SMVector Drive

Flexible, simple, economical

SMVector
NOW AVAILABLE WITH
WASHDOWN ENCLOSURE AND
MULTIPLE COMMUNICATION
OPTIONS!

SMV NEMA 4X (IP65)

SMV NEMA 1 (IP31)

Lenze
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SMVector | Our promise

Commitment to Price Leadership

Price leadership is serious business. It takes continuous life cycle management to make price leadership a sustainable strategy. We are always investigating techniques to improve efficiency and take advantage of the latest microprocessor and power module technology. When we achieve efficiency gains or material cost reductions, we pass those savings on to our customers. This simple philosophy has permitted us to build and maintain a very loyal base of customers.

Commitment to Quality

Design quality is meticulously managed throughout our product's life cycle. Our design engineers are continuously monitoring new technology trends that increase product performance and component reliability. We never stop thinking about process improvements through automation. In fact, we have invested millions in automating our new state-of-the-art manufacturing facility. When you open the box you will immediately see and feel the attention to detail that goes into producing the SMVector.

Commitment to Innovation

We pride ourselves on delivering products to the market that are designed to meet specific customer needs. Our portfolio of innovative products is broad and covers very simple variable speed applications up through complex motion control. Each product, including the SMVector, is positioned so our customers pay only for the level of technology necessary for their application.

Commitment to Simplicity

One of the cornerstones of our design philosophy is to make our products simple to use. Technology only benefits the user if it can be easily understood and applied. The SMVector's intuitive display and EPM technology dramatically simplifies installation, commissioning and operation for our customers.

Commitment to Performance

The SMVector is in a class by itself when it comes to performance. At the heart of the SMV are sophisticated vector algorithms that achieve new heights in torque production and speed control. This technology breakthrough allows our customers to cover a full range of applications from simple speed control through advanced torque and process control with the same product.

Our Promise

At Lenze - AC Tech it is not good enough to deliver part of a promise. Our products deliver the entire package; Price Leadership, Quality, Innovation, Simplicity and Performance.

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SMVector | Features and Benefits:

The SMVector continues our price leadership tradition in the highly competitive AC drive market. Its performance and flexibility make it an attractive solution for a broad range of applications including:

- Food processing machinery
- Packaging machinery
- Material handling/conveying systems
- HVAC systems

The SMVector makes good its promise of price leadership in delivering unparalleled performance and simplicity. The SMVector is the right choice when you need it all – performance, power, packaging and intuitive programming.

SMV NEMA 4X (IP65)

SMV NEMA 1 (IP31)

Superior Performance

- Modes of Operation:
  - V/Hz (Constant and Variable)
  - Enhanced V/Hz (Constant and Variable)
  - Vector Speed Control
  - Vector Torque Control
- Dynamic Torque Response
- Sophisticated Auto-tuning (Motor Calibration)
- Impressive Low Speed Operation

Flexible Power Ranges

- International Voltages:
  - 120/240V, 1Ø (up to 1 Hp)
  - 200/240V, 1/3Ø (up to 3 Hp)
  - 200/240V, 3Ø (up to 20 Hp)
  - 400/480V, 3Ø (up to 25 Hp)
  - 480/600V, 3Ø (up to 25 Hp)

Industrial Grade Packaging

- NEMA Type 1 (IP31) Enclosure
- NEMA 4X (IP65)
- NEMA 12 (IP54)

Simplicity

- Intuitive User Interface
- Electronic Memory Module (EPM)

Electronic Programming Module (EPM)

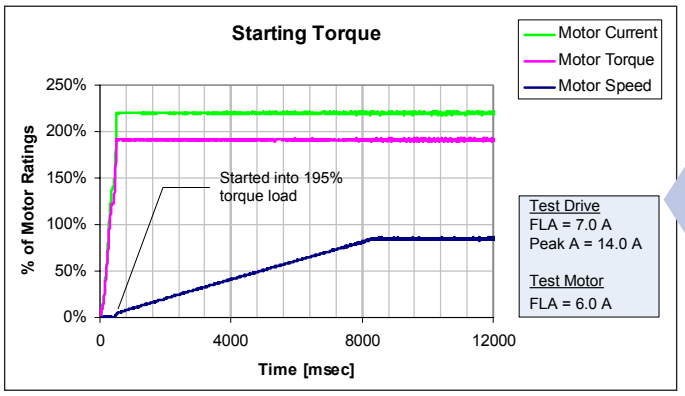
Program the SMVector quickly and easily using the electronic programming module (EPM). The EPM stores the drive's parameter configuration and simplifies initial setup:

- Three ways to program the EPM
  - Use the intuitive SMVector integrated keypad
  - Program in a Microsoft Windows™ environment with Techlink
  - Or with the lightweight portable EPM programmer. The crystal clear 16-character LCD display makes programming multiple drives a snap.
- The EPM saves time and money. It's as easy as 1, 2, 3…
  1. Create your parameter profile and archive to the EPM programmer, a master EPM or your PC.
  2. Insert the EPM into the programmer and copy parameters in a matter of seconds!
  3. Plug the EPM into the drive and it is fully programmed and ready to go.

  Imagine programming 20 drives in less than one minute.
- Improve efficiency. Program the drive anytime and anywhere it makes sense during your manufacturing or commissioning process. You can even plug in a fully programmed EPM before connecting the drive to power. Now the drive is ready and waiting for power to be connected.
- Safeguard your configuration. When you program the EPM your parameter settings are automatically archived. This truly unique feature allows the SMVector to be reset to factory default settings or to customer settings.

The EPM. Another example of the innovative thinking that separates Lenze-AC Tech from its competition.

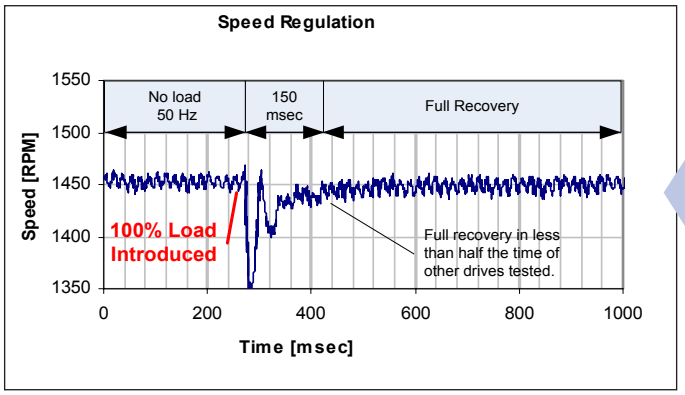
SMVector | Performance



Exceptional Starting Torque

Overpower demanding applications

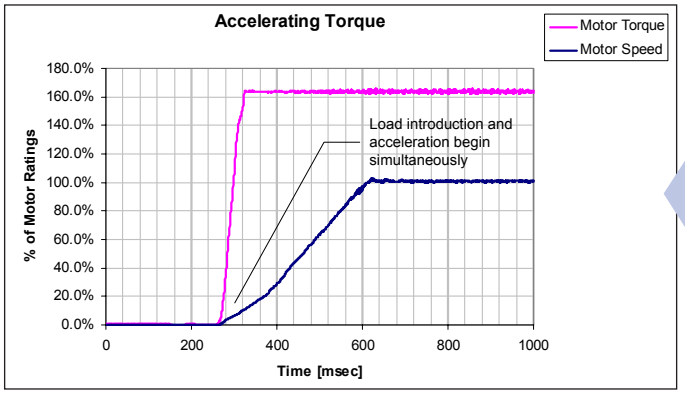
The SMVector is peerless in controlling the motor's ability to convert current into torque. In this example, the SMVector is started into a stiff 195% torque load. Not only does the motor start the load, but it also delivers a full 195% torque while accelerating to 50 Hz in 8 seconds.



Dynamic Speed Regulation

Recovery from 100% shock load in 0.15 seconds

Shock loads are no match for the SMVector. Here an instantaneous 100% load is dealt with in a mere 0.15 seconds. Remarkably, this level of speed regulation is achieved open loop without the benefit of a feedback device.



Quick Acceleration

0 to 100 in 0.33 seconds!

Motors controlled by the SMVector benefit from a sophisticated motor control algorithm that drives motor performance to maximum levels. In this application the the motor is able to drive a 165% torque load while accelerating from 0 to 100% speed in an impressive 0.33 seconds.

The SMV Thrives in Harsh Environments

Plastic Housing/Black Anodized Heatsink
Light weight and corrosion resistant

Totally Enclosed Non-Ventilating Housing

Compact Enclosures
Optimizes precious panel space

SMV NEMA 4X (IP65)

High Pressure Washdown Version
Can be ordered without keypad and display.

Optional Integrated EMC Filters
Meets CE regulations

No Cooling Fans on NEMA 4X (IP65) Models
Gives greater reliability in wet environments

SMVector | Specifications

World Class Control

Modes of Operation
- Open Loop Flux Vector
  Speed or Torque Control
- V/Hz (Constant or Variable)
- Enhanced V/Hz with Auto-tuning

Acceleration/Deceleration Profiles
- ▸ Two Independent Accel Ramps
- ▸ Two Independent Decel Ramps
- ▸ Linear
- ▸ S-Type
- ▸ Auxiliary Ramp-to-Stop

Output Frequency
- ▸ 500 Hz Standard
- ▸ 1,000 Hz Optional

Switching Frequency
- ▸ 4, 6, 8, 10, 12 or 16 kHz

Universal Logic Assertion (Selectable)
- ▸ Positive Logic Input
- ▸ Negative Logic Input

Braking Functions
- ▸ DC Injection Braking
- ▸ Optional Regenerative Braking

Speed Commands
- ▸ Keypad
- ▸ Jog
- ▸ Floating Point Control
- ▸ Voltage: Scalable 0 –10 VDC
- ▸ Current: Scalable 4 – 20 mA
- ▸ Potentiometer
- ▸ 8 Preset Speeds

Process Control
- ▸ PID Modes: Direct and Reverse Acting
- ▸ PID Sleep Mode

Vigilant System Protection

Voltage Monitoring
- ▸ Low DC Bus V Protection
- ▸ High DC Bus V Protection
- ▸ Low Line V Compensation

Current Monitoring
- ▸ Motor Overload Protection
- ▸ Current Limiting Safeguard
- ▸ Phase Loss Protection
- ▸ Ground Fault
- ▸ Short Circuit Protection

Loss of Follower Management
- ▸ Protective Fault
- ▸ Go to Preset Speed or Preset Setpoint
- ▸ Initiate System Notification

Over Temperature Protection

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)
- ▸ Analog Output (Speed, Load, Torque, kW)
- ▸ Network Speed (Baud Rate)
- ▸ Terminal Status
- ▸ Keypad Status
- ▸ Elapsed Run Time (Hours)
- ▸ Elapsed Power on Time (Hours)

Rugged Environmental Capabilities

NEMA Type 1 (IP31)
NEMA Type 4X (IP65)
NEMA Type 12 (IP54)
Ambient Temperature
- ▸ -10 to 55°C @ 6 kHz
- ▸ Derate 2.5% per °C Above 40°C

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 (North America)
cUL (Canada)
CE Low Voltage Directive (EN61800-5-1) (Europe)
CE EMC Directive (EN61800-3) with Optional EMC filter
GOST (Russia/Ukraine)
C-Tick (Australia/New Zealand)

Simple Six Button Programming

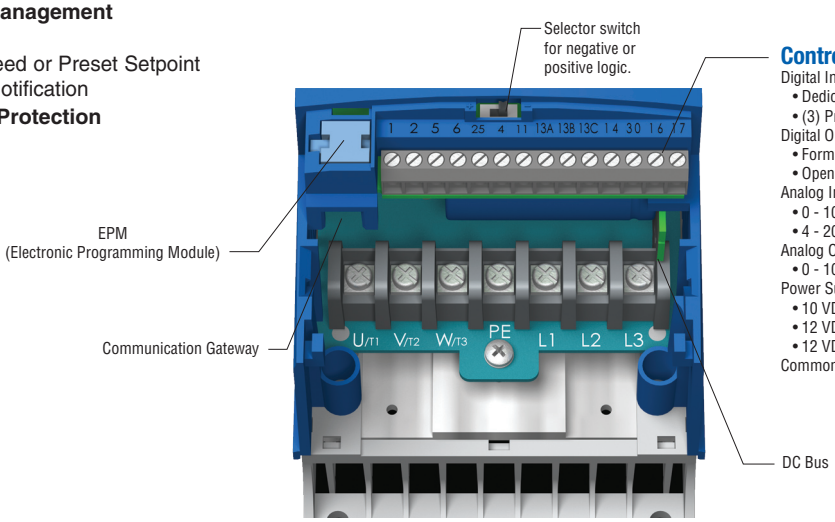
Start
Stop
Forward/Reverse
Scroll Up
Scroll Down
Enter/Mode

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



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

Power Supplies
- 10 VDC Potentiometer Ref
- 12 VDC, 20 mA Digital Input Ref or 0VDC Common
- 12 VDC, 50 mA Supply

Common

DC Bus

Removable terminal cover and steel conduit plate (not shown).
Easy access for control & power wiring.
An extra IP21 finger guard ships with every drive.

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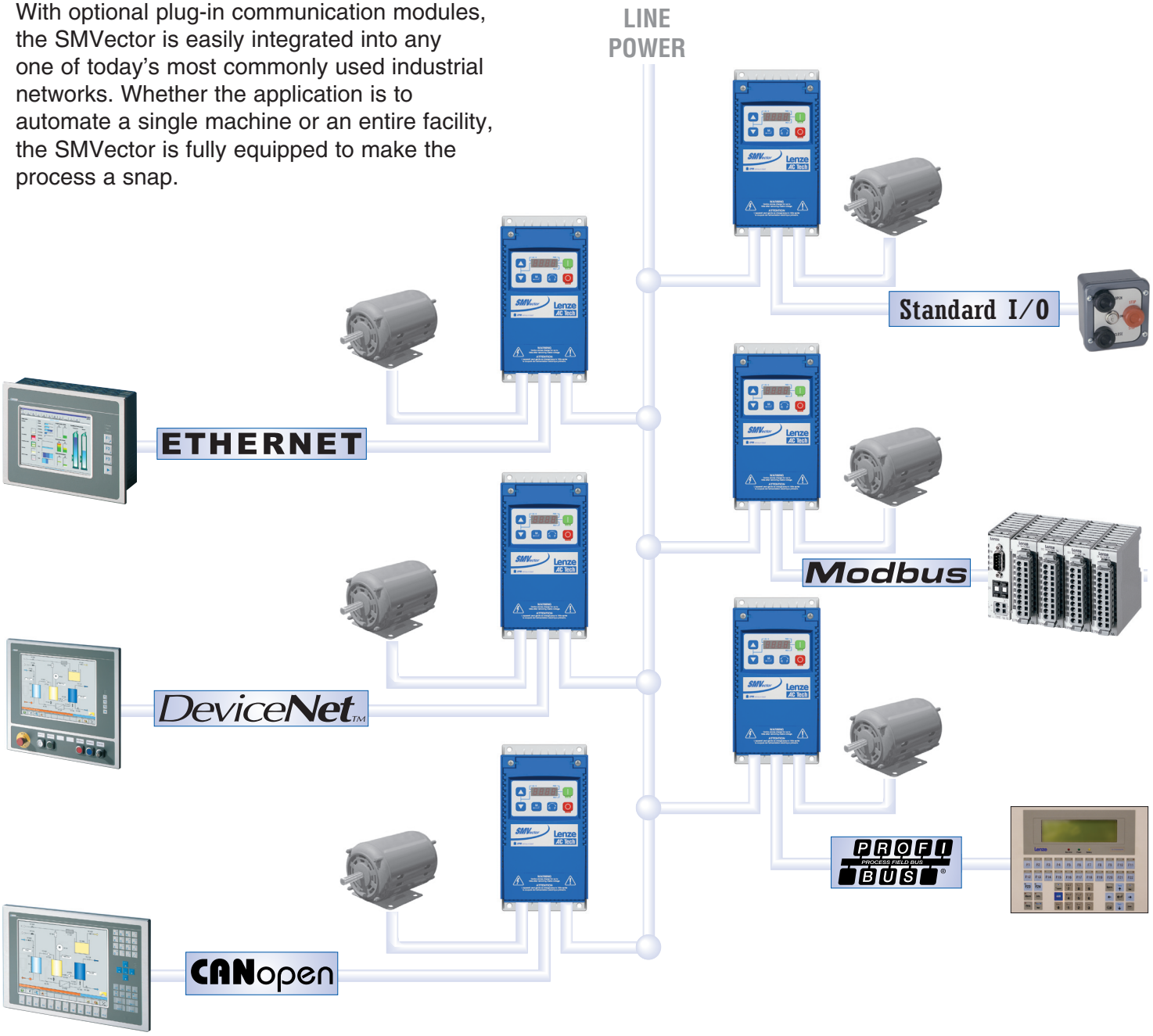
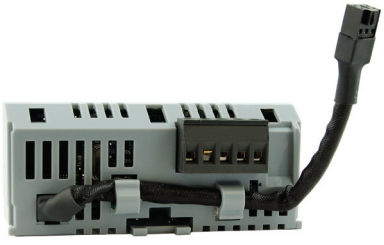
RoHS COMPLIANT

SMVector | Connectivity

With optional plug-in communication modules, the SMVector is easily integrated into any one of today's most commonly used industrial networks. Whether the application is to automate a single machine or an entire facility, the SMVector is fully equipped to make the process a snap.



NOTE: Communication options are available in NEMA 1 (IP31), NEMA 4X (IP65) and NEMA 12 (IP54) models



Communication Module

Setting up a drive in a network has never been so simple. Order the SMVector factory direct with the communication module preinstalled. Or if the SMVector is already installed it can be easily upgraded in the field. Simply snap the communication module into the terminal cover and the drive is ready to connect to the network.

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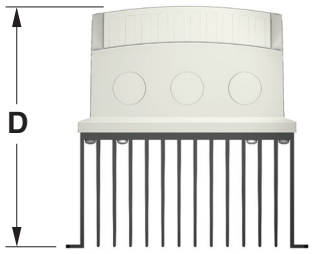
SMVector | Ratings & Dimensions

SMV NEMA 4X (IP65)



* NOTE: For complete part number, replace "*" with B, C, or D.

B = NEMA 1 (IP31)
C = NEMA 4X (IP65)
D = NEMA 12 (IP54)

120/240V - 1Ø Input (3Ø Output)

Model Number	Output Current	Power		Size		
				NEMA 1	NEMA 4X	NEMA 12
	I_N [A]	Hp	kW	IP31	IP65	IP54
ESV251N01SX*	1.7	0.33	0.25	G1		
ESV371N01SX*	2.4	0.5	0.37	G1	R1	
ESV751N01SX*	4.2	1	0.75	G1	R1	

Notes: 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)

Model Number	Output Current	Power		Size		
				NEMA 1	NEMA 4X	NEMA 12
	I_N [A]	Hp	kW	IP31	IP65	IP54
ESV251N02SX* (1)	1.7	0.33	0.25	G1		
ESV371N02YX*	2.4	0.5	0.37	G1	R1	
ESV751N02YX*	4.2	1	0.75	G1	R1	
ESV112N02YX*	6.0	1.5	1.1	G2	R2	
ESV152N02YX*	7.0	2	1.5	G2	R2	
ESV222N02YX*	9.6	3	2.2	G2	R3	

(1) The model ESV251N02SXB is 1Ø input only. For 3Ø INPUT use the ESV371N02YXB

200/240V - 3Ø Input (3Ø Output)

Model Number	Output Current	Power		Size		
				NEMA 1	NEMA 4X	NEMA 12
	I_N [A]	Hp	kW	IP31	IP65	IP54
ESV112N02TX*	6.0	1.5	1.1	G2	R2	
ESV152N02TX*	7.0	2	1.5	G2	R2	
ESV222N02TX*	9.6	3	2.2	G2	R3	
ESV402N02TX*	16.5	5	4.0	G3	S1	
ESV552N02TX*	23	7.5	5.5	H1		S2
ESV752N02TX*	29	10	7.5	H1		S2
ESV113N02TX*	42	15	11.0	J1		
ESV153N02TX*	54	20	15.0	J1		

400/480V - 3Ø Input (3Ø Output)

Model Number	Output Current	Power		Size		
				NEMA 1	NEMA 4X	NEMA 12
	I_N [A]	Hp	kW	IP31	IP65	IP54
ESV371N04TX*	1.3/1.1	0.5	0.37	G1	R1	
ESV751N04TX*	2.4/2.1	1	0.75	G1	R1	
ESV112N04TX*	3.5/3.0	1.5	1.1	G2	R2	
ESV152N04TX*	4.0/3.5	2	1.5	G2	R2	
ESV222N04TX*	5.5/4.8	3	2.2	G2	R3	
ESV402N04TX*	9.4/8.2	5	4.0	G3	S1	
ESV552N04TX*	12.6/11	7.5	5.5	H1		S2
ESV752N04TX*	16.1/14	10	7.5	H1		S2
ESV113N04TX*	24/21	15	11.0	J1		
ESV153N04TX*	31/27	20	15.0	J1		
ESV183N04TX*	39/34	25	18.5	J1		

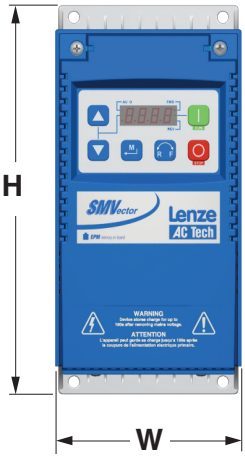
480/600V - 3Ø Input (3Ø Output)

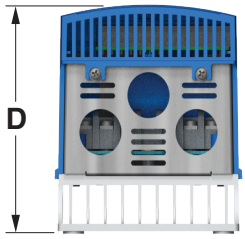
Model Number	Output Current	Power		Size		
				NEMA 1	NEMA 4X	NEMA 12
	I_N [A]	Hp	kW	IP31	IP65	IP54
ESV751N06TX*	1.7	1	0.75	G1	R1	
ESV152N06TX*	2.7	2	1.5	G2	R2	
ESV222N06TX*	3.9	3	2.2	G2	R3	
ESV402N06TX*	6.1	5	4.0	G3	S1	
ESV552N06TX*	9	7.5	5.5	H1		S2
ESV752N06TX*	11	10	7.5	H1		S2
ESV113N06TX*	17	15	11.0	J1		
ESV153N06TX*	22	20	15.0	J1		
ESV183N06TX*	27	25	18.5	J1		

Dimensions

	H		W		D	
	in.	*mm*	*in.*	*mm*	*in.*	*mm*
G1	7.50	191	3.90	99	4.35	110
G2	7.50	191	3.90	99	5.45	138
G3	7.50	191	3.90	99	5.80	147
H1	9.83	250	5.12	130	6.30	160
J1	12.33	313	6.88	175	8.08	205
R1	8.00	203	6.28	160	4.47	114
R2	8.00	203	6.28	160	6.27	159
R3	8.00	203	7.38	187	6.77	172
S1	10.00	254	8.96	228	7.97	202
S2	10.00	254	8.04	204	7.97	202

SMV NEMA 1 (IP31)





Bottom Entry with NEMA 1 Steel Conduit Plate

Bottom Entry with IP31 Finger Guard

Lenze AC Tech

Worldwide Coverage | We're everywhere you are

"Customer Service has always been and will always be our number one commitment. Our success depends on it."

"We are here to listen to your problems and give you the latest innovative solution that fits your needs – no more, no less".

"Quality is ingrained in our every day life and throughout every aspect of our business."

"High performing products don't have to be difficult to use. One of our core competencies is to take the latest motion control technology and make it easy to understand and apply."

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