INDUSTRIAL VECTOR DRIVES

INOMAX

MAX510

Precision for your process.

High-performance vector control drives

0.75–710 kW (G) | 1.5–800 kW (P)

220–240 V | 380–480 V



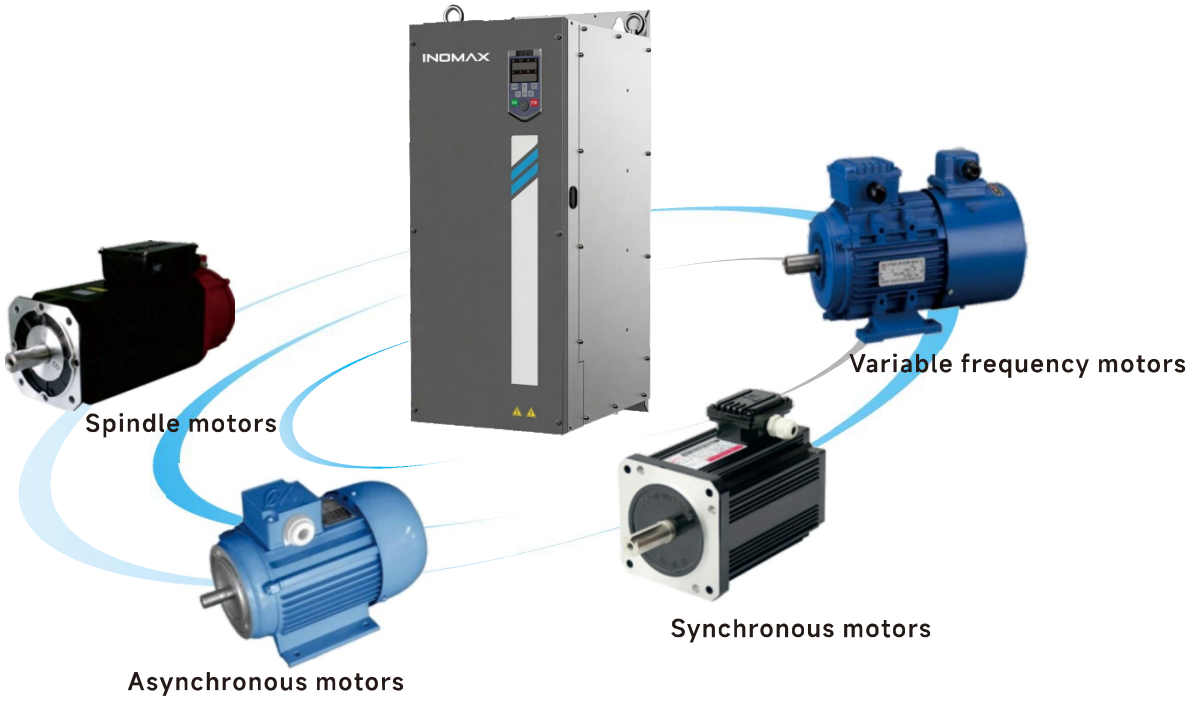
PRODUCT CATALOG

www.inomaxtechnology.com

Contents

MAX510 | High-performance vector control drives

01	Product overview & motor compatibility	02
02	Dynamic response & control performance	03
03	Model naming & current ratings	05
04	Power wiring & control terminals	07
05	Mechanical, thermal & operator interface	09
06	I/O, protection, EMC & expansion	12
07	Application functions	15
08	Dimensions & installation	16
09	Optional accessories	19
10	Braking selection	21
11	Technical specifications	24

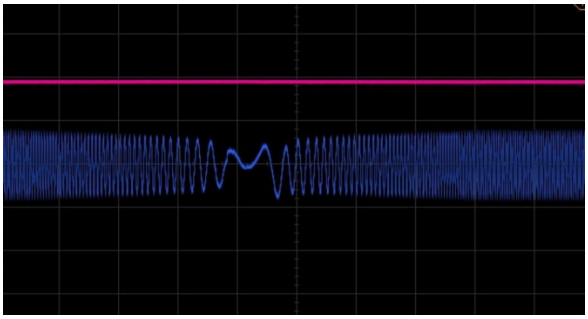


MAX510 series drives can drive various motors such as ordinary asynchronous motors, variable frequency motors, synchronous motors, high-speed motors and spindle motors, and are suitable for various loads such as constant torque, constant power, fans and pumps.

Speed, torque, position control integration

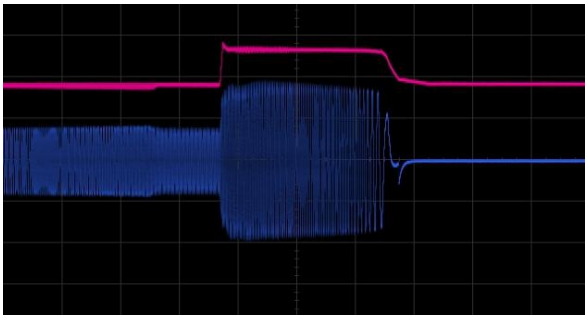
Torque and speed control performance -Ensure smooth operation of the machine, quick response and small torque ripple.

Characteristic index	MAX510
Speed range	1:1000
Steady speed accuracy	±0.02%
Control Accuracy Response Time	<10ms
Torque control accuracy	Torque control accuracy < 5%
Starting frequency/higher starting torque	0Hz/200%



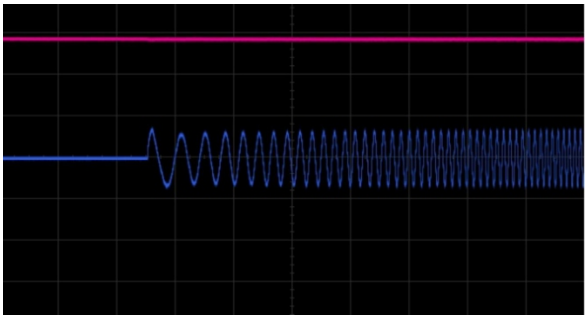
Excellent dynamic response

Excellent torque and speed dynamic response, Sensorless vector control torque response time (time from 0 step to rated torque) is less than 20ms; Feedback vector control torque response time is less than 10ms; the dynamic response accuracy of the speed loop is 0.5%s.



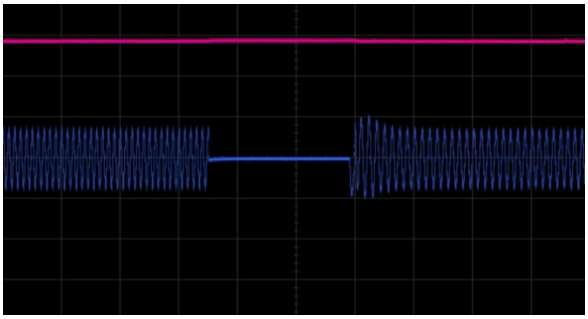
Overexcitation braking function

In the case of partial inertia shutdown, the braking resistor can be used without increasing the braking resistance, and the over-excitation braking function can be used realize fast braking and improve product ease of use.



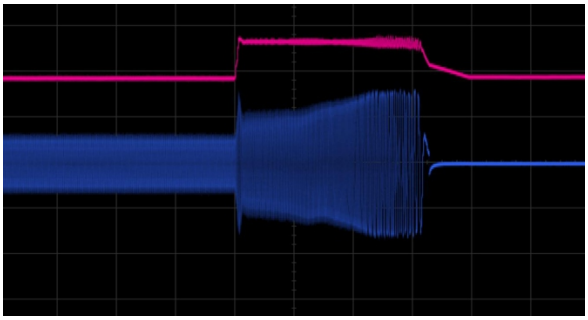
High starting torque

Low frequency high torque output. In feedback vector control mode, it can output 200% of rated torque at zero speed; in sensor-less vector control mode, it can output 150% of rated torque stably at 0.25Hz.



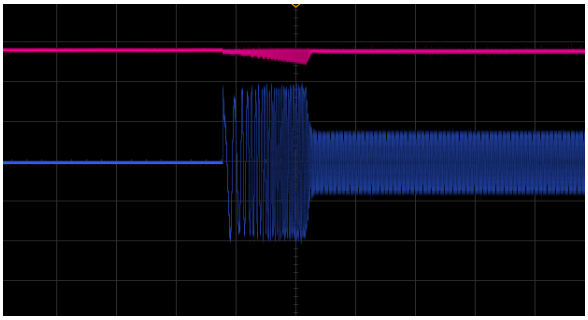
Super strong overcurrent suppression ability

The overcurrent suppression function can avoid the overcurrent fault caused by sudden load or interference in frequency converter. Reduce the loss caused by unexplained shutdown.



Super strong overvoltage suppression capability

The overvoltage suppression function can avoid the overvoltage fault caused by the bus voltage rise of the variable frequency drives.



Excellent speed tracking performance

In a very short time to achieve speed tracking start with identification direction, greatly reduce the impact of shutdown and restart.

Control matched to the load

Choose V/f, sensorless vector control or feedback vector control for the application.

V/f

Frequency-based operation

A straightforward control mode for applications that do not require vector control.

SVC

Sensorless vector control

Speed and torque control without an encoder feedback signal.

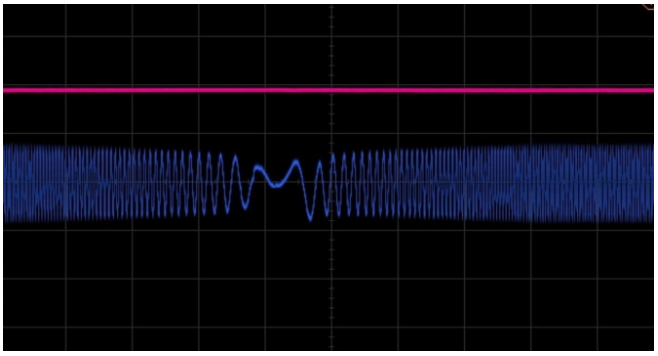
FVC

Feedback vector control

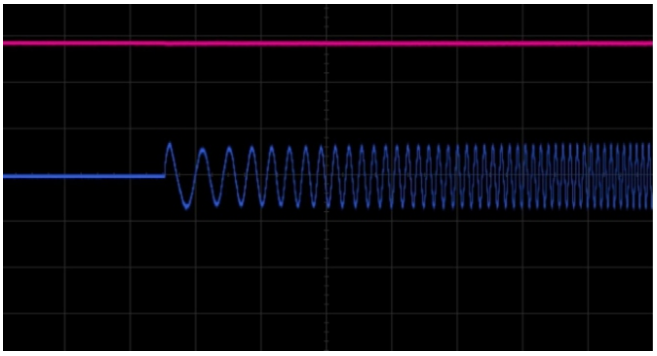
Encoder feedback supports accurate speed regulation and strong low-speed torque.

Performance by vector control mode

Performance characteristic	SVC	FVC
Speed regulation range	1:200	1:1000
Speed accuracy	0.5%	0.02%
Starting torque	150% at 0.25 Hz	200% at 0 Hz
Torque response time	<20 ms	<10 ms



Fast torque response



High starting torque

Feedback mode uses a compatible encoder interface. The figures above apply to the indicated control mode; motor and load characteristics must be considered during commissioning.

Identify the drive configuration

MAX510 1 – 4T – 55G B / 75P B – L

Series Motor Supply G/P rating Brake Reactor

Code	Meaning
MAX510	High-performance vector control AC drive
Motor designation	1: high-speed motor; E: synchronous motor
Voltage class	2S: 1-phase 220–240 V; 2T: 3-phase 220–240 V 4T: 3-phase 380–480 V; 6T: 3-phase 690 V
G / P rating	G: constant-torque duty; P: fan/pump duty The number gives the applicable motor power in kW.
Braking unit	B: built-in braking unit; blank: no built-in braking unit
Reactor	L: DC reactor; I: AC input reactor O: AC output reactor; H: AC input and output reactors

Select the supply class, motor rating and required hardware configuration together. The model and dimension tables on the following pages identify the configurations listed in this catalog.

Rated input and output current

Output ratings | 220–240 / 380–480 V

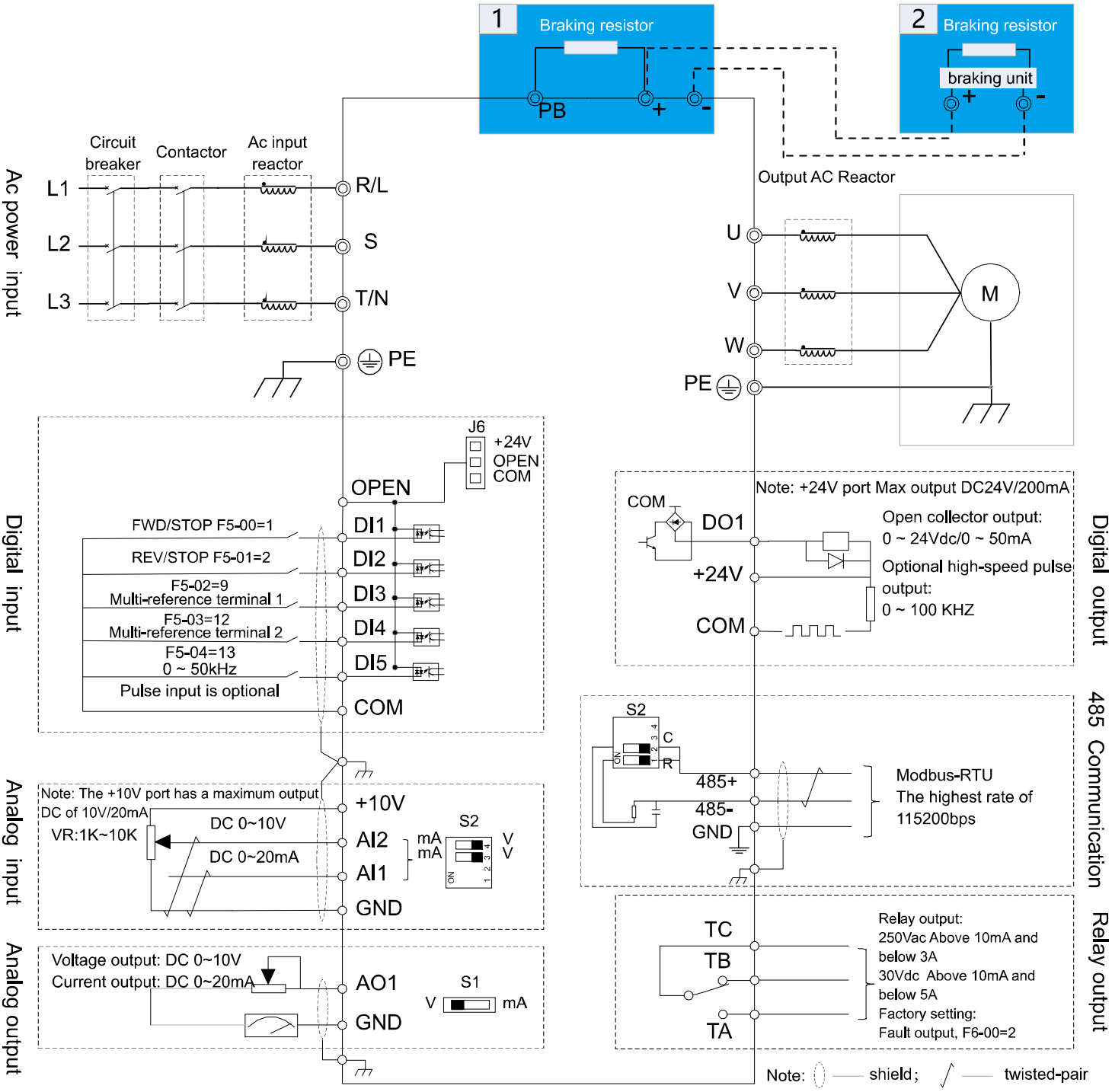
Power (kW)	220–240 V Out (A)	380–480 V Out (A)
0.75	4	2.5
1.5	7	3.8
2.2	9.6	5.1
3.7	16	9
5.5	20	13
7.5	30	17
11	42	25
15	55	32
18.5	70	37
22	—	45
30	—	60
37	—	75
45	—	91
55	—	112
75	—	150
90	—	176
110	—	210

380–480 V input/output ratings

Power (kW)	Input (A)	Output (A)
90	180	176
110	214	210
132	240	253
160	287	304
185	306	326
200	365	377
220	410	426
250	441	465
280	495	520
315	565	585
355	617	650
400	687	725
450	790	820
500	835	860
560	920	950
630	1050	1100
710	1198	1260

Power & control wiring

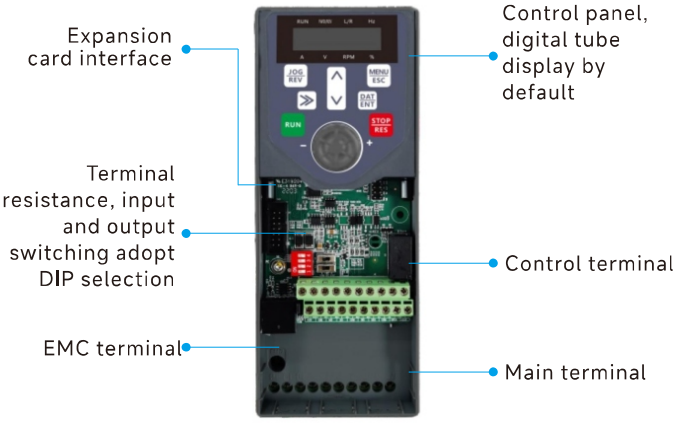
Up to 110 kW: connect the resistor to the specified built-in braking unit.
132 kW and above: use an external braking unit, as shown below.



Terminal functions at a glance

Group	Details
Digital inputs	DI1: FWD/STOP, F5-00=1 DI2: REV/STOP, F5-01=2 DI3: multi-reference terminal 1, F5-02=9 DI4: multi-reference terminal 2, F5-03=12 DI5: optional 0–50 kHz pulse input, F5-04=13
Input selection	J6: +24V / OPEN / COM selection. Input wiring and terminal configuration must match.
Auxiliary supplies	+10V: maximum 20 mA +24V: maximum 200 mA
Analog selection	AI1 / AI2: voltage or current selection by DIP switch. AO1: voltage or current output selection by S1. Reference potentiometer: 1–10 kΩ.
Relay output	TA / TB / TC: changeover relay. 250 VAC: above 10 mA and below 3 A. 30 VDC: above 10 mA and below 5 A. Factory setting: fault output, F6-00=2.
Communication	485+ / 485− / GND: RS485 Modbus RTU. Use the termination and wiring shown in the diagram.

Designed for installation & service



Organized internal layout

Expansion interfaces, DIP selection, control terminals and main terminals are arranged for convenient wiring.



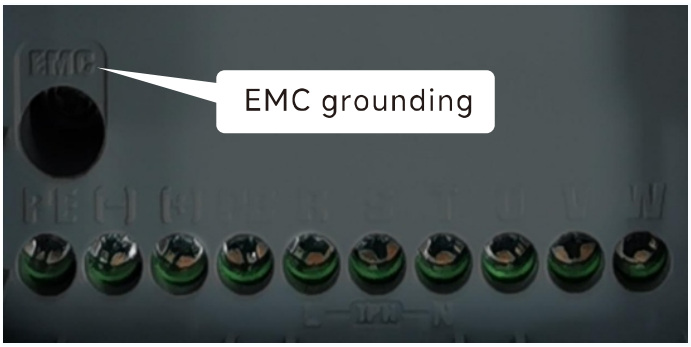
Independent air duct

The electronics and radiator air path are separated. Closed side panels help protect internal components.



Remove the fan cover for cleaning and replacement

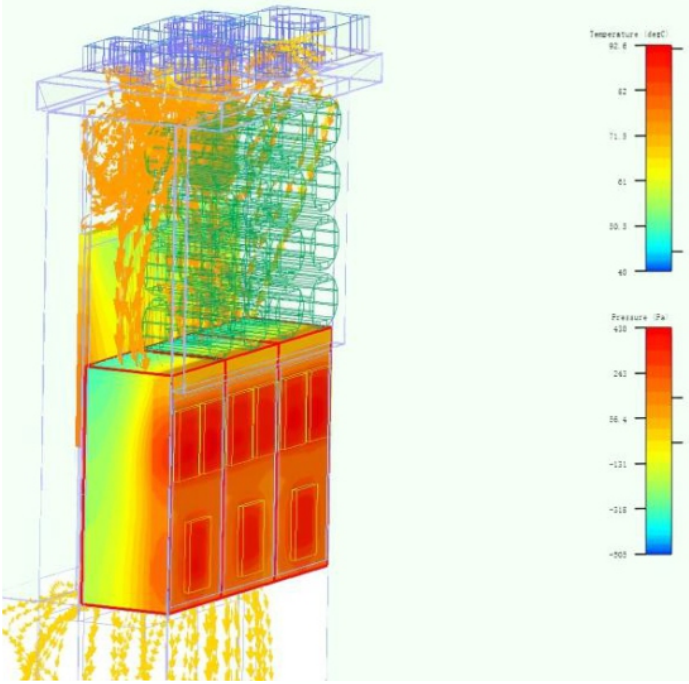
Quick fan access

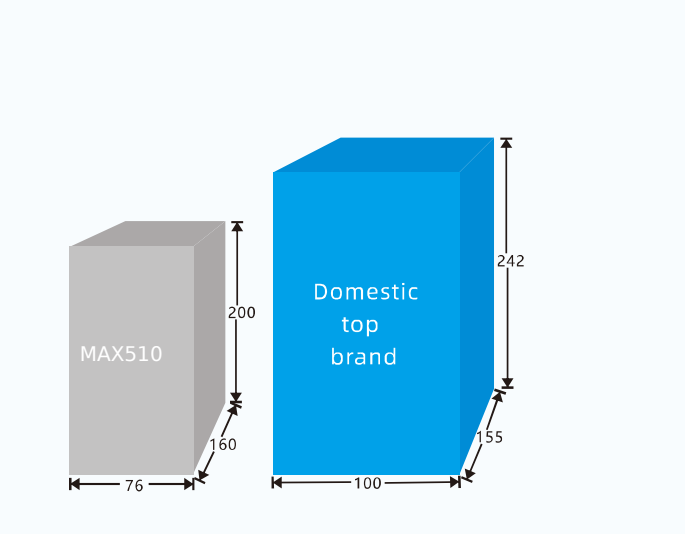


Selectable EMC grounding

The grounding connection is accessible at the EMC terminal. The fan cover opens for cleaning and replacement.

Compact format. Managed airflow.





Heat dissipation

A wide heat-transfer surface and high airflow support heat removal across the power range. Keep cooling passages clear and observe the specified ambient-temperature derating.

Book-style structure

A narrow-body arrangement helps use electrical-cabinet space efficiently. Outline drawings, mounting dimensions and weights are listed in the dimension tables.

Installation conditions

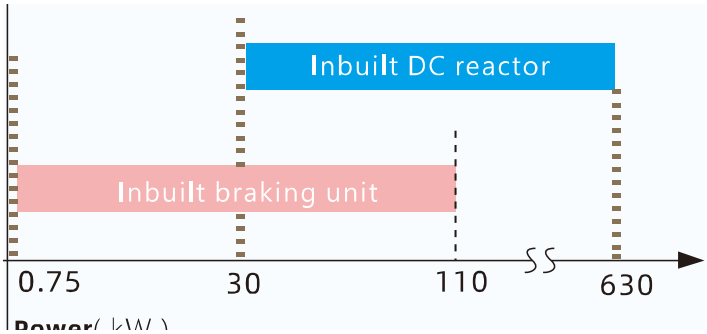
Ambient temperature	Altitude
−10°C to +50°C Above 40°C: derate 1% per °C.	0–2000 m Above 1000 m: derate 1% per 100 m.

Local operation & hardware options



The dual-display keypad shows operating values and status. Control authority for a built-in or external keypad is selected through drive parameters.

Indicator	Meaning
Hz / A / V	Frequency / current / voltage
RPM / %	Speed / percentage
RUN	Drive run / stop
FWD/REV	Reverse / forward
L/R	Terminal / local / communication



380–480 V voltage class

Braking-unit and reactor availability depends on the selected power rating and order configuration.

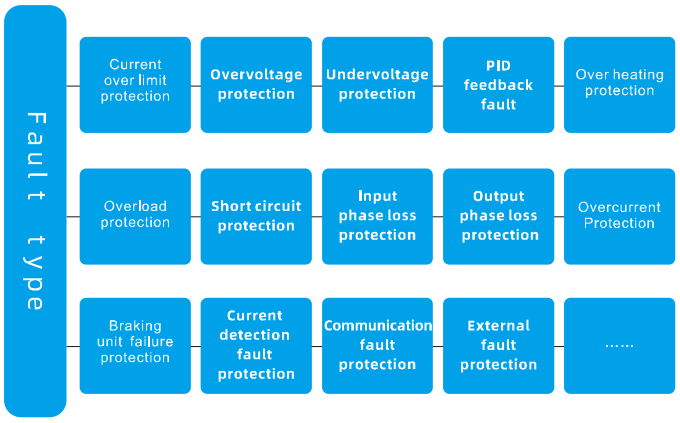
Power range	Braking unit / DC reactor
0.75–11 kW	Optional built-in braking unit
15–22 kW	Standard built-in braking unit
30–110 kW	Optional built-in braking unit and DC reactor
132–630 kW	Standard built-in DC reactor

Flexible signals. Built-in protection.

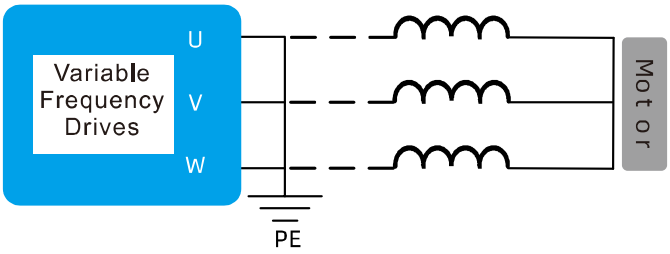
Interface	Quantity / function
Digital inputs	5 bidirectional inputs; 1 high-speed pulse input optional
Digital output	1 output; high-speed pulse output optional
Relay output	1 changeover relay (normally open / normally closed)
Analog inputs	2; voltage/current selection
Analog output	1; voltage/current selection
Auxiliary power	10 V / 20 mA and 24 V / 200 mA
Communication	RS485 Modbus RTU

Protection functions

Overcurrent, overvoltage, undervoltage, overload, short circuit, overtemperature, phase loss, PID feedback, braking-unit, current-detection, communication and external-fault protection.



Protection also covers the buffer relay, fan circuit and external 24 VDC supply.

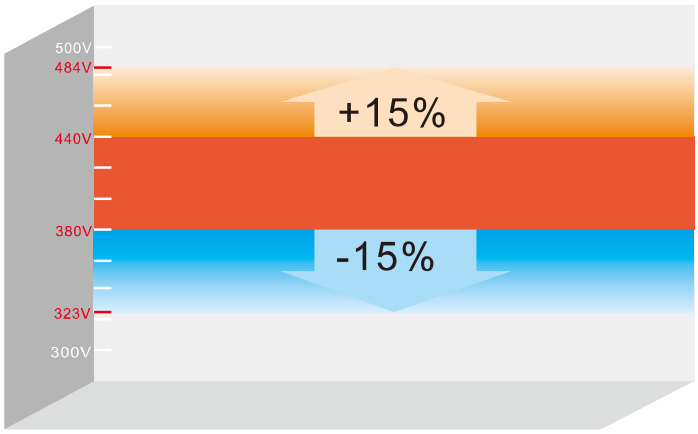


At start-up, the drive monitors the motor for a short circuit to ground and issues an alarm if detected.

Power quality & EMC integration

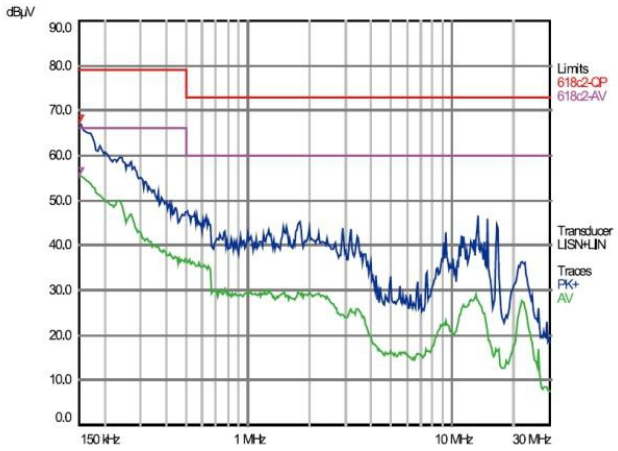
Input voltage tolerance

The input-voltage fluctuation range is ±15% of the rated voltage. This supports operation with supply variations within the specified limits.



EMC-oriented design

The compact filter arrangement and accessible EMC grounding terminal support integration in the electrical cabinet. Follow the installation and grounding requirements for the application.



Practical integration

Coordinate protective earth, motor-cable routing, signal-cable shielding and filter selection with the installation requirements.

Expand to match the application

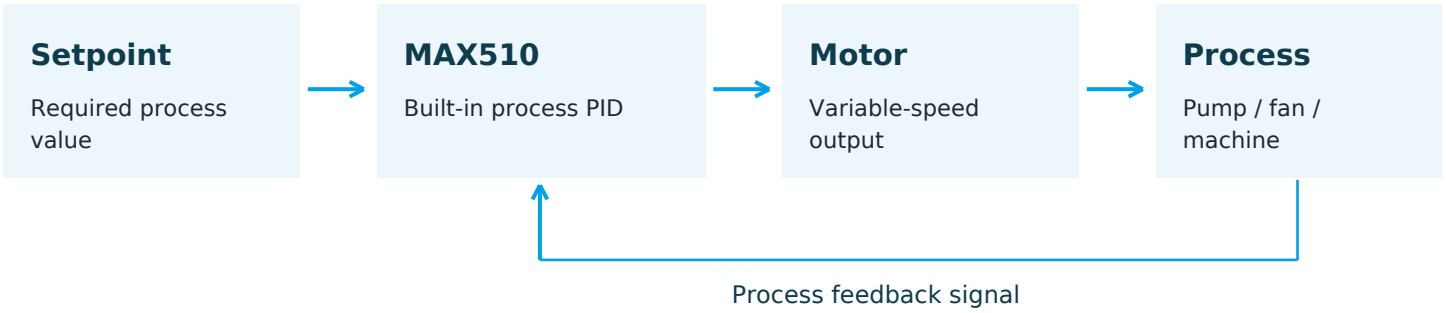
Select the required expansion card for additional I/O, encoder feedback or an industrial network.

Expansion	Supported functions
I/O expansion	AI, AO, DI, DO, relay outputs and motor-temperature sensing (PT100 / PT1000).
Encoder feedback	ABZ, ABZUVW, resolver and sine/cosine interfaces, according to the selected PG card.
Industrial networks	PROFIBUS-DP, PROFINET, EtherCAT, CANopen and Modbus TCP option cards.
Wireless communication	Optional Wi-Fi and Bluetooth communication cards.
Extension card	Reserved / under development in the product range.

From reference to controlled motion

Built-in functions support process control, machine sequencing and smooth restart.

Process PID control



The PID function compares the reference with process feedback and adjusts the drive output. Reference sources include the control panel, communication, analog input and terminal pulse input.

01 Speed sequences & machine cycles

A built-in simple PLC and programmable 16-step speed control support repeatable operating sequences. Fixed-length control, counting and programmable keys add machine-level flexibility.

02 Smooth starting & stopping

Select frequency start, DC braking before start or speed-tracking start. Adjustable acceleration/deceleration profiles, ramp stop and coast stop support different load behaviors.

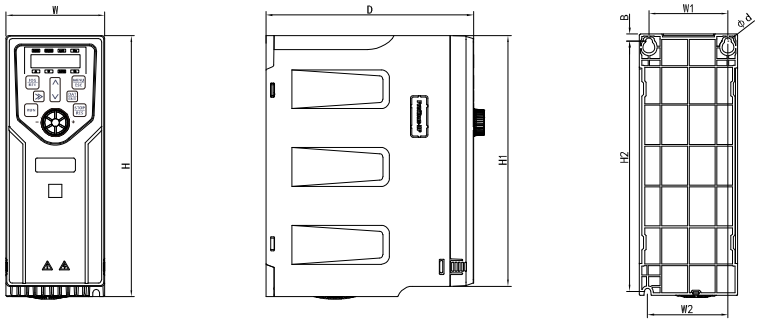
03 Commissioning & motor management

Motor autotuning, parameter copy and backup simplify setup. Two motor parameter sets can be switched to suit applications using different motor configurations.

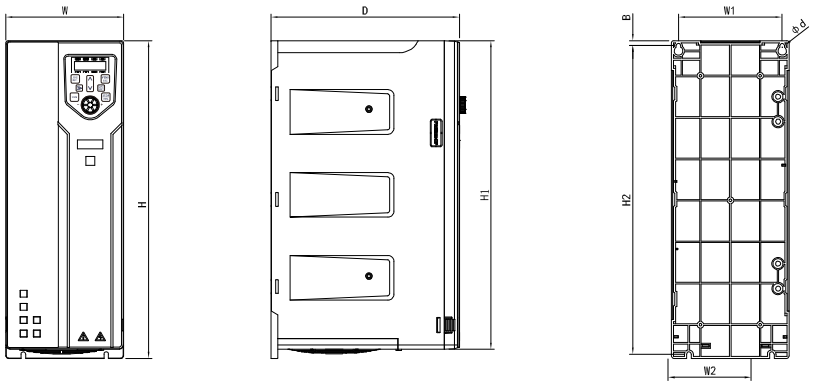
04 Protection & operating continuity

Motor thermal protection, stall prevention, skip-frequency settings, fault history and configurable fan control support reliable operation and maintenance.

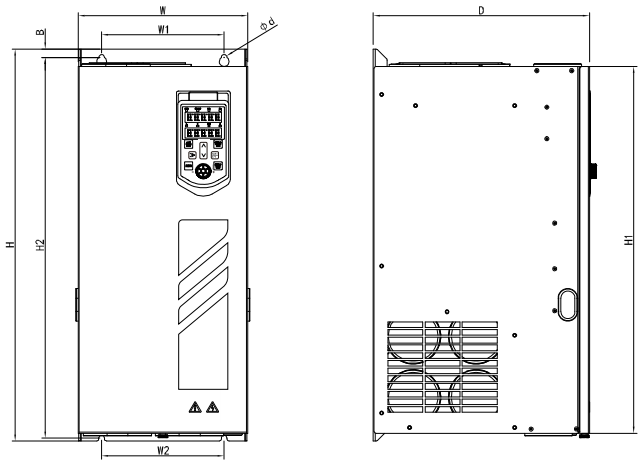
Schematic diagram of P1



Schematic diagram of P2



Schematic diagram of P3



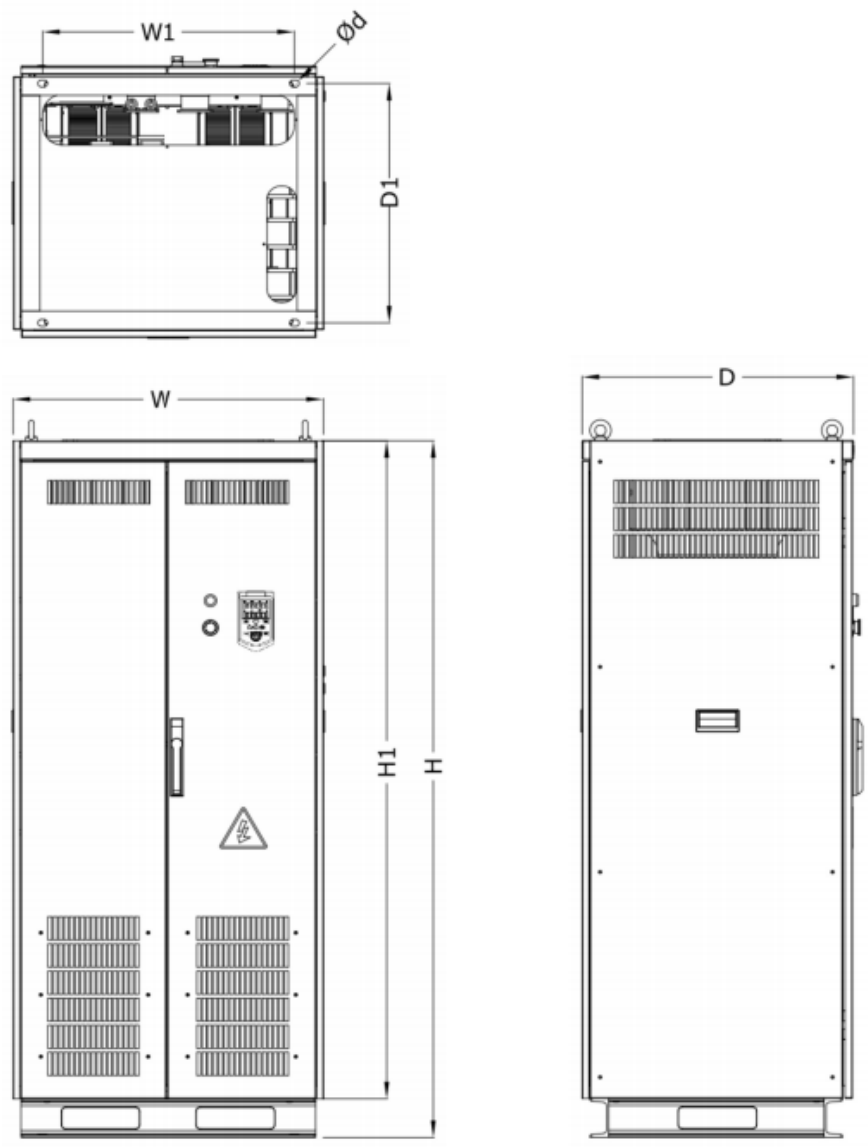
Note: 110kW and below support wall-mounted and embedded installation (optional)
185kW and above support wall-mounted and cabinet installation (optional)

Model dimensions & weights

Dimensions: mm | NW / GW: kg | Fig.: outline drawing

Model	W	H	H1	D	W1	W2	H2	B	d	NW	GW	Fig.
220–240 V | Single-phase input / three-phase output												
MAX510-2S-0.75GB	76	200	193	160	61	62	193	5.5	3-Ø5	1.2	1.5	P1
MAX510-2S-1.5GB												
MAX510-2S-2.2GB												
MAX510-2S-3.7GB	100	242	232	165	84	85	231	5.5	3-Ø5	2.3	2.6	P2
MAX510-2S-5.5GB												
MAX510-2S-7.5GB	142	383	372	227	125	100	372	6	4-Ø6	5.5	7	P2
MAX510-2S-11GB												
MAX510-2S-15G	173	430	408	230	150	150	416	8	4-Ø7	13.3	14.3	P3
MAX510-2S-18.5G												
220–240 V | Three-phase input / three-phase output												
MAX510-2T-0.75GB	76	200	193	160	61	62	193	5.5	3-Ø5	1.2	1.5	P1
MAX510-2T-1.5GB												
MAX510-2T-2.2GB												
MAX510-2T-3.7GB	100	242	232	165	84	85	231	5.5	3-Ø5	2.3	2.6	P2
MAX510-2T-5.5GB												
MAX510-2T-7.5GB	142	383	372	227	125	100	372	6	4-Ø6	5.5	7	P2
MAX510-2T-11GB												
MAX510-2T-15G	173	430	408	230	150	150	416	8	4-Ø7	13.3	14.3	P3
MAX510-2T-18.5G												
380–480 V | Three-phase input / three-phase output												
MAX510-4T-0.75GB/1.5PB	76	200	193	160	61	62	193	5.5	3-Ø5	1.2	1.5	P1
MAX510-4T-1.5GB/2.2PB												
MAX510-4T-2.2GB/3.7PB												
MAX510-4T-3.7GB/5.5PB												
MAX510-4T-5.5GB/7.5PB	100	242	232	165	84	85	231	5.5	3-Ø5	2.3	2.6	P2
MAX510-4T-7.5GB/11PB												
MAX510-4T-11GB/15PB	116	320	306	185	98	98	307	5	3-Ø5	3.5	5	P2
MAX510-4T-15GB/18.5PB	142	383	372	227	125	100	372	6	4-Ø6	5.5	7	P2
MAX510-4T-18.5GB/22PB												
MAX510-4T-22GB/30PB												
MAX510-4T-30G/37P	173	430	408	230	150	150	416	8	4-Ø7	13.3	14.3	P3
MAX510-4T-37G/45P												
MAX510-4T-45G/55P	242	560	524	310	175	175	544	12	4-Ø8	26	27	P3
MAX510-4T-55G/75P												
MAX510-4T-75G/90P												
MAX510-4T-90G/110P	270	638	595	350	195	195	615	15	4-Ø8	36	40	P3
MAX510-4T-110G/132P												
MAX510-4T-132G/160P-L	349	738	681	403	220	220	715	13	4-Ø10	65	72	P3
MAX510-4T-160G/185P-L												
MAX510-4T-185G/200P-L	360	940	851	480	200	200	910	21	4-Ø18	90	102	P3
MAX510-4T-200G/220P-L												
MAX510-4T-220G/250P-L												
MAX510-4T-250G/280P-L	369	1141	1050	550	200	200	1110	20	4-Ø18	130	150	P3
MAX510-4T-280G/315P-L												
MAX510-4T-315G/355P-L	400	1250	1160	550	240	240	1213	24	4-Ø18	209	225	P3
MAX510-4T-355G/400P-L												
MAX510-4T-400G/450P-L												
MAX510-4T-450G/500P-L	460	1400	1294	544	300	300	1360	24	4-Ø18	230	255	P3
MAX510-4T-500G/560P-L												
MAX510-4T-560G/630P-L												

Schematic diagram of P4



Model	External and installation dimensions (mm)							N.W (Kg)	G.W (Kg)
	W	H	H1	D	D1	W1	(mm)		
MAX510-4T-630G/710P-I MAX510-4T-710G/800P-I	850	1800	1700	700	617	650	4-f 18	475	500

Remarks: Cabinet installation, including input AC reactor, optional output AC reactor, no air switch.

I/O, feedback & operator panels

PD510IO1

I/O expansion
1 AI, 1 AO
4 DI, 1 DO
2 relays
PT100 / PT1000 / KTY84



PD510PG1-TTL / HTL

Incremental encoder
TTL: 5 V; HTL: 24 V
1:1 frequency output
Open-collector output



PD510PG2

Sine/cosine encoder
5 V or 8 V supply
Sine/cosine and absolute encoder support



PD510PG3

Resolver interface
Transformation ratio: 0.5



Dual-display keypad

Dual LED display
Operating values and status indication



LCD keypad

LCD operator panel
Navigation and soft keys
Dedicated start, stop and help keys



Industrial network option cards

PD510PN1

PROFINET
communication card



PD510DP1

PROFIBUS-DP
communication card



PD510EN1

Modbus TCP
communication card



PD510EC1

EtherCAT
communication card



PD510CAN1

CANopen
communication card



Standard communication

RS485 Modbus RTU is provided by the standard interface. The industrial networks shown here use the corresponding optional cards.

Braking resistors | 220–240 V

Model	Power	Ω	Brake unit
MAX510-2S-0.75GB	80 W	150	Built-in
MAX510-2S-1.5GB	100 W	100	Built-in
MAX510-2S-2.2GB	100 W	70	Built-in
MAX510-2S-3.7GB	200 W	40	Built-in
MAX510-2S-5.5GB	300 W	26	Built-in
MAX510-2S-7.5GB	500 W	16	Built-in
MAX510-2S-11GB	800 W	11	Built-in
MAX510-2S-15G	1000 W	10	Optional
MAX510-2S-18.5G	1400 W	8	Optional
MAX510-2T-0.75GB	80 W	150	Built-in
MAX510-2T-1.5GB	100 W	100	Built-in
MAX510-2T-2.2GB	100 W	70	Built-in
MAX510-2T-3.7GB	200 W	40	Built-in
MAX510-2T-5.5GB	300 W	25	Built-in
MAX510-2T-7.5GB	500 W	16	Built-in
MAX510-2T-11GB	800 W	11	Built-in
MAX510-2T-15G	1000 W	10	Optional
MAX510-2T-18.5G	1400 W	8	Optional

Braking resistors | 380–480 V

0.75–110 kW

Model	Power	Ω	Brake unit
MAX510-4T-0.75GB/1.5PB	150 W	150	Optional built-in
MAX510-4T-1.5GB/2.2PB	150 W	150	Optional built-in
MAX510-4T-2.2GB/3.7PB	300 W	100	Optional built-in
MAX510-4T-3.7GB/5.5PB	300 W	76	Optional built-in
MAX510-4T-5.5GB/7.5PB	400 W	76	Optional built-in
MAX510-4T-7.5GB/11PB	500 W	76	Optional built-in
MAX510-4T-11GB/15PB	800 W	40	Optional built-in
MAX510-4T-15GB/18.5PB	1000 W	27	Built-in
MAX510-4T-18.5GB/22PB	4.0 kW	27	Built-in
MAX510-4T-22GB/30PB	4.5 kW	27	Built-in
MAX510-4T-30G/37P	6 kW	16	Optional built-in
MAX510-4T-37G/45P	7.4 kW	16	Optional built-in
MAX510-4T-45G/55P	9 kW	14	Optional built-in
MAX510-4T-55G/75P	11 kW	10	Optional built-in
MAX510-4T-75G/90P	15 kW	8	Optional built-in
MAX510-4T-90G/110P	18 kW	6.8	Optional built-in
MAX510-4T-110G/132P	22 kW	6.8	Optional built-in

Braking resistors | 380–480 V

132–710 kW

Model	Power	Ω	Brake unit
MAX510-4T-132G/160P-L	27 kW	4.5	External unit
MAX510-4T-160G/185P-L	32 kW	3.6	External unit
MAX510-4T-185G/200P-L	37 kW	3.3	External unit
MAX510-4T-200G/220P-L	40 kW	3.3	External unit
MAX510-4T-220G/250P-L	44 kW	2.7	External unit
MAX510-4T-250G/280P-L	50 kW	2.7	External unit
MAX510-4T-280G/315P-L	56 kW	2.2	External unit
MAX510-4T-315G/355P-L	63 kW	1.9	External unit
MAX510-4T-355G/400P-L	70 kW	1.7	External unit
MAX510-4T-400G/450P-L	80 kW	1.6	External unit
MAX510-4T-450G/500P-L	90 kW	1.3	External unit
MAX510-4T-500G/560P-L	100 kW	1.2	External unit
MAX510-4T-560G/630P-L	120 kW	1.2	External unit
MAX510-4T-630G/710P-I	—	—	No brake
MAX510-4T-710G/800P-I	—	—	No brake

Electrical & control performance

220 V models drive 220–240 V motors; 380 V models drive 380–480 V motors.

Characteristic	Specification
Rated input voltage	220 V class: single/three-phase 220–240 V 380 V class: three-phase 380–480 V
Input frequency	50 / 60 Hz, tolerance ±5%
Input voltage tolerance	Continuous and short-term fluctuation: ±15% Voltage imbalance: <3%
Output voltage	Three-phase, 0–rated input voltage; error within ±3%
Output frequency	0.00–600.00 Hz; resolution 0.01 Hz
Overload capacity	G duty: 150% for 60 s; P duty: 120% for 60 s
Control modes	V/f; sensorless vector control (SVC); feedback vector control (FVC)
Speed regulation range	SVC: 1:200; FVC: 1:1000
Speed accuracy	SVC: 0.5%; FVC: 0.02%
Torque accuracy	SVC: 5%; FVC: 3%
Torque boost	Automatic; manual adjustment: 0.1–30.0%
Starting torque	SVC: 150% at 0.25 Hz; FVC: 200% at 0 Hz
Acceleration / deceleration	0.0–30000 s
Switching frequency	0.5–16 kHz

Operation & application functions

Category	Functions
Frequency reference	Digital / control panel, communication, analog and terminal pulse settings.
Starting / stopping	Starting frequency, DC brake start and speed-tracking start. Ramp stop or coast stop.
Parameters & commissioning	Parameter copy and backup; flexible display / hiding; two motor parameter sets; autotuning; programmable multifunction key.
Speed & sequence control	Master / auxiliary reference switching; 16-step programmable speed; flexible frequency command for 2-step speed; simple PLC; process PID; wobble frequency; fixed-length and counting functions.
Motion & torque	Selectable acceleration/deceleration curves; four acceleration/deceleration times; brake control; overexcitation braking; skip frequency; frequency binding; droop; field weakening; high-precision torque limit; separate V/f control.
Protection & continuity	Common DC bus; flying start; overvoltage / undervoltage stall protection; restart after power loss; motor thermal protection; flexible fan control; three historical fault records.

Installation & environmental limits

Characteristic	Specification
Installation location	Indoors; avoid direct sunlight, dust, corrosive or flammable gases, oil mist, water vapor, water droplets and salt.
Altitude	0–2000 m. Above 1000 m, derate by 1% for every additional 100 m.
Ambient temperature	−10°C to +50°C. From 40°C to 50°C, derate rated output current by 1% for each additional 1°C.
Relative humidity	0–95%; non-condensing
Vibration	Less than 5.9 m/s^2 (0.6 g)
Storage temperature	−20°C to +60°C
Efficiency at rated load	≤7.5 kW: ≥93% 11–45 kW: ≥95% ≥55 kW: ≥98%
Protection rating	IP20
Cooling	Forced air cooling



INOMAX INDUSTRIAL DRIVES

INOMAX

Engineered for demanding industrial applications.

SHENZHEN INOMAX TECHNOLOGY CO., LTD

High-performance drives for factory automation and general industrial applications.

Ideal Science and Technology Park,
Guanlan Avenue, Longhua District, Shenzhen,
Guangdong, China

Tel / Fax +86 755 2100 2285

info@inomaxtechnology.com

www.inomaxtechnology.com