

INTEGRATED STEPPER MOTORS

# ABSOLUTE MOTORS

Motion. Logic. Safety. HMI. — One Platform.

ABSOLUTE POSITION. ABSOLUTE CONTROL. ABSOLUTE SCALABILITY.



The most capable integrated stepper motor on the market today — drive, motion controller, and absolute encoder built into every motor, coordinated across a single M12 bus.

— MOTION

**AB-SM-8 through AB-SM-34, closed-loop stepper.** 24–36 VDC. 0.4–6 A adjustable phase current. Microstepping 1–128. Backlash compensation built in.

— LOGIC

**Onboard DSP. Distributed motion controller.** Coordinated multi-axis motion is computed across the bus by the motors themselves — no central controller card. Deterministic command execution.

— SAFETY

**Optional brake controlled over CAN.** No extra wiring. Engage/release commanded from AutoCode. Supervised E-stop cuts power via the Control Block's safety controller and safety relay.

— HMI

**Live on the Pendant from connect.** Every axis is auto-detected, jog-able, teach-able, and diagnosable from the Pendant or Web HMI the moment it joins the bus.

## Distributed motion. One platform.

Traditional steppers force a cabinet full of drives and a separate motion-controller card. The Absolute Motor collapses all of that into the motor itself — a single M12 cable carries power, communication, and brake control. Up to ten motors connect to the Control Block (daisy-chain or home-run across 4 ports) with full coordinated motion across all of them.

MULTI-TURN  
**ABSOLUTE ENCODER**  
No homing required

PER SYSTEM  
**UP TO 10 AXIS**  
Daisy-chain or home-run · 4 ports

NEMA 8–34  
**5 FRAME SIZES**  
One architecture across the line

OVER CAN  
**INTEGRATED BRAKE**  
Optional · no extra wiring

## HARDWARE

<b>Part numbers</b>	AB-SM-8, AB-SM-11, AB-SM-17, AB-SM-23, AB-SM-34
<b>Motor type</b>	Integrated closed-loop stepper
<b>Drive</b>	Integrated (no cabinet drive required)
<b>Motion controller</b>	Onboard DSP — distributed across the bus
<b>Encoder</b>	Multi-turn absolute (no homing at power-on)
<b>Brake</b>	Optional integrated — controlled over CAN, no extra wiring
<b>Supply voltage</b>	24–36 VDC (24 VDC nominal industrial)
<b>Phase current</b>	0.4–6 A, adjustable (frame-dependent)

## MOTION ARCHITECTURE

<b>Control modes</b>	Speed, position
<b>Microstepping</b>	1–128
<b>Coordinated motion</b>	Distributed across the bus
<b>Axis type</b>	Linear or rotary — set in AutoCode
<b>Gear ratio</b>	Set per axis in AutoCode
<b>Zero / direction</b>	Set in AutoCode
<b>Backlash compensation</b>	Built in (actuator backlash)
<b>Tuning</b>	None — closed-loop, factory-tuned

## SYSTEM INTEGRATION

<b>Motors per system</b>	Up to 10
<b>Topology</b>	Daisy-chain or home-run
<b>Control Block ports</b>	4 motor ports on the back
<b>Cabling</b>	Single M12 per motor (power + comm + brake)
<b>E-stop behavior</b>	Power cut by safety controller + safety relay
<b>Auto-detection</b>	Detected by the Control Block on connect

## EXTERNAL PORTS

- ▶ **(1)** M12 motor port — power, communication, and brake control on one cable
- ▶ **(4)** Control Block motor ports — daisy-chain or home-run any combination
- ▶ **(0)** Brake wires required — integrated brake is commanded over the CAN bus

## COMMUNICATION & SOFTWARE

- ▶ **Custom CAN bus** — single M12 cable carries power, comm, and brake control to every motor
- ▶ **AutoCode** — configures axis as linear or rotary, sets gear ratio, commands brake engage/release, coordinates motion across every axis
- ▶ **Autoblocks Studio** — offline programming, diagnostics, and remote support

## SUPPORTED DEVICES — PLUG & CONFIGURE

### PLATFORM HOSTS

Control Block · Pendant · Web HMI

### APPLICATIONS

Linear & rotary axes · Gantries · SCARA · Dispensing · Inspection

### COMPATIBLE MECHANICS

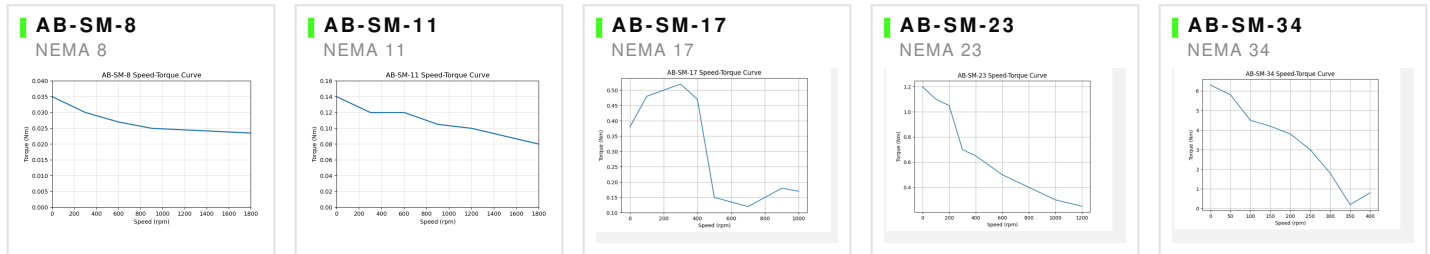
AB+ ball-screw & belt-drive actuators · OEM custom mechanics

### CONFIGURATION OPTIONS

**Configure in minutes.** Auto-detected on the bus. Set each axis as **linear or rotary**, define its **gear ratio**, and command the **optional brake over CAN** — all directly in AutoCode. Coordinated multi-axis groups defined visually. Up to 10 motors per system.

# Performance / Speed-Torque / By Frame

ABSOLUTE MOTORS  
REV 6 · 2026



## FRAME COMPARISON

SPECIFICATION	AB-SM-8	AB-SM-11	AB-SM-17	AB-SM-23	AB-SM-34
<b>Holding torque</b>	0.038 Nm	0.16 Nm	0.43 Nm	1.26 Nm	6.5 Nm
<b>Rotor inertia</b>	2.9 g·cm <sup>2</sup>	18 g·cm <sup>2</sup>	75 g·cm <sup>2</sup>	300 g·cm <sup>2</sup>	1900 g·cm <sup>2</sup>
<b>Phase current</b>	0.6 A	0.8 A	1.68 A	2.8 A	6 A
<b>Phase voltage</b>	6.4 VDC	4 VDC	2.8 VDC	2.3 VDC	2.4 VDC
<b>Phase resistance</b>	10.6 Ω	5 Ω	1.65 Ω	0.83 Ω	0.4 Ω
<b>Phase inductance</b>	4.3 mH	6.8 mH	2.8 mH	2.8 mH	3.43 mH
<b>Step angle</b>	0.1125°	0.1125°	0.1125°	0.1125°	0.1125°
<b>Weight</b>	83 g	218 g	418 g	810 g	3.8 kg

### MAJOR FEATURE — BRAKE OVER CAN

**Optional integrated brake on every frame, commanded over the CAN bus.** No additional wiring, no relay logic, no cabinet hardware — the brake engages and releases on AutoCode command across the same single M12 cable that carries power and motion data. Ideal for vertical axes, load-holding applications, and any axis that must hold position safely on power loss.

**Reading the curves.** Speed-torque curves shown at nominal phase current and 24 VDC supply, 1/16 microstepping. Tuned for stable low-speed holding, controlled mid-band behavior, and application-appropriate high-speed performance. Contact Autoblocks engineering for sizing guidance and frame selection.



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