

the power to control

bachmann.

The future begins. Now. M100.

Control-Systems for Demanding Applications



Uncompromising industrial control technology

Professional solutions call for future-proof technology: The M100

For over 55 years, Bachmann electronic has stood for efficient engineering, exceptional performance, and unmatched robustness. The M100 is the next step on our journey.

The market landscape in the coming decades will face challenges unlike any before. Emerging technologies, the demand for greater efficiency and uptime, and the rising importance of data are driving change. The same holds true for control, networking, and automation systems.

With the M100, Bachmann offers a brand-new control platform as the foundation for advanced automation tasks. Powerful CPU modules, advanced security, extreme I/O bandwidth, and real-time networking – all within a future-proof, scalable architecture. The boundaries between measurement technology, industrial control, motion controllers, edge devices and IoT are disappearing.

We stay aligned with the demands of this challenging segment. The priorities remain the same – unmatched robustness, efficiency, and performance.



36 channels per module

*Deformation-free, load-bearing, active backplane
Lag-free module-to-module communication*

*4 to 32 modules bolted per station
24 mm pitch up to 1080 digital or
496 analog channels*

*> 16 stations per system
(based on the fieldbus technology)*





M100-SERIES

ARCHITECTURE AND INTERFACES FOR A RAPIDLY EVOLVING DIGITAL WORLD. CONTEMPORARY AND FUTURE-PROOF, SCALABLE AND EFFICIENT. ENGINEERED WITH LONGEVITY IN MIND.

The M100 is exceptionally robust, resilient to interference, and built to last

Users benefit from condensation-resistant versions, extreme temperature resistance up to 70 °C, shock and vibration tolerance, and excellent EMC resilience. Customer satisfaction, uptime, and product longevity improve, while downtime costs are minimized.

The M100 is compact and highly scalable

Modular hardware and software – use the same control technology for everything from simple individual functions to complex plants. Choose from a wide range of processor performance options and over 60 signal modes, all with high functional density.

The M100 delivers superior performance

Real-time multiprocessor processing and more than 1100 Mbit/s backplane bandwidth, nanosecond time stamping and clock synchronization, motion control platform, direct module-to-module communication for microsecond response times.

The M100 is open

The user's solution space is maximized by the use of open standards, ready-made third-party products, and open-source components, with programming currently supported in IEC 61131-3, C and C++, and soon also in Simulink and Python.

The M100 is secure

The system starts with a root of trust and secure boot. Multi-layered security, including process isolation, least privilege, and role-based access control, enables IIoT services and edge nodes alongside PLCs and BDE systems.

M100 CONTROL SYSTEM PRODUCT GROUPS

*Channel-specific
function configuration.
Fewer module types,
fewer unused channels,
greater flexibility*



*High functional and
performance density in
an uncompromisingly
robust design*

Processor modules



[Find out more](#)

Scalable performance currently up to 1.9 GHz multicore in a 1-width standard housing with 2 to 4x Gigabit real-time Ethernet. Ethercat master and Profinet controller, -30 to 70°C fanless. Secure boot with hardware root of trust. RBAC including fine-grained permissions system for user applications. Onboard flash and removable microSD media. Hardware watchdog, RTC, non-volatile memory, ultra-fast expansion slot (1/E)

Digital input/output modules



[Find out more](#)

Digital inputs in accordance with IEC 61131-2 Type 1 and 3: signal inversion, configurable pulse extension, integrated counter function, timestamping, oversampling for sampling rates higher than the I/O fieldbus cycle. Digital outputs in accordance with IEC 61131-2 Type 0.5 and 2: signal inversion, pulse-width modulation, energy-saving function, time-controlled output (On/Off), and output of pulse sequences faster than the I/O fieldbus cycle (output oversampling)

Analog input/output modules



[Find out more](#)

Measurement signal types configurable by channel: ± 10 V, ± 1 V, ± 10 mV, current measurement ± 20 mA, 4-20 mA, thermocouples, PT100/PT1000 resistance thermometers configurable by channel versus current outputs 4-20 mA, 0-20 mA, 0-2 mA, 0-200 μ A, synchronous sampling, configurable digital filters, interpolation, diagnostic functions

Multifunctional input/output modules



[Find out more](#)

Configurable per channel as input/output and as digital/analog channel for almost 40 standard signal interfaces, including DI/DO with fast push-pull channels, counters, quadrature encoders, PWM, arbitrary pulse sequences, AI for voltage, current, resistance thermometers (PT100/1000), thermocouples, AO for voltage and current, time stamping, oversampling. Stepper motor output, adjustable sensor supply

Position encoders and counter modules



[Find out more](#)

Fast counters up to 8 MHz, incremental encoder function / A, B, Z quadrature encoders, up to 6 channels as counters and time measurement, inputs for latch, set/homing, counter enable, oversampling, synchronous clocks, absolute encoders for SSI (Synchronous Serial Interface), 2 MHz, digital inputs/outputs on the module itself, sensor supply 24 V, 5 V, reference value monitoring

Communication modules



[Find out more](#)

Serial digital interfaces RS232/RS422/RS485, electrically isolated, supporting up to 2.5 Mbaud data rate, with integrated terminating resistors. Optionally available with standard connectors for single wires or DSUB-9 industrial sockets for bus cables or when requiring enhanced EMC protection. Basis for application-specific protocols, Modbus RTU, remote telemetry, advanced diagnostics

Fieldbus node adapter



[Find out more](#)

Bus couplers (I/O node adapters) for EtherCAT, PROFINET, and CANopen technologies allow the creation of spatially distributed substations that remain fully synchronized with the CPU at the main station. Built-in power packs supply the logic side of the I/O modules and the backplane. Automatic failure detection with fallback values, advanced diagnostics and synchronous distributed clocks broadens the range of applications



*Built for the future with cutting-edge technology and scalable flexibility.
The M100 meets every challenge and scales as your requirements evolve.*

The software makes all the difference

Engineering – turning efficiency into a competitive advantage

The software delivers value on at least two levels: First in the configuration and programming phase, and later during real-time operation. The M100 redefines both: The architecture describes itself, engineering tools are both intuitive and efficient, and interfaces align with the evolving needs of a connected world. What truly remains unchanged is the reliability factor.

System & Engineering

- Development environment: SolutionCenter and configuration in the browser.
- Supports programming in IEC 61131-3, C and C++ (Simulink support under development)
- Integrated channel/module/station and heterogeneous fieldbus configuration
- Packet-oriented real-time Linux as the foundation, distributed synchronous clocks
- Automation-specific interprocess communication
- Call synchronization and scheduling, process separation (Apparmor)
- Real-time data recorder with analysis front end, OPC UA server onboard
- Server for web visualization (webMI)



**Explore the M100 series
at bachmann.info**



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