

Allen-Bradley PowerFlex 520-Series

Range overview: PowerFlex 520, PowerFlex 525 and PowerFlex 527

The PowerFlex 520-Series is Rockwell Automation's compact AC drive family for machine-level applications. The three drives share the same frame sizes (A to E), power range and enclosures, and differ in **networking, safety, I/O and motion capability**. Rockwell's base model of the family is the **PowerFlex 523**, which is what the "PowerFlex 520" entry on your list refers to; the Rockwell literature uses "520-Series" for the whole family and "523" for the entry-level drive.

Model	Role	Power range	Communications	Safety
PowerFlex 520 (523)	Entry-level drive for cost-sensitive stand-alone machines	0.2-22 kW (0.25-30 HP)	RS-485 (Modbus RTU); EtherNet/IP, DeviceNet or PROFIBUS DP optional	None built in
PowerFlex 525	Networked drive with standard safety and positioning	0.4-22 kW (0.5-30 HP)	Embedded EtherNet/IP; optional dual-port card; RS-485 / DSI	Hardwired Safe Torque Off, SIL 2 / PL d
PowerFlex 527	Logix-integrated drive with motion and network safety	0.4-22 kW (0.5-30 HP)	Built-in dual-port EtherNet/IP with Device Level Ring	Hardwired STO or network STO (CIP Safety), SIL 3 / PL e

Catalog numbers begin 25A for the PowerFlex 523, 25B for the 525 and 25C for the 527. Confirm exact ratings and options on the current Rockwell technical data sheet for the catalog number you are quoting.

Model details

PowerFlex 520 (PowerFlex 523)

Entry-level drive for simple stand-alone machines

Power	100-120 V single-phase: 0.2-1.1 kW. 200-240 V single- and three-phase: 0.2-15 kW. 380-480 V three-phase: 0.4-22 kW. 525-600 V three-phase: 0.4-22 kW (0.25-30 HP in total).
Control	Volts per Hertz and sensorless vector control.
I/O	5 digital inputs (4 programmable), 1 analog input, 1 analog output, 1 relay output.
Communications	Integral RS-485 (Modbus RTU) and DSI; optional EtherNet/IP, DeviceNet or PROFIBUS DP; the DSI port supports up to five drives per node.
Safety	No built-in safety function; safety needs an optional communication card.
Keypad / software	Multi-language LCD keypad with AppView and CustomView tools; Connected Components Workbench and Studio 5000.

- No motion instructions or positioning control.
- Typical use: cost-sensitive stand-alone machines and basic hardwired operation.

PowerFlex 525

Networked drive with built-in safety and positioning

Power	100-120 V single-phase: 0.2-1.1 kW. 200-240 V: 0.2-15 kW. 380-480 V and 525-600 V three-phase: 0.4-22 kW (up to 30 HP).
Control	Volts per Hertz, sensorless vector, closed-loop velocity vector with an encoder, and permanent-magnet motor control (listed for the 525).
I/O	7 digital inputs (6 programmable), 2 analog inputs, 1 analog output, 2 opto outputs, 2 relay outputs.
Communications	Embedded EtherNet/IP port, with an optional dual-port card; integral RS-485 / DSI; DeviceNet and PROFIBUS DP cards available.
Safety	Built-in hardwired Safe Torque Off to ISO 13849-1, SIL 2 / PL d, Category 3.
Positioning	PointStop positioning, with optional closed-loop encoder feedback.

- USB MainsFree programming and a multi-language LCD keypad.
- Programmed with Connected Components Workbench or Studio 5000 Logix Designer.
- Typical use: networked machines needing standard safety and simple integration.

PowerFlex 527

Logix-integrated drive with motion control and CIP Safety

Power	100-120 V single-phase: 0.4-1.1 kW (0.5-1.5 HP). 200-240 V: 0.4-15 kW (0.5-20 HP). 380-480 V: 0.4-22 kW (0.5-30 HP). 525-600 V: 0.4-22 kW (0.5-30 HP).
Output current	From 0.9 A up to 62.1 A depending on voltage and rating.
Control	Volts per Hertz (basic and fan / pump), sensorless vector, SVC economiser, closed-loop velocity and closed-loop position control with an optional encoder.
I/O	4 programmable digital inputs, 2 isolated analog inputs (+/-10 V, 4-20 mA), 2 relay outputs (one Form A, one Form B), 2 opto outputs, 1 analog output.
Communications	Built-in dual-port EtherNet/IP with Device Level Ring support; the drive is designed for use with Allen-Bradley Logix controllers.
Safety	Hardwired Safe Torque Off, or Network Torque Off over CIP Safety, both to SIL 3 / PL e, Category 3.
Motion	Uses the Logix motion instruction set shared with Kinetix servo drives, for example MAM (Motion Axis Move); synchronisation and electronic camming without extra hardware. Encoder card supports incremental feedback up to 250 kHz.

- Programmed exclusively with Studio 5000; USB and a keypad are not standard on this model.
- Typical use: synchronised multi-axis speed control and machines with network-based safety, such as pumps, fans and conveyors.

Common specifications

Frame sizes	A to E; the 527 ranges from 1.1 kg (Frame A) to 12.9 kg (Frame E). Dimensions are identical across the 523, 525 and 527.
Enclosure	IP20 / NEMA / UL Open type as standard; optional IP30 / NEMA 1 / UL Type 1 conduit kit.
Overload	Normal duty: 110% for 60 s and 150% for 3 s. Heavy duty: 150% for 60 s and 180% for 3 s (200% for 3 s programmable on some models). Duty selection applies to drives above 15 kW on the 520 / 525 sheet.
Output frequency	0-500 Hz, programmable; carrier frequency 2-16 kHz (520-Series sheet).
Ambient	-20 to +50 deg C without derating; up to +60 or +70 deg C with a fan kit.
Altitude	1,000 m without derating; up to 4,000 m with derating.
Built-in extras	Seventh-IGBT braking and DC braking on all three; optional EMC filter on 200 V and 380-480 V three-phase models.

Side-by-side comparison

Feature	PowerFlex 520 (523)	PowerFlex 525	PowerFlex 527
Built-in EtherNet/IP	No (optional)	Yes (single port)	Yes (dual port, DLR)
Safe Torque Off	No	SIL 2 / PL d, hardwired	SIL 3 / PL e, hardwired or network
Digital inputs	5	7	4
Analog inputs	1	2	2
Relay outputs	1	2	2
Closed-loop velocity	No	Yes (encoder)	Yes (encoder)
Position / motion	No	PointStop positioning	Logix motion instructions, camming

Feature	PowerFlex 520 (523)	PowerFlex 525	PowerFlex 527
Permanent-magnet control	No	Yes	Not listed
Software	CCW, Studio 5000	CCW, Studio 5000	Studio 5000 only

Quick selection guide

Application	Suggested model
Basic stand-alone machine, lowest cost, no network or safety needed	PowerFlex 520 (523)
Machine on EtherNet/IP with standard safety and simple positioning	PowerFlex 525
Closed-loop velocity or permanent-magnet motor control	PowerFlex 525
Logix-controlled line with synchronised axes or camming	PowerFlex 527
Safety over the network instead of safety wiring (CIP Safety)	PowerFlex 527
Ring topology (Device Level Ring) with fewer switches	PowerFlex 527

Sources

- PowerFlex 520-Series AC Drives brochure (520-BR001) - literature.rockwellautomation.com
- PowerFlex 527 AC Drive Specifications (520-TD002) - literature.rockwellautomation.com
- PowerFlex 520-Series AC Drive Specifications (520-TD001) - ideadigitalcontent.com copy of the Rockwell data sheet
- Hardware comparison: PowerFlex 523 vs 525 vs 527 - dosupply.com

Compiled on 5 October 2026 from publicly available Rockwell Automation documentation. Figures are for reference only.