Beckhoff — AX Digital Servo Drives

AX2003



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The **AX2003** is a digital servo drive manufactured by Beckhoff within the AX Digital Servo Drives series. It supplies regulated AC power to matched servo motors, allowing closed-loop velocity and position control in automated machinery such as packaging stations, gantry axes, and material-handling modules. The unit integrates drive electronics, safety relays, and regeneration hardware so a controller can command precise motor torque without external power stages.

The BTB/RTO relay can switch up to **500 mA**, enabling direct interfacing with emergency-stop or ready-to-operate chains. Under continuous loading, the power section produces **40 W** of thermal dissipation that must be removed by cabinet airflow. Normal motion cycles draw a rated phase current of **3 A RMS**, while acceleration events can reach a peak current of **6 A RMS** for short durations. These currents correspond to an installed load of **2 kVA**, so line protection devices must be sized accordingly. Compatible motors must have an inductance from 12 mH to 75 mH; operation within this range keeps current ripple near the stated form factor of 1.01. The residual 5 V drop across the output stage leaves usable headroom for motor back EMF, and an input resistance of 20 k? relative to AGND helps prevent ground-loop currents when analog references are connected.

The internal brake chopper can absorb up to **80 W** of regenerated power, allowing deceleration without external resistors when inertia is moderate. The electronics consume 15 W of quiescent power while off, so enclosure temperature calculations should include that baseline. The housing has a width of **100 mm**, a height of **275 mm**, and a depth of 265 mm, allowing side-by-side mounting on a TS35 DIN rail. The drive has a mass of **5 kg**, and the

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enclosure must provide sufficient support for secure mounting. Space must also be reserved for the recommended rear convection channels around the aluminum heat sink.

Specifications

Ambient Temperature In Operation:	0 to +45AC at rated data, +45 to +55AC with power derating	**Auxiliary Supply Voltage:**	24V DC (-0% to +15%)	**Btb/rto Contact Current:**	500 mA
Clock Frequency Of The Output Stage:	8 kHz (16 kHz with VDC max = 400V)	**Control Signal Connections:**	Combicon connectors, 18-pole, 2.5mmA^2	**Depth:**	265 mm
Digital Inputs/outputs Standards:	According to IEC 61131	**Dimensions (height X Width X Depth):**	275 mm x 100 mm x 265 mm (without connectors)	**Dissipation At Rated Current:**	40 W
Enclosure Protection:	IP 20	**Height:**	275 mm	**Input Resistance To Agnd:**	20 k?
Internal Regen Power:	80 W	**Max Load Inductance:**	75 mH	**Min Load Inductance:**	12 mH
Output Current Form Factor:	1.01	**Overvoltage Protection Threshold:**	450...900 V	**Peak Output Current:**	6 Arms
Quiescent Dissipation:	15 W	**Rated Installed Load:**	2 kVA	**Rated Installed Load For S1 Operation:**	2 kVA
Rated Output Current:	3 Arms	**Rated Output Current (rms Value):**	3 Arms	**Rated Supply Voltage:**	3 x 230V-10% to 480V+10%, 50 Hz or 60 Hz
Residual Voltage Drop:	5 V	**Site Altitude:**	Up to 1000 m a.m.s.l. without restriction	**Weight:**	5 kg
Width:	100 mm	**Last Verified:**	11/10/2026 6:10 AM		

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