

SMVector Drive

Flexible, simple, economical



Lenze
AC Tech

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 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.



AC Variable Frequency Drives | Servo Drives & Motors | Gear Reducers | Integral Gear

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 delivers on its promise of price leadership while delivering unparalleled performance and simplicity. The SMVector is the right choice when you need it all.



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:
 - 120V, 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 (IP21) Enclosure

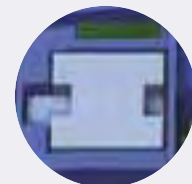
Simplicity

- ▶ 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 drives 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. It only takes 2 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.

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

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 Continuity
- ▶ Keypad Status
- ▶ Elapsed Run Time (Hours)
- ▶ Elapsed Power on Time (Hours)

Rugged Environmental Capabilities

Nema Type 1 (IP21) for Indoor Use

Ambient Temperature

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

International Voltages

- ▶ +10/-15% Tolerance
- ▶ 120V, 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

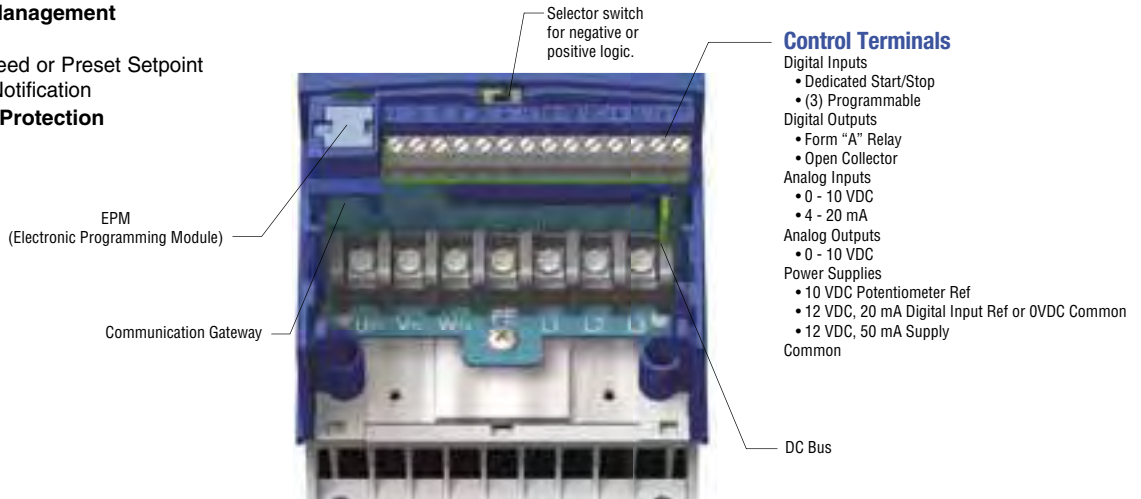
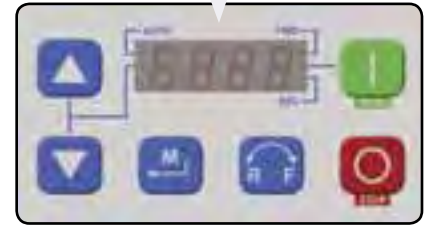
Easily Read from a Distance.

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

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

120/240V - 1Ø Input (3Ø Output)

Model Number	Output Current I_n [A]	Power		NEMA Type 1 (IP21)					
				H		W		D	
				in	mm	in	mm	in	mm
ESV251N01SXB	1.7	0.33	0.25	7.50	190	3.90	99	4.35	110
ESV371N01SXB	2.4	0.5	0.37	7.50	190	3.90	99	4.35	110
ESV751N01SXB	4.2	1	0.75	7.50	190	3.90	99	4.35	110

Note:

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 I_n [A]	Power		NEMA Type 1 (IP21)					
				H		W		D	
				in	mm	in	mm	in	mm
ESV251N02SXB ⁽¹⁾	1.7	0.33	0.25	7.50	190	3.90	99	4.35	110
ESV371N02YXB	2.4	0.5	0.37	7.50	190	3.90	99	4.35	110
ESV751N02YXB	4.2	1	0.75	7.50	190	3.90	99	4.35	110
ESV112N02YXB	6.0	1.5	1.1	7.50	190	3.90	99	5.45	138
ESV152N02YXB	7.0	2	1.5	7.50	190	3.90	99	5.45	138
ESV222N02YXB	9.6	3	2.2	7.50	190	3.90	99	5.45	138

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

200/240V - 3Ø Input (3Ø Output)

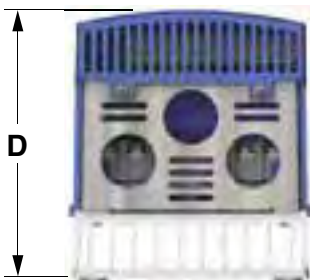
Model Number	Output Current I_n [A]	Power		NEMA Type 1 (IP21)					
				H		W		D	
				in	mm	in	mm	in	mm
ESV112N02TXB	6.0	1.5	1.1	7.50	190	3.90	99	5.45	138
ESV152N02TXB	7.0	2	1.5	7.50	190	3.90	99	5.45	138
ESV222N02TXB	9.6	3	2.2	7.50	190	3.90	99	5.45	138
ESV402N02TXB	16.5	5	4.0	7.50	190	3.90	99	5.80	147
ESV552N02TXB	23	7.5	5.5	9.83	250	5.12	130	6.30	160
ESV752N02TXB	29	10	7.5	9.83	250	5.12	130	6.30	160
ESV113N02TXB	42	15	11.0	12.33	313	6.88	175	8.08	205
ESV153N02TXB	54	20	15.0	12.33	313	6.88	175	8.08	205

400/480V - 3Ø Input (3Ø Output)

Model Number	Output Current I_n [A]	Power		NEMA Type 1 (IP21)					
				H		W		D	
				in	mm	in	mm	in	mm
ESV371N04TXB	1.3/1.1	0.5	0.37	7.50	190	3.90	99	4.35	110
ESV751N04TXB	2.4/2.1	1	0.75	7.50	190	3.90	99	4.35	110
ESV112N04TXB	3.5/3.0	1.5	1.1	7.50	190	3.90	99	5.45	138
ESV152N04TXB	4.0/3.5	2	1.5	7.50	190	3.90	99	5.45	138
ESV222N04TXB	5.5/4.8	3	2.2	7.50	190	3.90	99	5.45	138
ESV402N04TXB	9.4/8.2	5	4.0	7.50	190	3.90	99	5.80	147
ESV552N04TXB	12.6/11	7.5	5.5	9.83	250	5.12	130	6.30	160
ESV752N04TXB	16.1/14	10	7.5	9.83	250	5.12	130	6.30	160
ESV113N04TXB	24/21	15	11.0	12.33	313	6.88	175	8.08	205
ESV153N04TXB	31/27	20	15.0	12.33	313	6.88	175	8.08	205
ESV183N04TXB	39/34	25	18.5	12.33	313	6.88	175	8.08	205

480/600V - 3Ø Input (3Ø Output)

Model Number	Output Current I_n [A]	Power		NEMA Type 1 (IP21)					
				H		W		D	
				in	mm	in	mm	in	mm
ESV751N06TXB	1.7	1	0.75	7.50	190	3.90	99	4.35	110
ESV152N06TXB	2.7	2	1.5	7.50	190	3.90	99	5.45	138
ESV222N06TXB	3.9	3	2.2	7.50	190	3.90	99	5.45	138
ESV402N06TXB	6.1	5	4.0	7.50	190	3.90	99	5.80	147
ESV552N06TXB	9	7.5	5.5	9.83	250	5.12	130	6.30	160
ESV752N06TXB	11	10	7.5	9.83	250	5.12	130	6.30	160
ESV113N06TXB	17	15	11.0	12.33	313	6.88	175	8.08	205
ESV153N06TXB	22	20	15.0	12.33	313	6.88	175	8.08	205
ESV183N06TXB	27	25	18.5	12.33	313	6.88	175	8.08	205



Bottom Entry with Steel Conduit Plate



Bottom Entry with IP21 Finger Guard