

# Edge Process Management - EPM

• Wherever **Thermal** is Critical

A cutting-edge, data-centric, distributed, and scalable automation platform to boost efficiency, support growth, and secure a connected future...

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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.

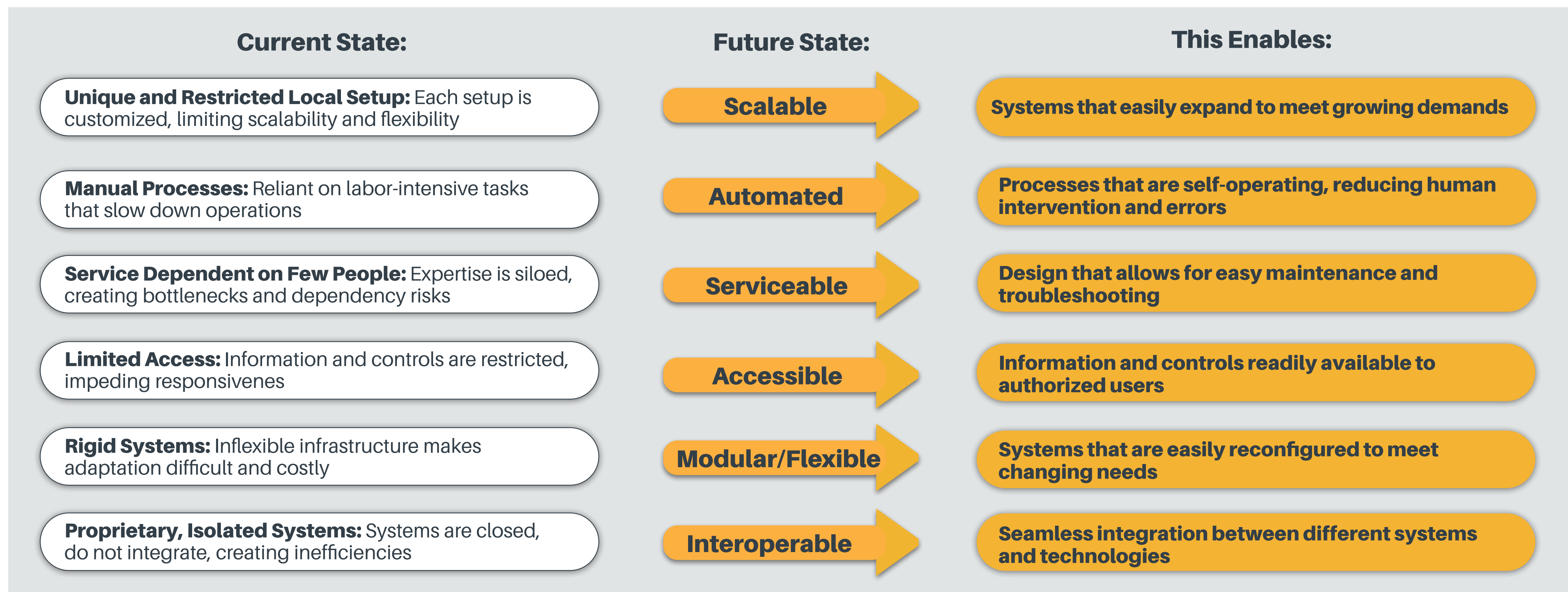
## Robust Cybersecurity to Secure the Connected Future

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.

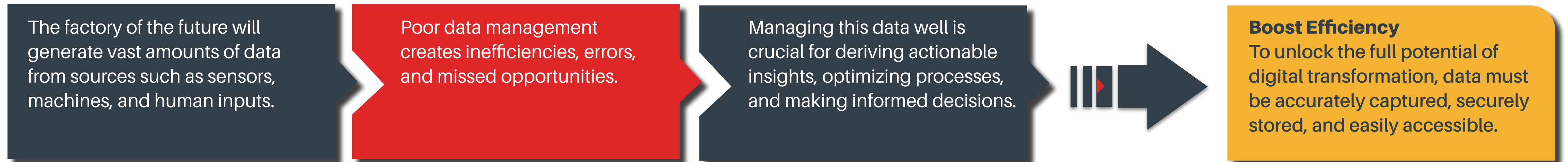


Source Reference: [Microsoft and IoT Analytics report](#)

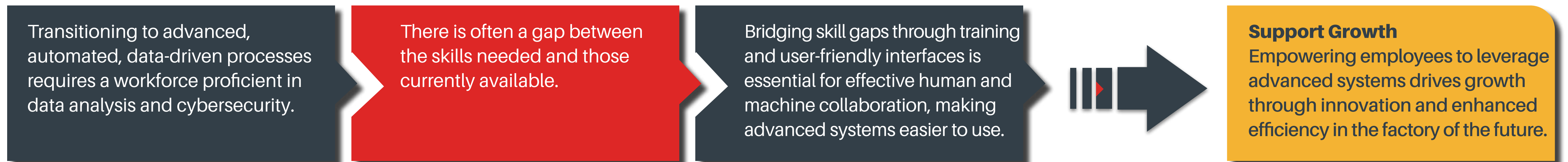


# The Challenges in Building the Factory of the Future

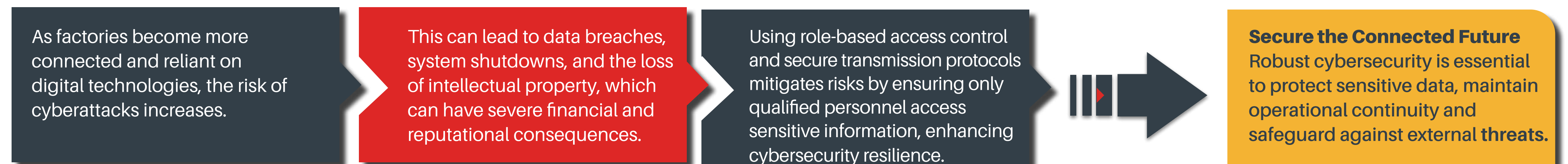
## Data Management



## Skill Gaps



## Cybersecurity Vulnerabilities



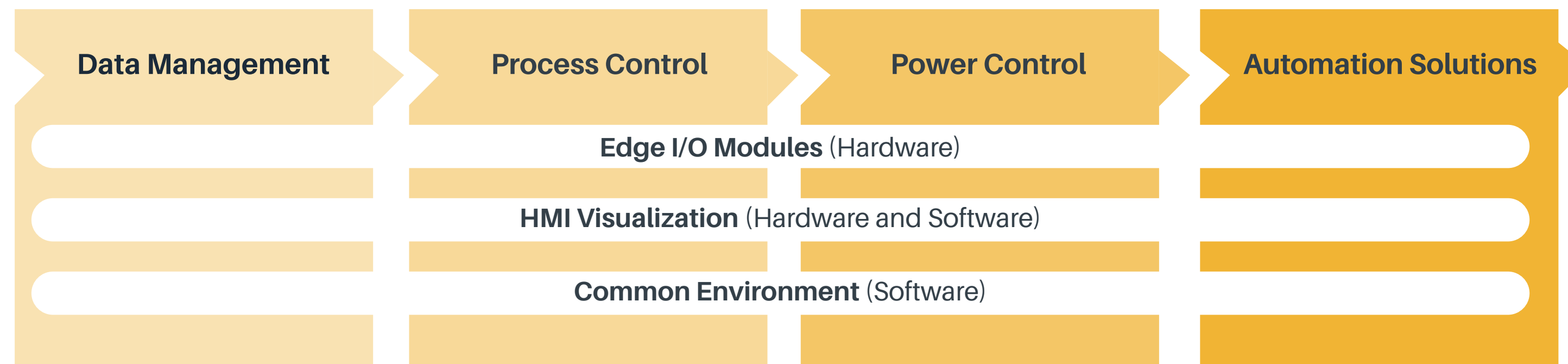
# Edge Process Management (EPM) Offers Scalability, Automation and Serviceability

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 Edge 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.

- Edge I/O patented precision input exceeds stringent accuracy specifications (e.g. SAE AMS2750 Field Test Instruments)
- Edge I/O includes native expansion 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 Edge I/O Expansion 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
- Online/offline and onboard configuration (parameterized for ISPE GAMP® 5 Second Edition, cat3)
- Serviceable design reduces potential downtime (e.g. field replaceable HMI and I/O)



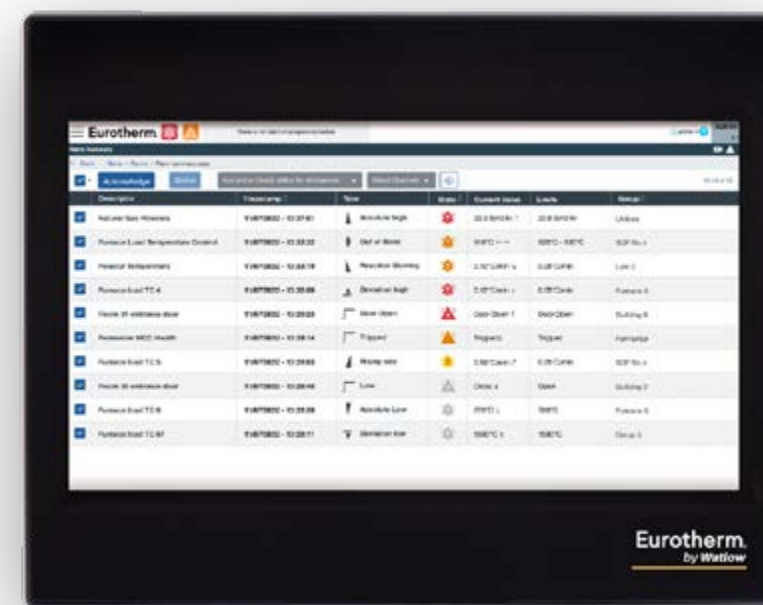
EPM-15 - 15" widescreen model, 18 I/O module slots  
Up to 54 high precision AI channels onboard



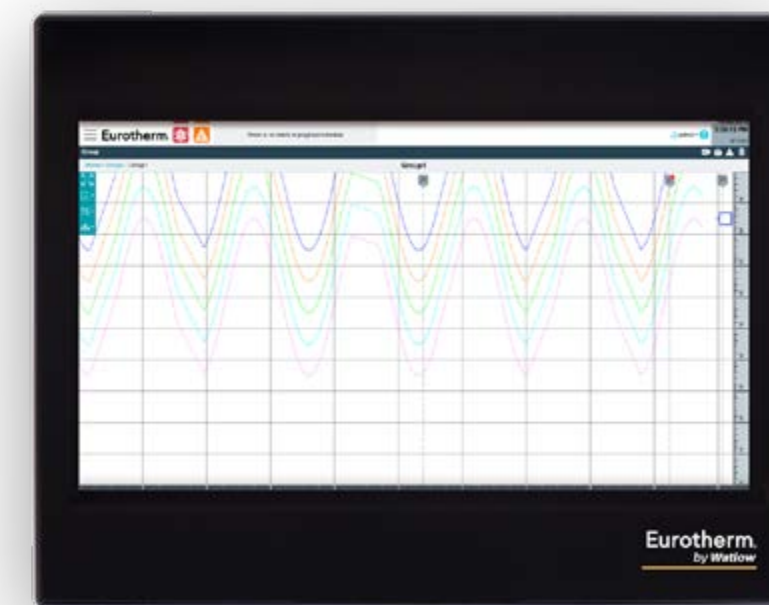
Dashboard View



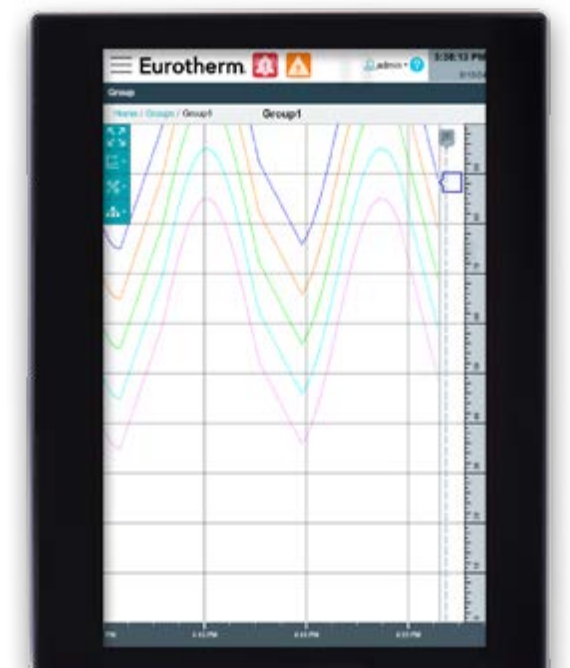
I/O Configuration



Populated Alarm



LineChart Trend  
- Landscape



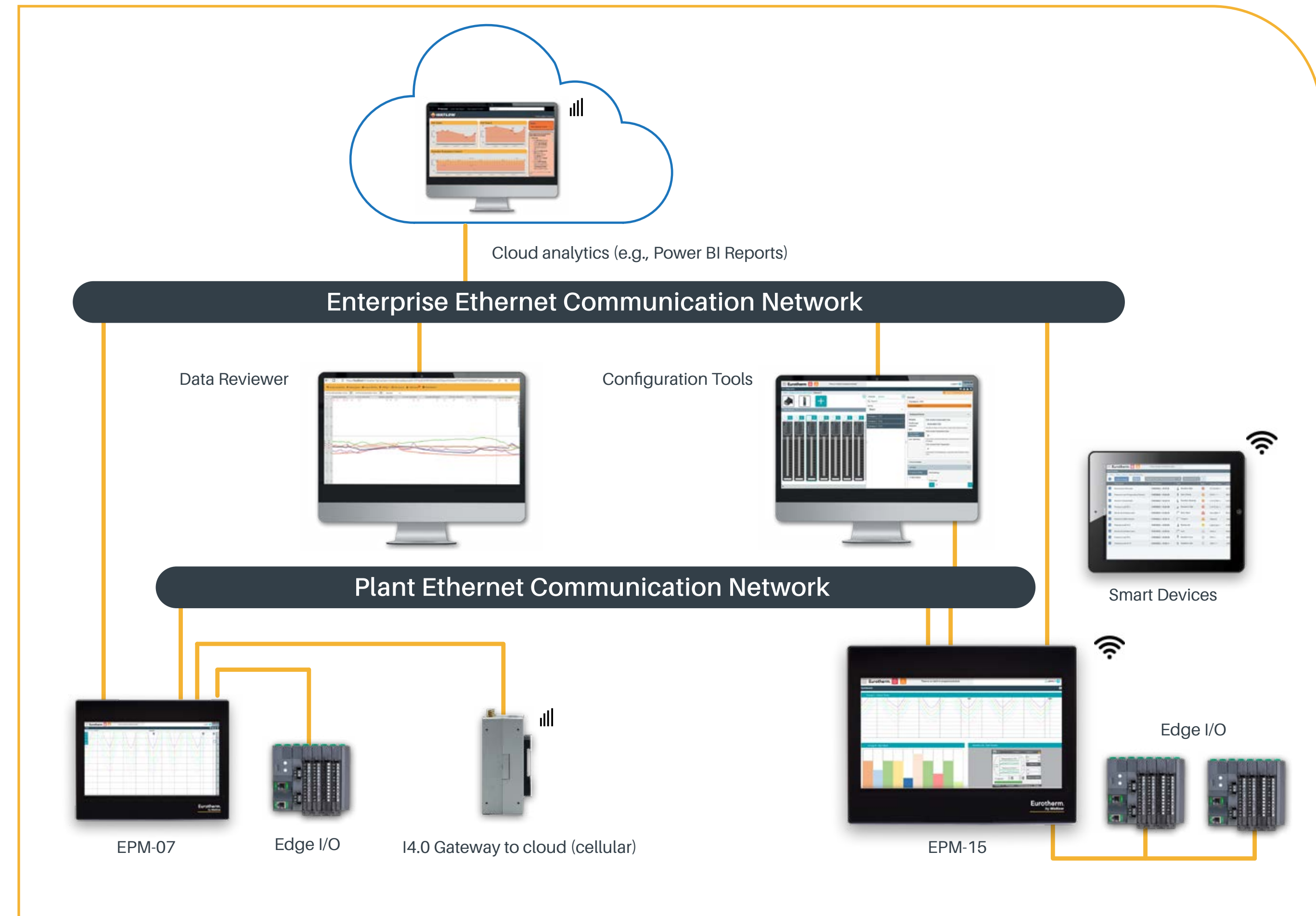
LineChart Trend  
- Portrait



# 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 IT and OT networks
- Multiple comms protocols, including HTTPS, OPC UA™, PROFINET™, Modbus TCP®, EtherNet/IP™, EtherCAT®
- 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  $\pm 1.0^{\circ}\text{F}$  ( $\pm 0.6^{\circ}\text{C}$ ) or  $\pm 0.1\%$  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.



# 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

<p><b>Processors &amp; Communication</b></p>	<p>Dual core 32 bit processor for control and data management, also acting as a Web server                  Quad core 64 bit processor for Web client to enhance graphical rendering                  Pair of on-board Ethernet ports for control 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</p>	<p><b>Benefits</b></p> <p><b>Scalable</b> - for multiple users</p> <p><b>Accessible</b> - to many devices using multiple communications protocols</p>
<p><b>Edge I/O Modules</b></p>	<p>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)*</p>	<p><b>Modular I/O system</b></p> <p><b>Serviceable</b> - with ease of installation and maintenance</p> <p><b>Scalable</b> - with I/O expansion</p>
<p><b>I/O Architecture</b></p>	<p>EPM-07 - Up to 9 on-board modules (27 high precision channels)                  EPM-15 - Up to 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 module available within I/O expansion                  Maximum analog I/O available on EPM-07: 219 channels                  Maximum analog I/O available on EPM-15: 246 channels</p>	<p><b>Serviceable</b> - with ease of installation and maintenance</p> <p><b>Scalable</b> - with I/O expansion</p>
<p><b>Display Hardware</b></p>	<p>Multi-point capacitive touchscreen                  Support for touch interactions - pinch-to-zoom, swipe-to-navigate                  Choice of 7" and 15" Widescreen</p>	<p><b>Accessible</b> - user friendly HMI</p>
<p><b>Retrofit Capability</b></p>	<p>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</p>	<p><b>Serviceable</b> - easy retrofit</p>

\*in development



# EPM Data - Firmware and Software Features and Benefits

<p><b>Communication Protocols</b></p>	<p><b>Control:</b> OPC UA™, HTTPS, PROFINET™, Modbus TCP®, EtherNet/IP™ EtherCAT®</p> <p><b>Enterprise:</b> OPC UA, HTTPS, MQTT</p> <p><b>Achiving:</b> (e.g. USB, network, sFTP, FTP, HTTPS)</p> <p><b>I/O:</b> OPC UA over TSN (time sensitive networking)</p>	<p><b>Benefits</b></p> <p><b>Interoperable</b> - with ERP systems and PLCs</p> <p><b>Accessible</b> - to many devices using multiple communications protocols</p>
<p><b>Software Functions</b> (unlimited, token-based)</p>	<p>Maths, Counters, Timers, Totalisers, external device channels (comms)</p> <p>Recording Groups (up to 30)</p> <p>Batch control and validation (including Batch Validator*)</p> <p>Control and power control algorithms*</p>	<p><b>Scalable</b> - to cater for more complex applications</p>
<p><b>Web HMI</b></p>	<p>Responsive design (caters for multiple resolutions and platforms)</p> <p>Access from anywhere (subject to infrastructure) for up to 10 clients</p> <p>Remote experience consistent with onboard HMI</p> <p>Onboard editing of user screens - ease of adding tags &amp; library elements</p> <p>Drag and drop real-time updates - customisable dashboard of widgets</p> <p>User style customisation*</p> <p>Apps for Smart devices*</p>	<p><b>Accessible</b> - user friendly and view from anywhere</p> <p><b>Automated</b> - migration from existing 6000 series data recorders</p>
<p><b>Configuration</b></p>	<p>Simple configuration (parameterized for GAMP® 5 Second Edition, Cat 3)</p> <p>From product HMI (local and remote)</p> <p>From PC development environment:</p> <ul style="list-style-type: none"> <li>- Online feature for live configuration</li> <li>- Software migration from 6000 series recorders</li> <li>- Offline feature for standalone configuration</li> <li>- Bulk configuration (channel copy)</li> </ul>	<p>*in development</p>





# 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.

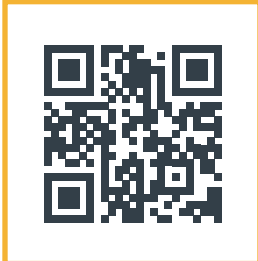
- **Expand as Demand Grows, Replicate Across Sites:**  
Ability to scale operations without major overhauls, enabling consistent replication of best practices across multiple locations.
- **Autonomous Processes Enhanced with Human Connection:**  
Automation that still values human oversight, ensuring processes are efficient yet adaptable to human insights.
- **Ease of Maintenance, Troubleshooting, 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 Units, Building Blocks:**  
Modular components that can function independently or as part of a larger system, offering flexibility in deployment and upgrades.
- **Seamless Communication Between Tech Components:**  
Integrated systems that work together effortlessly, reducing data silos and enhancing overall operational efficiency.



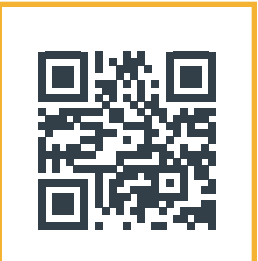
# Bringing the Best of our Combined Know-How Together




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.



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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