



IN YOUR SPACE SAFETY IS NON-NEGOTIABLE

The oil and gas industry literally fuels our global economy, and growing demand necessitates the highest level of engineering, productivity and safety. Every aspect of exploration, extraction and refinement must be carefully orchestrated to operate continuously and maximize profits. Achieving this high level of operational excellence is not possible without advanced data, voice and video communications.

Wireless Ethernet is fast becoming the preferred communication delivery system due to its excellent reliability, adaptability and affordability. However, your communication systems should be ATEX and HAZLOC certified to assure safe operations in your potentially hazardous environments.

ATEX AND HAZLOC CERTIFIED WIRELESS

Our license-exempt 5.4 and 5.8 GHz Cambium Point-to-Point (PTP) 600 Series Wireless Ethernet Solutions are excellent connectivity and backhaul systems to support your communication requirements. The systems are engineered to provide you with carrier-grade, high-speed, secure connectivity in virtually any environment. You can establish communications in non-line-of-sight (NLOS), long-distance line-of-sight (LOS) and high-interference environments, as well as over water and desert terrain. The ruggedized radios can withstand temperatures between -40° F and

140° F (-40° C and 60° C) and wind speeds up to 202 miles (325 kilometers) per hour.

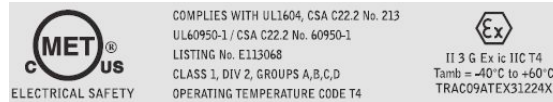
This unrivaled performance is possible due to our unique combination of technologies. These technologies work together to overcome obstacles, mitigate interference and enable long-distance communications with high spectral efficiency and up to five-nines of reliability. The systems routinely operate in some of the most hostile environments on earth, including icy mountaintops, hot and dusty deserts, turbulent seas and congested cities.

ATEX AND HAZLOC CERTIFICATIONS

PTP 600 wireless bridges have been tested and certified to meet ATEX and HAZLOC directives for equipment operations in hazardous locations. Compliance classifications granted are:

- ATEX**
- Equipment Group II** – electrical equipment intended for use in places with an explosive gas atmosphere other than mines susceptible to firedamp (methane); equipment category 3 G which is equipment that is suitable for Zone 2
 - Category 3 / Zone 2** – electrical equipment intended for use in a location where an explosive atmosphere is not likely to occur in normal operations, but if it does, only occurs for short periods of time; protection by intrinsic safety assessment for Zone 2
 - Gas Group IIC** – acetylene and hydrogen for example
 - Temperature Class T4** – 135° C maximum surface temperature

- HAZLOC**
- Class 1 Location** – flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures
 - Division 2** – ignitable concentration of flammable gases, liquids or vapors are not likely under normal conditions
 - Gas Groups A, B, C, D** – acetylene, hydrogen, ethylene and propane for example



Equipment Markings for ATEX and HAZLOC certified products



CASE FILE: PETROCHEMICAL INDUSTRY

It's time for another turnaround. You are pulling together the materials, equipment, contractors and personnel at warp speed. Of course, you're checking everything to make sure all systems and processes comply with safety regulations. Your schedule is really tight, but you've been here many times before.

This turnaround is a little different because you're using a wireless solution to communicate between your company's computer network and the workstations in the trailers. The system was installed in only five or six hours, and the test run was a whopping success. Happily, you can check this item off your list.

The wireless system that saved you three to four man-days of productivity is our PTP 600 Microwave Ethernet Solution with ATEX (ATmospheres EXplosibles) and HAZLOC (Hazardous Locations) certification. So start communicating. There still is much to do.



UPSTREAM APPLICATIONS

In both offshore and onshore exploration and production, our PTP 600 systems can support a variety of communications to enhance productivity and support ongoing operations safely. Typical upstream applications include:

- **Video Surveillance Backhaul:** PTP 600 systems are ideal solutions to backhaul traffic from your surveillance cameras to a control center. With user speeds up to 300 Mbps, the radios can stream video without dropping packets. Plus, you can manage the wireless network remotely with a standard Web browser.
- **NLOS and Long-Distance Connectivity:** When you need to communicate between drilling rigs and a host platform, a PTP 600 solution can overcome path challenges from high interference and obstacles which obstruct the line-of-sight. If you need to communicate over a long distance, our systems reliably communicate over distances up to 124 miles (200 km).
- **Network Redundancy:** Often exploration and drilling occur in very remote locations which may have mountainous or desert terrain, bodies of water and fluctuating weather conditions. Such environmental challenges make it very difficult to restore communications in the event of an outage. Deploying PTP systems as redundant links enables a continuous flow of information and helps to maintain your overall productivity. Plus, our sophisticated deployment-assistance features help you quickly and easily install the redundant links.
- **Over-Water Communications:** When connecting an offshore platform to an onshore facility or connecting between offshore platforms, your communications have

to travel over water. When crossing water, there is a risk of multipath interference caused by signals reflecting off the water and arriving at the receiver from various directions over multiple paths. In addition, ducting, caused as signals move through air masses of different densities, deflects signals away from the receiving antenna, often causing a communication outage. PTP 600 radios can overcome these challenges with vertically separated antennas at one or both ends of a link.

DOWNSTREAM APPLICATIONS

Refineries and petrochemical complexes are required to operate continuously at high productivity over long periods of time. To support optimal productivity and continuity, PTP 600 systems can establish communications quickly, supply increased capacity and provide redundancy for critical operations. Typical downstream applications include:

- **Rapid Deployment for Turnarounds:** When you need to shutdown operations for a turnaround, PTP 600 radios can supply needed wireless connectivity for employees and contractors at the work site. Because PTP radios can be installed in a day or two, you can provide temporary communications fast. Once installed, the systems are easy to use and can be managed remotely.
- **Network Redundancy:** For critical nodes such as SCADA (Supervisory Control and Data Acquisition), PTP 600 systems can provide reliable and affordable communication redundancy. If desired, you can deploy the systems in a ring configuration to support redundancy requirements. The systems are extremely durable, averaging 441 years of MTBF (Mean Time

Between Failures). So, you can rely on them to withstand the rigors of your environment.

- **Video, VoIP and PCS Backhaul:** PTP 600 radios are excellent options to backhaul traffic from your surveillance cameras, voice-over-IP (VoIP) and process control systems to a command center. You can also extend the reach of these systems into remote areas where fiber is not available or is prone to accidental cable cuts due to construction projects.
- **Added Capacity:** As with all industries, the oil and gas industry has experienced an increase in the demand for bandwidth-intensive voice and video communications. Our PTP 600 systems can provide additional capacity to support the ever-growing amount of multimedia content.

PTP 600 ADVANTAGES

Our PTP 600 systems offer you several significant advantages over comparable systems, including:

- **Anywhere Communications:** Our powerful combination of technologies gives you the freedom to communicate virtually anywhere – in NLOS, long-distance LOS, high-interference and over-water environments.
- **Reassuring, Multi-Level Security:** Although our systems are engineered to be inherently secure, PTP 600 systems support added security capabilities and compliance certifications, including, but not limited to:
 - **AES** – FIPS (Federal Information Processing Standard) 197 compliant 128-bit and 256-bit AES (Advanced Encryption Standard) encryption, a system option for added over-the-air security
 - **FIPS 140-2** – an optional module that meets regulatory requirements for cryptographic algorithms, key security and tamper-evidence
 - **HTTPS/TLS** – The secure version of Hypertext Transfer Protocol (HTTP) to protect the management interface
 - **SNMPv3** – Security and remote configuration enhancements for Simple Network Management Protocol (SNMP)
 - **Identity and Event Management** – identity-based user accounts with configurable password rules to control user access to the radios, and Remote Authentication Dial In User Service (RADIUS) to remotely authenticate users and their levels of access based on your network policies
 - **Auditing and Event Management** – local logging of security and other events that can be sent to a centralized logging server using syslog

- **Disaster Recovery** – “save and restore” feature that backs up a radio’s operating configuration file, allowing the file to be restored quickly and easily if a unit must be reset or replaced
- **Durability:** With more than 2.2 billion hours of field time, Mean Time Between Failures (MTBF) measured in decades and IP (Ingress Protection) 66 rated enclosures, PTP 600 radios are built to take the abuse of challenging outdoor environments. From salt spray in the North Atlantic, to perpetual ice in Antarctica, to extreme heat and dust in Abu Dhabi, PTP 600 systems weather the environment and perform continuously.
- **“No Surprises” Link Planning:** Prior to purchase, our easy-to-use Cambium PTP LINKPlanner tool allows you to accurately predict link performance based on geography, distance, antenna height and other factors specific to your deployment. LINKPlanner is available as a stand-alone tool on our web site.
- **Effortless Installation and Operation:** Sophisticated deployment-assistance features help installers complete a stress-free installation – typically in one to two days. The intuitive graphical user interface greatly simplifies operations
- **Performance-Enhancing Tools:** PTP 600 systems provide industry-leading metrics to help you get the best possible performance out of your wireless network. Those metrics include antenna alignment information, interference and throughput measurements, measurements of signal level and quality, and troubleshooting diagnostics.
- **Flexible Network Management:** You can manage your wireless network using the Internet and a standard Web browser, your existing network management system and/or Cambium Wireless Manager, Version 3.0 or higher.

SUMMARY

Oil and gas exploration, extraction and production entail sophisticated and complex processes to achieve productivity and profitability goals. State-of-the-art communication systems are crucial to the success of those efforts, and the safety afforded by those systems is paramount. Our PTP 600 systems are ATEX and HAZLOC certified to operate safely in oil and gas environments. With more than 60,000 systems deployed worldwide, we have the expertise to help you successfully plan, deploy, operate and manage your wireless communication network successfully.

Performance, safety and value ... you get all three with our PTP 600 solutions.



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