

The smd frequency inverter



Compact, powerful, without compromise – simply smart



Lenze

smart micro drive | The compact smd for large tasks

Do you work with digital and analog inputs, preset speeds or a display with a keypad in your applications? Are space in the control cabinet and budgets restricted? The smd frequency inverter provides advanced technology and high quality at a reasonable price – you will not be forced to compromise. The smd covers a power range from 0.25 ... 22 kW and features everything you would expect from a modern frequency inverter suitable for universal use. A relatively small number of functions can be used to provide complete yet simple solutions for a multiplicity of standard applications.

Just three on-board functions and a handful of parameters are all you need – commissioning is child's play. Parameter settings can be saved on a unique chip. The electronic programmable module (EPM) is a plug-in memory chip which has been designed specifically for the smd. With the EPM, drive data only needs to be configured once and can then be transferred to other frequency inverters in the range. Even modifying drive parameters take just seconds – simply replace the EPM on the front panel of the frequency inverter.



Programming takes place directly on the inverter or using a battery-powered EPM programming device. This means that configurations can be created or edited easily offline. The programmer can save up to 30 different drive programs as files. Copying from EPM to EPM, file to EPM or rewriting the EPM to a file takes just two seconds at the touch of a button.

The frequency inverter features integrated motor overload protection. For this purpose, a microprocessor calculates the motor load independently of the output speed, protects the motor and renders additional hardware superfluous.

The function and number of control terminals corresponds to the familiar Lenze standard:

- ▶ Start/stop functions
- ▶ Analog setpoint selection with voltage or current
- ▶ Freely programmable inputs
- ▶ Freely programmable relay output

The smd features current limitation with frequency reduction for stable operation, a highly visible LED display and the option of low-noise operation by means of an adjustable switching frequency up to 10 kHz.



Selection tables | Getting your order right

kW	1~ 200/230 V			
	smd type	Filter type	Dimensions H x W x D [mm]	Comms
0.25	ESMD251□2SFA	Integrated mains filter	146 x 93 x 83	X, W
0.37	ESMD371□2SFA	Integrated mains filter	146 x 93 x 83	X, W
0.55	ESMD551□2SFA	Integrated mains filter	146 x 93 x 92	X, W
0.75	ESMD751□2SFA	Integrated mains filter	146 x 93 x 92	X, W
1.50	ESMD152□2SFA	Integrated mains filter	146 x 114 x 124	X, W
2.20	ESMD222□2SFA	Integrated mains filter	146 x 114 x 140	X, W



kW	smd type	Dimensions H x W x D [mm]	1~ or 3~ 200/230 V		Comms
			Filter type 1-1~ Class A = SMF 2-1~ Class B = SBF 3-3~ Class A = TMF	Dimensions incl. Filter type H x W x D [mm]	
0.37	ESMD371□2YXA	146 x 93 x 100	ESMD7512SMF	175 x 95 x 131	L, C
			ESMD7512SBF	175 x 95 x 143	
			ESMD1124TMF	175 x 95 x 143	
0.75	ESMD751□2YXA	146 x 93 x 120	ESMD7512SMF	175 x 95 x 151	L, C
			ESMD7512SBF	175 x 95 x 163	
			ESMD2224TMF	175 x 118 x 163	
1.10	ESMD112□2YXA	146 x 114 x 133	ESMD2222SMF	175 x 118 x 176	L, C
			ESMD2222SBF	175 x 118 x 176	
			ESMD2224TMF	175 x 118 x 176	
1.50	ESMD152□2YXA	146 x 114 x 171	ESMD2222SMF	175 x 118 x 214	L, C
			ESMD2222SBF	175 x 118 x 214	
			ESMD5524TMF	175 x 118 x 214	
2.20	ESMD222□2YXA	146 x 114 x 171	ESMD2222SMF	175 x 118 x 214	L, C
			ESMD2222SBF	175 x 118 x 214	
			ESMD5524TMF	175 x 118 x 214	

The "□" in the type number can be replaced with any letter under Comms where:

- X = Basic I/O without communications
- W = Basic I/O with CANopen Communication
- L = Full I/O with Modbus and Locom Communication
- C = Full I/O with CANopen Communication

3~ 200/230 V					
kW	smd type	Dimensions H x W x D [mm]	Filter type	Dimensions incl. Filter type H x W x D [mm]	Comms
0.37	ESMD371□2TXA	146 x 93 x 83	ESMD1124TMF	175 x 95 x 126	X, W
0.75	ESMD751□2TXA	146 x 93 x 92	ESMD1124TMF	175 x 95 x 135	X, W
1.10	ESMD112□2TXA	146 x 93 x 141	ESMD2224TMF	175 x 118 x 184	X, W
1.50	ESMD152□2TXA	146 x 93 x 141	ESMD5524TMF	175 x 118 x 184	X, W
2.20	ESMD222□2TXA	146 x 114 x 140	ESMD5524TMF	175 x 118 x 183	X, W
3.00	ESMD302□2TXA	146 x 114 x 171	ESMD5524TMF	175 x 118 x 214	X, W, L, C
4.00	ESMD402□2TXA	146 x 114 x 171	ESMD1134TMF	226 x 150 x 214	X, W, L, C
5.50	ESMD552□2TXA	197 x 146 x 182	ESMD1134TMF	226 x 150 x 225	L, C
7.50	ESMD752□2TXA	197 x 146 x 182	ESMD1134TMF	226 x 150 x 225	L, C
11.00	ESMD113□2TXA	248 x 195 x 203	ESMD2234TMF	283 x 198 x 269	L, C
15.00	ESMD153□2TXA	248 x 195 x 203	ESMD2234TMF	283 x 198 x 269	L, C

3~ 400/480 V					
kW	smd type	Dimensions H x W x D [mm]	Filter type	Dimensions incl. Filter type H x W x D [mm]	Comms
0.37	ESMD371□4TXA	146 x 93 x 100	ESMD1124TMF	175 x 95 x 143	L, C
0.75	ESMD751□4TXA	146 x 93 x 120	ESMD1124TMF	175 x 95 x 163	L, C
1.10	ESMD112□4TXA	146 x 93 x 146	ESMD1124TMF	175 x 95 x 189	L, C
1.50	ESMD152□4TXA	146 x 114 x 133	ESMD2224TMF	175 x 118 x 176	L, C
2.20	ESMD222□4TXA	146 x 114 x 133	ESMD2224TMF	175 x 118 x 176	L, C
3.00	ESMD302□4TXA	146 x 114 x 171	ESMD5524TMF	175 x 118 x 214	L, C
4.00	ESMD402□4TXA	146 x 114 x 171	ESMD5524TMF	175 x 118 x 214	L, C
5.50	ESMD552□4TXA	146 x 114 x 171	ESMD5524TMF	175 x 118 x 214	L, C
7.50	ESMD752□4TXA	197 x 146 x 182	ESMD1134TMF	226 x 150 x 225	L, C
11.00	ESMD113□4TXA	197 x 146 x 182	ESMD1134TMF	226 x 150 x 225	L, C
15.00	ESMD153□4TXA	248 x 195 x 203	ESMD2234TMF	283 x 198 x 269	L, C
18.50	ESMD183□4TXA	248 x 195 x 203	ESMD2234TMF	283 x 198 x 269	L, C
22.00	ESMD223□4TXA	248 x 195 x 203	ESMD2234TMF	283 x 198 x 269	L, C

The "□" in the type number can be replaced with any letter under Comms where:

X = Basic I/O without communications

W = Basic I/O with CANopen Communication

L = Full I/O with Modbus and Lecom Communication

C = Full I/O with CANopen Communication

Rated data tables | Countless possibilities

Type	1 ~ 230 V						
	Power	Input Voltage	Mains input current	Output current at 4 ... 8 kHz	Output current at 10 kHz	Max. output current at 4 ... 8 kHz for 60 s	Max. output current at 10 kHz for 60 s
ESMD251□2SFA	0.25 kW	1/N/PE 180 V ... 264 V; (± 0%)	3.4 A	1.7 A	1.6 A	2.6 A	2.3 A
ESMD371□2SFA	0.37 kW		5.0 A	2.4 A	2.2 A	3.6 A	3.3 A
ESMD551□2SFA	0.55 kW		6.0 A	3.0 A	2.8 A	4.5 A	4.2 A
ESMD751□2SFA	0.75 kW		9.0 A	4.0 A	3.7 A	6.0 A	5.5 A
ESMD152□2SFA	1.50 kW		14.0 A	7.0 A	6.4 A	10.5 A	9.6 A
ESMD222□2SFA	2.20 kW		18.0 A	9.5 A	8.7 A	14.3 A	13.1 A

Where "□" designates the communications

Type	1 ~/3 ~ 230 V, operating from 1 ~ supply						
	Power	Input Voltage	Mains input current	Output current at 4 ... 8 kHz	Output current at 10 kHz	Max. output current at 4 ... 8 kHz for 60 s	Max. output current at 10 kHz for 60 s
ESMD371□2YXA	0.37 kW	180 V ... 264 V; 48 Hz ... 62 Hz (± 0%)	4.7 A	2.2 A	2.0 A	3.3 A	3.0 A
ESMD751□2YXA	0.75 kW		8.4 A	4.0 A	3.7 A	6.0 A	5.5 A
ESMD112□2YXA	1.1 kW		12.0 A	6.0 A	5.5 A	9.0 A	8.3 A
ESMD152□2YXA	1.5 kW		12.9 A	6.8 A	6.3 A	10.2 A	9.4 A
ESMD222□2YXA	2.2 kW		17.1 A	9.6 A	8.8 A	14.4 A	13.2 A

Where "□" designates the communications

Type	1 ~/3 ~ 230 V, operating from 3 ~ supply						
	Power	Input Voltage	Mains input current	Output current at 4 ... 8 kHz	Output current at 10 kHz	Max. output current at 4 ... 8 kHz for 60 s	Max. output current at 10 kHz for 60 s
ESMD371□2YXA	0.37 kW	180 V ... 264 V; 48 Hz ... 62 Hz (± 0%)	2.7 A	2.2 A	2.0 A	3.3 A	3.0 A
ESMD751□2YXA	0.75 kW		4.8 A	4.0 A	3.7 A	6.0 A	5.5 A
ESMD112□2YXA	1.1 kW		6.9 A	6.0 A	5.5 A	9.0 A	8.3 A
ESMD152□2YXA	1.5 kW		7.9 A	6.8 A	6.3 A	10.2 A	9.4 A
ESMD222□2YXA	2.2 kW		10.8 A	9.6 A	8.8 A	14.4 A	13.2 A

Where "□" designates the communications

Type	3~ 230 V						
	Power	Input Voltage	Mains input current	Output current at 4 ... 8 kHz	Output current at 10 kHz	Max. output current at 4 ... 8 kHz for 60 s	Max. output current at 10 kHz for 60 s
ESMD371□2TXA	0.37 kW	3//PE 180 V ... 264 V; 48 Hz ... 62 Hz (± 0%)	2.7 A	2.4 A	2.2 A	3.6 A	3.3 A
ESMD751□2TXA	0.75 kW		5.1 A	4.2 A	3.9 A	6.3 A	5.9 A
ESMD112□2TXA	1.10 kW		6.9 A	6.0 A	5.5 A	9.0 A	8.3 A
ESMD152□2TXA	1.50 kW		7.9 A	7.0 A	6.4 A	10.5 A	9.7 A
ESMD222□2TXA	2.20 kW		11.0 A	9.6 A	8.8 A	14.4 A	13.2 A
ESMD302□2TXA	3.00 kW		13.5 A	12.0 A	11.0 A	18.0 A	16.5 A
ESMD402□2TXA	4.00 kW		17.1 A	15.2 A	14.0 A	22.8 A	21.0 A
ESMD552□2TXA	5.50 kW		25 A	22 A	20 A	33 A	30 A
ESMD752□2TXA	7.50 kW		32 A	28 A	26 A	42 A	39 A
ESMD113□2TXA	11.00 kW		48 A	42 A	39 A	63 A	58 A
ESMD153□2TXA	15.00 kW		59 A	54 A	50 A	81 A	75 A

Where "□" designates the communications

Type	3~ 400 V/480 V 400 V mains input voltage (code 90=1)						
	Power	Input Voltage	Mains input current	Output current at 4 ... 8 kHz	Output current at 10 kHz	Max. output current at 4 ... 8 kHz for 60 s	Max. output current at 10 kHz for 60 s
ESMD371□4TXA	0.37 kW	3//PE 320 V ... 528 V; 48 Hz ... 62 Hz (± 0%)	1.6 A	1.3 A	1.2 A	2.0 A	1.8 A
ESMD751□4TXA	0.75 kW		3.0 A	2.5 A	2.3 A	3.8 A	3.5 A
ESMD112□4TXA	1.10 kW		4.3 A	3.6 A	3.3 A	5.4 A	5.0 A
ESMD152□4TXA	1.50 kW		4.8 A	4.1 A	3.8 A	6.2 A	5.7 A
ESMD222□4TXA	2.20 kW		6.4 A	5.8 A	5.3 A	8.7 A	8.0 A
ESMD302□4TXA	3.00 kW		8.3 A	7.6 A	7.0 A	11.4 A	10.5 A
ESMD402□4TXA	4.00 kW		10.6 A	9.4 A	8.6 A	14.1 A	12.9 A
ESMD552□4TXA	5.50 kW		14.2 A	12.6 A	11.6 A	18.9 A	17.4 A
ESMD752□4TXA	7.50 kW		18.1 A	16.1 A	14.8 A	24.0 A	22.0 A
ESMD113□4TXA	11.00 kW		27 A	24 A	22 A	36 A	34 A
ESMD153□4TXA	15.00 kW		35 A	31 A	29 A	47 A	43 A
ESMD183□4TXA	18.50 kW		44 A	39 A	36 A	59 A	54 A
ESMD223□4TXA	22.00 kW		52 A	46 A	42 A	69 A	64 A

Where "□" designates the communications

Type	3~ 400 V/480 V 480 V mains input voltage (code 90=2)						
	Power	Input Voltage	Mains input current	Output current at 4 ... 8 kHz	Output current at 10 kHz	Max. output current at 4 ... 8 kHz for 60 s	Max. output current at 10 kHz for 60 s
ESMD371□4TXA	0.37 kW	3//PE 320 V ... 528 V; 48 Hz ... 62 Hz (± 0%)	1.4 A	1.1 A	1.0 A	1.7 A	1.5 A
ESMD751□4TXA	0.75 kW		2.5 A	2.1 A	1.9 A	3.2 A	2.9 A
ESMD112□4TXA	1.10 kW		3.6 A	3.0 A	2.8 A	4.5 A	4.2 A
ESMD152□4TXA	1.50 kW		4.0 A	3.4 A	3.1 A	5.1 A	4.7 A
ESMD222□4TXA	2.20 kW		5.4 A	4.8 A	4.4 A	7.2 A	6.6 A
ESMD302□4TXA	3.00 kW		7.0 A	6.3 A	5.8 A	9.5 A	8.7 A
ESMD402□4TXA	4.00 kW		8.8 A	7.8 A	7.2 A	11.7 A	10.8 A
ESMD552□4TXA	5.50 kW		12.4 A	11.0 A	10.1 A	16.5 A	15.2 A
ESMD752□4TXA	7.50 kW		15.8 A	14.0 A	12.9 A	21.0 A	19.4 A
ESMD113□4TXA	11.00 kW		24 A	21 A	19 A	32 A	29 A
ESMD153□4TXA	15.00 kW		31 A	27 A	25 A	41 A	37 A
ESMD183□4TXA	18.50 kW		38 A	34 A	31 A	51 A	47 A
ESMD223□4TXA	22.00 kW		45 A	40 A	37 A	60 A	55 A

Where "□" designates the communications

Technical data	
Power	0.25 ... 22 kW
Voltage	230 V, single-phase, 180 ... 264 V, 48 ... 62 Hz 230/240 V, three-phase, 180 ... 264 V, 48 ... 62 Hz 400/480 V, three-phase, 320 ... 528 V, 48 ... 62 Hz
Climatic conditions	Class 3K3 to EN 50178
Temperature range	Storage: -20°C to +70°C Operation: 0 ... +55°C (with power derating of 2.5% per °C above +40°C)
Installation height	0 ... 4000 m amsl (with power derating of 5% per 1000 m above 1000 m amsl)
Ambient humidity	< 95% (no condensation)
Vibration resistance	Accelerational stability up to 0.7 g to EN 5178
Enclosure	IP20 to EN 60529
Protection measures against	<ul style="list-style-type: none"> ▶ Short circuit ▶ Earth fault ▶ Overvoltage ▶ Undervoltage ▶ Motor stalling ▶ Motor overload
EMC	Meets the requirements of EN 61800-3/A11
Noise emission	Meets the requirements of limit class A to EN 55011 when installed in a control cabinet. Single-phase models without additional filters (integrated filter) Three-phase models with suitable footprint filter
Overload capacity	150% rated current for 60 seconds
Switching frequencies	4, 6, 8 and 10 kHz (current derating required at 10 kHz)
Output frequency	0 ... 240 Hz
Conformity and approvals	CE, UL, cUL
Digital inputs	3 freely programmable, 1 "start/stop"
Analog setpoint	Programmable, 0 ... 5 V, 0 ... 10 V (max. 20 mA); 0 ... 20 mA, 4 ... 20 mA
Relay output	Freely programmable NO contact, 250 V AC, 3 A; 24 V DC, 2 A; 240 V DC, 0.22 A
Digital output	1 freely programmable (max. 30 V, 50 mA), only on full I/O option
Analog output	1 freely programmable (0 ... 10 V, max. 20 mA), only on full I/O option
Communication	RS485 (Modbus and LECOM) only on full I/O option, CANopen

Accessories | Braking units, keypad and more

The following accessories are available for all Full I/O compact smd drives:

- ▶ Braking units
Compact modules comprising a brake chopper and integrated resistor
- ▶ External keypad with IP65 enclosure – for example for installation in a control cabinet door. The keypad features keys for the start/stop function, clockwise/ counter-clockwise rotation, speed selection and an LED display.

- ▶ RFI filters designed as footprint filters to save space. RFI Filters are integrated as standard into the Basic I/O compact smd drive.

Delivered, installed, ready to go: The smd is now ready for operation and can meet your frequency inverter requirements for all basic applications. The clear concept and quick commissioning save both time and money.



External keypad



EPM

EPM programming device with plug-in memory chip. Simply replace the chip in the frequency inverter and go on to a different drive task.

Accessories	
Designation	Type
EPM programming device	EEPM1RA
External keypad	ESMD01KP
EPM memory chips	ESMD01BP