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INOVANCE

MD520 Series High-Performance General-Purpose AC Drive

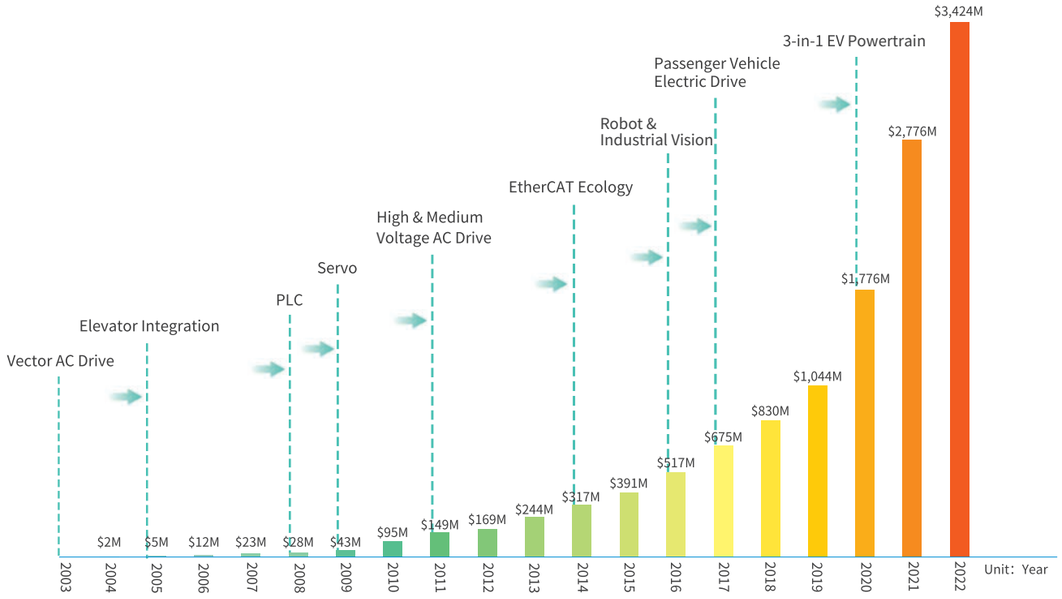
Energy-Saving, High-Quality and Efficient,
Safe and Stable, Globally-Certified



FORWARD,ALWAYS PROGRESSING

About Inovance

The Inovance Group, founded in 2003, is a rising star in the global industrial automation business and has revenues of $3.4bn in 2022. The company 's flexible production techniques and expert understanding of all industry sectors – from plastics to printing to packag-ing to iron & steel production – have allowed it to establish globally leading industry-specific business units. Over the years, Inovance has built an engineering team with specialist expertise in industrial automation. This knowledge allows it to form strong partnerships with OEMs and end users, providing ongoing advice about how to get the most out of their automation solutions today, and how to stay prepared for the market and technology changes that are coming in future.



2003
founded

IPO:2010
Shenzhen, China

20,000+
employees

Global
network of offices and distributors

$3.4+bn
revenues in 2022

Servo System

3,360,000+
sets delivered in 2022

AC Drive

4,350,000+
sets delivered in 2022

Industrial Robot

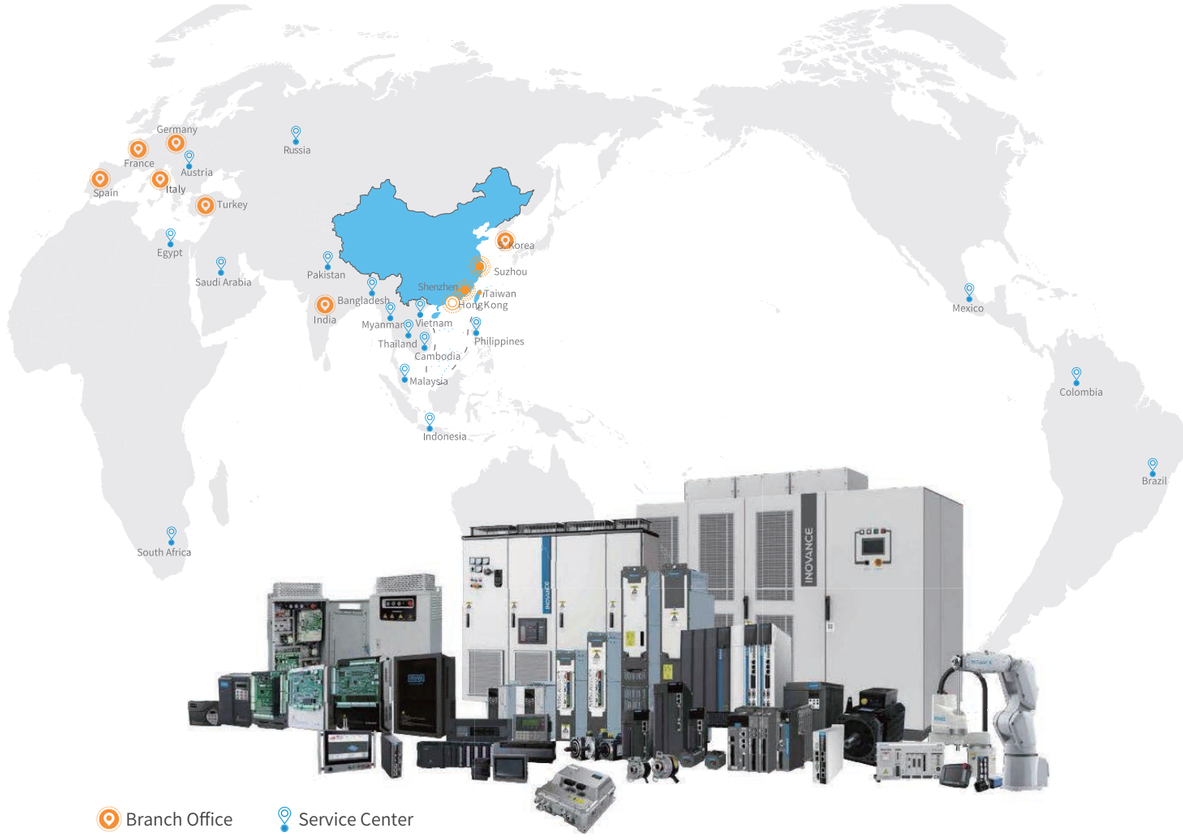
17,000+
sets delivered in 2022

Controller

3,560,000+
sets delivered in 2022

A global business

Inovance is headquartered in Shenzhen, China, and has built a global operation with offices and facilities in Germany, France, Italy, Spain, Turkey, India, and South Korea. Additionally, the company has a strong network of distribution partners around the world.



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INOVANCE
www.inovance.eu

Global Factories

Inovance has built digital factories around the world, including one in India that has been in operation for a decade. In 2022, we started to build the Hungary factory for localized manufacturing in Europe.

Suzhou



Super manufacturing base

Yueyang



Servo system

Changzhou



Automotive power system

Nanjing



Industrial robotics



Changchun Weton Optoelectronic Technology

Founded in: Apr. 1992
Area covered: 3,800 m²



BST Electric

Founded in: Mar. 1998
Area covered: 35,753 m2



Guangdong MJB factory

Founded in: Dec. 2003
Area covered: 7,500 m2



Jiashan manufacturing base

Put into operation in: May 2019
Area covered: 66,000 m2



BST factory in Tianjin

Founded in: June 2002
Area covered: 10,000 m2



BNK Cable

Founded in: Dec. 2003
Area covered: 18,000 m2



Factory in India

Founded in: 2012



Factory in Hungary

Founded in: 2022



Production Line of Automation Products

Take the lead in realizing the automation of the whole process of SMT,plug-in and spraying in China.



Jiangsu Demonstration Intelligent Workshop: Intelligent and Lean New Energy Powertrain and Component Manufacturing Platform

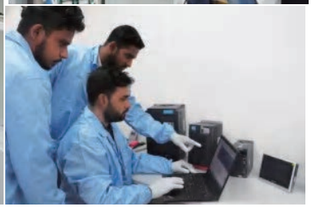
Automated Line for EV Powertrain

Worldwide R&D network

Inovance invests heavily in R&D, enabling the company to continuously release a steady stream of new and innovative products. To ensure that all products meet all key global standards wherever possible, Inovance's R&D teams in Europe, India, and China, all work together seamlessly and virtually on engineering projects. Inovance calls this co-development, and the practice ensures that the best technology knowledge and solutions can be gathered from all around the business; and that they are always implemented and adapted in a way that meets the needs of local markets. The company's commitment to innovation is demonstrated through its headcount: over 20% of Inovance's entire global workforce is in R&D.









Semi-anechoic chamber



EMC surge testing



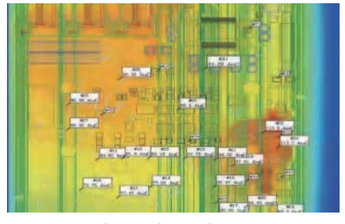
Highly accelerated life testing



Vibration & shock testing



Motion servo testing



Thermal simulation

6 R&D Centers

Shenzhen, Suzhou, Xi'an,Nanjing, Milan (Italy),Stuttgart (Germany)

USD 320+ Million

Account for 9.7% of revenue in 2022

4700+ R&D Employees

Account for 24% of total employees

2923 Patents And Software Copyrights

Invention 464 / Utility model 1662 / Industrial design 446 / Software copyright 351

MD520 Series AC Drive

Energy-Saving, High-Quality and Efficient,
Safe and Stable, Globally-Certified

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MD520

Applicable industries

Air compressor	Textile	Ceramic
Semiconductor	Stage equipment	Rubber and plastics
Test bench	Machine tool	Logistics
Food and beverage	Woodworking	Lithium battery

Metal product and cable ...



Product Positioning

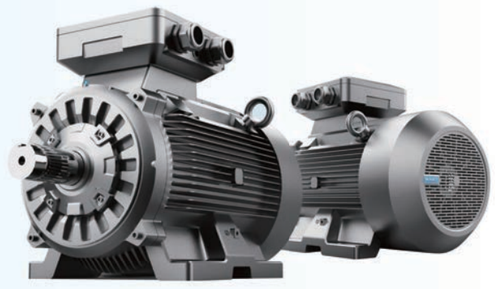
The MD520 series is a high-performance general-purpose AC drive developed by Inovance. It supports drive algorithms of both common asynchronous motors and high energy efficient motors, meeting the needs of energy-saving and upgrading. Compared with the last generation of the product, the new drive has been greatly enhanced in performance. The speed control range, torque output accuracy, and other performance indicators have reached the advanced level of the industry, which improves the system debugging and operation efficiency. The drive is equipped with various safety functions to ensure personal and equipment safety during production, such as built-in fault detection functions, shutdown mechanisms, and SIL3-level STO function. It is certified by CE, UL, EAC, UKCA, safety certification, and other standards. Therefore, it has been widely used in industries such as air compressor, textile, cable, rubber and plastic, ceramics, machine tool, and food and beverage.



Product Highlights

Energy-Saving

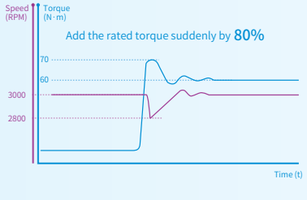
- The drive supports drive algorithms for high energy efficient motors, including surface-mounted permanent magnet synchronous motors, built-in permanent magnet synchronous motors, and reluctance motors.
- With the minimum current algorithm, the drive can be more energy-efficient under the same load.
- Using the field processes, the drive can achieve system-level energy saving in the application scenarios.



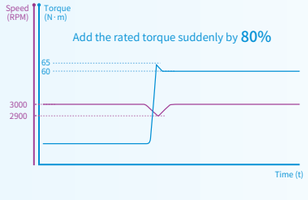
High-Quality and Efficient

- The improved performance of the drive helps enhance the terminal production yield and equipment stability.
- In the SVC mode, the asynchronous motor can achieve an increase in the speed adjustment range to 1:500, load capacity of 150% at zero speed, output torque accuracy of 5%, and linearity of 3%.
- With the optimization of the synchronous motor algorithm, the start torque can reach 200% at zero speed and the torque accuracy can reach ±3%.
- The drive features dynamic response, which allows the speed drop rate to be reduced by 70% upon a sudden increase in load.

Speed and torque response curve of the old scheme



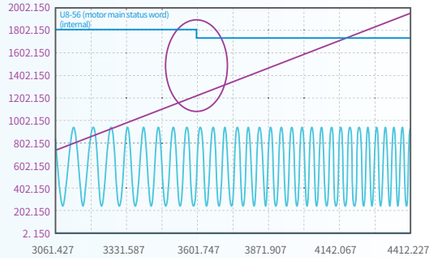
Speed and torque response curve of the new scheme



Safe and Stable

- Versatile fault detection functions, including IGBT self-check, encoder self-check, and load harmonic analysis are integrated to fully protect the drive and system.
- The drive supports self-check upon power-on to identify system risks in advance.
- You can customize shutdown modes and limp modes when a fault occurs. If the encoder fails, the system can seamlessly switch to the encoder-free operation state to ensure continuous running.
- The optional STO function complies with the SIL3-level security certification.





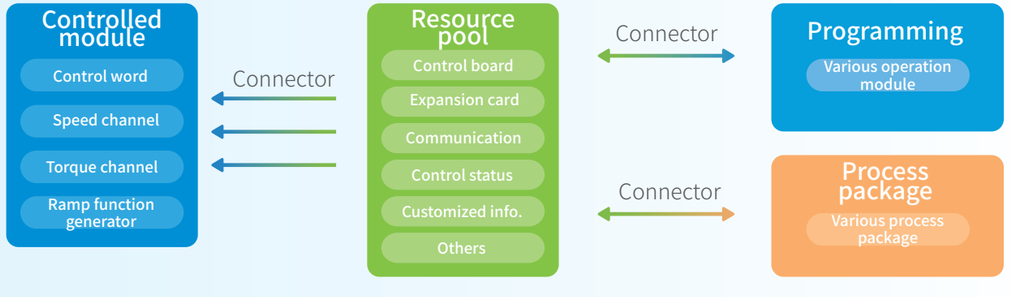
Smooth switchover from FVC to SVC

Globally-Certified

- The drive complies with CE, UL(cUL), KCC, EAC, UKCA, and function safety certifications.

Features

- Secondary development is supported, quickly meeting the field process requirements.
- The built-in connector supports parameter input and output and supports association and operation of the internal core parameters.
- The drive provides common built-in modules such the logic operation module, mathematical operation module, and word and bit conversion module for common function development.



Naming Rules

MD520 - 4T 220 B S - L

① ② ③ ④ ⑤ ⑥

①	Product Name
MD520	AC drive series

②	Voltage Class
4T	Three-phase 380 V to 480 V (power range: 0.4 kW to 630 kW)
2T	Three-phase 200 V to 240 V (power range: 0.4 kW to 200 kW)
2S	Single-phase 200 V to 240 V (power range: 0.4 kW to 2.2 kW)

③	Power Rating (kW)
0.4	0.4
...	...
630	630
...	...

④	Braking Unit
N/A	Without the braking unit
B	With the braking unit

⑤	Function Safety
N/A	Without the STO function
S	With the STO function

⑥	Reactor
N/A	See the note below.
-T	With the DC reactor; applicable to the T5 models
–L	With the AC output reactor; applicable to the T10 to T12 models
-A	With the auxiliary power distribution box; applicable to the T13 models

Note

- For three-phase 380 V to 480 V drives, T1 to T4 models support external AC reactors and do not support DC reactors. DC reactors are optional for T5 models and standard for T6 models.
- For three-phase 380 V to 480 V drives, braking units are standard for T1 to T4 models and optional for T5 to T8 models.

Technical Specifications

Control performance

Motor type		Asynchronous induction motors (IM), permanent magnet synchronous motors (PMSM), and synchronous reluctance motors (SynRM)
		Sensorless vector control (SVC), feedback vector control (FVC), and voltage/frequency (V/f) control
Asynchronous motor (V/f control)	Supported function	Energy saving control, overvoltage suppression, overcurrent suppression, voltage dip suppression, oscillation suppression, torque boost, slip compensation, different V/f curve selection, V/f separation, DC braking, random PWM, overexcitation fast deceleration, and droop control
Asynchronous motor (FVC)	Supported function	Energy saving control, inertia auto-tuning, acceleration feedforward, droop control, master-slave control, free programming and self-adaption of speed loop parameters, load observer, overvoltage suppression, voltage dip suppression, overexcitation fast deceleration, automatic voltage adjustment (AVR generator bus voltage control), DC braking, continuous operation after smooth switchover to SVC upon encoder abnormality, and FVC-to-SVC switchover at designated frequency (This can avoid abnormal operation caused by high-speed jitter of the encoder.)
	Supported encoder	23-bit communication encoder, ABZ encoder (differential, collector, push-pull), resolver, and sin-cos encoder
	Start torque	200%
	Speed step response	Within 2 ms
	Speed stability accuracy	0.02% when the motor and encoder are free from faults
	Speed fluctuation	0.05% when the motor and encoder are free from faults
	Torque control accuracy	±2%
	Flux weakening magnification	5
Asynchronous motor (SVC)	Supported function	Energy saving control, inertia auto-tuning, acceleration feedforward, droop control, master-slave control, free programming and self-adaption of speed loop parameters, load observer, overvoltage suppression, voltage dip suppression, overexcitation fast deceleration, automatic voltage adjustment (AVR generator bus voltage control), flying start, DC braking, continuous operation after smooth switchover to SVC upon encoder abnormality, and FVC-to-SVC switchover at designated frequency (This can avoid abnormal operation caused by high-speed jitter of the encoder.)
	Speed regulation range	1:500
	Start torque	200%
	Torque step response	Within 2 ms
	Torque control accuracy	±3% when the torque is above 5 Hz
	Speed accuracy	Within 10% of the rated slip value
	Flux weakening magnification	5
Synchronous motor (FVC)	Supported function	Electronic motor stator shorting, overexcitation fast deceleration, master-slave control, maximum torque per ampere (MTPA) control, inertia auto-tuning, acceleration feedforward, droop control, free programming and self-adaption of speed loop parameters, overvoltage suppression, voltage dip suppression, automatic voltage adjustment (AVR generator bus voltage control), DC braking, continuous operation after smooth switchover to SVC upon encoder abnormality, and FVC-to-SVC switchover at designated frequency (This can avoid abnormal operation caused by high-speed jitter of the encoder.)
	Supported encoder	23-bit communication encoder, ABZ encoder (differential, collector, push-pull), resolver, and sin-cos encoder
	Start torque	200%
	Torque step response	Within 2 ms
	Speed stability accuracy	0.02% when the motor and encoder are free from faults
	Speed fluctuation	0.05% when the motor and encoder are free from faults
	Torque control accuracy	±2%

Control performance

Synchronous motor (SVC)	Supported function	Flying start, electronic motor stator shorting, overexcitation fast deceleration, master-slave control, MTPA control, inertia auto-tuning, acceleration feedforward, droop control, free programming and self-adaption of speed loop parameters, overvoltage suppression, voltage dip suppression, automatic voltage adjustment (AVR generator bus voltage control), DC braking, continuous operation after smooth switchover to SVC upon encoder abnormality, and FVC-to-SVC switchover at designated frequency (This can avoid abnormal operation caused by high-speed jitter of the encoder.)
	Speed regulation range	1:200
	Start torque	200%
	Torque step response	Within 2 ms
	Speed stability accuracy	0.05% when the motor is free from faults
	Torque control accuracy	±3% when the torque is above 5 Hz

Basic functions

Command source		The commands are used to start or stop the motor. The command sources include the DI, DO, virtual DI, virtual DO, and DI/DO on the external expansion card. Switchover among four different sets of motor parameters and control parameters is supported. Start and stop commands can be set through programming.
Reference channel	Input frequency resolution	Digital setting: 0.01 Hz Analog setting: maximum frequency x 0.1%
	Speed/Torque reference	Acceleration and deceleration curve, dynamic switchover among multiple acceleration and deceleration time sets, acceleration and deceleration S curve, external PID reference, AI (2 channels, supporting ±10 V or 0-20 mA), speed and torque set through communication, pulse reference (DI5), multi-reference, speed/torque set through programming
Communication mode	Communication with the host controller	Modbus (Modbus RTU, Modbus ASCII, Modbus TCP/IP), PROFIBUS DP, CANlink, CANopen, PROFINET, EtherCAT, and Ethernet/IP
Output limit		Torque limit, power limit, current limit, maximum/minimum torque limit, speed limit, and jump frequency
Process control	PID	Hibernation, configurable reference and feedback sources, 2-segment PID parameter switchover, feedback loss detection, configuration of output limit, configuration initialization
	Brake	Brake with or without feedback, start speed, start torque, and brake judgment condition settings
Protection	AC drive and motor protection	Protection against overvoltage, overcurrent, overload, motor overheating (PT100, PT1000, KTY-84-130, PTC-130, PTC-150), and load loss, as well as automatic fault reset, automatic restart, and limp mode upon fault

Customized functions

Programming	Programming is supported. Word and bit conversion, word and double word conversion, logic (AND, OR, NOT, XOR, XNOT), arithmetic operations (fixed point and floating point addition/subtraction/multiplication/division, absolute value, numerical comparison), selector switch, free filtering, switch-on and switch-off delay through logic, multi-point curve, and constant value
Self-test	The AC drive and motor support self-test. IGBT shoot through, short circuit to ground, phase loss, and inter-phase short circuit tests are supported.
Long-distance drive	The AC drive supports long-distance driving of the motor and various types of output filters.
Reluctance motor	The drive can control reluctance motors in FVC/SVC mode, ferrite motors with magnet, pure reluctance motors, and permanent magnet and ferrite hybrid reluctance motors.
Electromagnetic coil	The current frequency is set separately. The three-phase AC power supply with variable frequency is provided, which applies mainly to electromagnetic mixers and welding equipment.
Powerful software	The software InoDriveShop allows you to upload and download AC drive parameters and supports the oscilloscope function. In addition, the InoDriveShop supports remote commissioning and fault diagnosis. With the oscilloscope function, you can monitor the internal state of the AC drive.

Operation

Motor over-heating protection	AI2 can input signals of the motor temperature sensor (PT100, PT1000, KTY-84-130, PTC-130, and PTC-150).	
Operation command source	Operating panel, control terminal, and serial communication port (switchable in multiple ways)	
Frequency source	The drive supports 10 frequency sources, including digital settings, analog voltage settings, analog current settings, pulse, and serial port communication, which can be switched over in various ways.	
Auxiliary frequency source	The drive supports 10 auxiliary frequency reference sources. The auxiliary frequency reference can be used together with the main frequency reference to implement fine adjustment and frequency superposition.	
Input terminal	Standard: Five DIs Two AIs AI1 and AI2. AI1 supports only -10 V to +10 V voltage input, and AI2 supports -10 V to +10 V voltage input, 0 mA to 20 mA current input, and temperature input, which can be switched over through the DIP switch.	Extension: Five DIs
Output terminal	Standard: One DO One relay output terminal One FM terminal (can be assigned with the high-speed pulse output or common DO function) One AO, supporting 0 mA to 20 mA current output or 0 V to 10 V voltage output	Extension: One DO One relay output terminal

Display and operating panel

LED operating panel	It can display parameters and AC drive status (forward running, reverse running, stop, operating panel/terminal/communication control, speed/torque control, STO state) and can be used to modify parameters.
External LCD operating panel	It is optional and displays content in Chinese, English, or Russian. You can use it to modify parameters.
Parameter copy	You can use the LCD operating panel to implement quick parameter uploading and downloading.
Key locking and function	Certain keys on the operating panel can be locked. In addition, functions with limited availability range can be assigned to certain keys. This can prevent accidental operation.

Environment

Operating location	Indoors and free from direct sunlight, dusts, corrosive gases, combustible gases, oil mists, vapors, water drips, and salty elements
Altitude	For altitude equal to or below 1000 m, derating is not required. For altitude ranging from 1000 m to 3000 m, derate 1% for every additional 100 m. For altitude above 3000 m, contact Inovance. Note that the maximum altitude for T1 models is 2000 m. If the altitude is above 2000 m, contact Inovance.
Ambient temperature	–10° C to +50° C. For temperature ranging from 40° C to 50° C, derate 1.5% for every additional 1° C.
Humidity	< 95% RH, non-condensing
Vibration	< 5.9 m/s^2 (0.6 g)
Storage temperature	-20° C to +60° C

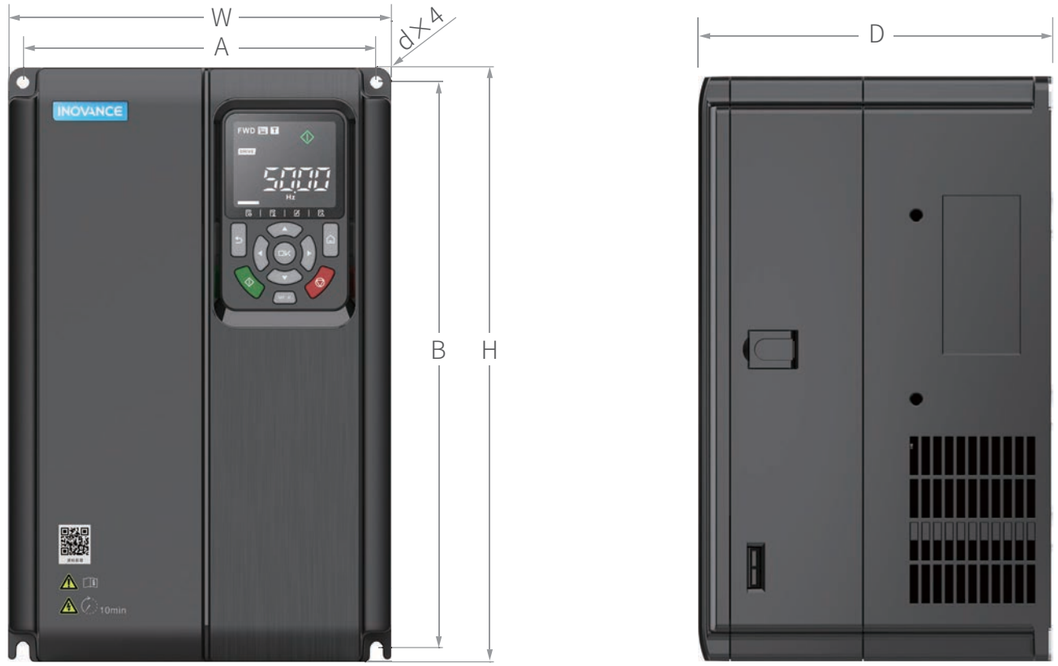
Electrical Specifications

Model	Structure	Heavy Load					Light Load				
		Power Supply Capacity	Input Current	Rated Power		Output Current	Power Supply Capacity	Input Current	Rated Power		Output Current
		(kVA)	(A)	(kW)	(HP)	(A)	(kVA)	(A)	(kW)	(HP)	(A)
Three-phase 380 VAC to 480 VAC, 50/60 Hz											
MD520-4T0.4B(S)	T1	2	1.8	0.4	0.5	1.5	2.8	2.5	0.7	1	2.1
MD520-4T0.7B(S)	T1	2.8	2.4	0.8	1	2.1	4.1	3.7	1.1	1.5	3.1
MD520-4T1.1B(S)	T1	4.1	3.7	1.1	1.5	3.1	5.0	4.6	1.5	2	3.8
MD520-4T1.5B(S)	T1	5	4.6	1.5	2	3.8	6.7	6.4	2.2	3	5.1
MD520-4T2.2B(S)	T1	6.7	6.3	2.2	3	5.1	9.5	9.1	3	4	7.2
MD520-4T3.0B(S)	T1	9.5	9	3	4	7.2	12	11.3	3.7	5	9
MD520-4T3.7B(S)	T2	12	11.4	3.7	5	9	17.5	15.9	5.5	7.5	13
MD520-4T5.5B(S)	T2	17.5	16.7	5.5	7.5	13	22.8	22.4	7.5	10	17
MD520-4T7.5B(S)	T3	22.8	21.9	7.5	10	17	33.4	32.9	11	15	25
MD520-4T11B(S)	T3	33.4	32.2	11	15	25	42.8	39.7	15	20	32
MD520-4T15B(S)	T4	42.8	41.3	15	20	32	45	44	18.5	25	37
MD520-4T18.5(B)(S)	T5	36	49.5	18.5	25	37	44	59	22	30	45
MD520-4T18.5(B)(S)-T	T5	33	43.4	18.5	25	37	39	51.3	22	30	45
MD520-4T22(B)(S)	T5	44	59	22	30	45	59	65.8	30	40	60
MD520-4T22(B)(S)-T	T5	39	51.3	22	30	45	52	65.8	30	40	60
MD520-4T30(B)(S)	T6	52	57	30	40	60	65	71	37	50	75
MD520-4T37(B)(S)	T6	63	69	37	50	75	79	86	45	60	91
MD520-4T45(B)(S)	T7	81	89	45	60	91	97	111	55	75	112
MD520-4T55(B)(S)	T7	97	106	55	75	112	127	143	75.0	100	150 m
MD520-4T75(B)(S)	T8	127	139	75	100	150	150	167	90	125	176
MD520-4T90(S)	T8	150	164	90	125	176	179	198	110	150	210
MD520-4T110(S)	T8	179	196	110	150	210	220	239	132	180	253
MD520-4T132(S)	T9	220	240	132	180	253	263	295	160	220	304
MD520-4T160(S)	T9	263	287	160	220	304	334	359	200	275	377
MD520-4T200(S)(-L)	T10	334	365	200	275	377	404	456	250	340	465
MD520-4T220(S)(-L)	T10	375	410	220	300	426	453	507	280	380	520
MD520-4T250(S)(-L)	T11	404	441	250	340	465	517	559	315	430	585
MD520-4T280(S)(-L)	T11	453	495	280	380	520	565	624	355	485	650
MD520-4T315(S)(-L)	T12	517	565	315	430	585	629	708	400	545	725
MD520-4T355(S)(-L)	T12	565	617	355	485	650	716	782	450	600	820
MD520-4T400(S)(-L)	T12	629	687	400	545	725	952	840	500	800	880
MD520-4T500(S)(-A)	T13	766	838.1	500	680	900	952	1041	630	857	1120
MD520-4T560(S)(-A)	T13	868	949.6	560	762	1020	1070	1170.9	710	966	1260
MD520-4T630(S)(-A)	T13	957	1043.5	630	857	1120	1194	1301.5	800	1088	1460

Model	Structure	Heavy Load					Light Load				
		Power Supply Capacity	Input Current	Rated Power		Output Current	Power Supply Capacity	Input Current	Rated Power		Output Current
		(kVA)	(A)	(kW)	(HP)	(A)	(kVA)	(A)	(kW)	(HP)	(A)
Three-phase 200 VAC to 240 VAC, 50/60 Hz											
MD520-2T0.4B(S)	T1	1.1	2.4	0.4	0.5	2.1	2.1	3.7	0.7	1.0	3.1
MD520-2T0.7B(S)	T1	2.1	4.6	0.8	1.0	3.8	2.9	6.4	1.1	1.5	5.1
MD520-2T1.1B(S)	T1	2.9	6.3	1.1	1.5	5.1	4.1	9.1	1.5	2.0	7.2
MD520-2T1.5B(S)	T1	4.1	9.0	1.5	2.0	7.2	5.2	11.3	2.2	3.0	9.0
MD520-2T2.2B(S)	T2	5.2	11.4	2.2	3.0	9.0	7.6	15.9	3.7	5.0	13.0
MD520-2T3.7B(S)	T2	7.6	16.7	3.7	5.0	13.0	14.7	22.4	5.5	7.5	17.0
MD520-2T5.5B(S)	T3	14.7	32.2	5.5	7.5	25.0	18.9	39.7	7.5	10.0	32.0
MD520-2T7.5B(S)	T4	18.9	41.3	7.5	10.0	32.0	27.0	44.0	11.0	15.0	37.0
MD520-2T11(B)(S)	T5	27.0	59.0	11.0	15.0	45.0	26.1	65.8	15.0	20.0	60.0
MD520-2T15(B)(S)	T6	26.1	57.0	15.0	20.0	60.0	31.6	71.0	18.5	25.0	75.0
MD520-2T18.5(B)(S)	T6	31.6	69.0	18.5	25.0	75.0	40.7	86.0	22.0	30.0	91.0
MD520-2T22(B)(S)	T7	40.7	89.0	22.0	30.0	91.0	48.5	111.0	30.0	40.0	112.0
MD520-2T30(B)(S)	T7	48.5	106.0	30.0	40.0	112.0	63.6	143.0	37.0	50.0	150.0
MD520-2T37(B)(S)	T8	63.6	139.0	37.0	50.0	150.0	75.0	167.0	45.0	60.0	176.0
MD520-2T45(S)	T8	75.0	164.0	45.0	60.0	176.0	89.6	198.0	55.0	75.0	210.0
MD520-2T55(S)	T8	89.6	196.0	55.0	75.0	210.0	109.0	239.0	75.0	100.0	253.0
MD520-2T75(S)	T9	131.0	287.0	75.0	100.0	304.0	164.0	359.0	90.0	125.0	377.0
MD520-2T90(S)	T10	167.0	365.0	90.0	125.0	377.0	209.0	456.0	110.0	150.0	465.0
MD520-2T110(S)	T10	187.0	410.0	110.0	150.0	426.0	232.0	507.0	132.0	180.0	520.0
MD520-2T132(S)	T11	202.0	441.0	132.0	180.0	465.0	256.0	559.0	160.0	220.0	585.0
MD520-2T160(S)	T12	258.0	565.0	160.0	220.0	585.0	324.0	708.0	200.0	275.0	725.0
MD520-2T200(S)	T12	314.0	687.0	200.0	275.0	725.0	384.0	840.0	220.0	300.0	880.0
Single-phase 200 VAC to 240 VAC, 50/60 Hz											
MD520-2S0.4B(S)	T2	1.4	5.4	0.4	0.5	2.3	/	/	/	/	/
MD520-2S0.7B(S)	T2	2.2	8.2	0.7	1.0	4.0	/	/	/	/	/
MD520-2S1.5B(S)	T2	3.7	14.0	1.5	2.0	7.0	/	/	/	/	/
MD520-2S2.2B(S)	T2	6.0	20.0	2.2	3.0	9.6	/	/	/	/	/

Dimensions of T1 to T4 Models

Outline and mounting dimensions

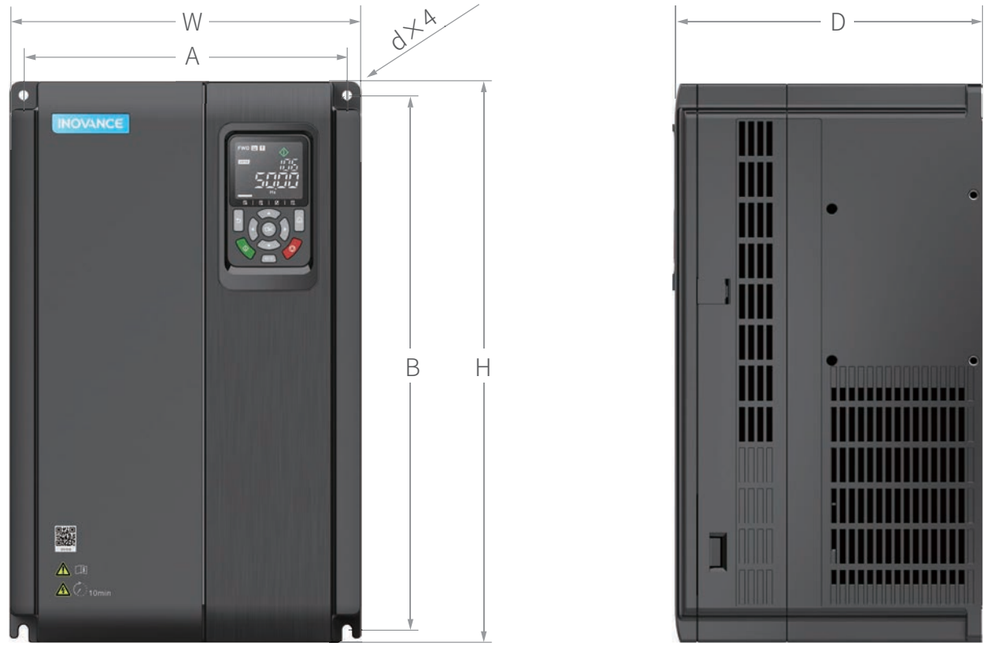


Outline and mounting dimensions

Structure	Mounting Hole mm (in.)		Outline Dimension mm (in.)			Mounting Hole mm (in.)	Weight kg (lb)
	A	B	H	W	D		
T1	119 (4.7)	189 (7.5)	200 (7.9)	130 (5.1)	150 (6.0)	Ø5 (0.2)	1.6 (3.5)
T2	119 (4.7)	189 (7.5)	200 (7.9)	130 (5.1)	160 (6.4)	Ø5 (0.2)	2.0 (4.4)
T3	128 (5.0)	238 (9.4)	250 (9.9)	140 (5.5)	168.3 (6.7)	Ø6 (0.2)	3.3 (7.3)
T4	166 (6.5)	266 (10.5)	280 (11.0)	180 (7.1)	169 (6.7)	Ø6 (0.2)	4.3 (9.5)

Dimensions of T5 to T6 Models

Outline and mounting dimensions

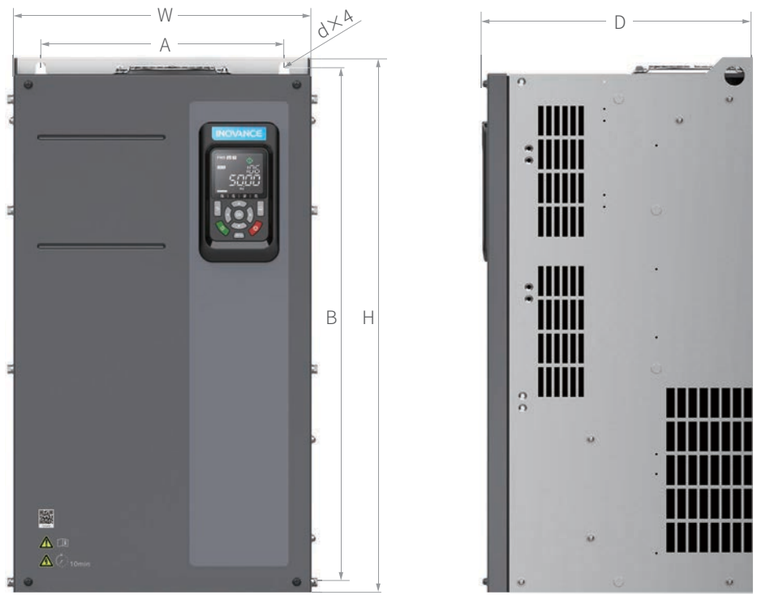


Outline and mounting dimensions

Structure	Mounting Hole mm (in.)		Outline Dimension mm (in.)				Mounting Hole mm (in.)	Weight kg (lb)
	A	B	H	H1	W	D		
T5 (without the DC reactor)	195 (7.7)	335 (13.2)	335 (13.2)	-	210 (8.3)	193.4 (7.6)	Ø6 (0.2)	7.6 (16.8)
T5 (with the DC reactor)	195 (7.7)	335 (13.2)	350 (13.8)	-	210 (8.3)	193.4 (7.6)	Ø6 (0.2)	10.0 (22.0)
T6	230 (9.1)	380 (15.0)	400 (15.8)	-	250 (9.9)	220.8 (8.7)	Ø7 (0.3)	17.5 (38.6)

Dimensions of T7 to T9 Models

Outline and mounting dimensions

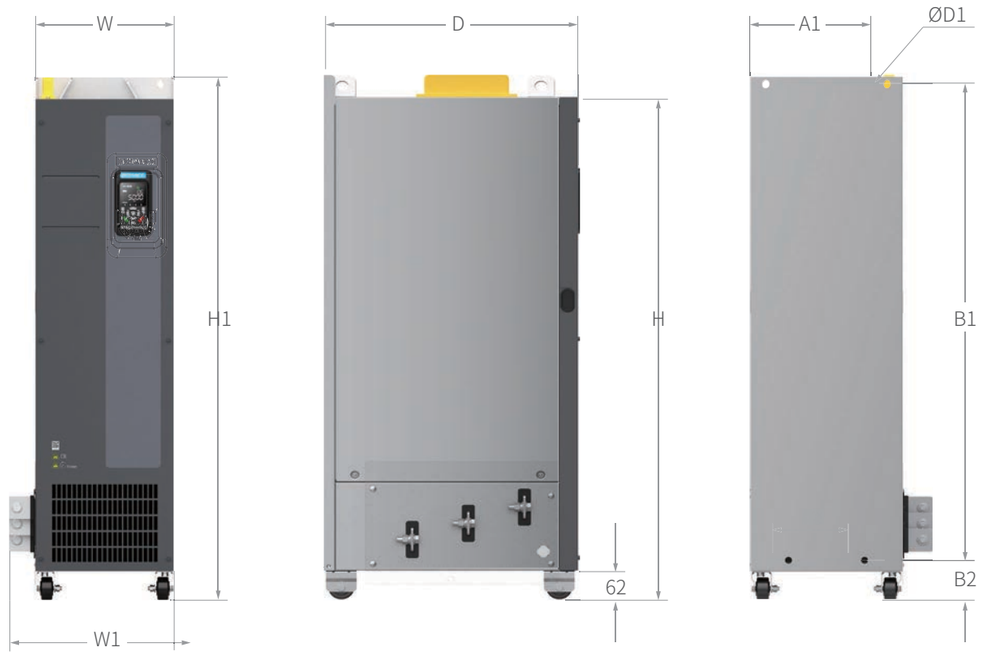


Outline and mounting dimensions

Structure	Mounting Hole mm (in.)		Outline Dimension mm (in.)				Mounting Hole mm (in.)	Weight kg (lb)
	A	B	H	H1	W	D		
T7	245 (9.7)	523 (20.6)	525 (20.7)	542 (21.4)	300 (11.8)	275 (10.8)	Ø10 (0.4)	35 (77.2)
T8	270 (10.6)	560 (22.1)	554 (21.8)	580 (22.9)	338 (13.3)	315 (12.4)	Ø10 (0.4)	51.5 (113.5)
T9	320 (12.6)	890 (35.1)	874 (34.4)	915 (36.1)	400 (15.8)	320 (12.6)	Ø10 (0.4)	85 (187.4)

Dimensions of T10 to T12 Models
(Without AC Output Reactors)

Outline and mounting dimensions



Outline and mounting dimensions

Structure	Mounting Hole mm (in.)				Outline Dimension mm (in.)					Mounting Hole mm (in.)	Weight kg (lb)
	A1	A2	B1	B2	H	H1	W	W1	D	D1	
T10	240 (9.5)	150 (5.9)	1035 (40.8)	86 (3.4)	1086 (42.8)	1134 (44.7)	300 (11.8)	360 (14.2)	500 (19.7)	ϕ13 (0.5)	110 (242.5)
T11	225 (8.9)	185 (7.3)	1175 (46.3)	97 (3.8)	1248 (49.2)	1284 (50.6)	330 (13)	390 (15.4)	545 (21.5)	ϕ13 (0.5)	155 (341.7)
T12	240 (9.5)	200 (7.9)	1280 (50.4)	101 (4)	1355 (53.4)	1405 (55.4)	340 (13.4)	400 (15.8)	545 (21.5)	ϕ16 (0.6)	185 (407.9)

Dimensions of T10 to T12 Models
(with AC Output Reactors)

Outline and mounting dimensions

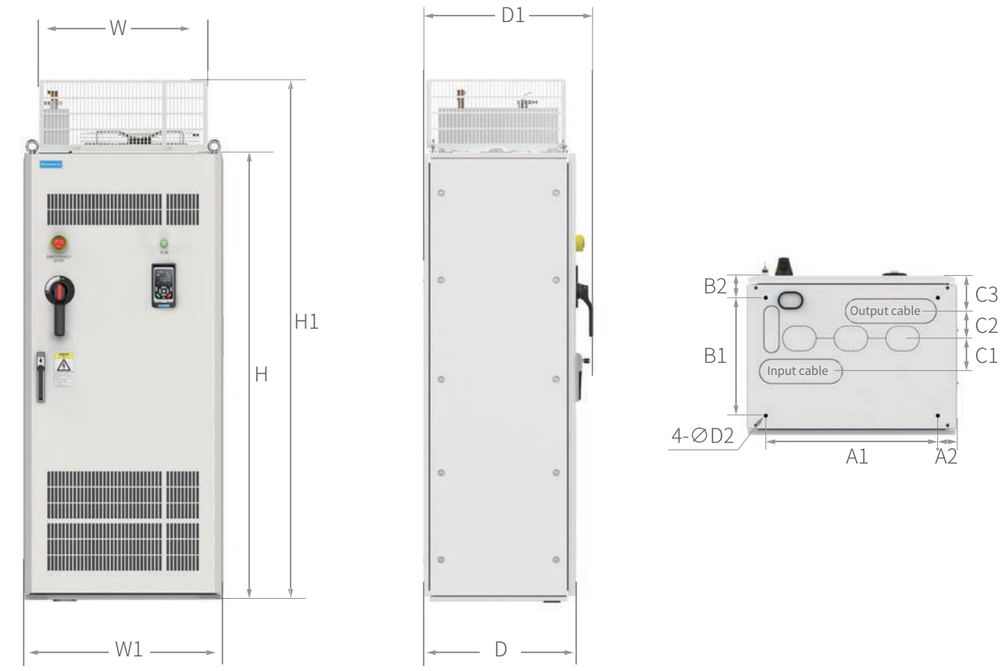


Outline and mounting dimensions

Structure	Mounting Hole mm (in.)				Outline Dimension mm (in.)					Mounting Hole mm (in.)	Weight kg (lb)
	A1	A2	B1	B2	H	H1	W	W1	D	D1	
T10	240 (9.5)	150 (5.9)	1035 (40.8)	424 (16.7)	1424 (56.1)	1472 (58.0)	300 (11.8)	360 (14.2)	500 (19.7)	ϕ13 (0.5)	160 (352.7)
T11	225 (8.9)	185 (7.3)	1175 (46.3)	435 (17.1)	1586 (62.5)	1622 (63.9)	330 (13.0)	390 (15.4)	545 (21.5)	ϕ13 (0.5)	215 (474.0)
T12	240 (9.5)	200 (7.9)	1280 (50.4)	432 (17.0)	1683 (66.3)	1733 (68.3)	340 (13.4)	400 (15.8)	545 (21.5)	ϕ16 (0.6)	245 (540.1)

Dimensions of T13 Models
(Without Auxiliary Power Distribution Cabinets)

Outline and mounting dimensions

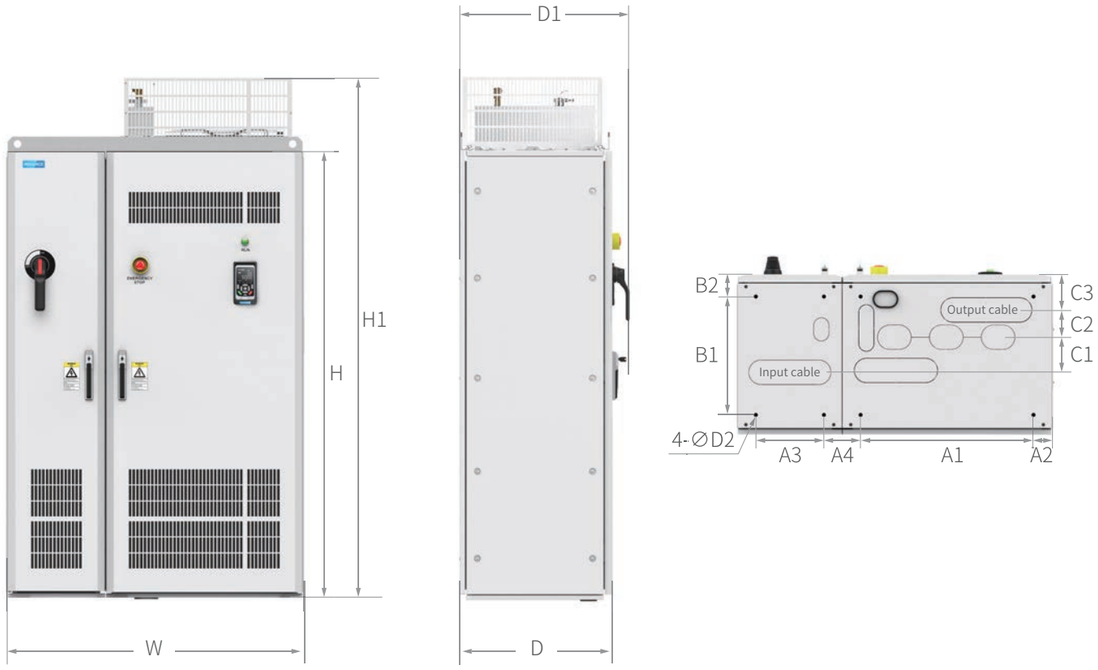


Outline and mounting dimensions

Structure	Mounting Hole mm (in.)							Outline Dimension mm (in.)					Mounting Hole mm (in.)	Weight kg (lb)
	A1	A2	B1	B2	C1	C2	C3	H	H1	W	D	D1	D2	
T13	660 (26)	73.5 (2.9)	450 (17.7)	85 (3.3)	125 m (4.9)	104 (4.1)	136 (5.4)	1800 (70.9)	2100 (82.7)	805 (31.7)	610 (24.0)	680 (26.8)	15 (0.6)	530 (1168.4)

Dimensions of T13 Models
(with Auxiliary Power Distribution Cabinets)

Outline and mounting dimensions



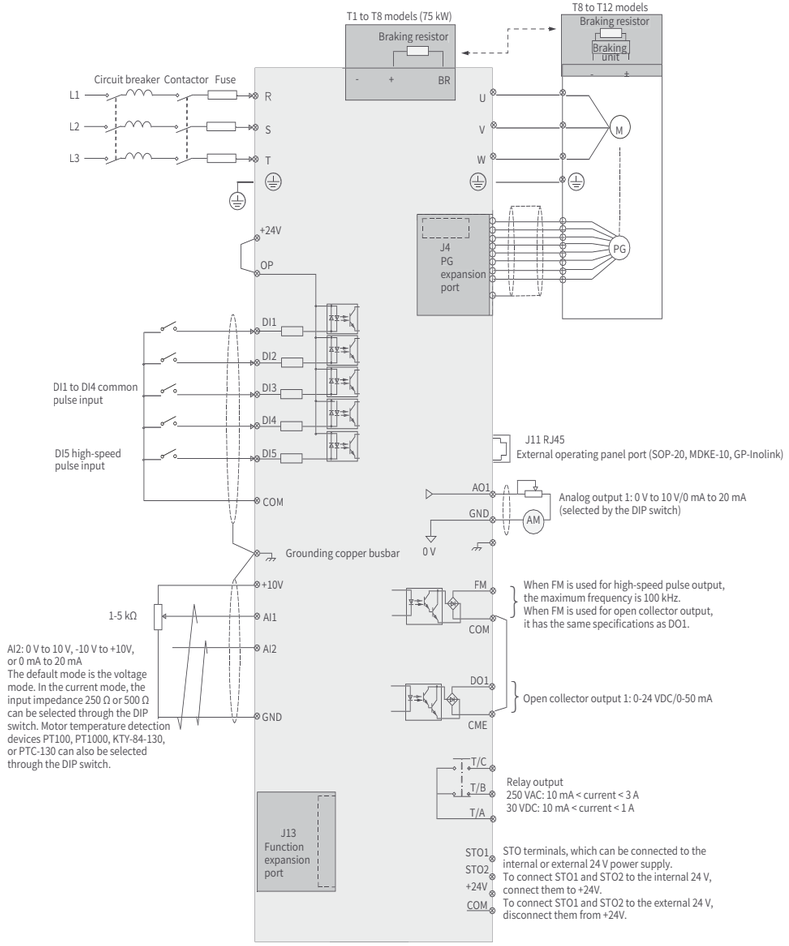
Outline and mounting dimensions

Structure	Mounting Hole mm (in.)										Outline Dimension mm (in.)					Mounting Hole mm (in.)	Weight kg (lb)
	A1	A2	B1	A3	A4	B1	B2	C1	C2	C3	H	H1	W	D	D1	D2	
T13	660 (26)	73.5 (2.9)	450 (17.7)	260 (10.2)	140 (5.5)	450 (17.7)	85 (3.3)	132 (5.2)	104 (4.1)	136 (5.4)	1800 (70.9)	2100 (82.7)	1205 (47.5)	610 (24)	680 (26.8)	15 (0.6)	730 (1609.4)

Control Expansion Options

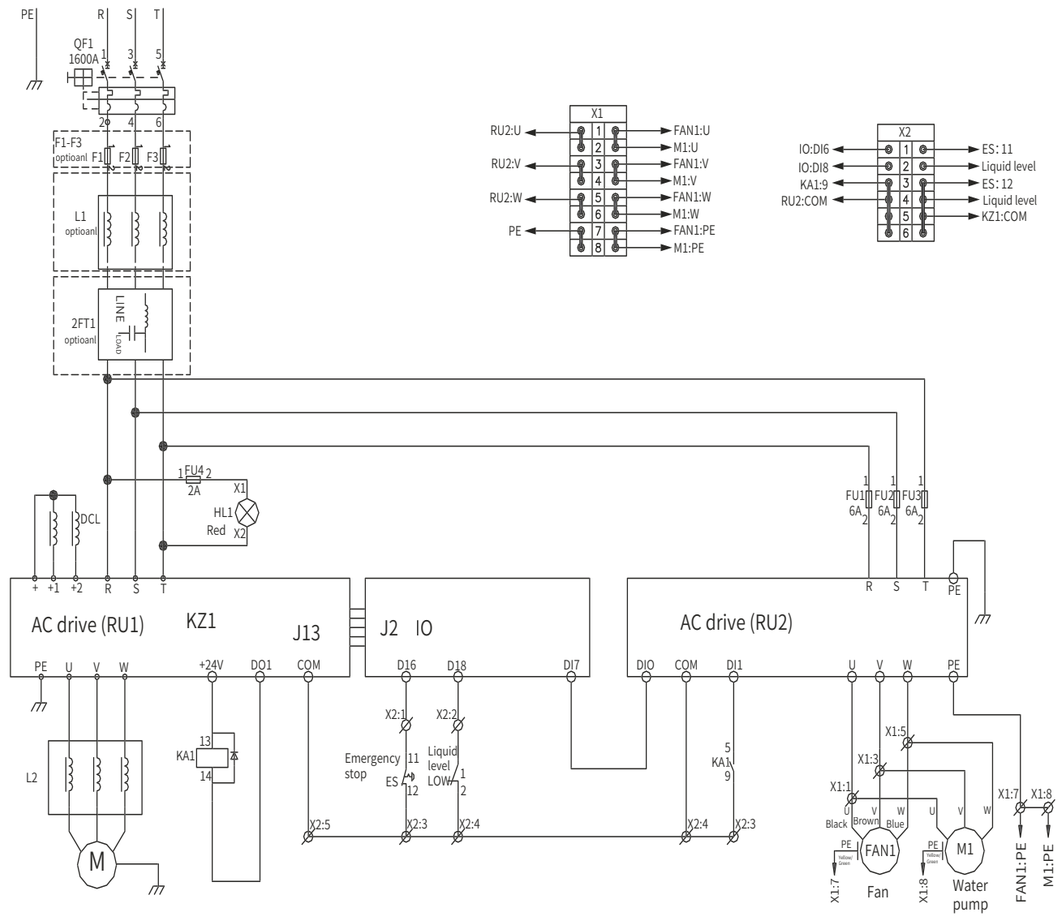
Product Model		Description	Remarks
Communication expansion	MD38CAN1	CANlink and CANopen communication expansion card	/
	MD38TX1	Modbus RTU and Modbus ASCII communication expansion card	/
	MD-SI-DP1	PROFIBUS DP communication expansion card (CAN bus not supported)	/
	MD500-PN2	PROFINET communication expansion card	/
	MD500-ECAT	EtherCAT communication expansion card	/
	MD500-EN1	EtherNet/IP communication expansion card	/
	MD500-EM1	Modbus TCP communication expansion card	/
I/O expansion	MD38IO1	The I/O expansion card supports five DIs, one AI (-10 V to +10 V), one AO (0-10 V/0-20 mA), one DO, and one normally open (NO)/normally closed (NC) delay terminal, and supports CAN and RS485 communication.	Available only for models of 15 kW and above (three-phase 380 V to 480 V) Available only for models of 7.5 kW and above (three-phase 200 V to 240 V)
	MD38IO2	The I/O expansion card supports the +24V terminal and three DIs.	/
	MD38IO3	The I/O expansion card supports three DIs and one NO relay terminal and supports the RS485 communication.	/
Encoder expansion	MD38PGMD	It supports differential input, collector input, and push-pull input, as well as differential output, collector output, and optional frequency division output.	/
	MD38PG4	It supports the resolver without frequency division output.	/
	MD38PG4D	It supports the resolver with frequency division output.	/
	ES510-PG-CT1	It supports 23-bit A3 series encoders.	/
External operating panel and base	SOP-20-810	It is the LCD operating panel that supports Chinese and English display, firmware upgrade, parameter uploading and downloading, and commissioning after connection with the PC.	/
	CP600-BASE1	The base can be used to install the SOP-20-810 to the cabinet door.	/
	MDKE-10	The external LED operating panel supports commissioning after connection with the PC over the Type-C port and does not support parameter uploading and downloading.	/
	MD580-AZJ1	The base can be used to install the MDKE-10 to the cabinet door.	
Commissioning software	GP-InoLink1	It can be connected to the Inovance Connect APP for wireless commissioning and the InoDriveShop installed on the PC for commissioning.	/

Electrical Wiring Diagram of T1 to T2 Models



(Three-phase 380 V models)

Electrical Wiring Diagram of T13 Models



Notes