SMVector NEMA1 | Standard Duty Inverter

Lenze

RoHS COMPLIANT

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 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

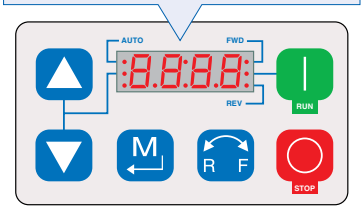
Informative LED Display

Vivid Illumination

Easily Read from a Distance

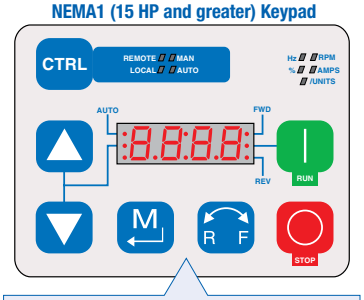
Five Status LEDs
- Run
- Automatic Speed mode
- Manual Speed Mode
- Forward Rotation
- Reverse Rotation

Status Display
- Motor Status
- Fault Management
- Operational Information



NEMA1 (Up to 10 HP) Keypad

NEMA1 (15 HP 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

Common

Additional Control Terminals (15 Hp & up)

1 Programmable Digital Input

1 Common

RS-485 Modbus Communications
- TXA
- TXB

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Ratings

120/240V* - 1Ø Input (3Ø Output)

Power		Output Current	NEMA1	
Hp	kW	I_N [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_N [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_N [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_N [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_N [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

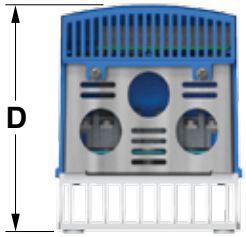
Dimensions

Dimensions

	H		W		D	
	in.	*mm*	*in.*	*mm*	*in.*	*mm*
G1	7.48	190	3.90	99	4.35	111
G2	7.52	191	3.90	99	5.45	138
G3	7.52	191	3.90	99	5.80	147
H1	9.85	250	5.12	130	6.30	160
J1	12.50	318	6.92	176	8.09	205
K1	14.19	360	8.72	221	10.07	256
K2	17.19	436	8.72	221	10.07	256
K3	20.19	513	8.72	221	10.07	256

SMV NEMA 1 (IP31)

Bottom Entry with IP21 Finger Guard



Bottom Entry with NEMA 1 (IP31) Steel Conduit Plate

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 (7.5 kW)
ESVZXH0	Remote Keypad w/ cable 15HP (11 kW) 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

		Motor Voltage		
HP	(kW)	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