# Control Block Mini

## Technical Specification Sheet


### Overview

The Autoblocks Control Block Mini is a robust and general-purpose controller that effortlessly combines logic and safety into a single, streamlined platform. It supports up to 6 slave devices and their peripherals. Motion is integrated with external power and drives. Offering no-code integration, it simplifies the management of diverse industrial robots, vision systems, safety devices, and sensors, making it accessible even for those with limited programming experience. Its modular, flexible design allows for seamless scalability, from small batch processes to fully automated production lines, making it the perfect solution for a wide range of industrial automation requirements. Additionally, the Autoblocks platform includes the AB+ product line, offering highly compatible motors, actuators, and gearboxes that further enhance system versatility and expand automation capabilities across multiple applications.

## Hardware Specifications

### Form Factor

- Dimensions: Standard 19” x 4U Rack Mount
- 19”W X 10”L x 7” H
- Weight: ~15 lbs.
- Ventilation: Rear exhaust fan.

### Power Supply

- Voltage Input: 120 VAC or 240 VAC
- Amperage Input: Max 1A at 120VAC or 0.5A at 220V
- 24V Bus (10 terminals) Power Output: 2A Max/50W
- 12V Bus (4 terminals) Power Output: 5A Max/60W
- 0V Bus (14) terminals
- Protection: Overvoltage, short circuit, and reverse polarity protection.

### External Ports:

- (3) RJ45 (2 rear/1 front)
- (1) USB 2.0 for file management, bar code scanner, camera.
- (1) DB15 for HMI teach pendant with integrated e-stop circuit.
- M12/5 (2) Light curtain transmitter/receiver
- M12/4 (1) Light Tower
- M12/8 (1) Door Switch - Cascade up to 16 units (including 4 locking)
- M12/8 (1) Remote I/O expansion port
- 14 Pin Output Terminal Block – 10 Transistor (PNP), (2) Relay 6A
- 14 Pin Input Terminal Block – 10 Sink/Source, (2) Analog
- 14 Pin Safety Output Terminal Block – (5) Safety Outputs
- 14 Pin Safety Input Terminal Block - Redundant Remote E-stop in, 7 inputs
- 14 Pin 0 VDC Terminal Block
- 14 Pin 24 VDC Terminal Block

**Communication Protocols:**

- Ethernet/IP
- MODBUS TCP
- CANopen/CANLayer2
- MQTT Client

**I/O Standard Model A:**

- 10 digital inputs
- 2 analogue Inputs
- 10 transistor outputs
- 2 Relay outputs

**I/O Analogue Model B:**

- 8 digital inputs
- 4 analogue Inputs
- 6 transistor outputs
- 2 Relay outputs
- 3 analogue outputs

**Other:**

- SQL Client
- WEB Server
- E-Mail & SMS
- VNC
- FTP server/client

**Safety Features**

- **Safety Controller:** Integrated Programmable Safety Controller
- **Ple, Category 4, SIL3 Safety Standards**
- **Plug and play safety devices** - light curtain, door interlocks, remote E-stop, light tower, and other safety devices
- **Customizable programming**
- **Safety event tracking**
- **Remote Emergency Stop Circuit:** Remote E-stop port to connect field devices.
- **Interlocks:** Plug and play magnetic door interlock/switches. HMI password controlled.

**Mechanical and Environmental Specifications**

- Operating Temperature: 0°C to 40°C
- Storage Temperature: -20°C to 70°C
- Humidity: 10% to 90% (non-condensing)

## Software & Control Capabilities

**Software Packages:**

- Control Block Mini comes pre-loaded with choice of **AutoCode** or **TurnCode**.
- **AutoCode -** software package for generalized automation control
- **TurnCode -** software package specializing in modular rotary control
- **Custom Interfaces** – Limited custom Interfaces are available with NRE.

**AutoCode Programming Environment – Linear Control Made Simple**

- Table-based command structure compatible with PLC and CAM programming
- Supports custom commands and developer environment.
- Supports AI-generated AutoCode for fast programming
- Recipe Programming: Integrated recipe management for production line reconfiguration
- Machine Master and up to (6) Slave device AutoCode control.

**Turn Code Programming Environment – No Code Modular Rotary Control**

- Modular Rotary System Support: Controls up to 8 stations with configurable 2, 4, or 8-position setups.
- No-Code Configuration: Simplifies programming with an intuitive, point-and-click interface.
- Error Handling and Diagnostics: Includes real-time error detection, fault history, and troubleshooting tools.
- Integration: Fully compatible with Autoblocks HMI and teach pendant for seamless operation.
- Applications: Ideal for assembly lines, inspection stations, filling operations, and other indexed rotary tasks.
- Efficient Automation: Enhances the Autoblocks Control Block Mini's capabilities for scalable, multi-station rotary control.

**HMI/Teach Pendant Interface:**

- 10.1-inch-high resolution capacitive touch screen HMI interface.
- Supports integration of other web interfaces.
- Integrated E-Stop

## System Integration

**Safety and Error Handling**

- Built-in Fault Detection
- Diagnostic system with real-time error logging
- Automatic motor shutdown in case of fault
- Red, Green, and Yellow HMI/light tower status indicators

**Modularity:**

- Compatible with all types of robots.
- Flexible device integration through Auto-code or drag and drop ladder logic for complex machine control
- Expandable I/O and motor controls for future scalability

**Supported Devices**

**AutoBlocks Smart Actuators:**

- Precision Ball Screw Actuators +/- 0.005mm up to 2000mm
- Belt Drive Actuators +/- 0.05mm up to 3000mm
- Customizable Cartesian Gantries available.

**EPSON Robots:**

- EPSON Robots are plug & play with simple device selection on the HMI.
- EPSON robot program templates with extensive handshake and error handling prebuilt.

**Universal Robots:**

- UR robots are plug & play with simple device selection on the HMI.
- UR CAPP with extensive handshake and error handling prebuilt.

**Vision Systems:**

- Keyence IV3/4
- Keyence VS
- Zebra FS/VS
- Cognex
- Custom devices supported

**Servo Drives & VFDs:**

- AutoBlocks Smart Servo Drives & VFDs come plug & Play
- Third Party Servo Drives & VFDs available.

**Safety:**

- Built In Safety Controller to meet strict safety requirements.
- Single M12 cable door interlocks/switches
- Single M12 cable plug & play single cable light curtains
- Single M12 cable plug and play light tower
- Terminal blocks for built in safety I/O
- Expandable field safety I/O

**Cloud**

- Customizable Cloud Machine monitoring dashboard
- Remote Support
- Remote Software Customization and Support.

**Other Devices:**

- Control Block Mini is simple to configure for any discrete I/O device
- High level communication devices are simple to add with NRE or development.

**Integrator Support**

The Autoblocks Control Block Mini is targeted at integrators and machine builders seeking a cost-effective, highly configurable, and easy-to-program machine controller. Its plug-and-play capabilities and AI-driven AutoCode functionality reduce the need for

extensive programming, making it ideal for medium complexity machines in industries such as automotive, electronics, medical devices, and precision assembly.

This technical specification sheet provides a detailed overview of the capabilities and components of the Autoblocks Control Block Mini, highlighting its advanced features for machine safety, and flexibility in industrial automation applications.

## Comparison Control Block vs. Control Block Mini

| Feature | Control Block | Control Block Mini |
|---|---|---|
| **Capabilities** | General Purpose Controller with Plug & Play Motion | General Purpose Controller with External Motion |
| **Motion Control** | Up to 6 Axis Plug & Play | Up to 6 Axis w/external power/drive |
| **24V Power Output Bus** | 190W, 24V DC bus | 75W, 24V DC bus |
| **Network Capabilities** | 3 RJ45 ports Ethernet IP, Modbus TCP, MQTT | 3 RJ45 ports Ethernet IP, Modbus TCP, MQTT |
| **PLC** | Included | Included |
| **Safety Controller** | Keyence safety controller | Keyence safety controller |
| **Plug & Play Safety** | Light Curtains, Door Switches (up to 16), Light Tower. | Light Curtains, Door Switches (up to 16), Light Tower. |
| **I/O Configuration** | 10 digital inputs, 2 analog inputs, 10 transistor outputs (PNP), 2 Relay Outputs 8in/7out safety | 10 digital inputs, 2 analog inputs, 10 transistor outputs (PNP), 2 Relay Outputs 8in/7out safety |
| **Optional Analogue Output** | 8 digital inputs, 4 analog inputs, 6 transistor outputs (PNP), 3 analog outputs, 2 Relay Outputs 8in/7out safety | 8 digital inputs, 4 analog inputs, 6 transistor outputs (PNP), 3 analog outputs, 2 Relay Outputs 8in/7out safety |
| **Expandability** | Remote I/O up to 2,000 points | Remote I/O up to 2,000 points |
| **Teach Pendant** | Optional, industrial-grade design | Optional, industrial-grade design |
| **HMI** | Web interface and multi-tab capabilities | Web interface and multi-tab capabilities |
| **Software** | AutoCode (Linear Motion/Logic) & TurnCode (Rotary Motion/Logic) | AutoCode (Linear Motion/Logic) & TurnCode (Rotary Motion/Logic) |
| **Programming** | Master/6 slave devices/1 motion platform/6 axis/gcode/recipes | Master/6 slave devices/1 motion platform/6 axis/gcode/recipes |
| **Safety Features** | Plug-and-play light curtains, light towers, e-stop, safety interlocks | Plug-and-play light curtains, light towers, e-stop, safety interlocks |
| **Dimensions** | 14x19x4U rack-mount | 24x19x4U rack-mount |
| **Weight** | ~25 lbs | ~15 lbs |
| **Power Input** | 220V/8A or 120V/15A | 220V/1A or 120V/1A |
| **Use Case** | Complex machines with motion, robots, precision assembly, palletizing, industrial automation | Complex machines, robots, precision assembly, palletizing, industrial automation |
| **Cloud Integration** | Cloud dashboards, SQL database support | Cloud dashboards, SQL database support |
| **Target Market** | Integrators needing advanced integration, recipes, and safety | Integrators needing advanced integration, recipes, and safety |