



## World Class Control

### Modes of Operation

- Open Loop Flux Vector, Speed or Torque Control with Auto Tuning
- V/Hz (Constant or Variable)
- Base Frequency Adjustable to Motor Specs
- Enhanced V/Hz with Auto-tuning

### Acceleration/Deceleration Profiles

- Two Independent Accel Ramps
- Two Independent Decel Ramps
- Linear, S-Type
- Auxiliary Ramp(or Coast)-to-Stop

### Fixed Accel Boost for Improved Starting

### 500 Hz Output Frequency

### High Carrier (PWM Sine-Coded) Frequency

- 4, 6, 8, 10 kHz

### Universal Logic Assertion (Selectable)

- Positive or Negative Logic Input
- Digital Reference Available

### Braking Functions

- DC Injection Braking
- Optional Dynamic Braking

### Speed Commands

- Keypad, Potentiometer
- Jog, 8 Preset Speeds
- Floating Point Control
- Sequencer, 16 Segments
- Voltage: Scalable 0 – 10 VDC
- Current: Scalable 4 – 20 mA

### Process Control

- PID Modes: Direct and Reverse Acting
- PID Sleep Mode
- Analog Output (Speed, Load, Torque, kW)
- Network Speed (Baud Rate)
- Terminal and Keypad Status
- Elapsed Run or Power On Time (Hours)

### Status Outputs

- Programmable Form "A" Relay Output
- Programmable Open Collector Output
- Scalable 0-10 VDC / 2-10 VDC Analog Output
- 4-20mA w/500 Ohm Total Impedance

## Environment

### Ambient Temperature

- 10 to 55°C @ 6 kHz
- Derate 2.5% per °C Above 40°C

## Comprehensive Diagnostic Tools

### Real Time Monitoring

- 8 Register Fault History
- Software Version
- Drive Network ID
- DC Bus Voltage (V)
- Motor Voltage (V)
- Output Current (%)
- Motor Current (A)
- Motor Torque (%)
- Power (kW)
- Energy Consumption (kWh)
- Heatsink Temperature (°C)
- 0 – 10 VDC Input (User Defined)
- 4 – 20 mA Input (User Defined)
- PID Feedback (User Defined)

## Vigilant System Protection

### Voltage Monitoring

- Low and High DC Bus V Protection
- Low Line V Compensation

### Current Monitoring

- Motor Overload Protection
- Current Limiting Safeguard
- Ground Fault
- Short Circuit Protection

### Three ReStarts

- Two Flying and One Auto
- User Enabled

### Loss of Follower Management

- Protective Fault
- Go to Preset Speed or Preset Setpoint
- Initiate System Notification

### Over Temperature Protection

## International Voltages

- +10/-15% Tolerance
- 120/240V, 1Ø
- 200/240V, 1 or 3Ø
- 200/240V, 3Ø
- 400/480V, 3Ø
- 480/600V, 3Ø

## Global Standards

- UL EAC
- cUL C-Tick
- CE Low Voltage (EN61800-5-1)
- CE EMC (EN61800-3) with optional EMC filter

## Keypad & Display

### Simple Six Button Programming

- Start
- Stop
- Forward/Reverse
- Scroll Up
- Scroll Down
- Enter/Mode

### Informative LED Display

#### Vivid Illumination

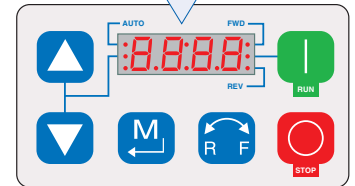
Easily Read from a Distance

#### Five Status LEDs

- Run
- Automatic Speed mode
- Manual Speed Mode
- Forward Rotation
- Reverse Rotation

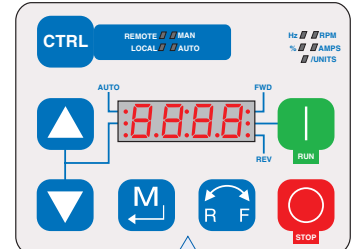
#### Status Display

- Motor Status
- Fault Management
- Operational Information



NEMA 4X (Up to 10 HP) Keypad

NEMA 4X (15-30 HP) Keypad



### Additional CTRL Button

#### Switch between control modes

- Local-Manual
- Remote-Manual
- Local Auto
- Remote Auto

### Additional LED Indicators

#### Define the units being displayed

- Hz
- RPM
- %
- Amps
- /Units

## Control Terminals

- Digital Inputs
  - Dedicated Start/Stop
  - (3) Programmable
- Analog Outputs
  - 0 - 10 VDC
  - 4 - 20 mA
- Digital Outputs
  - Form "A" Relay
  - Open Collector
- Analog Outputs
  - 0 - 10 VDC
  - 2 - 10 VDC

### Power Supplies

- 10 VDC Potentiometer Ref
- 12 VDC, 20 mA DI Ref or 0VDC Com
- 12 VDC, 50 mA Supply

### Common

### Additional Control Terminals (15 HP & up)

- 1 Programmable Digital Input
- 1 Common
- RS-485 Modbus Communications

- TXA
- TXB

## Ratings

### 120/240V\* - 1Ø Input (3Ø Output)

Power		Output Current	NEMA4X Indoor [C] / Outdoor [E]		NEMA4X w/Disconnect Indoor	
Hp	kW	I <sub>n</sub> [A]	Model	Size	Model	Size
0.5	0.37	2.4	ESV371N01SX[C] or [E]	R1	ESV371N01SMC	AA1
1	0.75	4.2	ESV751N01SX[C] or [E]	R1	ESV751N01SMC	AA1
1.5	1.1	6.0	ESV112N01SX[C] or [E]	R2	ESV112N01SMC	AA2

\*120/240V models provide 0-230V output even with 120V input applied.

### 200/240V - 1 or 3Ø Input (3Ø Output)

Power		Output Current	NEMA4X Indoor [C] / Outdoor [E]*		NEMA4X w/Disconnect Indoor**	
Hp	kW	I <sub>n</sub> [A]	Model	Size	Model	Size
0.5	0.37	2.4	ESV371N02YX[C] or [E]	R1	ESV371N02YMC	AA1
1	0.75	4.2	ESV751N02YX[C] or [E]	R1	ESV751N02YMC	AA1
1.5	1.1	6.0	ESV112N02YX[C] or [E]	R2	ESV112N02YMC	AA2
2	1.5	7.0	ESV152N02YX[C] or [E]	R2	ESV152N02YMC	AA2
3	2.2	9.6	ESV222N02YX[C] or [E]	S1	ESV222N02YMC	AD1

\*Filter versions are also available in 1-phase: Replace the "YX" in the Model Part Number with an "SF".  
\*\*Filter versions are also available in 1-phase: Replace the "YM" in the Model Part Number with an "SL".

### 200/240V - 3Ø Input (3Ø Output)

Power		Output Current	NEMA4X Indoor [C or D] / Outdoor [E or F]		NEMA4X w/Disconnect Indoor	
Hp	kW	I <sub>n</sub> [A]	Model	Size	Model	Size
5	4	16.5	ESV402N02TX[C] or [E]	V1	ESV402N02TMC	AC1
7.5	5.5	23	ESV552N02TX[D] or [F]	T1	ESV552N02TMD	AB1
10	7.5	29	ESV752N02TX[D] or [F]	T1	ESV752N02TMD	AB1
15	11	42	ESV113N02TX[D] or [F]	W1	ESV113N02TMD	AF1
20	15	54	ESV153N02TX[D] or [F]	W1	ESV153N02TMD	AF1

### 400/480V - 3Ø Input (3Ø Output)

Power		Output Current	NEMA4X Indoor [C or D] / Outdoor [E or F]*		NEMA4X w/Disconnect Indoor**	
Hp	kW	I <sub>n</sub> [A]	Model	Size	Model	Size
0.5	0.37	1.3/1.1	ESV371N04TX[C] or [E]	R1	ESV371N04TMC	AA1
1	0.75	2.4/2.1	ESV751N04TX[C] or [E]	R1	ESV751N04TMC	AA1
1.5	1.1	3.5/3.0	ESV112N04TX[C] or [E]	R2	ESV112N04TMC	AA2
2	1.5	4.0/3.5	ESV152N04TX[C] or [E]	R2	ESV152N04TMC	AA2
3	2.2	5.5/4.8	ESV222N04TX[C] or [E]	R2	ESV222N04TMC	AA2
4	3.0	7.6/6.3	ESV302N04TX[C] or [E]	R2	ESV302N04TMC	AA2
5	4	9.4/8.2	ESV402N04TX[C] or [E]	V1	ESV402N04TMC	AC1
7.5	5.5	12.6/11	ESV552N04TX[C] or [E]	V1	ESV552N04TMC	AC1
10	7.5	16.1/14	ESV752N04TX[D] or [F]	T1	ESV752N04TMD	AB1
15	11	24/21	ESV113N04TX[D] or [F]	W1	ESV113N04TMD	AE1
20	15	31/27	ESV153N04TX[D] or [F]	W1	ESV153N04TMD	AE1
25	18.5	39/34	ESV183N04TX[D] or [F]	W1	ESV183N04TMD	AF1
30	22	46/40	ESV223N04TX[D] or [F]	X1	ESV223N04TMD	AF1

\*Filter versions are also available in 1-phase: Replace the "X" in the Model Part Number with an "F".  
\*\*Filter versions are also available in 1-phase: Replace the "M" in the Model Part Number with an "L".

### 600V - 3Ø Input (3Ø Output)

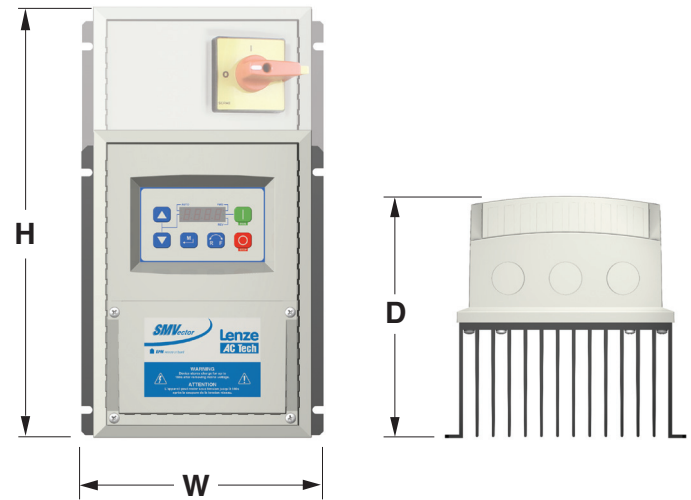
Power		Output Current	NEMA4X Indoor [C or D] / Outdoor [E or F]		NEMA4X w/Disconnect Indoor	
Hp	kW	I <sub>n</sub> [A]	Model	Size	Model	Size
1	0.75	1.7	ESV751N06TX[C] or [E]	R1	ESV751N06TMC	AA1
2	1.5	2.7	ESV152N06TX[C] or [E]	R2	ESV152N06TMC	AA2
3	2.2	3.9	ESV222N06TX[C] or [E]	R2	ESV222N06TMC	AA2
5	4	6.1	ESV402N06TX[C] or [E]	V1	ESV402N06TMC	AC1
7.5	5.5	9	ESV552N06TX[C] or [E]	V1	ESV552N06TMC	AC1
10	7.5	11	ESV752N06TX[D] or [F]	T1	ESV752N06TMD	AB1
15	11	17	ESV113N06TX[D] or [F]	W1	ESV113N06TMD	AE1
20	15	22	ESV153N06TX[D] or [F]	W1	ESV153N06TMD	AE1
25	18.5	27	ESV183N06TX[D] or [F]	W1	ESV183N06TMD	AF1
30	22	32	ESV223N06TX[D] or [F]	X1	ESV223N06TMD	AF1

## Dimensions

### Dimensions

	H		W		D	
	in.	mm	in.	mm	in.	mm
R1	8.00	203	6.30	160	4.47	114
R2	8.00	203	6.30	160	6.31	160
S1	8.00	203	7.10	181	6.77	172
T1	10.00	254	8.10	204	8.00	203
V1	10.00	254	9.00	228	8.00	203
W1	14.40	368	9.40	240	9.45	241
X1	18.50	470	9.40	240	9.45	241
AA1 <sup>(4)</sup>	10.99	279	6.30	160	5.33	136
AA2 <sup>(4)</sup>	10.99	279	6.30	160	7.17	182
AB1 <sup>(4)</sup>	13.00	330	8.10	204	8.86	225
AC1 <sup>(4)</sup>	13.00	330	9.00	228	8.90	226
AD1 <sup>(4)</sup>	10.99	279	7.10	181	7.63	194
AE1 <sup>(4)</sup>	14.40	368	9.40	240	10.18	260
AF1 <sup>(4)</sup>	18.50	470	9.40	240	10.18	260

(4) The "D" (depth) dimension includes the disconnect switch.



## Options

### Communication Modules (Only one Communication Module can be installed at a time.)

Item Number	Item Description
ESVZACO	CANopen Communications Interface Module
ESVZAR0	RS-485/Modbus Communications Interface Module
ESVZAP0	PROFIBUS DP Communications Interface Module
ESVZAD0	DeviceNet Communications Interface Module
ESVZAE0	EtherNet/IP Communications Interface Module

### Keypad

ESVZXK1	Remote Keypad w/ drive interface module & cable up to 10HP (7.5 kW)
ESVZXH0	Remote Keypad w/ cable 15HP (11kW) and up

### Additional I/O (cannot be used with Communication Modules or Remote Keypad ESVZXK1)

ESVZAL0	Additional Form C Relay Output Module
ESVZAL1	Additional I/O Module w/ 1 Form C Relay Output and 2 Digital Inputs

### Potentiometer (Cannot be used with Communication Module, Remote Keypad or Additional I/O.)

ESVZXM1	NEMA 4X terminal cover with integral speed potentiometer (W = 6.3 or 7.1 in)
ESVZXM2	NEMA 4X terminal cover with integral speed potentiometer (W = 9.0 or 8.1 in)
ESVZXM3	NEMA 4X terminal cover with integral speed potentiometer (W = 9.4 in)

### Dynamic Braking Modules with Built-in Resistors

HP	(kW)	208 to 230 V Part Number	Motor Voltage 400 to 480 V Part Number	480 to 600 V Part Number
0.33 - 0.5	(0.25 - 0.37)	EZXDB3712A1	EZXDB3714A1	N/A
1 - 1.5	(0.75 - 1.1)	EZXDB1122A1	EZXDB1124A1	EZXDB1126A1
2 - 3	(1.5 - 2.2)	EZXDB2222A1	EZXDB2224A1	EZXDB2226A1
5	(4)	EZXDB4022A1	EZXDB4024A1	EZXDB4026A1
7.5	(5.5)	EZXDB5522A1	EZXDB5524A1	EZXDB5526A1
10	(7.5)	EZXDB7522A1	EZXDB7524A1	EZXDB7526A1

### Dynamic Braking Modules without Built-in Resistors

15 - 20	(11 - 15)	EZXDC1532A1	N/A	N/A
15 - 30	(11 - 22)	N/A	EZXDC2234A1	EZXDC2236A1

### Open Dynamic Braking Resistors with mounting brackets

15 - 20	(11 - 15)	841-009	841-009	841-010
25 - 30	(18.5 - 22)	N/A	841-011	841-012