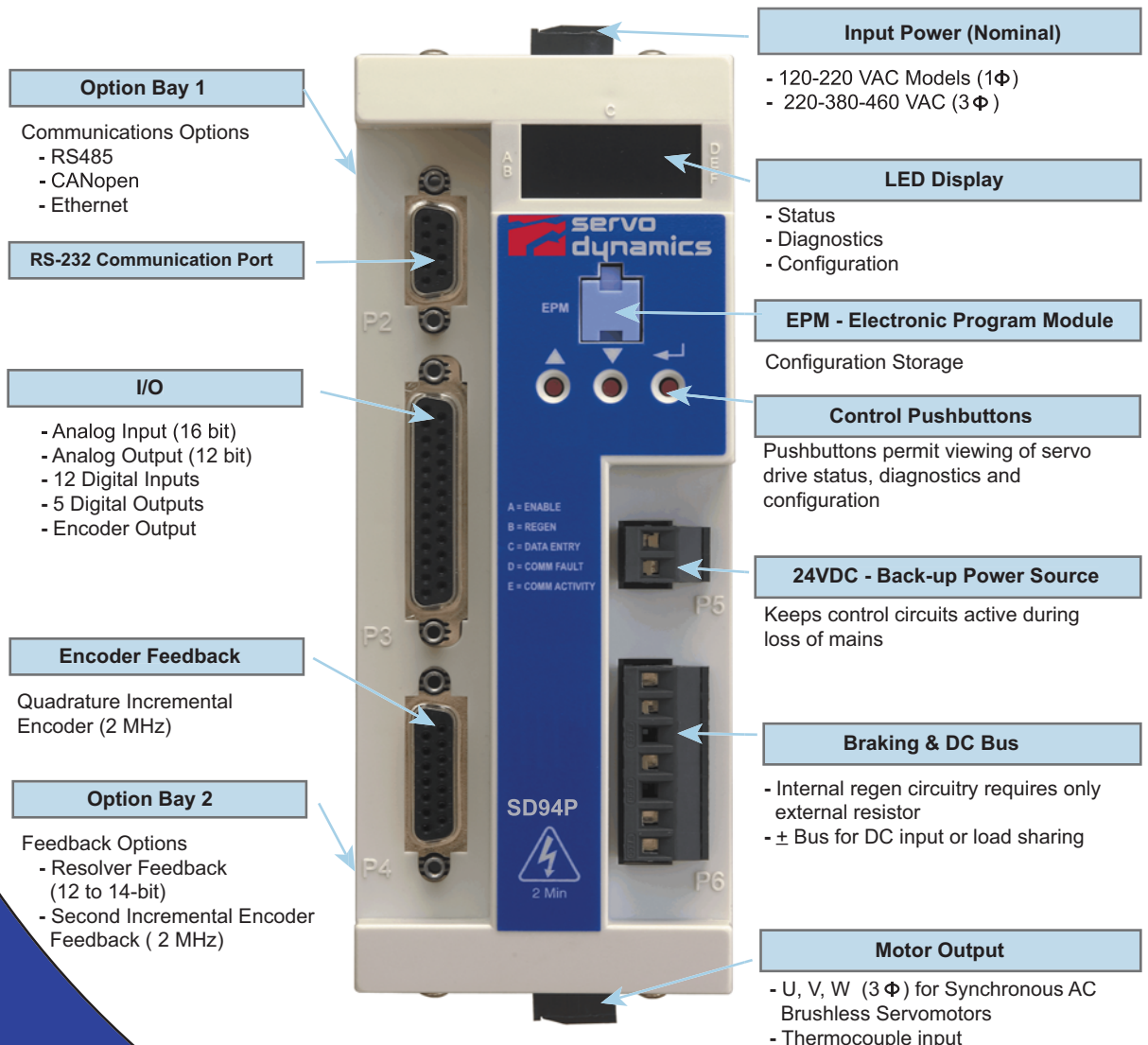# SD94P Servo Drive

Servo Dynamics new cost effective **SD94P Servo Drive Series** is full featured with superior performance and power. The SD94P adds networking, motion profiling and execution. **SimpleMotion** language with Basic-like commands allow the user to program and store motion profiles and multi-axis coordinated moves in the drive to be executed through a network connection or I/O. This compact servo drive operates straight from the AC line, 120/220/380/460 VAC (nominal) and can produce up to 2.3 kW of continuous power. The SD94P uses the latest algorithms for field-oriented commutation, current, velocity and position loop control. The servo drive can be operated in current, velocity or position mode. The user-friendly **MotionView** software configures the servo drive to any servomotor and can tune the velocity or position loop for ultimate performance. The Electronic Program Module is ideal for duplicating axis or field service. All configuration and tuning parameters are stored on this module and can be copied using a simple programming device. The SD94P is available with an optional integrated EMI filter as a cost and space saving feature. The SD94P is UL listed and CE compliant.

Option Bay 1

Communications Options
- RS485
- CANopen
- Ethernet

RS-232 Communication Port

I/O

- Analog Input (16 bit)
- Analog Output (12 bit)
- 12 Digital Inputs
- 5 Digital Outputs
- Encoder Output

Encoder Feedback

Quadrature Incremental Encoder (2 MHz)

Option Bay 2

Feedback Options
- Resolver Feedback (12 to 14-bit)
- Second Incremental Encoder Feedback (2 MHz)

Input Power (Nominal)

- 120-220 VAC Models (1Φ)
- 220-380-460 VAC (3Φ)

LED Display

- Status
- Diagnostics
- Configuration

EPM - Electronic Program Module

Configuration Storage

Control Pushbuttons

Pushbuttons permit viewing of servo drive status, diagnostics and configuration

24VDC - Back-up Power Source

Keeps control circuits active during loss of mains

Braking & DC Bus

- Internal regen circuitry requires only external resistor
- ± Bus for DC input or load sharing

Motor Output

- U, V, W (3Φ) for Synchronous AC Brushless Servomotors
- Thermocouple input

A = ENABLE
B = REGEN
C = DATA ENTRY
D = COMM FAULT
E = COMM ACTIVITY

Models and Ratings:

Input Voltage	Model	Output Current [Amps]		Dimensions [mm]		
		Rated	Max	H	W	D
80-264 VAC 48-62 Hz **3Φ or 1Φ** **120/220/240 (Nominal)**	SD94P020Y2N	2	6	190	69	190
	SD94P040Y2N	4	12	190	69	190
	SD94P080Y2N	8	24	190	95	190
	SD94P100Y2N	10	30	190	115	190
320-528 VAC 48-62 Hz **3Φ** **400/480 (Nominal)**	SD94P020T4N	2	6	190	69	190
	SD94P040T4N	4	12	190	95	190
	SD94P050T4N	5	15	190	115	190

Modes of Operation

SimpleMotion® Language Features:

Language:	Statement-based
Operands:	"Typeless" unified, 64-bit
Execution:	Compiled Java-like byte code
Semantic:	Basic-like
Translation:	Multipass compiler
Arithmetic precision:	64-bit

Programming Tools:

Full-featured IDE (integrated into MotionView® software

* Single-step execution capability
* Breakpoints
* Status and variable WATCH
* On-the-fly Debug Window
* "Real-time" Oscilloscope

Program Execution: 5 separate threads

* Program body
* Motion control
* EVENTs
* Fault monitor
* Communication

Scan rate:

255µS Trappable EVENT (deterministic)
~2µS reaction to registration mark
~1µS per step/instruction (depending on program length)

User Program Memory:

64KB for user compiled program
EPM removable, non-volatile memory module
Nonvolatile Program Variables

Motion:

Up to 64-bit indexing (incremental, absolute, registered, segmented)
32-level motion queue
Linear and S-curve accel and decel

Index Profiles: Trapezoidal, Multi-segment, S-curve, Multi-segment with S-curve

Motion Specific Commands:

Move (Relative and Absolute)
Multi-segment profile, back to back (switchable) execution
Events assignment and handling
Registration
I/O handling
Filter parameters setup
Gearing
Operating mode (Velocity or position)

Non-motion Specific Operator:

Assignment operators
Conditional branching
Logic and arithmetic operators
Bit-wise operators
Looping (repeat)
Program flow control
Subroutines
Network Broadcasting

Serial Communications:

Standard:

RS232 @ 115/38.4 KBPS

Optional:

RS485 @ 115/38.4 KBPS (addressable to 32 devices)
CANopen 250/500/1000 KBPS
Ethernal @ 10/100 MBPS

Windows Software:

Windows 95, 98, NT and XP

Details of Optically Isolated I/O:

12 Programmable Digital Inputs (5/24 VDC, sinking)
2 high-speed **(2µS)** programmable
Master encoder & registration
5 Digital Outputs (5/24 VDC @ 20 mA, sink or source)
1 Dedicated READY
4 Programmable isolated open-collector
1 Analog Input (±10 VDC differential, 16-bit)
1 Analog Output (±10 VDC, 12-bit)
Feedback:
Encoder - 2 MHz
Resolver (option) - 12 to 14-bit resolution

Environment:

Storage Temperature:	-10 to 70°C
Operating Temperature:	0 to 40°C
Humidity:	5-90% non-condensing
Altitude:	1500 m
	(Derate current 1% per 300 m above 1500 m)
Vibration:	10 - 2000 Hz @ 2g