Tml/Tmd *frequency inverters*

Compact on the outside, precision on the inside

Lenze

Tml & Tmd | smart drives

Are you ready to face the challenges that tomorrow will bring? The new Tml and Tmd series frequency inverters are fit for the future in every sense. Thanks to highly-developed vector control, these devices work extremely well even in the most demanding of applications. You will benefit from one very special feature even before commissioning takes place, as Tml and Tmd are extremely good value for money.

As you can see, we're ready for those future challenges.

Lenze is adding to its successful smd series of frequency inverters and breaking new ground in torque and speed control with two brand new series.

However demanding your requirements may be, the Tml and Tmd outshine the competition due to their performance. Output speeds down to 1 Hz remain available even under heavy load, thanks to a specially developed flux vector algorithm.

Tml and Tmd are multitalented, despite their compact design. Be it V/f, vector or torque control, Tml and Tmd can take on any challenge. Plus, they are child's play to operate. For example, the three on-board operator buttons are all that are needed to carry out commissioning.

A fantastic feature of Tml and Tmd is the plug-in EPM parameterisation, as used on smd series devices.

All drive data is stored on a pluggable memory chip located on the front of the frequency inverter. The EPM can be replaced easily, meaning that you can use, copy and process existing configurations in all Tml, Tmd and smd drives as often as you like and quick as a flash.

Programming is either performed on the inverter directly or offline using a hand-held EPM programmer, so you always have access to your configuration data via either method.

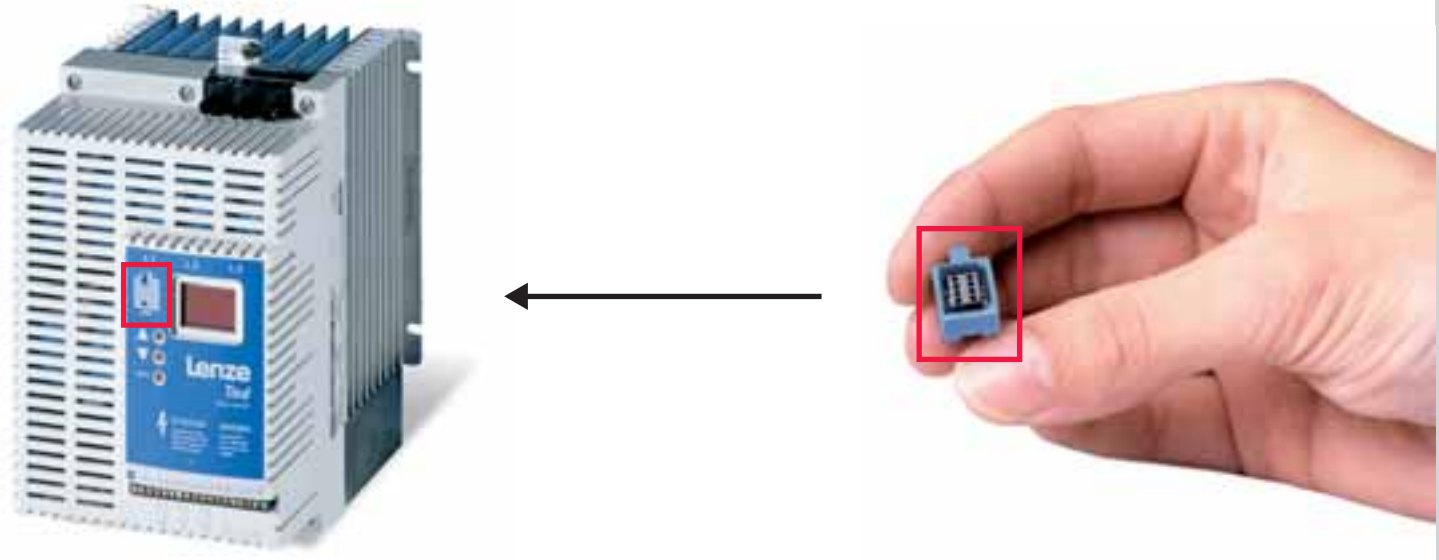
Anything else?

Simple handling is not the only impressive feature of the Tml and Tmd. Their performance also leaves nothing to be desired. The single-phase Tml inverter has a power range of 0.25 to 2.2 kW.

The three-phase Tmd covers an even larger power range of 0.37 to 7.5 kW. It also has additional inputs and outputs and is compatible with RS485.

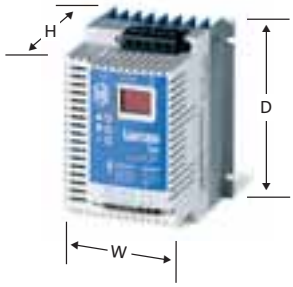
The functional range of the Tml and Tmd is in line with that provided by much more expensive drives. Features include auto-TRIP reset, flying restart circuit, a highly visible LED display and a start/stop function as, well as a motor potentiometer, CE, UL and cUL approvals, a diagnostic function and fault memory.

Freely programmable inputs and chopper frequencies of 4, 8 or 10 Hz for reducing noise make the Tml and Tmd your first choice if you need a good value frequency inverter that does not compromise on quality.



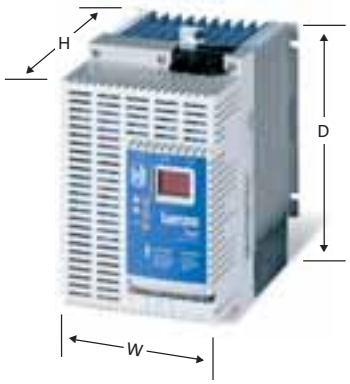
Selection table | Getting your order right

kW	Tml 1~ 230 V		
	Tml type	Filter type	Dimensions H x W x D [mm]
0.25	ETML251X2SFA	Integrated EMC filter	146 x 93 x 83
0.37	ETML371X2SFA	Integrated EMC filter	146 x 93 x 83
0.55	ETML551X2SFA	Integrated EMC filter	146 x 93 x 92
0.75	ETML751X2SFA	Integrated EMC filter	146 x 93 x 92
1.1	ETML112X2SFA	Integrated EMC filter	146 x 114 x 124
1.5	ETML152X2SFA	Integrated EMC filter	146 x 114 x 124
2.2	ETML222X2SFA	Integrated EMC filter	146 x 114 x 140



kW	Tmd 1~ or 3~ 200/230V			
	Tmd type	Dimensions H x W x D [mm]	Filter type	Dimensions H x W x D [mm] *
0.37	ETMD371L2YXA	146 x 93 x 100	ESMD7512SMF	175 x 95 x 131
			ESMD7512SBF	175 x 95 x 143
			ESMD1124TMF	175 x 95 x 143
0.75	ETMD751L2YXA	146 x 93 x 120	ESMD7512SMF	175 x 95 x 151
			ESMD7512SBF	175 x 95 x 163
			ESMD2224TMF	175 x 118 x 163
1.10	ETMD112L2YXA	146 x 114 x 133	ESMD2222SMF	175 x 118 x 176
			ESMD2222SBF	175 x 118 x 176
			ESMD2224TMF	175 x 118 x 176
1.50	ETMD152L2YXA	146 x 114 x 171	ESMD2222SMF	175 x 118 x 214
			ESMD2222SBF	175 x 118 x 214
			ESMD5524TMF	175 x 118 x 214
2.20	ETMD222L2YXA	146 x 114 x 171	ESMD2222SMF	175 x 118 x 214
			ESMD2222SBF	175 x 118 x 214
			ESMD5524TMF	175 x 118 x 214

* Dimensions for frequency inverter inc. external filter



	Tmd 3~ 200/230 V			
kW	Tmd type	Dimensions H x W x D [mm]	Filter type	Dimensions H x W x D [mm] *
0.75	ETMD751L2TXA	146 x 93 x 120	ESMD2224TMF	175 x 118 x 163
1.1	ETMD112L2TXA	146 x 93 x 146	ESMD2224TMF	175 x 118 x 189
1.5	ETMD152L2TXA	146 x 114 x 171	ESMD5524TMF	175 x 118 x 214
2.2	ETMD222L2TXA	146 x 114 x 171	ESMD5524TMF	175 x 118 x 214
4.0	ETMD402L2TXA	146 x 114 x 171	ESMD1134TMF	226 x 150 x 214
5.5	ETMD552L2TXA	197 x 146 x 182	ESMD1134TMF	226 x 150 x 225
7.5	ETMD752L2TXA	197 x 146 x 182	ESMD1134TMF	226 x 150 x 225

* Dimensions for frequency inverter inc. external filter

	Tmd 3~ 400/480 V			
kW	Tmd type	Dimensions H x W x D [mm]	Filter type	Dimensions H x W x D [mm] *
0.37	ETMD371L4TXA	146 x 114 x 133	ESMD2224TMF	175 x 118 x 176
0.75	ETMD751L4TXA	146 x 114 x 133	ESMD2224TMF	175 x 118 x 176
1.1	ETMD112L4TXA	146 x 114 x 133	ESMD2224TMF	175 x 118 x 176
1.5	ETMD152L4TXA	146 x 114 x 171	ESMD2224TMF	175 x 118 x 214
2.2	ETMD222L4TXA	146 x 114 x 171	ESMD2224TMF	175 x 118 x 214
3.0	ETMD302L4TXA	146 x 114 x 171	ESMD5524TMF	175 x 118 x 214
4.0	ETMD402L4TXA	146 x 114 x 171	ESMD5524TMF	175 x 118 x 214
5.5	ETMD552L4TXA	197 x 146 x 171	ESMD1134TMF	175 x 118 x 214
7.5	ETMD752L4TXA	197 x 146 x 182	ESMD1134TMF	226 x 150 x 225

* Dimensions for frequency inverter inc. external filter

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

* Tmd only

Rated data | Small but powerful

Type	Rated data for Tml 1~ 230 V						
	Power [kW]	Input voltage	Mains input current [A]	Nom. output current at 4 to 8 kHz [A]	Nom. output current at 10 kHz [A]	Max. output current at 4 to 8 kHz for 60 s [A]	Max. output current at 10 kHz for 60 s [A]
ETML251X2SFA	0.25	1/N/PE 230 V (180 V -0% to 264 V +0%) 50/60 Hz (48 Hz -0% to 62 Hz +0%)	3.4	1.7	1.6	2.6	2.4
ETML371X2SFA	0.37		5.0	2.4	2.2	3.6	3.3
ETML551X2SFA	0.55		6.0	3.2	2.9	4.8	4.4
ETML751X2SFA	0.75		9.2	4.2	3.9	6.3	5.8
ETML112X2SFA	1.1		12.0	6.0	5.5	9.0	8.3
ETML152X2SFA	1.5		16.0	7.0	6.4	10.5	9.6
ETML222X2SFA	2.2		21.0	9.6	8.8	14.4	13.2

Type	Rated data for 1 / 3~ 230 V Tmd operating from 1~ Supply						
	Power [kW]	Input voltage	Mains input current [A]	Nom. output current at 4 to 8 kHz [A]	Nom. output current at 10 kHz [A]	Max. output current at 4 to 8 kHz for 60 s [A]	Max. output current at 10 kHz for 60 s [A]
ETMD371L2YXA	0.37	1/N/PE 230 V (180 V -0% to 264 V +0%) 50/60 Hz (48 Hz -0% to 62 Hz +0%)	4.7	2.4	2.2	3.6	3.3
ETMD551L2YXA	0.55		6.0	3.0	2.8	4.5	4.2
ETMD751L2YXA	0.75		9.2	4.2	3.9	6.3	5.9
ETMD112L2YXA	1.1		12.0	6.0	5.5	9.0	8.3
ETMD152L2YXA	1.5		12.9	7.0	6.4	10.5	9.6
ETMD222L2YXA	2.2		17.1	9.6	8.8	14.4	13.2

Type	Rated data for 1 / 3~ 230 V Tmd operating from 3~ Supply						
	Power [kW]	Input voltage	Mains input current [A]	Nom. output current at 4 to 8 kHz [A]	Nom. output current at 10 kHz [A]	Max. output current at 4 to 8 kHz for 60 s [A]	Max. output current at 10 kHz for 60 s [A]
ETMD371L2YXA	0.37	3/PE 230 V (180 V -0% to 264 V +0%) 50/60 Hz (48 Hz -0% to 62 Hz +0%)	2.7	2.4	2.2	3.6	3.3
ETMD551L2YXA	0.55		3.9	3.0	2.8	4.5	4.2
ETMD751L2YXA	0.75		5.1	4.2	3.9	6.3	5.9
ETMD112L2YXA	1.1		6.9	6.0	5.5	9.0	8.3
ETMD152L2YXA	1.5		7.9	7.0	6.4	10.5	9.6
ETMD222L2YXA	2.2		11.0	9.6	8.8	14.4	13.2

Type	Rated data for 3~ 230V Tmd Drive						
	Power [kW]	Input voltage	Mains input current [A]	Nom. output current at 4 to 8 kHz [A]	Nom. output current at 10 kHz [A]	Max. output current at 4 to 8 kHz for 60 s [A]	Max. output current at 10 kHz for 60 s [A]
ETMD751L2TXA	0.75	3/PE 230 V (180 V -0% to 264 V +0%) 50/60 Hz (48 Hz -0% to 62 Hz +0%)	5.1	4.2	3.9	6.3	5.9
ETMD112L2TXA	1.1		6.9	6.0	5.5	9.0	8.3
ETMD152L2TXA	1.5		7.9	7.0	6.4	10.5	9.6
ETMD222L2TXA	2.2		11.0	9.6	8.8	14.4	13.2
ETMD402L2TXA	4.0		17.1	15.2	14.0	23.0	21.0
ETMD552L2TXA	5.5		25.0	22.0	20.0	33.0	30.0
ETMD752L2TXA	7.5		32.0	28.0	26.0	42.0	39.0

Type	Rated data for Tmd 3~ 400 V						
	Power [kW]	Input voltage	Mains input current [A]	Nom. output current at 4 to 8 kHz [A]	Nom. output current at 10 kHz [A]	Max. output current at 4 to 8 kHz for 60 s [A]	Max. output current at 10 kHz for 60 s [A]
ETMD371L4TXA	0.37	3/PE 400/480 V (320 V -0% to 528 V +0%) 50/60 Hz (48 Hz -0% to 62 Hz +0%)	1.6	1.3	1.2	2.0	1.8
ETMD751L4TXA	0.75		3.0	2.5	2.3	3.8	3.5
ETMD112L4TXA	1.1		4.3	3.6	3.3	5.4	5.0
ETMD152L4TXA	1.5		4.8	4.1	3.8	6.2	5.7
ETMD222L4TXA	2.2		6.4	5.8	5.3	8.7	8.0
ETMD302L4TXA	3.0		8.3	7.6	7.0	11.4	10.5
ETMD402L4TXA	4.0		10.6	9.4	8.6	14.1	12.9
ETMD552L4TXA	5.5		14.2	12.6	11.6	18.9	17.4
ETMD752L4TXA	7.5		18.1	16.1	14.8	24.0	22.0

Type	Rated data for Tmd 3~ 480 V						
	Power [kW]	Input voltage	Mains input current [A]	Nom. output current at 4 to 8 kHz [A]	Nom. output current at 10 kHz [A]	Max. output current at 4 to 8 kHz for 60 s [A]	Max. output current at 10 kHz for 60 s [A]
ETMD371L4TXA	0.37	3/PE 400/480 V (320 V -0% to 528 V +0%) 50/60 Hz (48 Hz -0% to 62 Hz +0%)	1.4	1.1	1.0	1.7	1.5
ETMD751L4TXA	0.75		2.5	2.1	1.9	3.2	2.9
ETMD112L4TXA	1.1		3.6	3.0	2.8	4.5	4.2
ETMD152L4TXA	1.5		4.0	3.4	3.1	5.1	4.7
ETMD222L4TXA	2.2		5.4	4.8	4.4	7.2	6.6
ETMD302L4TXA	3.0		7.0	6.3	5.8	9.5	8.7
ETMD402L4TXA	4.0		8.8	7.8	7.2	11.7	10.8
ETMD552L4TXA	5.5		12.4	11.0	10.1	16.5	15.2
ETMD752L4TXA	7.5		15.8	14.0	12.9	21.0	19.4

Technical data | Countless possibilities

Technical data	
Power	Tml: 0.25 to 2.2 kW Tmd: 0.37 to 7.5 kW
Voltage	Tml: 230 V, single-phase, 180 to 264 V, 48 to 62 Hz Tmd: 400 V, three-phase, 320 to 528 V, 48 to 62 Hz
Climatic conditions	Class 3K3 to EN 50178
Temperature range	Storage: -20°C to +70°C Operation: 0 to +55°C (with power derating of 2.5% per °C above +40°C)
Installation height	0 to 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
Enclosure	IP 20
Open-loop and closed-loop control methods	▶ V/f characteristic ▶ V/f characteristic with improved features ▶ Vector control ▶ Torque control
Protection measures against	▶ 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% of rated current for 60 s, 200% of rated current for 25 s
Switching frequencies	4, 6, 8 and 10 kHz (current derating required at 10 kHz)
Output frequency	0 to 240 Hz
Conformity and approvals	CE, UL, cUL
Digital inputs	Tml: 3 freely programmable, 1 permanently assigned (start/stop) Tmd: 4 freely programmable, 1 permanently assigned (start/stop)
Analog setpoint	Tml: 1 programmable, 0 to 5 V, 0 to 10 V; 0 to 20 mA, 4 to 20 mA Tmd: 2 programmable, 0 to 5 V, 0 to 10 V; 0 to 20 mA, 4 to 20 mA
Relay output	Tml: 1 freely programmable relay, 250 V AC, 3 A; 24 V DC, 2 A; 240 V DC, 0.22 A
Digital output	Tmd: 2 freely programmable, max. 24 V DC, 50 mA open collector
Analog output	Tmd: 1 freely programmable, 0 to 10 V, 20 mA
Communication	Tmd: RS485 (Modbus or LECOM B)

Accessories | Braking units, keypad and more

The following accessories are available for the compact Tml and Tmd:

- Braking units
  Compact modules comprising a brake chopper and integrated resistor
- RFI filters designed as footprint filters to save space. RFI filters are integrated as standard into Tml drives.
- External keypad with IP 65 enclosure for Tmd – for installation in a control cabinet door, for example. The keypad features keys for the start/stop function, clockwise/counter-clockwise rotation, speed selection and an LED display.

Delivered, installed, ready to go: The Tml and Tmd are 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 programmer with plug-in memory chip. Simply replace the chip in the frequency inverter and start work on a different drive task.

It's good to know | why we're there for you

"Our customers come first. Their satisfaction is what motivates us. Our ability to think in terms of customer benefits means increasing your productivity by providing complete reliability."

"The world is our market. We take an international approach to development and production. We are on hand wherever you are in the world."

"We will provide you with exactly what you need – perfectly co-ordinated products and solutions with the right functions for your machines and installations. That is what we mean by 'quality'."

"Take advantage of the expertise we have built up across various industries over more than 50 years and which we have implemented consistently in terms of our products, motion control functions and preconfigured industry solutions."

We offer a service you can rely on. Expert advice is available 24 hours a day, 365 days a year in more than 30 countries via our international helpline: 008000 24 Hours (008000 2446877).

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