atop Technologies

INDUSTRIAL NETWORKS at OIL & GAS INFRASTRUCTURE

DIGITALIZATION OF OIL & GAS

OIL & GAS COMPANIES GOALS

The main tasks of oil and gas companies are to maintain production and ensure continuous operation. This requires greater awareness of field assets, the ability to access growing volumes of data from multiple locations, and the provision of actionable information to multiple stakeholders to achieve the following industry goals:

- To maintain reliable and safe production - to achieve plant performance targets, achieve operational and safety performance, and protect investment in equipment and assets.
- To maximize resource utilization and reduce waste - by automating data collection and distribution, eliminating manual monitoring and minimizing duplication of effort and resources.
- To improve efficiency and minimize environmental impact - by monitoring increasing amounts of data to detect leaks, emissions, effluents and pollution control, and overall asset integrity.

New requirements for the organization of production

Traditional production, as well as customer demand and expectations, are undergoing major transformations. It is no longer enough to deal with such destructive factors as macroeconomic shifts, political uncertainty, and political and regulatory compatibility. Today's manufacturers also need to adapt rapid changes in the new digital—a reality driven by big data. To survive, production must go to simpler automated production processes that previously supported traditional use in factory operations with traditional IT intervention.

This aspired task is not so simple in itself. The solution will not only make monitoring more informative and effective, but also maximize overall asset utilization, minimize downtime, synchronize direct and indirect efficiencies, ensure stability and accuracy, and stimulate new growth in production efficiency.

The modern smart factory is a giant leap from its traditional image. In real time, the technological processes will be integrated with information technology. Data will be pulled from connected operating and production systems, bringing the physical and digital world closer together. Immediate interaction with CRM allows you to highlight deviations from the plan. By integrating customer demand with a wider supply chain, the smart factory optimizes lead times, delivery times, and costs at every step.

Industrial Ethernet is the foundation for smart enterprises

For over thirty years, ATOP Technologies has provided reliable communications networks to leading oil and gas, industrial and energy companies around the world.

As an industry leader in deploying communications networks with exceptional reliability, ATOP has an impeccable reputation. With extensive experience in harsh industrial environments, ATOP provides oil and gas companies with best-in-class solutions. We offer a wide range of industrial products providing end-to-end communications networks that are scalable to our customers' unique requirements.

Our solutions are in use in more than 50 countries around the world. Industrial companies rely on us for mission-critical data networks to meet production goals and ensure business performance.

SUCCESSFUL DIGITALIZATION

Interoperability

Success lies in efficient and flexible integration. Complexities arise when different manufacturers adopt different gateways with various ports and interfaces. How do you integrate all of them together then? ATOP Protocol Gateway and industrial communication modules are designed to solve this problem and make integration seamless. They simplify connectivity, make older equipment blend with new, provide data conversion among industrial protocols to ensure compatibility of various devices. Modbus, Profinet, Ethernet/IP, EtherCAT, MQTT and OPC UA are no longer an obstacle, but an opportunity to take the best from each technology.

Security

With digital transformation and interconnected nature of Industry 4.0, managing risks in the age of IIoT has become a new industry mandate. The more devices are connected, the more points of entry lie vulnerable to threats and malicious activities. From disruptions of operations to gaining control of systems, in the recent past, cyberattacks have caused far reaching, extensive damages to manufacturers and supply networks. ATOP hardware features security solutions to provide seamless security and encryption: MACsec for security over LANs; IPsec, OpenVPN and PPTP for security over WANs and the Internet is embedded in all advanced products.

Reliability

With MTBF of up to 25 years, ATOP's range of hardware is built to minimize downtime events. Built-in redundancy features such as ERPS Ring, RSTP, DLR and Media Redundancy Protocol (MRP) ensure ideal upkeep times. For instance, in the event of a link or device failure, these features detect the failure and relay the cause of the failure to the control center, by recovering automatically from the failure to provide continuous operation.

Environment

From blast furnaces to operating in sub-zero degree environments, ATOP's line of hardware is designed to withstand the harshest of environments. Supporting temperatures from range of -40°C to +85°C, our hardware uses industrial-grade materials to guarantee also a long MTBF. And, because our devices feature fanless designs to reduce the number of moving parts, breakdowns and failures are reduced, thereby prolonging the operational lifetime of your investment.

EMI/EMS

High voltages and electromagnetic interferences in factories can be fatal if installed devices are not properly shielded and isolated. Without proper precautions, there could be equipment failures. Devices should also be designed in a way so as to not to interfere with their surrounding equipment, as their own radiated emissions can generate noise and interference. ATOP's hardware conforms with high EMS and EMI standards, such as UL61010-2-101, UL60950-1, UL/EN/IEC62368 and EN61000-6-2 and EN61000-6-4.

UPSTREAM

Trouble-free equipment supporting industrial protocols and serial interfaces:

- Transfer pressure data in tubing and casing from gas wells to RTUs and flow meters
- Collect data for dynamometers, pumpdown controllers and RTUs
- Collect data on site tank levels, pressure and compressor status
- Provide necessary wellhead and production site data to facility control centers
- Support multiple wireless options in a distributed infrastructure for local Wi-Fi and high speed Ethernet connectivity

MIDSTREAM

Network infractructure with Ring topology protection:

- Connect remote production sites, pumping and compressor stations, and PKUs in real time
- Collect data on inlet pressure, discharge pressure and compressor status.
- Collect remote data from flow meters to detect intrusions and leaks through remote pipelines
- Allow SCADA communication with flow meters and RTUs for custody transfer, intrusion and leak detection
- Fuse SCADA data, voice and security in a common fiber optic network

REFINARY

Network infrastructure with high bandwidth and advanced architecture:

- Remotely monitor pressure, temperature and level along the perimeter of the object
- Enable wireless LAN communication for equipment management, operation and maintenance
- Enable fiber communication for operation, maintenance, protection and control of the facility's electrical networks
- Remotely monitor pipeline flow and status signals
- Support voice, data, video surveillance, IP / Ethernet telecommunications services for hydraulic control, leak detection, SCADA pipelines, security and protection subsystems
- Allow SCADA communication with flow meters, RTU and controllers for custody transfer, storage, cathodic detection and leak detection

TRANSPORTATION

Network infrastructure with high bandwidth and advanced architecture:

- Remotely monitor pipeline flow and status signals
- Support voice, data, video surveillance, IP / Ethernet telecommunications services for hydraulic control, leak detection, SCADA pipelines, security and protection subsystems
- Allow SCADA communication with flow meters, RTUs and controllers for custody transfer, storage, cathodic detection and leak detection
- Provide communication with terminal facilities and offshore spill response centers and coast guards
- Enable long distance wireless communication between offshore production and transport terminals

SUCCESS STORIES

Monitoring and control of pumping units

MISSION:

The customer needs PoE switches to connect with IP cameras for unmanned well monitoring.
The control room must provide aggregation of fiber-optic lines through the 10GbE backbone.

Solution

EHG7612/ EHG7616/ EHG7620

12, 16 & 20 Port Gigabit PoE Industrial Managed L3 Switches

- Up to 16 10/100/1000 RJ45 ports or 100/1000 BASE-X SFP slots plus 4 dedicated 1/10G uplink SFP slots
- Up to 8x 802.3af/ 802.3at PoE/PoE+ Power over Ethernet ports, with maximum 30W PoE power per port and up to 240W power budget
- Powerful Layer-3 switching, supporting BGPv4, IPv4 Static, RIPv1/v2 and OSPFv2
- Redundancy through ITU-T G.8032 ERPS Ring, RSTP, STP, MRP (Manager/Client), compatible rings and compatible chains
- UL 62368-1:2014, CE/FCC, NEMA TS-2 certified for traffic control
- IEEE 1588v2 Precision Time Protocol hardware-based end-to-end TC
- Wide temperature operations, from -40°C to 70°C

SE5908/ SE5916

8 or 16-Port Rack Mount Industrial Secure Serial Device Server

- Remotely monitor, manage, and control industrial field devices
- Industrial EMC protection, optional serial port isolation, -20 to +70°C operation
- 2 Fast Ethernet ports, dual-subnet or RSTP redundancy
- 8/16 sw-selectable RS-232/485/422 RJ45 serial ports, up to 921kbps
- 24 to 48 VDC power input or 100 to 240 VAC power input (EU or US version)
- TCP Server/Client, UDP, Virtual COM and Tunneling modes supported
- Supports SNMPv1/v2c/v3, embedded security(IPsec and OpenVPN)
- Configuration via web browser/serial console/Telnet console/Windows utility/LCM matrix
- Integrated RSTP redundancy

SUCCESS STORIES

Monitoring and control of oil pipeline cathodic protection systems

MISSION:

Prevent and minimize corrosive processes by reducing the positive potential on the metal part of the pipeline.

Solution

RHG7628 Series

Industrial Rack-Mount Layer-3 Managed Modular Gigabit Ethernet PoE Switch

- Maximum 128Gbps switching capacity, 95.24Mpps throughput
- Rugged industrial design for -40 to +75°C harsh environment operation
- Flexible modular configuration, 3 module-dedicated slots
- Up to 24 PoE ports, with maximum 720W of PoE power budget
- 4 x 1 Gigabit or 4 x 10 Gigabit SFP uplink slots
- Up to 20 possible switch configurations, 2 security modules, and 4 power input versions
- ITU-T G.8032 ERPS Ring, RSTP, or MRP (Manager/Client) redundancy
- RIP, OSPF, Static Routing, PIM supported Layer-3 switching
- EN50155 / EN50121-4 certified for railway applications
- PROFINET CC-B v2.33 conformance, provides GSD description file

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MB5904D Series

4-Port Advanced Industrial Secure Modbus TCP/RTU/ASCII Gateway

- Industrial EMC protection, wide temperature operation from -40°C to 85°C
- 2 Fast-Ethernet ports or 100/1000 SFP slots
- 4 Software-selectable RS-232/RS-485/RS-422 serial ports, up to 921kbps
- Bi-Directional Modbus TCP/RTU/ASCII conversion from Serial to Ethernet and viceversa, VirtualCOM support, advanced Modbus options available
- Isolated redundant 12~48 VDC power inputs or powered (PoE models) through through the Ethernet cable (802.3af)
- Embedded security with PPTP, IPsec or OpenVPN (client/server)
- Configuration via web browser/serial console/Telnet console/utility
- Rugged metal case with wall or DIN rail mount

ATOP FACTORY AUTOMATION SOLUTIONS

ATOP provides comprehensive solutions for Industry 4.0. From your information gateway to the cloud, no matter public or private, we empower businesses with IIoT connectivity through our networking backbone (switches, VPN routers, Wireless and Wi-Fi mesh), field level actuators with ATOPindustrial serial device servers and Modbus gateways for legacy equipment, remote I/O, or directly inside the I/O device through our embedded industrial Ethernet chips and modules.

And if you need to bridge two different industrial networks, ATOP gateways will help you overcome this challenge easily with a high level of integration, seamless communication and reliability.

INTELLIGENCE

ERP
Cloud
Private Cloud
AI

ATOP Computing

IIoT Gateways
Industrial Edge Computers Industrial PCs

Third Party Control

PLCs
Controllers

ATOP Networking

Ethernet Switches
VPN Routers
Industrial Wireless
Media Converters

ATOP Legacy

Serial Device Servers
Modbus Gateways

Third Party Legacy

ATOP I/O

Remote I/Os

ATOP Gateways

Automation Protocol Gateways

Third Party Control

Other PLCs/ Industrial networks

ATOP Embedded

Embedded Industrial Ethernet Solutions

Third Party I/O

I/O devices
Motion controllers
Others...

ATOP Computing

Need a shortcut to Industry 4.0? ATOP provides rugged, wide-temperature, industrial embedded ARM-computers to help your business benefit from intelligence and insight of cloud-based services.
With 9 different hardware platforms available, and each one of those customizable in many more combinations, ATOP gives you a powerful C-programmable embedded computer, or a user-friendly Programming interface running Node-RED.

ATOP Networking

PoE? Profinet? Ring? Industrial EMC? Redundant power supply? Network Redundancy? Serial connectivity? No problem. ATOP's industrial networking series cover more than 100 different combinations for all industrial needs. Unmanaged and managed switches, field-mount, DIN rail or rack-mount serial servers, wireless access points, media converters.

ATOP Legacy

ATOP serial device servers are designed for superior performance amid electrically extreme and climatically challenging industrial environments. While entry level serial servers offer both wired and wireless connectivity options, industrial serial servers act as a powerful platform to integrate legacy devices with modern network infrastructure. Compact Wi-Fi Serial Device Servers extend network range and wireless serial device servers deliver rugged, industrial-strength wireless solutions for deployment in harsh environments.

ATOP I/O

ATOP's new generation IIoT I/O module, the IO5202 Series, connects digital, analog devices and sensors. It enables you to monitor, acquire and process data from remote sensors to control digital and analog outputs. It's a cost-effective solution for integrating existing applications into an IIoT framework, such as automated manufacturing, building management and control, and agricultural and irrigation systems.

ATOP Gateways

ATOP's industrial protocol gateways enable different industrial Ethernet protocols to work on the same network, including Profinet, Ethernet/IP, Modbus, EtherCAT and OPC UA. Designed to work in most demanding industries, the gateways come with high performance, low cost, seamless conversion, exception/error management and unsolicited event management for the protocols requiring them (such as DNP3).

Our wide range of Modbus gateways provides seamless conversion between Ethernet-based Modbus TCP and serial-based Modbus RTU/ASCII. Web-based configuration UI help users select the serial interface easily.

ATOP NETWORKING

ATOP networking products include more than 100 different combinations for all industrial needs. For the simplest of applications, ATOP offers DIN rail unmanaged Ethernet switches, available in 10/100 Mbps, 10/100/1000 Mbps with RJ45 or SFP Fiber in plastic or aluminum housings that embed packet prioritization based on IEEE 802.1q as defined in the Profinet specifications. Our Profinet CC-B compatible managed DIN rail or modular rack-mount Ethernet switches will allow you to draw up the most appropriate network topology to support a trouble-free application and a reliable backbone to your network, all of them complying with the strictest Industrial EMC standards, and suitable for wide temperature operating conditions.

ATOP has brought together a comprehensive portfolio of industrial networking products to support the need of tomorrow's smart factories. We develop and constantly upgrade our product portfolio that broadly includes industrial Ethernet switches, VPN routers, industrial wireless and media converters. Our extensive 30+ years of experience has helped us earn a reputation. We have always been at the forefront of networking hardware that delivers solutions to the problems that industries face. Business benefits include reduced downtime, lowered operating expenditure cost, enhanced security and investment protection.

Driven by industry insights and customer mandates from across the world and industries, our range extends from entry level to high performance hardware that operates in the harshest of environments under the most demanding network loads.
Our industrial Ethernet switches come with advanced security features such as redundancy (through RSTP, ERPS, MRP Rings or high availability protocols such as HSR/PRP), QoS, VLAN management, LACP link aggregation/port trunking, and Layer-3 routing. Smart media converters provide reliable solutions to all conversions between single-mode or multi-mode fiber optics to Ethernet conversion, while industrial wireless solutions provide infrastructure for WLAN from entry level to to high-end multifunctional APs/stations.

ATOP SWITCHING: UNMANAGED, MANAGED, POE AND LAYER-3

Entry Level: ATOP's entry level DIN rail mount unmanaged switches offer a reliable, robust but cost-effective solution to the most simple network topologies. IP30 rated, all of them are certified for Industrial EMC (EN61000-6-4 and EN61000-6-2). The items have plastic, steel or aluminum housing, and support redundant power-supply for enhanced safety and operate in temperatures ranging from -10 to 70 °C (plastic housing products support 0 to 60°C operating temperature). Selected products can prioritize Profinet packets and are equipped with the specific Profinet plug. Our products range from 4 to 8 Fast Ethernet or Gigabit Ethernet ports and selected versions have single-mode or multi-mode fiber-optic uplink.

Harsh Environments: ATOP's most advanced product line offers around 14 models available in up to 60 different possible configurations. Ranging from 4 up to 20 Fast Ethernet or Gigabit ports, with minimum supported operating temperatures from -20 to +70 °C, relay output, redundant power input, Profinet packet prioritization (for unmanaged switches) and Profinet CC-B compatibility (managed switches), our harsh-environment switches are the best choice to support high-demanding networks. Select products offer MIL-STD shock, vibration, temperature and humidity performance and operating temperatures from -45 to + 80 °C.

ATOP's managed switches provide advanced network management features to maximize network performance and minimize downtime.

Want to know more? Detailed information is available in ATOP's Industrial Networking Brochure, ATOP's Switch Product Selection Guide or in the datasheets.

ATOP Wireless

ATOP's Wi-Fi access points provide reliable, robust, rugged and cost-effective solutions to industrial applications that require contactless connection. Our single-radio, high-performance 2x2 MIMO IEEE 802.11 a/b/g/n access points provide a built in DIN rail mount access point/bridge/client capability, and are designed to be fully operational between -20 and +60°C.

AW5900 and SW5901/02 Series embed a high-performing industrial Wi-Fi mesh chipset, allowing you to build complex topologies relying on the self-healing capabilities of Wi-Fi mesh.

AW5200, our entry-level industrial wireless access point provides IEEE802.11 a/b/g/n at 2.4GHz connectivity for data mining in a low-cost reliable platform that can also be used in combination with our IO5202 IIoT remote I/O.

Want to know more? Detailed information is available in ATOP's Industrial Networking Brochure or in the datasheets.

ATOP Media converters and PoE Injectors

Ethernet to Fiber? SFP to Ethernet? No problem. ATOP's media converters and smart media converters provide reliable solutions to all conversion between single-mode or multi-mode fiber optics to Ethernet conversion. Available in different versions according to the cable length, selected versions embed a redundant power supply input for enhanced power fault security.

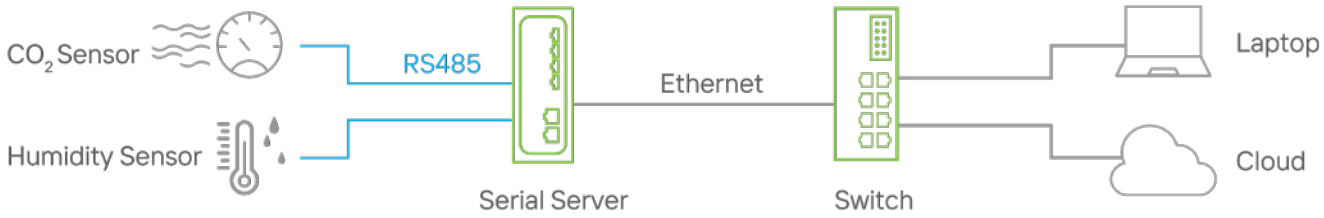
Our new, next-generation PoE injector allows you to provide high-power PoE up to 60W through the new IEEE802.3bt, with the advantage of a power input starting from only 12 VDC.

Want to know more? Detailed information is available in ATOP's Industrial Networking Brochure or in the datasheets.

ATOP LEGACY

Our hardened, rugged industry specific serial device servers and Modbus gateways ensure optimized operational safety and network reliability. Easy to install and configure, our serial server family enables precise monitoring and controlling of legacy serial devices via wired and wireless networks.

The product line provides a plethora of operational modes to comply with your industrial automation needs. Our Modbus gateways provide seamless conversion between Ethernet-based Modbus TCP and serial based Modbus RTU/ASCII. Our ruggedized industrial Modbus gateways are ideal for the harshest of environments.



ATOP Serial Servers

Available in field-mount, DIN rail mount or rack-mount versions from 1 up to 16 ports and with different operation temperature/ EMC variants, ATOP's serial server family covers all the needs that you may have in easily converting Ethernet to Serial ports (RS-232, RS-485, RS-422). Our serial manager software configuration tool helps you achieve easy and immediate device setup. If your application requires VirtualCOM, we provide a specific suite to make it fully functional within minutes.

Entry level:

Available in a rugged metal case with optional 2kV magnetic isolation and operating temperatures ranging from 0 to 60 °C, ATOP's entry-level serial servers provide the simplest but reliable Ethernet to Serial conversion.

Advanced:

ATOP's advanced serial device servers, available in 1 (field mount or DIN rail), 4 (DIN rail) or 8/16 (rack-mount) serial port versions, provide the ultimate solution to your needs. Supporting operating temperatures as wide as -40/85 °C (exceptions apply), they provide industrial EMC protection, serial port isolation and high performance. Select versions can be PoE powered. If wireless connectivity (either 802.11 a/b/g/n or Cellular 3G/4G LTE) is what you need, don't worry. ATOP has the solution for you too.

Want to know more? Detailed information is available in ATOP's Industrial Networking Brochure, or in the datasheets.

ATOP I/O

IIoT Remote I/Os

ATOP's new generation IIoT I/O module, the IO5202 Series, connects digital and analog devices and sensors. It enables you to monitor, acquire and process data from remote sensors to control digital and analog outputs. It's a cost-effective solution for integrating existing applications into an IIoT framework, such as automated manufacturing, building management and control, or agricultural and irrigation systems.

IO5202 with Digital Input/Outputs

IO5202 with Analog Inputs

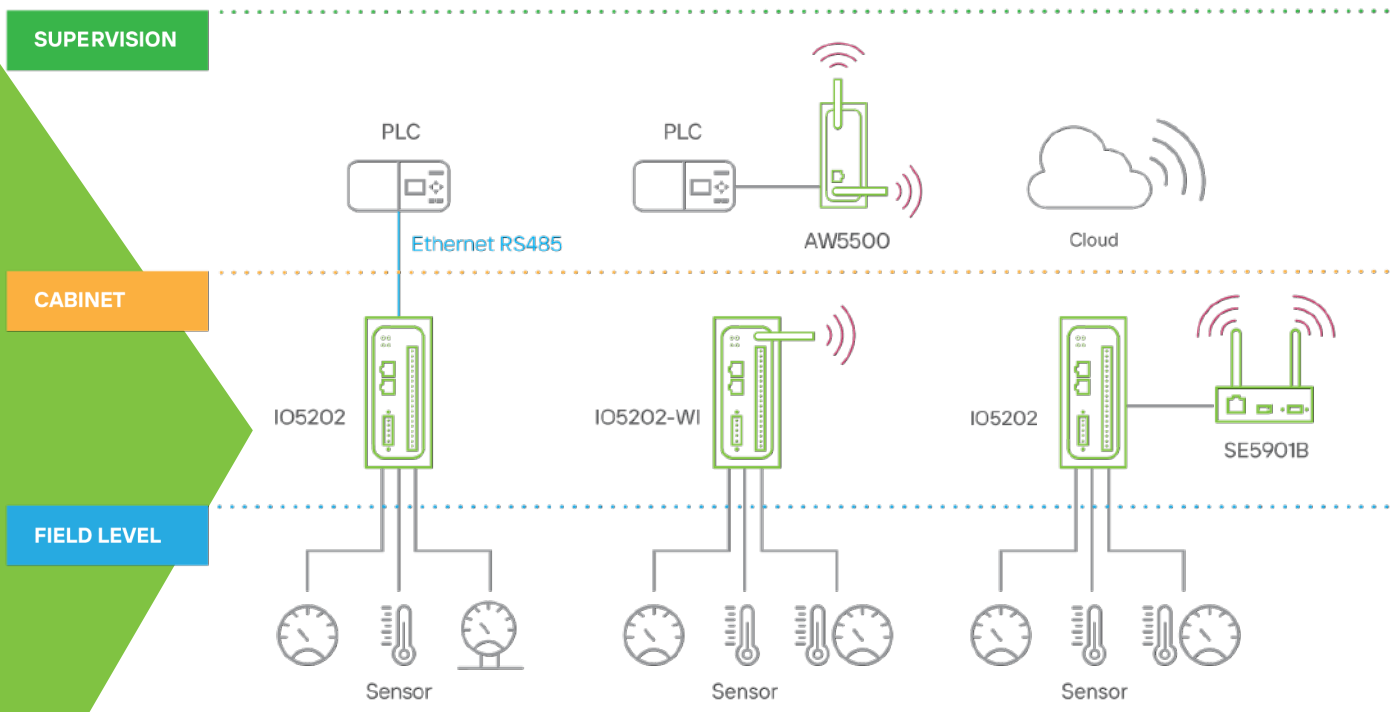
IO5202 with DIOs and Relays

IO5202 with Relays and Universal Inputs

IO5202 with Analog Inputs and Outputs

In situations where running cable is impractical, the IO5202 WiFi-equipped version comes handy as a cable-free solution connecting widely dispersed devices and sensors. It also allows better scalability for operations that continue to evolve and grow.

The IO5202 Series supports numerous protocols, including Modbus TCP/RTU/ASCII, MQTT, RESTful APIs and SNMP. Using the intelligent processing and publishing features of the IO5202 Series, data can be polled, logged, or even automatically pushed when I/O statuses change. And with RESTful API, data can be pushed to connect and interact with public or private cloud servers, which can be set up using the provided RESTful API and the user's own platform.



ATOP INDUSTRIAL PROTOCOL GATEWAYS FOR LEGACY RETROFITTING

Times change and technologies evolve. Not long time ago, serial-based communication was the standard for industries. Investments in equipment, machinery, robots, and PLCs made earlier than a decade ago were mainly serial or CAN-based. Upgrading or enhancing existing production lines can be exhausting and without much bottom-line benefits. Since modern industry needs more data, and faster, the standards evolved and equipment using new technologies won't always be compatible with older equipment. Upgrading perfectly-running equipment due to network or protocol constrains can be an extremely heavy financial pain. Re-adapting existing equipment into a new layout can also be almost impossible.

In the world of Industry 4.0, it's the system integration and interoperability that can make all the difference. How to bring Profinet and Modbus together? How to supervise an Ethernet/IP-based architecture with OPC UA? ATOP has the right solution for you.

ATOP's protocol gateway family has been specifically designed in order to make seamless integration easy and provide a fast and flexible solution to upgrade or retrofit an existing network. A powerful hardware platform with a stable and reliable software will manage the translation from one specific protocol to another specific protocol. A user-friendly configuration tool will help the customer or the system integrator map data points and commands within minutes, enabling the customer to manage changeovers, upgrades or integration in a fast and cost-effective way.

Do you want to know more? Detailed information is available in ATOP's Serial Server/ Modbus Gateways and Protocol Gateways Selection Guide.

Hardware	Mount	Ethernet Ports	RS-485 / RS-232 / RS-422 ports	Temperature range	Additional features
PG5901	DIN rail	2 (RJ45)	1 (TB5 or DB9)	-40/+85 °C	PoE-powered [optional]
PG5901B	DIN rail	1 (RJ45)	1 (DB9) or 2 (TB14, IO version only)	-40/+70 °C	4G LTE or 3G connectivity DI/DO [opt], Battery [opt]
PG5904D	DIN rail	2 (RJ45 or SFP)	4 (TB5 or DB9)	-40/+85 °C	PoE-powered [optional] Serial isolation [optional]
PG5908	Rack mount	2 (RJ45)	8 (RJ45)	-20/+70 °C	Serial isolation [optional]
PG5916	Rack mount	2 (RJ45)	16 (RJ45)	-20/+70 °C	Serial isolation [optional]
PG5908A	Rack mount	6 (SFP or RJ45)	8 (TB5 or DB9)	40/+85 °C	Serial isolation [optional] IEC61850-3 certification
PG5916A	Rack mount	6 (SFP or RJ45)	16 (TB5 or DB9)	40/+85 °C	Serial isolation [optional] IEC61850-3 certification
PG5900A	Rack mount	6 (SFP or RJ45)	-	40/+85 °C	IEC61850-3 certification






INDUSTRIAL PROTOCOL GATEWAYS— ATOP'S HARDWARE FLEXIBILITY

To support customers, ATOP offers combinations of all supported protocols—from entry level to advanced—on 9 different hardware platforms, enabling selection among hundreds of different products! DIN rail, rack mount, SFP, Ethernet, TB5 or DB9 serial connectors are available.

All products are embedded with security. Now supporting VPN over PPTP, IPSec or OpenVPN in case your application requires data to travel through the Internet. Through ATOP protocol gateways, remote or unmanned site monitoring can be set up in a heartbeat.

Do you want to know more? Datasheets and detailed information available in ATOP's Protocol Gateways Brochure. For questions or pricing please contact your local ATOP representative.

MODBUS GATEWAYS

Due to its quick configuration, flexible deployment and easy troubleshooting capabilities, Modbus has become one of the most sought-after protocols all over the world since its introduction. It eliminates complicate processes, quickly connects different protocols, makes older equipment more functional and simplifies networking activities. Modbus RTU (through serial connection) and Modbus TCP (through Ethernet networks) are often used in the backbone of industrial automation, substation automation, and building automation. Because of its lightweight and broad market penetration, ATOP has a specific product line for Modbus devices. The slow migration of the communication standard from serial-based (RS-232, RS-485, and RS-422) devices to Ethernet-based devices introduces the need of smart converters.

OUR RANGE

From simple to complex applications, ATOP has 10 products supporting Modbus in a wide variety of options. ATOP's entry-level products provide seamless conversion of Modbus RTU to Modbus TCP with almost no configuration required. ATOP's devices are available from one to sixteen serial ports and with flexible installation modes DIN rail, field mount or rack mount. An advanced LTE version also enables recent high-speed wireless communication for Modbus protocol.

Our products are enhanced with harsh environment operational capability, vibration resistance, power or serial port isolation for equipment and device protection, redundant power supplies, and many more special options. For the most critical applications, ATOP provides additional reliability through the redundancy function and supports enhanced responsiveness through the concentrator function.

CONCENTRATOR FUNCTION

Data concentrator function is a unique feature on ATOP's Advanced Modbus Gateways. This feature is ATOP's proprietary mechanism for responsiveness enhancement. Generally, a Modbus Gateway is working in the following manners. First, it waits for a master device's request, then it has to convert and relay information to a field device. Once a response is returned from the field device, the response is then converted and relayed back to the master device.
This has significant negative impact on the responsiveness. Instead, ATOP's Advanced Modbus Gateways with data concentrator function will continuously poll (at an interval specified by the customer) IEDs autonomously and store the data in their internal memory waiting for master device's requests. Once the request arrived, the return data would be retrieved from the internal memory of the Modbus Gateways.
This has several positive implications on the system performance: the master device may need just one connection and one query to get all data at once, the response time will be dramatically reduced, and many different data structures can be accessible based on specific need.

Want to learn more? Datasheets and detailed information are available in ATOP's Product Selection Guide.

REDUNDANCY FUNCTION

ATOP's Advanced Modbus Concentrators can be embedded with additional redundancy feature implemented through ATOP's proprietary communication protocol. For instance, a number of IEDs can be connected in multiple chains through serial ports where the primary Modbus gateway and the secondary Modbus gateway are connected on different ends of the chains as shown in the figure below. There can be an Ethernet link which could be either fiber or copper connection between the primary gateway and the secondary gateway. Both primary and secondary gateways may be further connected to a master through different redundant rings.
In normal situation, the secondary gateway will be silent, listening, and recording the data. In the event of a network breakdown, one of the gateway that is still reachable will take over communication with the master and relay back the link requested data to the master together with a link failure notification. One the other hand, if there is a serial link failure the secondary gateway will autonomously poll the missing data and update the primary gateway memory ensuring the data relayed to master is complete.
This feature enables the customer to manage the network with much fewer down-times than before and provides additional safety feature protecting the utility or the substation from accidental or intentional failure coming from the outside of the system.

Category	Picture	Model	Ethernet Ports	Serial ports	Mount	Isolation	CON	RDN	Power Supply	Extra Features
Entry Level		MB5201	1	1	FieldMount	No	No	No	1xDC	
Industrial		MB5901	2 RJ45	1	DIN-Rail	No	No	No	1xDC	PoE PD version available
		MB5901E	2 RJ45	1	DIN-Rail	Yes	No	No	1xDC	
		MB5904D	2 RJ45 or 2 SFP	4	DIN-Rail	Optional	No	No	2x DC	PoE PD version available
		MB5908/ MB5916	2 RJ45	8~16 RJ45	Rack Mount	Optional	No	No	AC/DC	
		MB5901B	1 RJ45	1 + 1 (RS232, IO version only	DIN-Rail	Optional	No	No	DC	3G-4G connectivity
Advanced		MB5904D-CT	2 RJ45 or 2G SFP	4	DIN-Rail	Optional	Yes	Opt	2x DC	PoE PD version available
		MB5908-CT/ MB5916-CT	2 RJ45	8~16 RJ45	Rack Mount	Optional	Yes	Opt	AC/DC	
		MB5900A MB5908A-CT MB5916A-CT	6 RJ45 or SFP	0 8 16	Rack Mount	Optional	Yes	Opt	2x AC/ DC/ HV DC	IEC 61850-3 certification

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