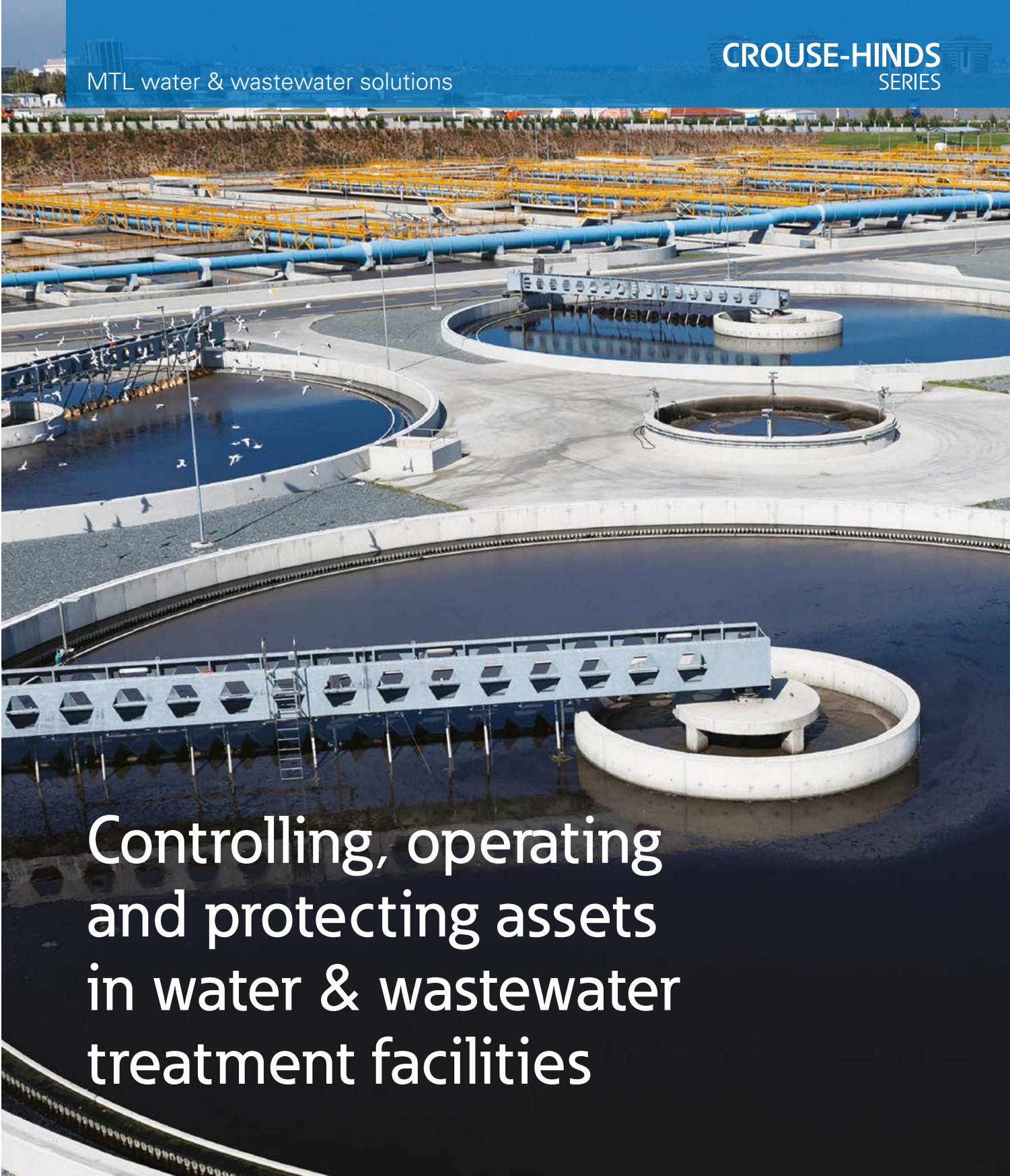


MTL water & wastewater solutions

CROUSE-HINDS  
SERIES



# Controlling, operating and protecting assets in water & wastewater treatment facilities

**EATON**

*Powering Business Worldwide*

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# Only Eaton can deliver...

- Protection and safety of people and assets around the world with unsurpassed reliability and quality in every product we offer
- Industry-leading innovation and product efficiency
- Product solutions designed and certified for global specifications
- Best-in-class, global sales and customer service teams that provide local support
- More than 40 years of process automation industry knowledge and expertise and over 50 years of surge protection solutions.





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At Eaton we understand that water and wastewater plants are a huge investment and an essential resource. The population and the local industry depend upon these plants to provide a continuous and safe output of clean water. Any inefficiency in controls and instrumentation could result in a major health and safety risk through accidental spills or contamination. All of which can result in possible health issues, environmental fines, downtime, public perception issues, revenue loss and budget depletion caused by emergency repairs and overtime cost.

Modern treatment plants are heavily instrumented for process efficiency and this equipment is critical to the safe and efficient operation of the plant. A typical plant may include many connected instruments, measuring a wide range of levels, temperatures and pressures as well as more specialist monitoring analysers and will contain areas where hazardous liquids and gases are present. Typically the plant will be remote and often unmanned and may also have extensive communications networks, not just for the field to control room signals, but for the plant health and efficiency signals being transmitted outside of the plant.

Water and wastewater facilities are continually met with shifting regulatory requirements, stricter

standards and new process methods. And with these changes, new technologies are implemented that reshape the way the plants and their equipment operate.

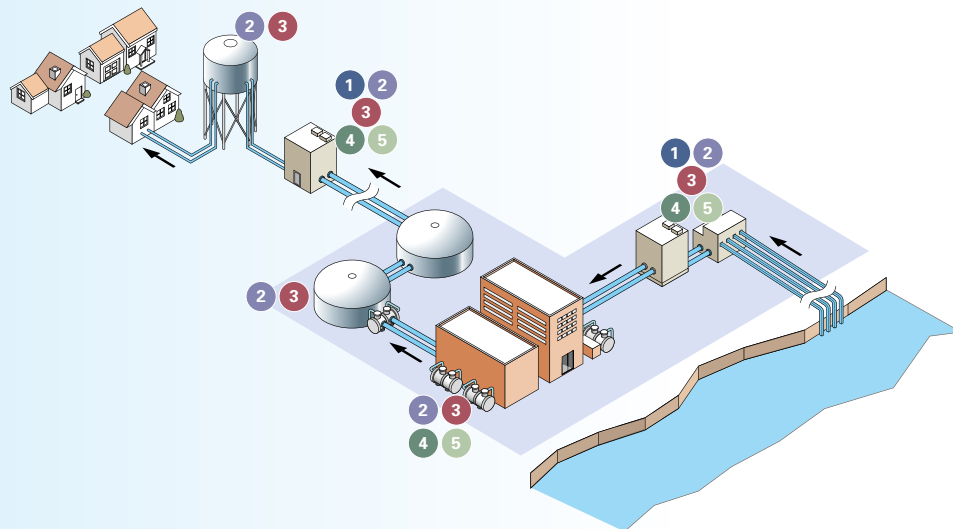
The purpose of standards such as NFPA 820 is to provide a degree of protection to reduce the risk of fire or explosion at wastewater collection, transportation, and treatment facilities. Our comprehensive range of MTL products are all designed and manufactured to address those requirements and meet the needs of the harsh environment of water and wastewater facilities, delivering safe, reliable control, operation and protection of your process equipment. Our MTL product offering, part of Eaton's Crouse-Hinds series portfolio, includes solutions such as surge protection devices, intrinsic safety solutions, industrial networking and security, through to process alarm equipment and gas analysis.

Here at Eaton, we have a wealth of knowledge and expertise with many of the world's critical processes monitored, controlled or protected by our MTL products. Dedication to our customers and recognition of industry requirements, alongside our distinguished global network of sales and support, we can provide a proven solution.

## Increased availability and reliability for water and waste water treatment plants

## MTL water & wastewater product applications: where the solutions connect

### clean water



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intrinsic safety and  
HART® interfacing 1



MTL surge protection 2



MTL industrial  
networking solutions 3



MTL industrial  
security solution 4

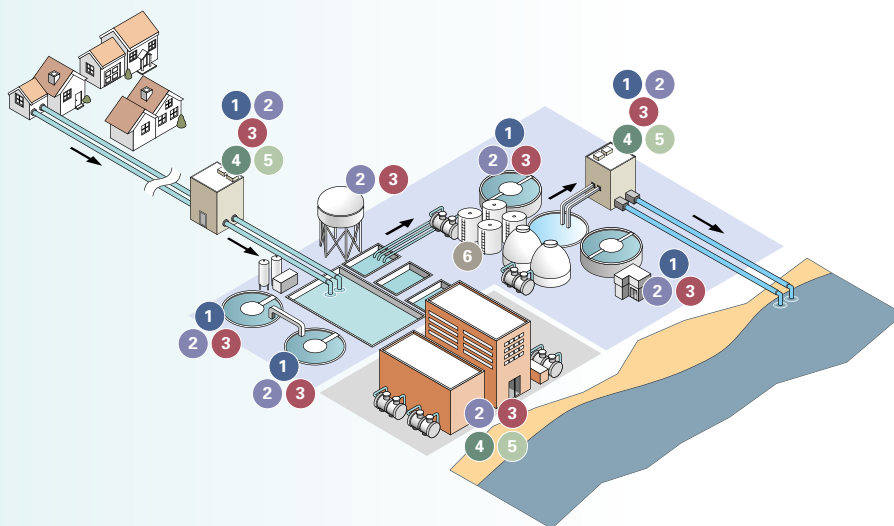


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### wastewater



Water treatment facilities monitor and control miles of distributed instrumentation and processes so high-availability is of the utmost importance.

Eaton has the capability to deliver both large and small hazardous area application solutions for water treatment, waste water treatment, pump station controls, SCADA and remote networking. This is achieved through a comprehensive range of trusted, reliable products that not only help to protect against unplanned downtime, but also reduce operating and maintenance costs.

# MTL signal conditioning, intrinsic safety and HART® interfacing

With water & wastewater plants spread over wide areas and the demand for more information, the transfer of electrical signals present many challenges. High power devices mixed in with low level signal transfer generates an environment which has an adverse effect on the ability to control and measure the processes.

Signal conditioning has a major contribution to resolving issues such as with varying ground potentials, reducing signal noise and eliminating earth loops. It also protects sensitive control equipment from dangerous voltages. Many different signals from sensors such as thermocouples, RTDs, position monitors, pressure and flow monitors are all accommodated. All these benefits add up to reduced down time, fewer failures, greater product yield and significant cost savings. With the risk of methane being present in water

& wastewater treatment plants, parts of the plant are often classified as hazardous areas. For over forty years MTL intrinsic safety interface products have been world leading, producing barriers, isolators and integrated IS to help prevent explosions in process industries.

If you have smart field devices installed and you are not making full use of their capabilities, then you need our HART® connection system. Our MTL HART® products provide the connections between the HART® field instruments, the control systems and the process automation maintenance software. The MTL HART® multiplexer system provides on-line access from a PC to the HART® field devices for monitoring device performance. HART® devices may be selected for regular status monitoring and alerts to be issued if the status changes.



## MTL signal conditioning & intrinsic safety devices



### MTL1000 range

The MTL1000 range of signal conditioning isolators and accessories are designed to help protect field instruments and control systems to provide safe, reliable process communications. This cost-effective solution offers significant savings with its embedded DIN-rail mounted power-bus reducing power connections by up to 90% and compact 6.2mm width reducing the cabinet space required. The optional MTL1991 power-bus feed and alarm module offers added power security with the application of dual power feeds with individual supply monitoring.



### MTL5500/7700 range

The MTL5500 and MTL7700 range of DIN-rail mounted intrinsic safety isolators and barriers are ideal for IS interface "application focused" projects. These range from single instrument loops through to fully equipped cabinets, across industries where hazardous areas exist, providing a very cost effective solution. All of these ranges are compact and of slim-line design and module options for both single and multiple channel devices which enables the user to choose the functionality and integrity needed without sacrificing cabinet space. Additional features such as removable terminals allow for easy installation and maintenance and provide a loop disconnect function.



### MTL660 range

The MTL660 range of indicators are loop powered units and the low voltage drop across their input terminals allows them to be installed in almost any 2-wire, 4-20mA loop.

Large liquid crystal displays make the process variables easily visible at a distance and a backlight option may also be ordered for use in low light conditions. Process units are configured into the display area. Instant readout of percentage or loop current is available at the push of a button. Field mounting units are housed in a rugged aluminium IP67, NEMA 4X case. GRP options are available for highly corrosive atmospheres.

## MTL multiplexers



### MTL4850 range

The MTL4850 range of HART® multiplexers provides a simple interface between smart devices in the field, control/safety systems and HART® instrument management software. The system is based on both 16 and 32-channel modularity to provide a compact, easily configurable and expandable system.

The MTL4851 and MTL4852 are expandable from 16 to 256 channels through multiple secondary modules with a single master device. The MTL4854 provides four HART® modems to enable simultaneous communications with field devices, giving more access to data which can be used to optimise the process.



# MTL surge protection

Surge protection is critical within the water industry for protecting equipment and processes from failure and downtime. Typically, water/wastewater plants have facilities that are located remotely and are often unmanned. This can entail long and complex cable runs and thus are more susceptible to surge interference.

High magnitude surge over-voltages can occur on electrical power or signal lines and can lead to catastrophic failure of process control systems and instrumentation. Common causes can be events such as direct/indirect lightning strikes or transient events such as switching of electrical loads.

More common are ongoing transients that, unnoticeably, can lead to failure of equipment through degradation. These continual surge events can be caused by voltage switching, pump or motor start-ups, welding or nearby supply network switching occurrences and

can potentially go unnoticed until failure of systems occurs.

Any outages or downtime can quickly escalate, especially for remote and unmanned locations and maintenance crews may need to be deployed. The cost of such an event can result in an expensive loss in production time, in addition to failure of equipment on-site and the consequences of a halt to a valuable public service. The costs associated with even a single failure in a ten year period, far outweighs the cost of implementing suitable surge protection, even when you protect all the power, signal, communications, telecomms and networks lines, as well as many other applications like CCTV and antenna systems.

Eaton designs and manufactures a vast range of MTL surge protection solutions and can provide application advice on how to apply adequate protection at your water treatment facility.



## MTL data and signal protection devices



### MTL SD/SDM range

The MTL SD and MTL SD Modular range of surge protection devices deliver a high-performing level of protection combined with an unparalleled packing density at just 7mm, application versatility with a variety of voltage ratings available and proven hybrid circuitry. With additional options such as fuse disconnect, LED options for fault diagnostics and a make-before-break feature to ensure signal continuity, this range is the ultimate surge protection solution for process equipment, I/O systems and communication networks.



### MTL SLP range

The MTL SLP range provides application versatility, proven reliable hybrid circuitry and simple installation - features which make it an ideal surge protection solution for process equipment, systems I/O and communications networks.

The SLP units are suitable for general process I/O applications and are available in a range of voltage ratings. Where small size and higher currents are required or loop resistance is critical, the SLP units are ideal. The SLP range provides protection for up to 4 wires and incorporates removable terminals.



### MTL IOP range

Offering digital I/O surge protection, the MTL IOP range provides high packing density plus a high protection level.

Designed to exhibit exceptionally low line resistance, the IOP has removable terminals for ease of installation, maintenance and for providing a loop disconnect by simply unplugging the terminals from the side of the module. In addition, wire entry is angled to assist wiring within limited space enclosures.



### MTL ZoneBarrier data range

The MTL ZoneBarrier range is a uniquely modular data and signal line protection system for 24V, 4-20mA current loop and Industrial Ethernet applications.

By providing an effective barrier between uncontrolled transient environments and your valuable electronic systems the ZoneBarrier range protects you from costly system downtime and equipment failure.



## MTL power protection devices



### MTL ZoneMaster range

The MTL ZoneMaster All-Mode is available in units with 200kA, 240kA, 340kA and 400kA ratings while the ZoneMaster has 170kA or 200kA ratings. All ZoneMaster units are engineered to protect the most critical electronic systems, suppressing surges at the main service panel. The ZoneMaster range of devices has the advantage of remote monitoring capabilities and full module diagnostic indication as well as optional filter modules.

The MTL ZoneMaster Pro combines all the features of the "All Mode" into a metal enclosure and incorporates a surge event counter as standard. In addition the ZoneMaster Pro is type 1 & 2 UL listed.



### MTL ZoneDefender Pro range

The extensive range of MTL ZoneDefender PRO non-modular products have been specifically engineered to be compact, powerful, and feature-rich. They offer cost-effective, high capacity protection along with application versatility.

The state-of-the-art circuitry of the ZoneDefender PRO protects equipment from high frequency noise as well as from damaging electrical transients and high-energy disturbances. Meets UL96A requirements for UL master label installations.



### MTL MA15 range

MTL MA15 surge protection devices can be incorporated into, or mounted close to, individual items of electrical equipment, providing immediate local protection against surges and electrical noise. The MA15 is ideally designed for cabinet power and camera power applications. 15 amp operating current, comes standard with real time status indication, 110 or 240V working voltage. These unique units combine RFI filtering and ring suppression therefore aiding compliance with EMC directives. DIN rail mounting MA15 units, suitable for AC or DC application, are UL recognised components and UL hazardous location Class I Div. 2. The MA15 protects in all modes and has 4 kA of surge current capacity per mode.

## MTL network and comms protection devices



### MTL ZoneBarrier range

The MTL ZoneBarrier range is a completely modular communication line protection system. Designed for multi-port or single port applications, ZoneBarrier offers a flexible and uniquely customer configurable port-by-port protection approach.

ZoneBarrier can be utilised as either a wall mountable stand-alone device or as DIN rail mounting building blocks to create an unlimited multi-port network protection system. Rail assembly units will also accommodate a mix of up to 32 ZoneBarrier modules and can be mounted on any flat surface or mounted in a 19" rack. Modules are available for a range of network and comms applications including RS232, RS485, 1000Base-T, 100Base-T, 10Base-T and PoE.

ZoneBarrier Cat 6 Ethernet models are UL497B listed and tested to IEC 61000-4-5 and CCITT K17. ZoneBarrier surge protection devices are available with RJ45, BNC or terminal strip connectors.

## MTL transmitter protection devices



### MTL WWIP-N range

The MTL WWIP-N surge protection device safeguards 2-wire field-mounted process transmitters where it matters, right at the unit. After a simple installation (the device screws into an unused conduit entry, without involving any additional wiring, conduit modifications or other expensive extras), it provides high-level protection against surges and transients up to 10kA, whilst normal operation remains unaffected.

Specially designed for the water/wastewater industry with the whole unit encased in a corrosion resistant ANSI 316 stainless steel housing and are threaded for the common conduit entries used on field instruments.



### MTL TP-AC range

The new MTL TP-AC range is designed specifically for the protection of 120VAC or 240VAC powered field instruments. This product is ideal for the protection of AC powered flow meters. The TP-AC combines the AC protection with the 4-20mA/HART interface protection giving you a single unit to protect both interfaces. The NEMA 4X IP66 stainless steel enclosure makes this product ideal for use on outside instrumentation. The TP-AC is easily installed by just screwing it into a conduit entry on the instrument and connecting the wiring to the AC, the 4-20mA, and the ground interfaces of the instrument terminal block.



### MTL TP-Pipe range

The MTL TP-Pipe adds a level of surge protection to field mounted devices far above that provided as standard in the transmitter. The TP-Pipe is a series connected device that makes it ideal for 2 wire field instruments without any spare conduit entry points.

"Surge events and maintenance account for over 50% of premature equipment failure"



# MTL industrial networking solutions

The water industry is benefiting from the extension of networks from the control room into the process environment using Ethernet, wireless and fieldbus technologies and the use of latest technology assures availability on water supply with efficiency and quality.

Eaton's range of industrial strength networking products are designed to meet the most demanding harsh and hazardous environment requirements in process applications worldwide, with the convenient use of existing Ethernet networks. With many facilities unmanned or located remotely, amongst other applications, the benefits of using such products can help to prevent the plant from inferior water quality, reduced capacity or even complete shutdown.

The extensive range of ruggedised Ethernet switches and media converters include multi-port managed and unmanaged switches with Fibre, Gigabit, PoE (Power over Ethernet) and redundant ring functionality. For applications

requiring access into Division 1, Zone 1 and Zone 0 hazardous areas, including wireless access, the 9460-ET range of MTL Intrinsically Safe Ethernet units delivers Intrinsically Safe "Power over Ethernet" (PoEx) with a single Cat 5e or Cat 6 cable, allowing live connection and disconnection of the end device. Our range of industrial wireless devices delivers reliable communications where long cable runs would usually be required, significantly reducing installation costs.

The use of fieldbus within the water industry is a growing sector due to the great benefits of increased availability and cost reduction. Eaton provides a comprehensive range of MTL fieldbus power supplies, wiring components, diagnostic tools and displays for FOUNDATION™ fieldbus H1 and Profibus PA networks. Our complete range of MTL fieldbus physical layer components deliver an unrivalled source for all parties involved in the design, installation and commissioning of fieldbus networks in the water industry.



## MTL fieldbus, Ethernet & wireless devices



### MTL fieldbus range

The 918x range of redundant fieldbus power supplies are ideal for applications demanding the highest availability and are complemented by the F10x range of single segment power supplies. The Megablock wiring hub range provide a simple and reliable means of connecting individual fieldbus instruments to the field network, protect against spur short-circuits and allow instruments to be easily added to or removed from the segment without disrupting communications. The 937x-FB2 Fieldbus Barrier range provides a scalable, modular wiring hub solution for connecting intrinsically safe field devices installed in Zone 1 (gas) or Zone 21 (dust) hazardous areas.



### MTL 9200 range

The MTL 9200 ruggedised Ethernet range is designed to operate in the harsh process environment and features multi-port managed and unmanaged switches supporting copper and fibre connections. The range are certified for mounting in Zone 2 and Class 1 Division 2 hazardous areas with a hardened environmental specification making them suitable for use in the demanding environment of the water industry. The low power dissipation, high MTBF, flexible redundancy options and switch status via Modbus make them ideal for use in critical infrastructure applications.



### MTL wireless range

With many remote and unmanned facilities within the water industry, the need for reliable, long-distance communications are critical to any process. From plant-wide 802.11 network infrastructure in hazardous areas to simple sensor signal cable replacement, our wireless range offers a reliable and quality, industrial solution and a technology that supports industry standard connections and protocols, maximizing the flexibility of your system while reducing inventory and installation costs. Our wireless range can be deployed to communicate mA, voltage, digital, pulsed, Ethernet and serial data over wireless communications and can be selected for a wide range of licenced or licence-free frequencies.



### MTL RUGICAM-IP

The MTL RUGICAM-IP High Definition (HD) Intrinsically Safe (IS) Ethernet network camera enables users to ensure they are operating safely in harsh and hazardous environments. It is ideal for remote monitoring using Internet Protocol (IP) connectivity and provides enhanced safety with clear visualisation of conditions in the process area. Its lightweight, compact and rugged design alongside simple mounting allows for easy installation wherever monitoring is required within a Zone 0, 1 or 2 hazardous area. The MTL RUGICAM-IP offers flexible connectivity options for easy integration into the site network via WiFi or a compatible IS Ethernet network with a standard Cat5e cable.



# MTL industrial security solution

There is increasing awareness within the water industry of the vulnerability of Supervisory Control and Data Acquisition (SCADA) and industrial control systems to cyber attacks. The move to open standards such as Ethernet TCP/IP and web technologies has seen control systems affected by a growing number of cyber security incidents impacting critical infrastructure.

To safeguard your network's critical devices, Eaton can provide a proven solution, the MTL Tofino™, to combat modern cyber-security threats reducing the risk of plant and process shutdown. By deploying MTL Tofino™ security appliances directly in front of each control device (or group of control devices), they provide SCADA and process control networks with a defence in depth security solution.

"The increasing rise of cyber threats against water treatment facilities has become a major national concern"

## MTL industrial security device

### MTL Tofino™ 9202-ETS

Protect your control system against network problems and cyber threats. You may never be attacked by a serious hacker, but typical control networks are extremely vulnerable to simple day to day security and reliability issues. Poor network segmentation, unprotected points of entry into the network, 'soft' targets such as un-patched PCs and vulnerable PLCs, and human error can result in significant production losses and even safety issues.

The 9202-ETS is our next generation MTL Tofino security solution and continues to provide the highest level of network security for process automation applications. It is exceptionally easy to install compared with alternative solutions and includes the latest configurator software to protect industrial networks from cyber-security vulnerabilities. This maximises plant uptime and process availability while protecting it from external network attack.

The MTL Tofino solution is a distributed system with a flexible architecture that allows you to create security zones throughout your control network to protect critical system components. It supports all popular industrial protocols with the Firewall Loadable Security Module (LSM) which compares network traffic against a set of rules. The addition of the new EtherNet/IP Enforcer LSM for deep packet inspection of EtherNet/IP (CIP) communications provides additional protection for this popular industrial protocol. The MTL Tofino can also be configured remotely with the Netconnect LSM, providing further flexibility. Further LSM's can also be specified such as the Modbus enforcer and OPC enforcer LSMs providing deep packet inspection for these key industrial protocols and the Event Logger LSM logs security events and sends alarms.

New





# MTL process alarm equipment

Pump station control monitoring in water/waste-water applications requires a number of differing features that the successful range of RTK critical alarm annunciators offer in various package types. These demanding applications also require a flexible approach to functionality which can be found in the products outlined below.

The complete range of RTK critical alarm annunciators also meets the size and cost requirements of major systems integrators and OEM's in today's dynamic market.

Eaton's world-wide installed base of RTK annunciators in water treatment facilities is testament to the quality and ease of use of these high quality products backed with a five year warranty.

## RTK alarm annunciators



### RTK SmartAlarm

A range of DIN standard boxes offering a wide range of functions across this compact package. Units are available in 96 x 96 format increasing to a maximum size of 144 x 96mm. All units, with the exception of the basic model, include internal individual repeat relays. Negating the need for having external relays and associated wiring that could be a point of failure.



### RTK 725B

The RTK 725B brings together many years of development in alarm annunciator technology and represents the best available investment in protection for your industrial plant. Using advanced communication techniques, coupled with our unique multi-redundant design, the RTK 725B annunciator gives the best combination of flexibility, usability, reliability and cost of ownership.



### RTK 725 range

The fully programmable RTK 725 annunciator range is the perfect solution for monitoring critical process alarms. With the unique multi-redundant design and a proven history of 100,000s of alarm points world-wide, this annunciator can be manufactured in any shape and size to your exact requirement. There are also a host of options to choose from including repeat relays, time delays and serial communications.



### RTK UC625

A cost effective, compact annunciator packed with useful features, this product is ideal for machine alarms and sub-station alarm monitoring. With thousands of units operating reliably in the field, particularly in transmission and distribution, the RTK UC625 has proven itself in harsh environments. Despite the size, this unit is still fully programmable and uses a multi-redundant design.



# MTL gas analysers and systems

Anaerobic digestion is playing an increasingly important role within wastewater treatment with digester gas being increasingly seen as a valuable commodity that can be used within a CHP (Combined Heat & Power) plant to produce heat and electricity, two valuable commodities in such a plant, or which can be sold to other plants.

Digester gas is a complex mixture, comprising mainly of Methane,  $\text{CH}_4$  (~65%) and Carbon Dioxide,  $\text{CO}_2$ , (~35%) plus other trace gases such as Hydrogen Sulphide,  $\text{H}_2\text{S}$ . Although the Methane is a valuable fuel gas, both  $\text{CO}_2$  and  $\text{CH}_4$  are considered greenhouse gases, (GHG), which are of environmental concern whilst the  $\text{H}_2\text{S}$  is both hazardous and corrosive. This has safety and plant longevity implications.

Therefore, it is important to understand the composition of the digester gas. The variable nature of the digester gas means that it is usual to measure the gas in order to optimize plant productivity and this is where Eaton's MTL Gas products can assist. With over 30 years' experience in gas analysis systems, our biogas analysers can be used to characterise the gas composition, hence helping to ensure the gas mix is within acceptable limits for use in the CHP plant package and optimizing the subsequent use of the gas.

In addition to measuring the produced digester gas, we offer a range of instruments that can measure Oxygen content in various secondary treatment processes to help ensure process efficiency and safety.

## MTL gas analysers and systems

### MTL GIR6000

The new MTL GIR6000 offers a unique modular platform concept that is quick and easy to customise with a choice of up to six gas modules. This allows the user to choose only the gas elements they wish to measure. Reducing plant start-up costs is easy with an integrated solution that optimises your productivity and increases your plant availability.

Rugged, reliable and easy to maintain, the MTL GIR6000 is an IP65 weather-proof system and is ATEX certified for use in a Zone 2 area for safety confidence.

- Innovative intelligent modular sensor concept
- Measurement of up to 6 gas components (incl.  $\text{CH}_4$ ,  $\text{CO}_2$ ,  $\text{H}_2\text{S}$  &  $\text{O}_2$ )
- Modules allow easy customisation to the measurement task
- Intelligent sensors provide predictive diagnostic data
- Modules are supplied pre-configured and easily field replaceable
- Robust, weatherproof design to IP65
- Suitable for ATEX Zone 2 mounting
- Digital communications options
- Future upgrade potential by adding/changing sensors



### MTL G1010

The G1010 panel mount oxygen analyser with electrochemical cell options is used in a wide variety of industries and applications. ATEX certified configurations are available. Zirconia oxygen sensors have a rapid response and are usually more accurate at low ppm oxygen levels. The Z4010 is a rugged, transportable unit ideal for use at multiple points on a plant, e.g. air separation and gas blending applications. The Z1920C is designed with a catalytic reactor to measure fuel:air ratios in flame treatment and burner applications.

## Gas analysers for water/wastewater applications



EATON Crouse-Hinds series

# The safety you rely on.

See the complete MTL water & wastewater product portfolio at [www.mtl-inst.com](http://www.mtl-inst.com)

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