the power to control

bachmann.

M100. One Ecosystem. Every Possibility.

Scalable control systems for demanding applications.



energy.industry.maritime.

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 PLATFORM

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.

Scalable processing power

Choose the performance your application needs.

CPE100

Ideal for compact machine automation,
I/O applications and decentralized control tasks.

CPE0106



CPE0108



CPE0208



CPS100

Ideal for complex control tasks, data processing,
edge computing, and software-intensive applications.

CPS0212/E



CPS0212



CPS0415



CPS0419



EFFICIENCY PERFORMANCE

One Ecosystem. Every Possibility.

- PLC
- Motion
- Vision
- Edge & analytics
- Safety
- HMI / SCADA

M100 Control System

Product groups

Processor modules

Scalable performance currently up to 1.9 GHz multicore in a 1-width standard housing with 2 to 4x Gigabit real-time Ethernet. EtherCAT MainDevice 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

Digital inputs in accordance with IEC 61131-2 Type 1 and 3: signal inversion, con-figurable 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

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 µA, synchronous sampling, configurable digital filters, interpolation, diagnostic functions.

Multifunctional input/output modules

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

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

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 socket for pre-assembled cables. Basis for application-specific protocols, Modbus RTU, remote telemetry, advanced diagnostics.

Fieldbus node adapter

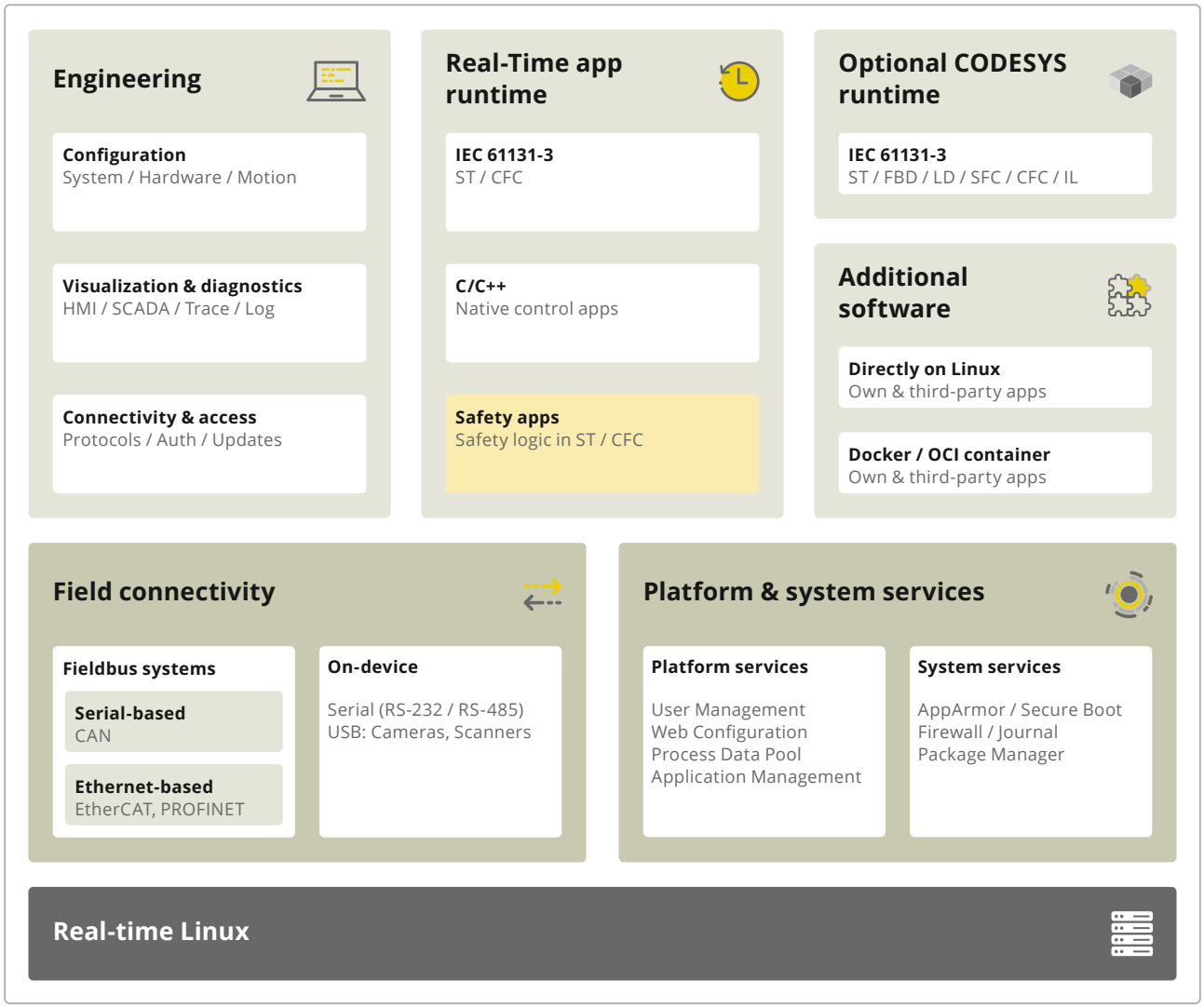
Bus couplers (I/O node adapters) for EtherCAT, PROFINET, and CANopen technologies allow the creation of spatially distributed substations that remain fully synchronized with the CPU at the main station. Built-in power packs supply the logic side of the I/O modules and the backplane. Automatic failure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



Hardware can change. Your code remains.

Software architecture overview

One software environment for faster engineering, flexible integration and powerful industrial applications.



AppArmor · atvise · bachmann. SolutionCenter · C++ · CANopen · CODESYS · dtp · docker · EtherCAT

git · IEC 61131-3 · Linux · Enabled by MATLAB & SIMULINK MathWorks · Modbus · MQTT · OPC UA · PROFINET · REST API

Fully integrated safety. Flexible scalability.

Scalable safety functions on the same hardware: flexible licensing, unrestricted programming, and efficient adaptation across machine variants.

M100-Safety integrates a fully featured SIL 3 / PL e safety CPU as software into the M100 platform. No additional hardware is required and users have the flexibility to tailor license scope, programming, and I/O to the specific application.

One CPU. Scalable safety.



Fully featured SIL 3 / PL e safety CPU
on standard M100 hardware.
No separate safety CPU required.

Designed in accordance with
IEC 61508 / ISO 13849-1.

Safety I/O for digital and analog signals



SDI108 Safety Digital Input
16 Inputs PL d/SIL 2, 8 Inputs PL e/SIL 3, Test signals

SDO104 Safety Digital Output
8 Outputs PL e/SIL 3, Test signals

SIC103 Safety Analog Input
4-20mA, 6 channels SIL 2/PL d / 3 channels SIL 3/PL e
freely selectable cutoff frequency, power-line frequency filtering

SIO142 Safety Combined Digital In- and Output
8 Inputs PL d/SIL 2,
4 Inputs PL e/SIL 3,
4 Outputs PL e/SIL 3,
Test signals

Scaled to meet your needs
Four license levels to suit your project and application.

Flexibly programmable
Graphically or in structured text.
Blocks and libraries.

Controllable variants
A safety application for various configurations.

Safety protocols
EtherCAT FSoE,
PROFIsafe
in development.

bachmann.

www.bachmann.info

M100. One Ecosystem. Every Possibility. EN | Subject to alterations without notice
© 11/2026 by Bachmann electronic

