



## World Class Control

### Modes of Operation

- Open Loop Flux Vector, Speed or Torque Control with/without 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
- Flux Braking w/ Adjustable Flux Level & Decel Time

### 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 w/ Adjustable Recovery Threshold
- 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
- 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

### Four ReStarts

- Three 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 GOST
- 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

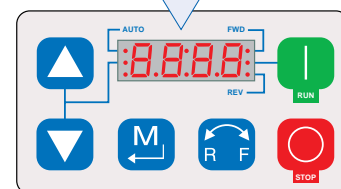
Easily Read from a Distance

#### Five Status LEDs

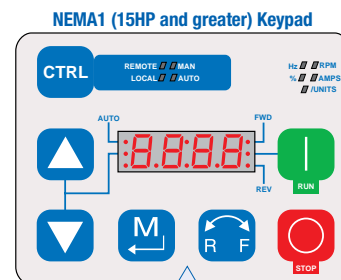
- Run
- Automatic Speed mode
- Manual Speed Mode
- Forward Rotation
- Reverse Rotation

#### Status Display

- Motor Status
- Fault Management
- Operational Information



NEMA1 (Up to 10HP) Keypad



NEMA1 (15HP and greater) Keypad

### Additional CTRL Button

#### Switch between control modes

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

### Additional LED Indicators

#### Define the units being displayed

- Hz
- RPM
- %
- Amps
- /Units

## Control Terminals

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

### 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     | NEMA1        |      |
|-------|------|--------------------|--------------|------|
| Hp    | kW   | I <sub>n</sub> [A] | Model        | Size |
| 0.33  | 0.25 | 1.7                | ESV251N01SXB | G1   |
| 0.5   | 0.37 | 2.4                | ESV371N01SXB | G1   |
| 1     | 0.75 | 4.2                | ESV751N01SXB | G1   |
| 1.5   | 1.1  | 6.0                | ESV112N01SXB | G2   |

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

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

| Power |      | Output Current     | NEMA1           |      |
|-------|------|--------------------|-----------------|------|
| Hp    | kW   | I <sub>n</sub> [A] | Model           | Size |
| 0.33  | 0.25 | 1.7                | ESV251N02SXB*** | G1   |
| 0.5   | 0.37 | 2.4                | ESV371N02YXB    | G1   |
| 1     | 0.75 | 4.2                | ESV751N02YXB    | G1   |
| 1.5   | 1.1  | 6.0                | ESV112N02YXB    | G2   |
| 2     | 1.5  | 7.0                | ESV152N02YXB    | G2   |
| 3     | 2.2  | 9.6                | ESV222N02YXB    | G2   |

\*\*\*Model ESV251N02SXB is single-phase input only.

### 200/240V - 3Ø Input (3Ø Output)

| Power |     | Output Current     | NEMA1        |      |
|-------|-----|--------------------|--------------|------|
| Hp    | kW  | I <sub>n</sub> [A] | Model        | Size |
| 1.5   | 1.1 | 6.0                | ESV112N02TXB | G2   |
| 2     | 1.5 | 7.0                | ESV152N02TXB | G2   |
| 3     | 2.2 | 9.6                | ESV222N02TXB | G2   |
| 5     | 4   | 16.5               | ESV402N02TXB | G3   |
| 7.5   | 5.5 | 23                 | ESV552N02TXB | H1   |
| 10    | 7.5 | 29                 | ESV752N02TXB | H1   |
| 15    | 11  | 42                 | ESV113N02TXB | J1   |
| 20    | 15  | 54                 | ESV153N02TXB | J1   |

### 400/480V - 3Ø Input (3Ø Output)

| Power |      | Output Current     | NEMA1        |      |
|-------|------|--------------------|--------------|------|
| Hp    | kW   | I <sub>n</sub> [A] | Model        | Size |
| 0.5   | 0.37 | 1.3/1.1            | ESV371N04TXB | G1   |
| 1     | 0.75 | 2.4/2.1            | ESV751N04TXB | G1   |
| 1.5   | 1.1  | 3.5/3.0            | ESV112N04TXB | G2   |
| 2     | 1.5  | 4.0/3.5            | ESV152N04TXB | G2   |
| 3     | 2.2  | 5.5/4.8            | ESV222N04TXB | G2   |
| 5     | 4    | 9.4/8.2            | ESV402N04TXB | G3   |
| 7.5   | 5.5  | 12.6/11            | ESV552N04TXB | H1   |
| 10    | 7.5  | 16.1/14            | ESV752N04TXB | H1   |
| 15    | 11   | 24/21              | ESV113N04TXB | J1   |
| 20    | 15   | 31/27              | ESV153N04TXB | J1   |
| 25    | 18.5 | 39/34              | ESV183N04TXB | J1   |
| 30    | 22   | 46/40              | ESV223N04TXB | J1   |
| 40    | 30   | 60/52              | ESV303N04TXB | K1   |
| 50    | 37.5 | 75/65              | ESV373N04TXB | K2   |
| 60    | 45   | 88/77              | ESV453N04TXB | K3   |

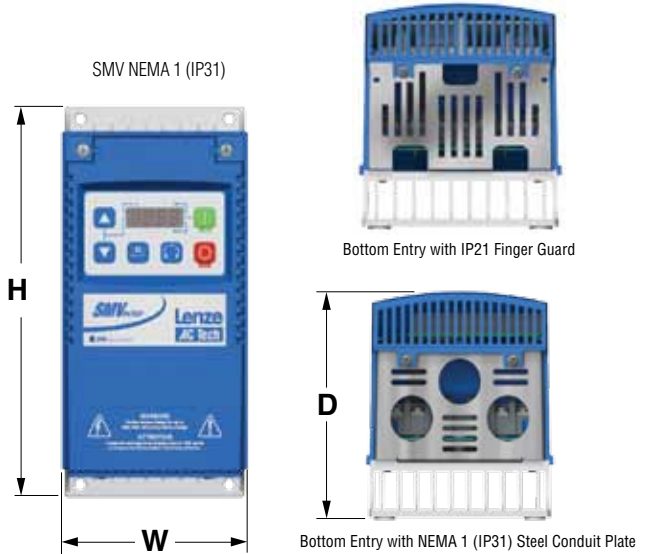
### 600V - 3Ø Input (3Ø Output)

| Power |      | Output Current     | NEMA1        |      |
|-------|------|--------------------|--------------|------|
| Hp    | kW   | I <sub>n</sub> [A] | Model        | Size |
| 1     | 0.75 | 1.7                | ESV751N06TXB | G1   |
| 2     | 1.5  | 2.7                | ESV152N06TXB | G2   |
| 3     | 2.2  | 3.9                | ESV222N06TXB | G2   |
| 5     | 4    | 6.1                | ESV402N06TXB | G3   |
| 7.5   | 5.5  | 9                  | ESV552N06TXB | H1   |
| 10    | 7.5  | 11                 | ESV752N06TXB | H1   |
| 15    | 11   | 17                 | ESV113N06TXB | J1   |
| 20    | 15   | 22                 | ESV153N06TXB | J1   |
| 25    | 18.5 | 27                 | ESV183N06TXB | J1   |
| 30    | 22   | 32                 | ESV223N06TXB | J1   |
| 40    | 30   | 41                 | ESV303N06TXB | K1   |
| 50    | 37.5 | 52                 | ESV373N06TXB | K2   |
| 60    | 45   | 62                 | ESV453N06TXB | K3   |

## Dimensions

### Dimensions

|           | H     |     | W    |     | D     |     |
|-----------|-------|-----|------|-----|-------|-----|
|           | in.   | mm  | in.  | mm  | in.   | mm  |
| <b>G1</b> | 7.50  | 190 | 3.90 | 99  | 4.40  | 111 |
| <b>G2</b> | 7.60  | 191 | 3.90 | 99  | 5.50  | 138 |
| <b>G3</b> | 7.60  | 191 | 3.90 | 99  | 5.80  | 147 |
| <b>H1</b> | 9.90  | 250 | 5.20 | 130 | 6.30  | 160 |
| <b>J1</b> | 12.50 | 318 | 7.00 | 176 | 8.10  | 205 |
| <b>K1</b> | 14.19 | 360 | 8.72 | 221 | 10.07 | 256 |
| <b>K2</b> | 17.19 | 436 | 8.72 | 221 | 10.07 | 256 |
| <b>K3</b> | 20.19 | 513 | 8.72 | 221 | 10.07 | 256 |



## Options

### Communication Modules \*

| Item Number | Item Description                              |
|-------------|---|
| ESVZAC0     | 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   |

\* Only one Communication module can be installed and used at a time.

### Keypad

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

### Additional I/O \*\*

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

\*\* Additional I/O modules cannot be used with Communication modules or Remote keypad ESVZXK1.

### Dynamic Braking Modules with Built-in Resistors

| HP         | (kW)         | Motor Voltage            |                          |                          |
|------------|--------------|--------------------------|--------------------------|--------------------------|
|            |              | 208 to 230 V Part Number | 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 |