

M1 Control System

Holistically designed. Made for the toughest conditions.







Future Solutions from a Single Source

The M1 automation system

Thinking further, always keeping one step ahead, staying open for everything that the future will bring – this is our mission at Bachmann and what makes our automation solutions so special. A holistic system, perfectly tailored to the individual requirements of our customers – today and in the future. The core of every Bachmann system solution is the M1 automation system: a modular hardware and software concept that guarantees maximum availability, future investment security and engineering efficiency.



For Maximum Engineering Efficiency

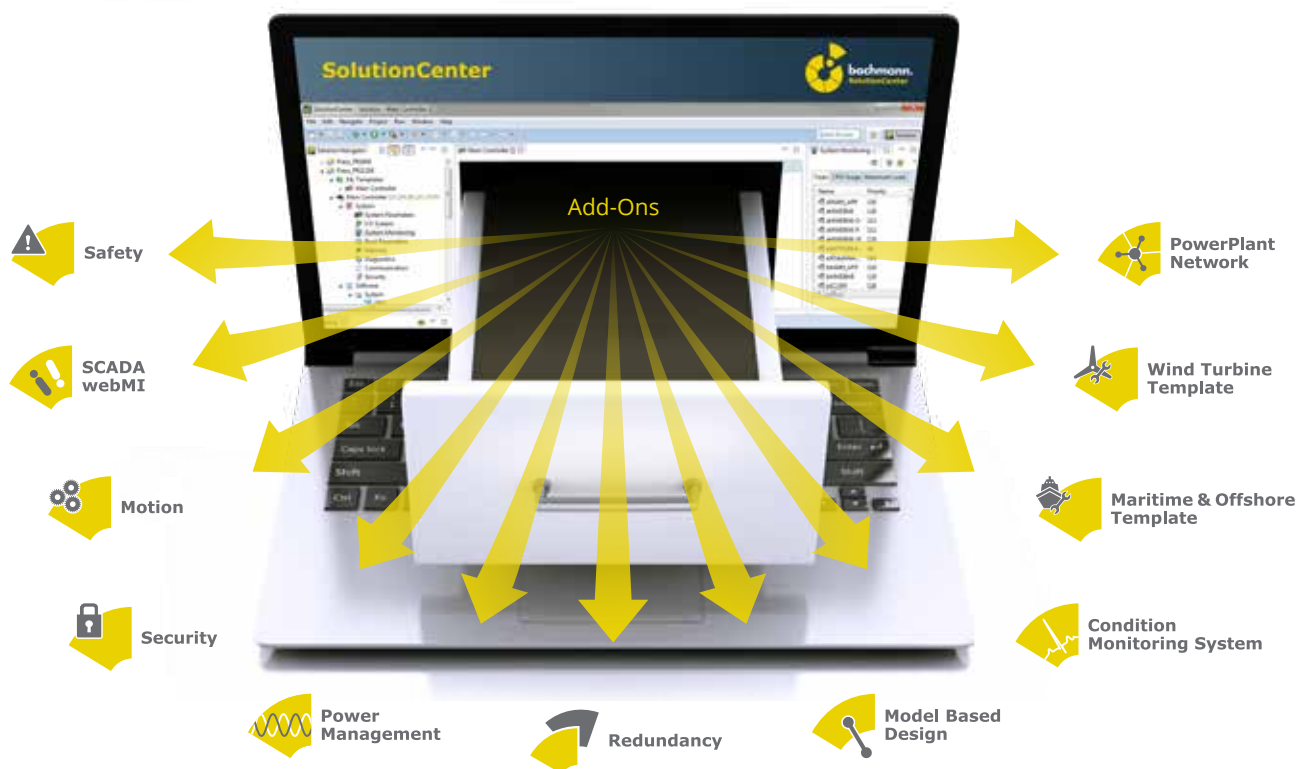
The all-in-one software concept

The SolutionCenter is a comprehensive, practically-oriented software environment for automation and a clear answer to the increasing cost pressure in the automation industry.

The all-in-one package stands out on account of the efficient integration of all tasks during the entire life

cycle of the automation solution. Perfectly matched to devices and systems, and always to the latest state-of-the-art technology and user requirements.

The SolutionCenter provides the perfect view of the overall project at any time and comes with a number of seamlessly integrated subcomponents.



Applikation developer / component designer

- For the simple creation of SW modules
- With support of templates
- Clear display of all variables and interfaces as well as associated SW modules

PLC developer (IEC 61131)

- Modern (contemporary) editor
- Based on standard technologies
- Clearly designed development user interface
- Adapted to standard development tools

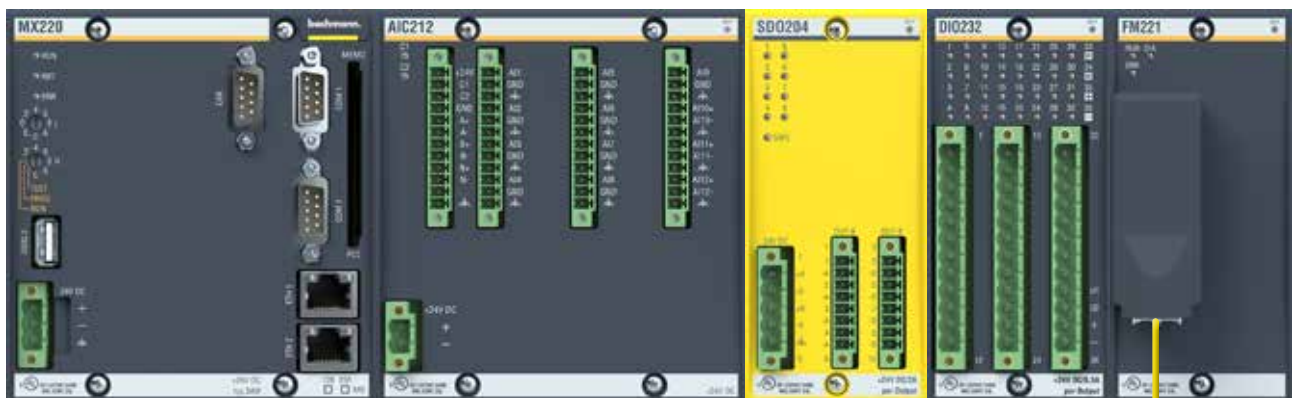
For the most Demanding Requirements

The hardware concept of many possibilities

Individual requirements can be met easily with a wide range of powerful CPUs based on industrial (Pentium) processors and with an extensive range of I/O modules.

Real-time capable bus systems enable the automation to be decentralized without any losses in performance. The M1 controller perfectly combines here the openness of a PC-based controller with the reliability of industrial hardware platforms. And all this with a robustness that enables use even in the most challenging environmental conditions. Thanks to a system architecture with all-round networking capability it can be integrated easily in the area of the controller and plant peripherals.

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Modularity

- Wide range of modules right up to special modules
- Safety modules, central or decentralized solutions
- Function modules with flexible I/O features
- Large number of communication protocols, fieldbuses, also with fiber optic technology

CPU

- Scalable CPUs with 1 to 50 fold performance
- I/O accesses in μ seconds
- Interfaces integrated: COM, CAN, Ethernet, USB, ...
- Integrated equipment (nvRAM, large working memory, removable memory)
- Asynchronous program starts in response to (signal) events possible within $<10\mu$ s

Robustness / Reliability / Availability

- Stable, field proven metal housing
- Vibration-proof screw fastening of connectors and modules
- Climatic range from -30 to +60 (70) °C, fan-free
- Integrated diagnostics in continuous operation
- Long-term continuity, downwardly and upwardly compatible
- Quality – traceability (barcode sticker, DB recording)
- 48h Run-IN temperature cycle test for each module

Programming

- Multitasking unlimited tasks, 256 priorities, 256 different software modules
- C/C++, IEC 61131, MATLAB®/Simulink®, 20-sim, UML capable
- Libraries for software controllers, protocols, sectors
- Universal function and variable interfaces

Networking

- Redundancy (hot/warm standby)
- Communication via standard fieldbuses
- Configuration-free fiber optic system bus (FAST Bus) up to 2 km
- Control center protocols (IEC, DNP, ...)
- OPC UA

Visualization

- Pure web-based HTML visualization with webMI pro, SCADA
- Vector-based display (SVG)
- Open standard interfaces such as OPC UA
- Ready-to-use sector libraries, templates

I/Os

- Condition monitoring, grid measuring/synchronization
- Dedicated I/Os with high signal density
- Multi-purpose I/Os, each channel can be any signal type
- Special I/Os, e.g. precision measuring, ...

Safety and service

- Integrated safety – up to SIL3/PLe
- IT security, including encryption, access control
- Teleservice, web server
- Removable memory – easy replacement for servicing



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