

SMVector NEMA1 | Standard Duty Inverter

Lenze
AC Tech



ROHS
COMPLIANT

World Class Control

Modes of Operation

- Open Loop Flux Vector, Speed or Torque Control 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 or 12 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
- 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

Run Screen Display

- Multiplier: 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
- Parameters can be reset for 50 or 60 Hz Motors

Current Monitoring

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

Three ReStarts

- Two Flying and One Auto
- Password Protected

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

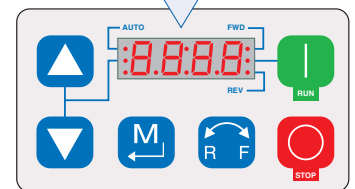
Easily Read from a Distance

Five Status LEDs

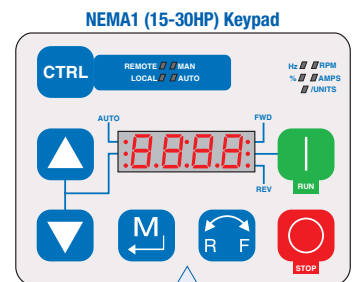
- Run
- Automatic Speed mode
- Manual Speed Mode
- Forward Rotation
- Reverse Rotation

Status Display

- Motor Status
- Fault Management
- Operational Information



NEMA1 (Up to 10HP) Keypad



NEMA1 (15-30HP) 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
- Analog Inputs
- 0 - 10 VDC
- 4 - 20 mA
- Power Supplies
- 10 VDC Potentiometer Ref
- 12 VDC, 20 mA DI Ref or 0VDC Com
- 12 VDC, 50 mA Supply
- Common
- Digital Outputs
- Form "A" Relay
- Open Collector
- Analog Outputs
- 0 - 10 VDC
- 2 - 10 VDC

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 _o [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

*Output voltage will be twice line voltage when connected to a 120V source.
Output voltage will not exceed line voltage when connected to a 240V source.

200/240V - 1 or 3Ø Input (3Ø Output)

Power		Output Current	NEMA1	
Hp	kW	I _o [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 _o [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 _o [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

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

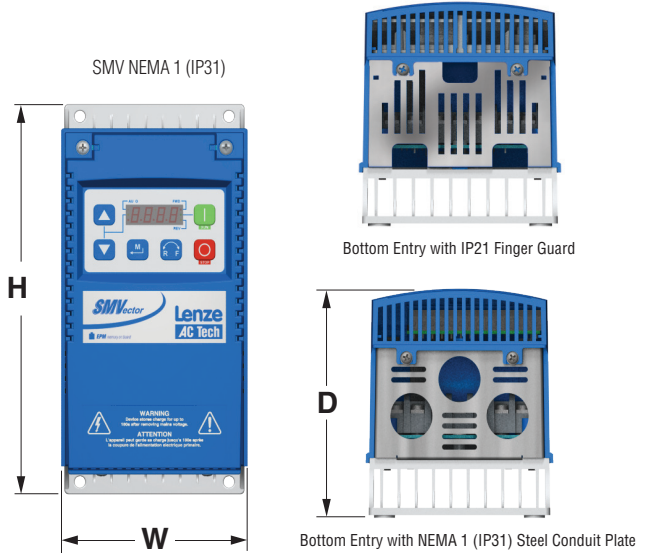
600V - 3Ø Input (3Ø Output)

Power		Output Current	NEMA1	
Hp	kW	I _o [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

Dimensions

Dimensions

	H		W		D	
	in.	mm	in.	mm	in.	mm
G1	7.50	190	3.90	99	4.40	111
G2	7.60	191	3.90	99	5.50	138
G3	7.60	191	3.90	99	5.80	147
H1	9.90	250	5.20	130	6.30	160
J1	12.50	318	7.00	176	8.10	205



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

ESVZK1	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 ESVZK1.

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)	EZXDB222A1	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