TECHNICAL DATASHEET

# Zeus IPC-CM400200

Industrial PC Controller · Zeus Native Runtime or CODESYS V3.5 Runtime

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## PRODUCT OVERVIEW

The Zeus IPC-CM400200 is an industrial-grade DIN rail PC controller based on the Broadcom BCM2711 Quad-core Cortex-A72 (ARM v8) 64-bit processor. It is supplied with **your choice of runtime**: the **Zeus Native Runtime**, programmed with the Zeus PLC IDE and carrying no per-unit runtime licence, or the **CODESYS V3.5** multicore runtime, installed and licensed. Both support EtherCAT, Profinet, EtherNet/IP, Modbus TCP and OPC UA — for demanding automation applications in pharma, manufacturing, water treatment, and energy sectors.

| 1.5 GHz | 2–8 GB | 32–64 GB | 12–24V | 20 W | -40/+60 | IP20 | Dual |
|---|---|---|---|---|---|---|---|
| Quad-Core ARM A72 | DDR4 RAM | eMMC Storage | DC Power Input | Max Power Consump. | Operating °C Range | Protection Rating | Runtime: Native or CODESYS |

## MECHANICAL & ENVIRONMENTAL

| | |
|---|---|
| Dimensions (H×W×D) | **96 × 45 × 110.5 mm** |
| Housing Type | **DIN rail housing (35 mm)** |
| Housing Material | **Polycarbonate** |
| Weight | **approx. 320 g** |
| IP Code | **IP20** |
| Operating Temp. | **-40 °C to +60 °C** |
| Storage Temp. | **-40 °C to +85 °C** |
| Humidity (40 °C) | **90% (non-condensing)** |
| ESD Protection | **4 kV / 8 kV (EN 61131-2)** |
| EMI Tests | **Passed (EN 61131-2 / IEC 61000-6-2)** |
| Surge/Burst Tests | **Passed (EN 61131-2 / IEC 61000-6-2)** |
| RoHS Conformity | **Yes** |
| CE Conformity | **Yes** |
| UL Certification | **No** |

## POWER SUPPLY

| | |
|---|---|
| Input Voltage | **12–24 V DC (-10% / +10%)** |
| Polarity Protection | **Yes — reverse-polarity protected** |
| Max. Consumption | **20 Watt** |
| Connector | **1× 3-pole screw-type terminal** |
| Input Type | **24 V control voltage (UPS power-good)** |
| Input Thresholds | **approx. 2.0 V (0→1) / 2.3 V (1→0)** |
| Input Protection | **Against overvoltage & negative voltages** |
| Max. Contact Load | **2 A @ 30 V DC (resistive load)** |

## SYSTEM SOFTWARE

| | |
|---|---|
| Runtime | **Zeus Native Runtime or CODESYS Control V3.5 (see page 2)** |
| OS | **Debian Linux · Raspberry Pi OS** |
| Built-in Firewall | **iptables / nftables · UFW pre-configured** |
| Expansion | **Via Ethernet or RS-485 (no onboard I/O)** |

## PROCESSOR & MEMORY

| | |
|---|---|
| Processor | **Broadcom BCM2711** |
| Architecture | **Quad-core Cortex-A72 (ARM v8) 64-bit SoC** |
| Clock Rate | **1.5 GHz** |
| Processor Cooling | **Passive with heat sink** |
| RAM | **2 GB DDR4 (default) / up to 8 GB** |
| eMMC Flash | **32 GB (default) / up to 64 GB** |
| TF Card (microSD) | **Supported** |
| Internal SSD (PCIe) | **128 GB – 1 TB (optional)** |
| EEPROM | **4 MB / 512 KB** |

## INTERFACES & CONNECTIVITY

| | |
|---|---|
| Ethernet 1 | **1× RJ45 10/100/1000 Mbps (separate MAC)** |
| Ethernet 2 | **1× RJ45 10/100 Mbps (separate MAC)** |
| USB | **2× USB-A (max 1A total from both)** |
| Micro-USB | **1× Micro-USB (eMMC image transfer only)** |
| HDMI | **1× HDMI output** |
| UPS Interface | **1× UPS — 12 seconds backup power** |
| SSD PCIe (optional) | **M.2 PCIe SSD slot** |
| Status LEDs | **4× green LEDs (2 freely programmable)** |

## WATCHDOG & I/O CONTROL

| | |
|---|---|
| Watchdog Interval | **Trigger after ~30 s without reset bit toggle** |
| SW Integration | **Via GPIOs and process image** |
| Output Control | **Optionally switched by hardware watchdog** |
| I/O Expansion | **Via Ethernet or RS-485 — no onboard I/O** |
| Compatible Modules | **Odot Remote I/O via Modbus TCP / EtherCAT / Profinet** |
| Buffer Time RTC | **No internal RTC (external if required)** |

## SYSTEM REQUIREMENTS

| | |
|---|---|
| Op. Temp. (Lite OS) | **0 °C to +50 °C** |
| Op. Temp. (Desktop) | **0 °C to +40 °C** |
| Humidity | **10% to 90% — no condensation** |
| Mounting | **DIN rail 35 mm — vertical or horizontal** |
| Cabinet Clearance | **Minimum 25 mm from other components** |
| Power Supply | **24 Vdc / 10 A DIN rail PSU recommended** |
| Default IP | **10.10.10.20 / 24 (ETH right port)** |

## RUNTIME OPTIONS — ONE CONTROLLER, TWO RUNTIMES

The same hardware is delivered with either runtime. Choose the **Zeus Native Runtime** when you deploy many controllers and want the PLC, the SCADA and the I/O from one supplier, with no per-unit runtime licence. Choose **CODESYS V3.5** when your engineers, libraries and existing projects are already in CODESYS.

| | CODESYS V3.5 Runtime | Zeus Native Runtime + Zeus PLC IDE |
|---|---|---|
| Runtime | CODESYS Control V3.5 (multicore) | Zeus Native Runtime, built for the IPC-CM400200 |
| Runtime licence | Installed & licensed, per controller | Included — no per-unit runtime fee |
| Engineering tool | CODESYS development system | Zeus PLC IDE — self-contained package for Windows and macOS, nothing to install |
| Programming | IEC 61131-3 (LD, FBD, ST, IL, SFC) | IEC 61131-3 Structured Text, graphical Ladder, FBD and SFC |
| Cycle time | Down to 250 µs | Down to 500 µs (default 10 ms) |
| I/O control | Cyclic scan + immediate refresh | Cyclic scan on one real-time task, with slower sub-tasks |
| Simulation | CODESYS simulation mode | Built-in simulator — runs the real runtime on the PC |
| Online monitoring | Watch, write, force | Watch tables, prepared values, write, force, hover values, trace |
| Data types | STRUCT, ENUM, UNION, alias | STRUCT, ENUM, alias |
| Alarms | Alarm manager | ISA-18.2 alarm engine, up to 10,000 alarms, journal |
| SCADA / HMI access | OPC UA server | OPC UA server + EtherNet/IP tag server (tags by name) |
| Motion control | SoftMotion / CNC (licensed) | Zeus Motion — in development |

## SUPPORTED FIELDBUS PROTOCOLS

| Protocol | CODESYS V3.5 | Zeus Native |
|---|---|---|
| **EtherCAT** | Master | Master |
| **Profinet** | IO controller | IO controller |
| **EtherNet/IP** | Adapter & scanner | Tag server (tags by name) |
| **Modbus TCP** | Client & server | Client & server |
| **OPC UA** | Built-in server | Built-in server |
| **CANopen** | Master via CAN interface | — |
| **MQTT** | IoT messaging via Ethernet | — |
| **RS-485 (Modbus RTU)** | Serial fieldbus via RS-485 | — |

## COMPATIBLE ZEUS ECOSYSTEM

**Odot Remote I/O**
DI, DO, AI, AO, RTD, TC modules — EtherCAT / Profinet / Modbus

**FAS Pneumatic**
Solenoid valves, cylinders, FRL — controlled via DO

**Wecon HMI Panels**
7"–21.5" touch panels — Modbus TCP or EtherNet/IP tags

**OptiZeus SCADA**
Web-based SCADA/HMI — OPC UA + Modbus TCP

**OptiZeus MES**
35-module MES — OPC UA + MQTT integration

## OptiZeus SCADA INTEGRATION

The Zeus IPC-CM400200 is the **recommended hardware platform** for OptiZeus SCADA. With either runtime, the built-in OPC UA server connects directly to OptiZeus without any additional drivers or middleware.

**OPC UA Native**
Controller OPC UA server → OptiZeus OPC UA client. Both runtimes.

**Tags by Name**
Zeus Native: EtherNet/IP tag server — SCADA and HMI read tags by name.

**Modbus TCP**
Controller variables accessible as Modbus registers.

**EtherCAT I/O**
Odot Remote I/O modules expand I/O via EtherCAT.

**ISA-88 Batch**
SFC programs map to OptiZeus S88 batch phases.

**Historian**
Tag values logged to OptiZeus SQL Server historian.

**Alarm Management**
Controller alarms forwarded to OptiZeus ISA-18.2 engine.

**MQTT Telemetry**
CODESYS runtime: publish process values to OptiZeus MQTT broker.

**GAMP5 Validation**
IPC used as field controller in GAMP5 IQ/OQ/PQ evidence.

## ORDERING INFORMATION & VARIANTS

| Standard | Recommended | High-Perf. | Storage+ |
|---|---|---|---|
| **IPC-CM400200-2G** | **IPC-CM400200-4G** | **IPC-CM400200-8G** | **IPC-CM400200-SSD** |
| 2 GB RAM / 32 GB eMMC | 4 GB RAM / 32 GB eMMC | 8 GB RAM / 64 GB eMMC | 4 GB RAM / 32 GB + 256 GB SSD |

Every variant is supplied with the **Zeus Native Runtime** or the **CODESYS V3.5 Runtime** — please state the runtime when ordering.

## ORDER & TECHNICAL ENQUIRIES

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