1000BASE-T x 2 (one port supports iAMT)
I/O	RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 2, HDMI 1.4 x 1 Audio line out x 1, USB 2.0 x 1 (optional) Audio MIC x 1 (optional)
Expansion	Full-size mini PCIe
Power Input Range	24VDC +/- 20%
Operation Temp.	0 ~ 55°C (32 ~ 131°F)
Dimension	488 x 309 x 56.7 mm (19.21" x 12.17" x 2.23")
Certifications	BSMI, CCC, CE, FCC Class A, UL C1D2
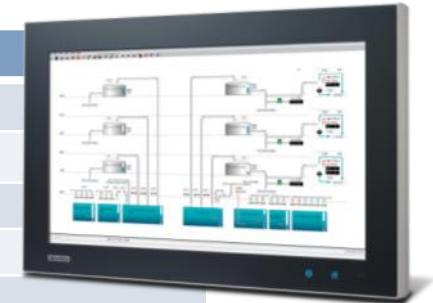
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Advantech Class I, Division 2 Unmanaged Ethernet Switch

EKI-5726FI	EKI-5729FI	EKI-2728M/MI
16-port+2 SFP Gigabit Ethernet Switch	8-Port+2 SFP Gigabit Ethernet Switch	6G+2G Multi-Mode Unmanaged Ethernet Switch

EKI-5524SSI/MMI Series	EKI-5525SI/MI Series	EKI-5528I EKI-5525I	EKI-5626CI	EKI-5629CI	EKI-5725I EKI-5728I	EKI-5726I
4-port + 2x100FX port (Single/ Multimode, SC/ST type), Fast	4-port +1x100FX port (Single/Multi-mode, SC/ST type), Fast Ethernet	8/5-port Fast Ethernet Switch	16FE + 2GE Combo Ethernet Switch	8FE + 2GE Combo Ethernet Switch	5/8-port Gigabit Ethernet Switch	16-port Gigabit Ethernet Switch

Advantech Class I, Division 2 Industrial Protocol Switch

EKI-5526I-EI EKI-5528I-EI	EKI-5526I-PN EKI-5528I-PN	EKI-5526I-MB EKI-5528I-MB	EKI-5626CI-EI EKI-5629CI-EI	EKI-5626CI-PN EKI-5629CI-PN	EKI-5626CI-MB EKI-5629CI-MB
16FE Managed Ethernet Switch supports EtherNet/IP/ Modbus/ PROFINET	16FE Managed Ethernet Switch supports EtherNet/IP/ Modbus/ PROFINET, -40~75℃	8FE Managed Ethernet Switch supports EtherNet/IP/ Modbus/ PROFINET	8FE Managed Ethernet Switch supports EtherNet/IP/ Modbus/ PROFINET, 40~75℃	16FE+2G Combo Managed Ethernet Switch supports EtherNet/IP/ Modbus/ PROFINET	16FE+2G Combo Managed Ethernet Switch supports EtherNet/IP/ Modbus/ PROFINET, 40~75℃

Media Converter and Injector

EKI-2541M/MS/S/SI	EKI-2741FPI	EKI-2742FPI	EKI-2741FHPI	EKI-2711HPI
10/100TX to Multi-mode/ single –mode SC type fiber optic industrial media converter	1GE PoE, SFP Injector, IEEE802.3af/at, 48VDC, -40~75℃	2GE PoE, SFP Injector, IEEE802.3af/at, 48VDC, -40~75℃	1GE PoE, SFP Injector, IEEE802.3af/at,up to 60W, 48VDC, -40~75℃	1GE PoE Injector, IEEE802.3af/at,up to 60W 48VDC, -40~75℃

Advantech Class I, Division 2
Serial Device Server

EKI-1521/I/CI	EKI-1522/I/CI	EKI-1524/I/CI
1-port RS-232/422/485 serial device server	2-port RS-232/422/485 serial device server	4-port RS-232/422/485 serial device server

Modbus Gateway

EKI-1221/I/CI	EKI-1222/I/CI	EKI-1224/I/CI
1-port Modbus gateway	2-port Modbus gateway	4-port Modbus gateway

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Advantech Class I, Division 2 Industrial Cellular Router

SmartFlex BB-SR300 Series	SmartFlex BB-SR303 Series	SmartFlex BB-SR305 Series
SmartFlex LAN router series	SmartFlex LTE router for EMEA region	SmartFlex LTE router for US region

Naming rule for quick selection:

BB - SR3 00 XXXXX - YYYY

		No SmartWorx HUB
	SWH	SmartWorx HUB
Accessories		
	0	No Accessories (DIN holder included)
	1	Accessories with EU power supply
	5	International Power Supply (EU, US, UK, AUS)
Enclosure		
	1	Plastic enclosure
	2	Metal enclosure
Interfaces		
	0	No optional port
	1	3x ETH Switch
PoE		
	0	No PoE
	8	PoE PSE
	9	PoE PD
WiFi		
	0	No Wi
	1	WiFi (TI 2.4 & 5 GHz)
Router version		
	00	Wired version

More product information can be found HERE -
https://ep.advantech-bb.cz/support/router-models/category/smartflex-lte-router

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Advantech Class I, Division 2 Data Acquisition Modules

Serial I/O Modules				Ethernet I/O Modules		Signal Conditioning Modules
Analog I/O Modules	Digital I/O Modules	Robust Remote I/O Modules	Converter and Repeaters	Analog I/O Modules	Digital I/O Modules	Thermocouple Conditioner
ADAM-4015 ADAM-4017+ ADAM-4018+ ADAM-4019+ ADAM-4024	ADAM-4051 ADAM-4055 ADAM-4056SO ADAM-4056S ADAM-4068	ADAM-4117 ADAM-4118 ADAM-4150	ADAM-4510I ADAM-4520I	ADAM-6015 ADAM-6017 ADAM-6018 ADAM-6022 ADAM-6024	ADAM-6050 ADAM-6051 ADAM-6052	ADAM-3011

25 models are certified   **More product information can be found HERE**

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Advantech UL Class I, Division 2 Industrial Serial Converters

Serial Converters			
Industrial Isolated Converter RS-232 to RS-422/485, 3-way isolation, Modbus	**Hardened Industrial 2kV Isolated Converter** RS-232 to RS-422/485, IP30, 3-way isolation, Modbus IEC61850-3, IEEE1613	**Industrial 2kV Isolated Serial to Fiber Converters** 3-way isolation, Modbus	**Hardened Industrial 2kV Isolated Serial to Fiber Converters** 3-way isolation, Modbus, IP30 IEC61850-3, IEEE1613
BB-485DRCI (DB9F for RS232; removable terminal block for RS-422/485)	**BB-485DRCI-PH** (DB9F for RS232; removable terminal block for RS-422/485)	**BB-FOSTCDRI** (multi-mode, ST) (fiber On in idle state) **BB-FOSTCDRI-INV** (multi-mode, ST) (inverted; fiber Off in idle state)	**BB-FOSTCDRI-PH-MT** (multi-mode, ST)

ADVANTECH

Advantech UL Class I, Division 2 Industrial Serial Repeaters

Serial Repeaters	
Industrial 2kV Isolated Repeaters 3-way isolation, Modbus	**Hardened Industrial 2kV Isolated Repeaters** IP30, 3-way isolation, Modbus, IEC61850-3, IEEE1613
BB-232OPDRI (RS-232, DB9F, DB9M) BB-485OPDRI (RS-422/485, 2 removable terminal blocks)	BB-232OPDRI-PH (RS-232, DB9F, DB9M) BB-485OPDRI-PH (RS-422/485, 2 removable terminal blocks)

Advantech UL Class I, Division 2 Industrial USB Converters and Hubs

USB to Serial Converters	USB Hubs	
2kV Isolated Converters 2 or 4 port, full speed High-retention USB port, IEC60068-x	**4kV Isolated Hubs** 4 or 7 port, full or high speed, High-retention USB ports	**Non-isolated Hubs** 4 or 7 port, full or high speed, High-retention USB ports
BB USR602 (2 DB9M serial, USB Type B) BB-USR604 (4 DB9M serial, USB Type B)	BB UHR304 (1 Type B, 4 Type B) BB-UHR307 (1 Type B, 7 Type B)	BB-UHR204 (1 Type B, 4 Type B) BB-UHR207 (1 Type B, 7 Type B)

Advantech UL Class I, Division 2 Industrial Ethernet Gateways

Ethernet to Serial Gateways	Modbus Ethernet to Serial Gateways
Copper Ethernet / Serial	Copper Modbus Ethernet / Serial
BB VESR901 (1 DB9/TB, 1 RJ45) BB-VESR902D (2 DB9, 1 RJ45)	BB-MESR901 (1 DB9/TB, 1 RJ45) BB-MESR902T (2 TB, 1 RJ45)

Advantech UL Class I, Division 2 Wireless IoT Mesh Network Sensing

Wireless Industrial Nodes	Wireless Starter Kits
Conduit Nodes	Wzzard HVAC Monitoring Starter Kit
BB-WSD2C31010 (3AI, 1DI, internal temperature) BB-WSD2C21150 (2AI, 1DI, 1DO, 2 thermocouples, 2 thermistors, internal temperature) BB-WSD2C06010 (6DI, internal temperature)	BB-WSK-HAC-2 (1 BB-WSD2C21150 node, 2 clamp-on current sensors, 2 J-type thermocouples, 1 SmartSwarm 342 gateway)

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of the IoT World