Eurotherm®
by Watlow

Edge Process Management - EPM

A cutting-edge, data-centric, distributed, and scalable automation platform.

Boost Efficiency
Support Growth
Secure a Connected Future

eurotherm.com/epm

EPM™
Edge Process Management

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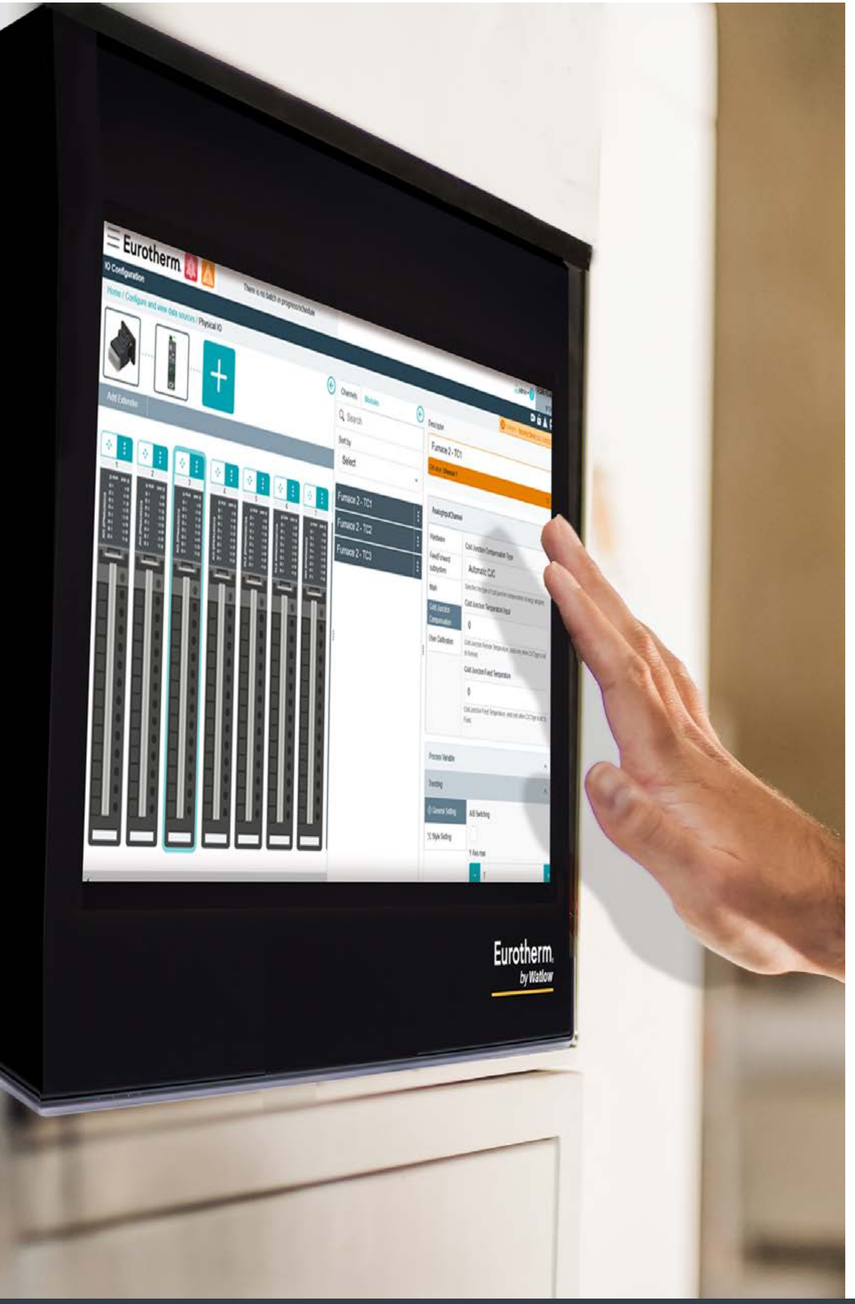


Edge Process Management

A world where humans and machines evolve together, transforming factories into agile centers of innovation and efficiency.

Edge intelligence to Boost Efficiency

Capture data at the edge, where it is born, using advanced analytics to empower machines to learn, adapt, and make decisions in real and near real-time.

Human and Machine Collaboration to Support Growth

Intuitive interfaces that enhance human and machine collaboration, empowering future factories to amplify human potential.

Robust Cybersecurity to Secure the Connected Future

Safeguard our connected world with built-in, robust cybersecurity. Every data point, connection, and device is protected from threats and empowered to share securely.

The Vision for the Factory of the Future

Manufacturers are evolving towards a future where automation drives scalability and simplifies maintenance, overcoming security and data management challenges along the way.

Current State:	Future State:	This Enables:
Unique and Restricted Local Setup: Each setup is customized, limiting scalability and flexibility	**Scalable**	**Systems that easily expand to meet growing demands**
Manual Processes: Reliant on labor-intensive tasks that slow down operations	**Automated**	**Processes that are self-operating, reducing human intervention and errors**
Service Dependent on Few People: Expertise is siloed, creating bottlenecks and dependency risks	**Serviceable**	**Design that allows for easy maintenance and troubleshooting**
Limited Access: Information and controls are restricted, impeding responsivenes	**Accessible**	**Information and controls readily available to authorized users**
Rigid Systems: Inflexible infrastructure makes adaptation difficult and costly	**Modular/Flexible**	**Systems that are easily reconfigured to meet changing needs**
Proprietary, Isolated Systems: Systems are closed, do not integrate, creating inefficiencies	**Interoperable**	**Seamless integration between different systems and technologies**

Source Reference: Microsoft and IoT Analytics report

The Challenges in Building the Factory of the Future

Data Management

The factory of the future will generate vast amounts of data from sources such as sensors, machines, and human inputs.

Poor data management creates inefficiencies, errors, and missed opportunities.

Managing this data well is crucial for deriving actionable insights, optimizing processes, and making informed decisions.

Boost Efficiency
To unlock the full potential of digital transformation, data must be accurately captured, securely stored, and easily accessible.

Skill Gaps

Transitioning to advanced, automated, data-driven processes requires a workforce proficient in data analysis and cybersecurity.

There is often a gap between the skills needed and those currently available.

Bridging skill gaps through training and user-friendly interfaces is essential for effective human and machine collaboration, making advanced systems easier to use.

Support Growth
Empowering employees to leverage advanced systems drives growth through innovation and enhanced efficiency in the factory of the future.

Cybersecurity Vulnerabilities

As factories become more connected and reliant on digital technologies, the risk of cyberattacks increases.

This can lead to data breaches, system shutdowns, and the loss of intellectual property, which can have severe financial and reputational consequences.

Using role-based access control and secure transmission protocols mitigates risks by ensuring only qualified personnel access sensitive information, enhancing cybersecurity resilience.

Secure the Connected Future
Robust cybersecurity is essential to protect sensitive data, maintain operational continuity and safeguard against external **threats.**

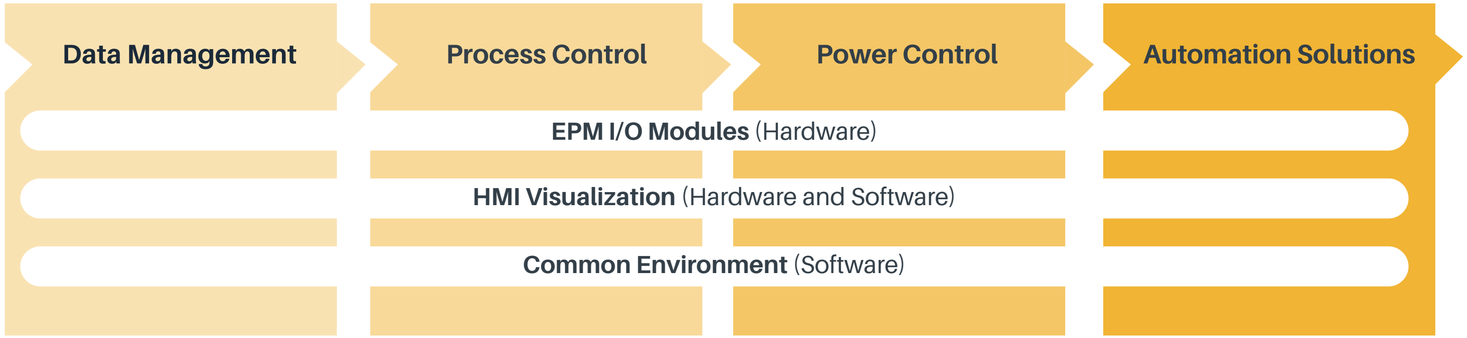
Edge Process Management (EPM) Offers Scalability, Automation and Serviceability

We continue to push the boundaries with a unified, functional, and consistent architecture that spans data management, process control, power control, and automation solutions.

Engineered for both machine and process levels, the EPM platform is built with modular I/O, a common configuration and operational interface, responsive HMI, and advanced connectivity.

This design not only significantly reduces the time required for system enhancements but also simplifies operation, maintenance, and product lifecycle management for our customers.

Architectural Evolution



Why is a Unified Data Management Platform so Critical for Smart Factories?

Used to its full potential, this can transform the value chain, enhancing efficiency and productivity by enabling real-time monitoring and greater visibility which leads to better decision making.

1

Support **regulatory compliance** of manufactured goods

2

Ensure **continual data availability** and **connectivity**

3

Provide **controlled access to data** with a **robust cybersecurity** approach

4

Enable **informed decision** making

Introducing EPM Data

Cutting-edge, data-centric, and distributed, this scalable automation platform enhances human and machine collaboration to optimize processes and secure a connected future...

Wherever Thermal is Critical

EPM Modules:

I/O Extender (IOE), Power Supply (PBF) and Analog Input module (AI3) with base unit

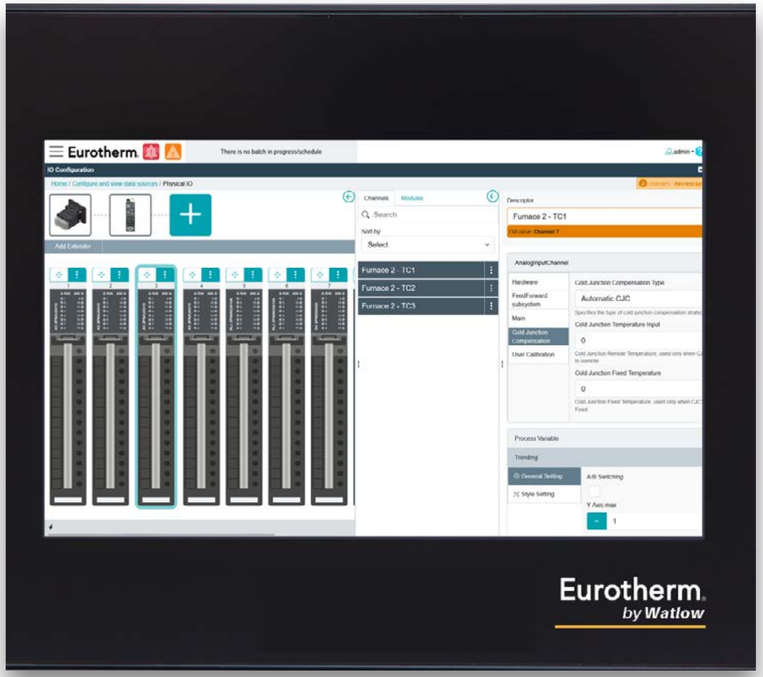
Edge Intelligence to Boost Efficiency

Enables data processing close to where the data is born. This reduces latency, enhances real-time decision-making, and improves overall system efficiency.

The combination of speed, security, and proximity to data creation sets EPM Data apart from traditional solutions.

- Our patented precision input exceeds stringent accuracy specifications (e.g. SAE AMS2750 Field Test Instruments)
- EPM I/O includes native extension I/O, which reduces wiring and engineering effort while expanding the number of data points. This integration simplifies system design and enhances overall efficiency
- Enhanced CPU capability enables efficient data management and advanced control performance*
- Batch Validator* analytics flags process deviations in real-time, reducing waste and increasing throughputs

*In development



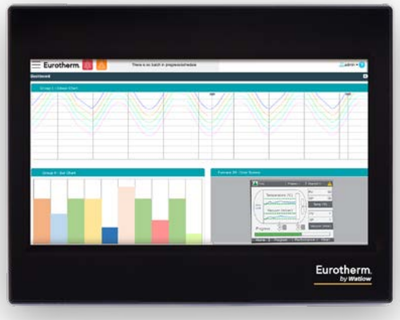
EPM-07 - 7" widescreen model, 9 I/O module slots
Up to 27 high precision AI channels onboard

EPM I/O Extender Modules
Can support over 200 AI channels

Human and Machine Collaboration to Support Growth

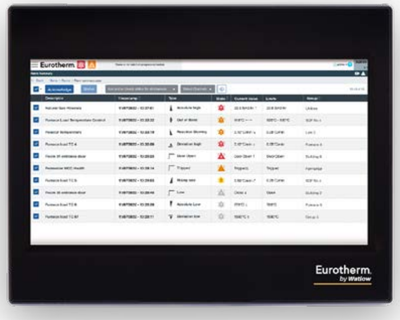
- Widescreen display provides greater viewing area
- Multi-touch, capacitive functionality for improved operator interaction
- Responsive display optimizes user interface from smart devices to PCs
- Built-in HTML5 web server enables remote connection from any web-enabled client device
- Onboard configuration (parameterized for ISPE GAMP® 5 Second Edition, category 3)
- Serviceable design reduces potential downtime (e.g. field replaceable HMI and I/O)

EPM-15 -15" widescreen model, 18 I/O module slots
Up to 54 high precision AI channels onboard

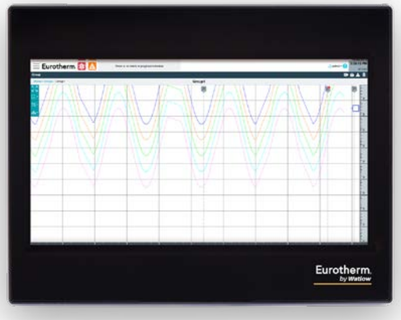


Dashboard View

I/O Configuration



Populated Alarm



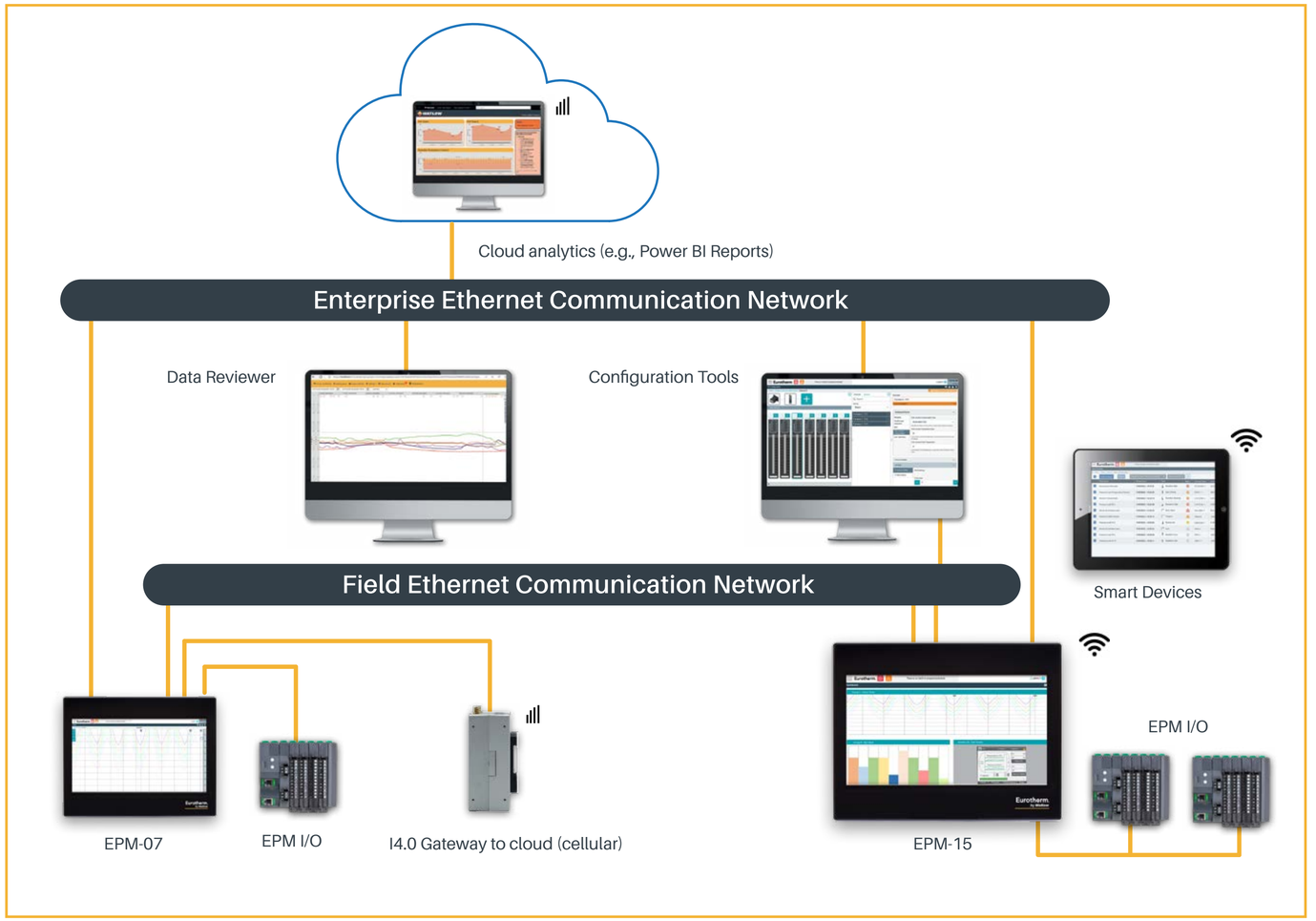
LineChart Trend
– Landscape

LineChart Trend
– Portrait

Robust Cybersecurity to Secure the Connected Future

- Secure-by-design (e.g. Cybersecurity standard IEC62443 as an SL2 device)
- Multiple Ethernet ports enable data to be shared over segregated field and enterprise networks
- Multiple comms protocols available at both enterprise and plant network level
- Tamper-resistant .uhh file format enables data integrity complying with MHRA, PIC/S guidance, EudraLex Vol. 4 Annex 11, FDA 21 CFR Part 11, and SAE AMS2750
- Data storage upgraded to allow embedding of any file type within the record
- Inbuilt audit trail functionality ensures all activity is logged and monitored
- Optional Industry 4.0 data gateway for quick, secure transfer between on-prem and cloud (e.g. MQTT)
- Lifecycle management – designed for ease of migration from legacy data recorders

EPM Architecture



EPM Data Provides Essential Enhancements for all Automated Industries

Improvements in operations and maintenance, as well as overall lifecycle and cost of ownership.

Helps a **maintenance manager** streamline equipment upkeep and secure critical data without the need for extra tools or systems. EPM Data integrates easily, providing real-time data protection and management in one user-friendly solution.

Helps an **operations manager** boost their productivity by digitizing his site and equipment details without the typical cost and time penalties, through an innovative platform featuring intuitive, easy-to-use software.

Helps a **quality manager** achieve instant access to accurate process records without the hassle of extra tools, using a streamlined web-based platform that simplifies data management.

Helps an **operator** easily monitor and control equipment in real-time without needing complex training, through a user-friendly interface that provides clear, actionable insights at a glance.

EPM Data Helps Meet Regulations Across Automated Industries

Regulations and standards such as SAE AMS2750, CQI9, FDA 21 CFR PART 11 and EudraLex Volume 4 Annex 11 requirements. A robust platform that ensures accurate data recording and embeds ISPE GAMP® 5 Second Edition, Category 3 parameterizable modules for repeatable data integrity, F0 and MKT calculation, batch validation*. EPM Data is tailored to ease compliance with industry regulations, all without the need for additional tools or complex system integration.

Precise
Analog Input

With field calibration accuracy better than +/-1.0°F (+/-0.6°C) or +/-0.1% of temperature, whichever is greater.

Suitable for control, monitoring, recording and field test instrument applications.

Thermocouple types
J, E, K, N, T, R, B, S

Trustable
.UHH Records

Single source of truth.

Tamper-resistant .uhh file format offers data integrity: Unalterable data, alarms, events, comments are stored locally within EPM Data.

Audit trail is embedded in the history file and individual user accounts are password protected.

Electronic records can be attached to the data, in either text or graphics* format.

Improves
Repeatability

Batch Validator* flags deviations and exceptions as they start to occur, allowing the operator to make a quick and informed decision.

Can be used as a basis for Batch OEE to improve equipment effectiveness, cycle time, and productivity, while also reducing unplanned downtime.

Enables
Critical Thinking

Cutting-edge platform.

EPM Data is designed to help embed Quality by Design and critical thinking when developing manufacturing processes and products.

Allows users to stay focused on advancing process and performance while mitigating risks, reducing costs, and improving time to operation.

Seamless
Integration

Easy regulatory compliance.

Many regulations such as EudraLex Annex 1.8.50 (sterile medicinal products) recommend independent monitoring of the controlling system.

EPM Data provides independent monitoring of standalone control systems, utilizing a wide range of communications protocols.

*In development

Increasing Need for Sustainable Automation and Data Integrity

Regulations and standards across industries will continue to emphasize automation, data integrity, and sustainability, while ensuring compliance with stringent quality, safety, and environmental targets. Enhanced traceability, realtime monitoring, and adaptive systems will be critical in meeting these challenges.

Pharmaceuticals
Medical Devices
Food & Beverage

Drivers: Population aging, growth, chronic disease, technology, biotech advancements

FDA 21 CFR Part 11, EMA, GMP, ISO, HCCP, PMO, MediAccred

Product safety, efficacy, accurate labelling. Contamination, compliance, traceability of raw materials.

Aerospace
Defense
Automotive

Drivers: Military spending, space exploration, demand for Electric Vehicles (EVs), car ownership

FAA, EASA, ITAR, AS9100, ISO, NADCAP, CMMC, NHTSA, CQI9

Adherence to quality and safety standards, supply chain security, compliance with export controls, vehicle safety.

Energy Industry
Electronics Industry

Drivers: Demand for global energy, shift to renewables, consumer electronics, smart devices, IoT, nuclear energy investments,

NRC, OSHA, EPA, API, ASME, FCC, CE, RoHS, WEEE, ISO9001, IPC

Environmental protection, safety, operational integrity in handling hazardous materials.

EPM Data - Hardware Features and Benefits

Processors & Communication	Dual core 32 bit processor for control and data management, also acting as a Web server Quad core 64 bit processer for Web client to enhance graphical rendering Pair of on-board Ethernet ports for field networks, to allow daisy-chaining Third (segregated) on-board Ethernet port for enterprise network connection Fourth (segregated) on-board Ethernet port for native I/O expansion Serial port supporting EIA232 and EIA485 comms WiFi available as a USB add-on, to allow for external antenna placement 2 x USB-C connected to control and data engine for ease of archiving 2 x USB-A for ease of connecting peripherals 4GB Internal flash for data recording	Benefits **Scalable** – for multiple users **Accessible** – to many devices using multiple communications protocols
EPM I/O Modules	Easy, tool-free mounting and wiring, with removable terminal units AI3 - High precision for high accuracy applications AI4 - Standard precision for other analog applications Other modules include; Digital inputs (DI4), Digital outputs (DO4), Relay (RL2), Analog Outputs (AO2)	**Modular I/O system** **Serviceable** – with ease of installation and maintenance **Scalable** –with I/O expansion
I/O Architecture	EPM-07 - Up to 9 on-board modules (27 high precision channels) EPM-15 - Up tp 18 on-board modules (54 high precision channels) I/O Expansion - Up to 2 extender units, each of which supports up to 32 modules Field power distribution modules for use with extender I/O Maximum analog I/O available on EPM-07: 219 channels Maximum analog I/O available on EPM-15: 246 channels	
Display Hardware	Multi-point capacitive touchscreen Support for touch interactions - pinch-to-zoom, swipe-to-navigate Choice of 7” and 15” Widescreen	**Accessible** – user friendly HMI
Retrofit Capability	EPM-07 - Designed to fit 138 x 138mm cut-out (9/16 DIN) EPM-15 - Designed to fit 281 x 281mm cut-out Cabling located in similar positions to 6000 series graphical data recorders	**Serviceable** – easy retrofit

EPM Data - Firmware and Software Features and Benefits

Communication Protocols	**Field:** OPC UA™*, HTTPS, PROFINET™*, Modbus TCP®, EtherNet/IP™*, EtherCAT®* **Enterprise:** OPC UA* , HTTPS, MQTT* **Achiving:** (e.g. USB, network, sFTP, FTP, HTTPS) **I/O:** OPC UA over TSN (time sensitive networking)	Benefits **Interoperable** - with ERP systems and PLCs **Accessible** - to many devices using multiple communications protocols
Software Functions (unlimited, token-based)	Maths, Counters, Timers, Totalisers, external device channels (comms) Recording Groups (up to 30) Batch control and validation (including Batch Validator*) Control algorithms*	**Scalable** - to cater for more complex applications
Web HMI	Responsive design (caters for multiple resolutions and platforms) Access from anywhere (subject to infrastructure) for up to 10 clients Remote experience consistent with onboard HMI Onboard editing of user screens - ease of adding tags & library elements* Drag and drop real-time updates - customisable dashboard of widgets* User style customisation* Apps for Smart devices*	**Accessible** - user friendly and view from anywhere **Automated** - migration from existing 6000 series data recorders
Configuration	Simple configuration (parameterized for GAMP® 5 Second Edition, category 3) From product HMI (local and remote) From PC development environment: – Online feature for live configuration – Offline feature for standalone configuration* – Software migration from 6000 series recorders – Bulk configuration* (channel copy) *in development	

The Solution for the Factory of the Future

EPM Data meets the needs of today and is designed to grow with the requirements of the factory of the future. A future where automation drives scalability and simplifies maintenance, overcoming security and data management challenges along the way.

- **Expand as Demand Grows, Replicate Across Sites:**
  Ability to scale operations without major overhauls, enabling consistent replication of best practices across multiple locations.
- **Autonomous Processes Enhanced with Human Connection:**
  Automation that still values human input, ensuring processes are efficient yet adaptable to human insights.
- **Ease of Maintenance with Onboard Troubleshooting and Global Support:**
  Systems designed for straightforward upkeep, minimizing downtime and resource strain.
- **Providing Intuitive Interfaces and Tools:**
  User-friendly systems that empower all users, regardless of technical expertise.
- **Self Contained Devices, One Unified Architecture:**
  Modular components that can function independently or as part of a larger system, offering flexibility in deployment and upgrades.
- **Seamless Communication:**
  Integrated systems that work together effortlessly, reducing data silos and enhancing overall operational efficiency.

Bringing the Best of our Combined Know-How Together

WATLOW®
Powered by Possibility

Is a global leader in advanced thermal systems across a broad range of industries, supplying solutions to the world's leading manufacturers in industries as broad as semiconductor manufacturing, food and beverage processing and medical equipment.

Eurotherm®
by Watlow

Has a reputation for precision PID control, data integrity and formidable power control, coupled with domain knowledge to aid compliance in regulated industries such as heat treatment, life sciences and water/wastewater.

Watlow, W & Design (W in Diamond), ADAPTIVE THERMAL SYSTEMS, ASPYRE, ASSURANT, ATS and Design (Signaling Pulse), COMPOSER, Chessell, DIN-A-MITE, Eurotherm, EurothermSuite, EFit, EPack, EPower, Eycon, ECO-HEAT, EHG, E-SAFE, EXACTSENSE, EXSTREAM, EZ-ZONE, EZ-LINK, F4T, FIREBAR, FIREROD, FLUENT, FREEFLEX, HELIMAX, HYDROSAFE, MINICHEF, MULTICELL, Mini8, nanodac, OPTIMAX, piccolo, PM LEGACY, PM PLUS, POWERED BY POSSIBILITY, POWERGLIDE, POWERSAFE, RAYMAX, SELECT, SERV-RITE, SERIES EHG, STREAMLINE, STRETCH-TO-LENGTH, SURETEMP, TRU-TUNE,ULTRAMIC, versadac, VISUAL DESIGNER, WATCONNECT, Watlow.com, XACTPAK, are all trademarks and property of Watlow Electric Manufacturing Company, its subsidiaries and affiliated companies. All other trademarks are the property of their respective owners.

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