



V&T AC DRIVE

V9 SERIES CATALOGUE



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Shenzhen V&T Technologies Co.,Ltd.

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- V9 Series Universal Variable Speed AC Drives
- VTS Series High Performance Multi-functional AC Drives
- DTS800/VTS800 Series Multi-drives/AFE
- VA Series Drives for Machine Tool Spindle
- V6/V5/E5 Series Universal Inverter
- FV20 Mini Series Inverter
- VTF Series Regenerative Braking Unit
- Electric Vehicle Motor Controller
- Integrated Elevator Controller



Shenzhen V&T Technologies Co.,Ltd.
Listed Company,Stock Code:300484

Company Introduction

Shenzhen V&T Technologies Co., Ltd. is certificated as a "National Hi-tech and Double-Software Enterprise", which has fully intellectual property rights and devotes to the R&D, manufacture, sales and technical service of Inverter, Servo Drive, Electric Vehicle Motor Controller, etc. V&T has won the “Technical Innovation” prize awarded by the Inverter Industry Association, “The Most Competitive Brands” prize awarded by China Electrical Association, "2012 Electric Vehicle Excellent Technology" prize respectively awarded by China Electro-technical Society (CES), the Specialized Committee of Electric Vehicles, the Automotive Engineering Society of China, and the Branch Association of Electric Vehicles. In addition, V&T has been ranked as one of the “Top 10 Chinese Inverter Enterprises”. V&T successfully listed on the Shenzhen Stock Exchange in 2016 (stock code: 300484).

In regard to core and mainstream motor control technologies, Shenzhen V&T Technologies Co., Ltd. has mastered both advanced “Vector Control “and “Torque Control” technology so far. Through continuous technological innovation, international technical exchange and cooperation with other countries, V&T has completely grasped the key control technique, and also possesses the capacity of industrialization design and manufacturing. Our company has developed and reserved many product series. The product voltage grade mainly contains 200V, 400V, 690V, and the power grade varies from 0.4kW to 3000kW, which can meet various application demands for high, medium and low-end market.

Under the premise of meeting international standards and satisfying different industries' application requirements, we further strengthen the product reliability and environment adaptability to suit harsh and extreme environments. Customized products and industrialized designs can better meet medium and high-end application demands. The products have been widely used in electric vehicles, metallurgy, crane, oil, chemicals, machine tools, metal processing, building materials, stone, wood processing, ceramics, plastics, air compressor, washing machine, water supply, air conditioning, municipal engineering, textile, printing, mining, solar pump and other industries.

Main Product Series

Product Series

- V9 Series Universal Variable Speed AC Drives (Voltage: 3AC200V, 3AC400V, 3AC690V. Power range: 0.4kW to 710kW)
- VTS30 Series Universal Variable Speed AC Drives (Voltage: 3AC400V. Power range: 0.75kW to 500kW)
- VTS400 Series High Performance Multi-functional AC Drives (Voltage: 3AC400V. Power range: 5.5kW to 500kW)
- DTS800 Series DTC Control Type Multi-drives / AFE (Voltage: DC540V, DC980V. Power range: 75kW to 560kW, up to 4 drives can be connected in parallel for higher power.)
- VTS800 Series Vector Control Type Multi-drives (Voltage: DC540V, DC980V. Power range: 75kW to 560kW)
- VA Series Drives for Machine Tool Spindle (Voltage: 3AC400V. Power range: 3.7kW to 160kW)
- VTF Series Regenerative Braking Unit (Power grid: 3AC400V. Power range: 11kW to 110kW, up to 10 RBUs can be connected in parallel for higher power)
- V6/V5/E5 Series Universal Inverter (Voltage: 3AC200V, 3AC400V, 3AC690V. Power range: 0.4kW to 710kW)
- FV20 Mini Series Inverter (Voltage: 3AC200V, 3AC400V. Power range: 0.75kW to 2.2kW)

Dedicated Drive

- V9-T Series VFD for Tension Control
- V9-H-P0 Series VFD for Water Supply
- Electric vehicle motor controller
- V9-GH/GA Series VFD for Crane
- V9-H-H3 Series High Frequency Inverter
- Integrated Elevator Controller
- V9-H-HCF High Switching Frequency Inverter
- V9-H-C9 Series VFD for VF Independent Control
- Integrated Control Cabinet for Energy Saving



V9 Series Product Features

Multiple Functions

- Advanced motor control algorithm, unified asynchronous motor and synchronous motor control.
- **Motor control mode:** synchronous motor sensor vector control, synchronous motor sensor less vector control, asynchronous motor sensor vector control, asynchronous motor V/F control, asynchronous motor sensor less vector control 1, asynchronous motor sensor less vector control 2
- **Support multiple system control modes:** position control, speed control and torque control.
- **Applicable to drive a variety of motors:** asynchronous motor, permanent magnet synchronous motor, direct-drive motor, machine tool spindle, servo motor, conical motor, in-wheel-motor, magnetic suspension motor, air suspension motor, etc.



Wide Voltage Range and Product Range

- 2AC220V. Power range 0.4kW to 2.2kW
- 3AC220V. Power range 0.4kW to 132kW
- 3AC380V. Power range 0.75kW to 710kW
- 3AC690V. Power range 15kW to 710kW
- Higher power and other voltage products can be customized

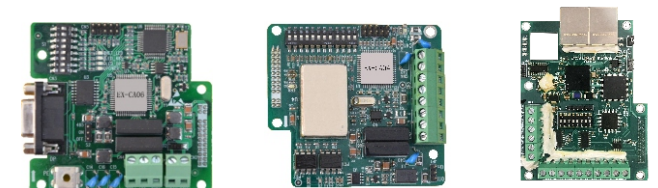
Various Encoder Interface Cards Available

- Open collector, voltage and push-pull (complementary) type HTL incremental encoder
- TTL differential type encoder
- Resolver
- Sin/Cos encoder (VA series)



Multiple Communication Cards Available

- Modbus-RTU as standard
- EX-CA04 CANOpen adapter card
- EX-CA06 Profibus-DP adapter card
- EX-CA13 ProfiNet adapter card
- EtherCAT (VA series)



- The V9-DP01 LED Keypad and the V9-DP02 LCD Keypad are available.
- The Keypad and control board can be connected by standard network cable.
- The Keypad can be used to upload and download parameters, convenient for commissioning.
- The keypad can be set a password and/or the keypad keys can be locked.



The diagram illustrates the VFD control panel with various settings and controls. The panel features a monochrome LCD display showing the following information:

- Top Line:** V&T, 3, 2, 1, 01, 50.00Hz
- Second Line:** Output Frèq 50.00Hz
- Third Line:** Output Cur 10.0A
- Fourth Line:** Output Volt 380V
- Bottom Line:** [Gene], Tun, 537V, [Menu]

The panel also includes a numeric keypad (0-5) and a multi-functional key (M). The multi-functional key is used to navigate through the menu items. The numeric keypad is used to enter values. The panel also includes a numeric keypad (0-5) and a multi-functional key (M). The multi-functional key is used to navigate through the menu items. The numeric keypad is used to enter values.

Motor Control Mode (P0-002):

- 0: Synchronous motor sensor control
- 1: Synchronous motor sensor-less control
- 2: Asynchronous motor sensor control
- 3: Asynchronous motor V/F control
- 4: Asynchronous motor sensor-less control 1
- 5: Asynchronous motor sensor-less control 2

System Control Mode (P0-003):

- 1: Position control
- 2: Speed control
- 3: Torque control

Run Command Selection (P0-004):

- 0: Modbus communication
- 1: Keypad
- 2: External digital input
- 3~5: Please refer to the user's manual

Speed Reference Selection (P0-005):

- 0: Modbus communication
- 1: Keypad
- 2: AI1
- 3~13: Please refer to the user's manual

Data Display Area:

Three parameters set on the first page are displayed by default:

- Output Frequency
- Output Current
- Output Voltage

Each page displays 3 parameters. Total 5 pages. The displayed page can be cyclically switched by pressing the Shift Left or Shift Right key.

General menu:

Tun	Auto-tuning
LOC	Local control
REM	Remote control

Reference frequency / Reference speed: 50.00Hz

Unauthorized Automatic stop after two hours of operation:

Menu:

DC bus Voltage:

ESC: Exit key/ Shortcut menu key

PRG: Confirmation key / Main menu key

M: Multi-functional key

STOP: Stop/Reset key

Indicator light:

- GREEN: Run
- RED: Fault
- OFF: Stop

RUN: Run key

STOP: Stop/Reset key

ESC: Exit key/ Shortcut menu key

PRG: Confirmation key / Main menu key

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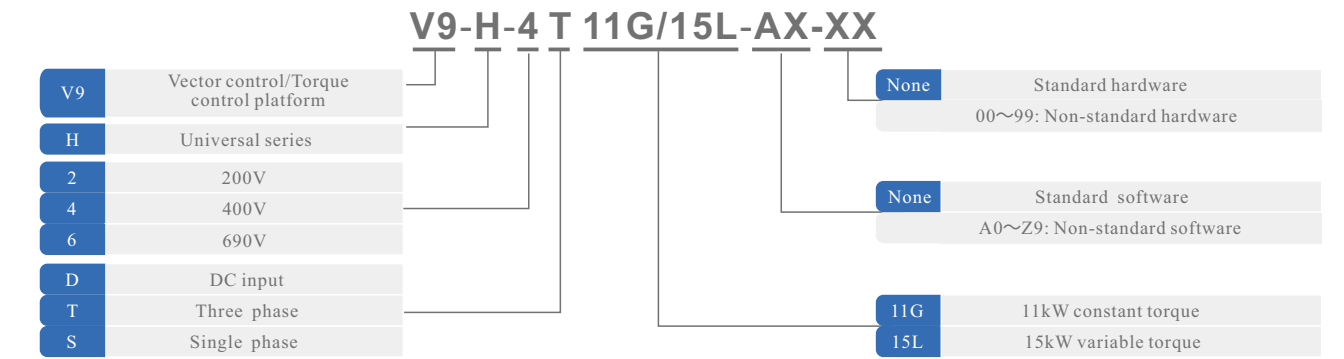
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Control characteristics	Control mode	Sensor-less control	Sensor control
	Applicable motor type	Synchronous motor Asynchronous motor	Synchronous motor Asynchronous motor
	Starting torque	● Asynchronous motor: 200% of rated torque at 0.25Hz ● Synchronous motor: 150% of rated torque at 1.5% of rated speed	200% of rated torque at 0 speed
	Speed regulation range	1:200	1:5000
	Steady speed precision	± 0.5%	± 0.02%
	Maximum speed	VF control: 600Hz Vector control: 600 Hz Note: Higher frequency products can be customized	600Hz Note: Higher frequency products can be customized
	Torque control	Y	Y
	Torque control precision	±5%	±3%
	Torque response time	<20ms	<10ms
	Positioning control	N	Y
Positioning precision	N	±1 pulse	
Product function	Key function	Torque limit, speed control, positioning control, motor auto tune, deep flux-weakening control, current limit control, over -voltage control, under-voltage control, motor speed tracing function, droop control, oscillation suppression, random carrier frequency, inertia auto-tune, etc.	
	Speed reference source	Modbus communication, keypad, external digital input, analog AI1/AI2/AI3, high speed pulse input, simple PLC, PID, CAN, PROFIBUS DP, PROFINET, etc.	
	Dynamic brake	Brake chopper action voltage: 650 ~ 750V (400V series product) The brake chopper can be built-in for 110kW and below equipment ● 0.75~15kW: brake chopper is built-in as standard. ● 18.5~110kW: brake chopper is built-in as option.	
	Communication	Built-in Modbus-RTU communication and the maximum distance up to 500 meters.	
	Keypad	LED Keypad and LCD Keypad are optional The Keypad can be used as remote-control box via straight-through wired cable.	
	Common DC bus	Support common DC bus directly	
	Independent air duct	All series product adopts independent duct design	
Protection function	Power supply under -voltage, over-current protection, over-voltage protection, auto-tune fault, module protection, heat sink over-temperature protection, drive overload protection, motor overload protection, peripheral protection, current abnormal detection, output short-circuit to ground protection, EEPROM abnormal detection, temperature sampling disconnection, encoder disconnection, analog input abnormal detection, motor overtemperature, communication fault, hardware overload protection, etc.		
Efficiency	At rating condition: ● 0.75kW to 7.5kW: ≥93% ● 11kW to 45kW: ≥95% ● 55kW and higher power class: ≥98%		
Environment	Operating site	● Install vertically in a well-ventilated electrical cabinet. Horizontal and other installation methods are not allowed. ● The cooling medium is air. ● Installed in an environment free from direct sunlight, dust, corrosive gases, flammable gases, oil mist, steam, dripping.	
	Ambient temperature	● -10~+40℃ ● Derate use when the temperature between 40 to 50℃ and the rated output current is reduced by 1% for every 1℃ increasing.	
	Humidity	5~95%, no condensation is allowed.	
	Altitude	● 0~2000 meters ● Derate use when the altitude over 1000 meters and the rated output current is reduced by 1% for every 100-meters rising.	
	Vibration	● 3.5 m/s², 2~9Hz ● 10 m/s², 9~200Hz ● 15 m/s², 200~500Hz	
	Storage temperature	-40~+70℃.	



Description of the Product Model



Product Series

■ V9-H-2T□□□G Three-phase 200V constant torque / heavy load application

Rated Power (kW)		0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	
Applicable motor (kW)		0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	
Output	Voltage (V)	Three-phase 0 to rated input voltage																			
	Rated current (A)	3	5	7.5	10	16.5	24	30	45	60	73	96	112	144	176	210	288	350	432	520	
	Overload capability	150% for 60s, 180% for 10s, 200% for 0.5s, interval: 10 minutes (Inverse time characteristic)																			
Input	Rated voltage / frequency	Three-phase 200V-240V; 50Hz/60Hz																			
	Allowable voltage	180V ~ 260V; voltage imbalance ≤3%; allowable frequency fluctuation: ±5%																			
	Rated current (A)	3.8	5.5	8.3	12	18	26	33	50	66	80	106	123	158	194	231	232	326	385	491	
DC reactor		Without built-in DC reactor							Built-in as option							Built-in as standard	External DC reactor as standard				
Brake unit		Built-in as standard							Built-in as option							External					
Protection level		IP20																			
Cooling mode		Natural cooling		Force air cooling																	

■ V9-H-4T□□□G Three phase 400V constant torque / heavy load application

Rated Power (kW)		0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	
Applicable motor (kW)		0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	
Output	Voltage (V)	Three-phase 0 to rated input voltage																	
	Rated current (A)	2.5	3.8	5.5	9	13	17	24	30	39	45	60	75	91	112	150	176	210	
	Overload capability	150% for 60s, 180% for 10s, 200% for 0.5s, interval: 10 minutes (Inverse time characteristic)																	
Input	Rated voltage / frequency	Three-phase 380V/480V; 50Hz/60Hz																	
	Allowable voltage	323V ~ 528V; voltage imbalance ≤3%; allowable frequency fluctuation: ±5%																	
	Rated current (A)	2.8	4.2	6.1	10	15	19	26	33	43	50	66	83	100	123	165	194	231	
DC reactor		Without built-in DC reactor								Built-in DC reactor as option									
Brake chopper		Built-in as standard								Built-in as option									
Protection level		IP20																	
Cooling mode		Natural cooling			Force air cooling														
Rated Power (kW)		132	160	185	200	220	250	280	315	355	400	450	500	560	630				
Applicable motor (kW)		132	160	185	200	220	250	280	315	355	400	450	500	560	630				
Output	Voltage (V)	Three-phase 0 to rated input voltage																	
	Rated current (A)	253	304	350	380	426	470	520	600	650	690	775	860	950	1100				
	Overload capability	150% for 60s, 180% for 10s, 200% for 0.5s, interval: 10 minutes (Inverse time characteristic)																	
Input	Rated voltage / frequency	Three-phase 380V/480V; 50Hz/60Hz																	
	Allowable voltage	323V ~ 528V; voltage imbalance ≤3%; allowable frequency fluctuation: ±5%																	
	Rated current (A)	232	282	326	352	385	437	491	580	624	670	755	840	920	1050				
DC reactor		Built-in DC reactor as standard		External DC reactor as standard										Built-in AC reactor as standard					
Brake chopper		External																	
Protection level		IP20																	
Cooling mode		Force air cooling																	

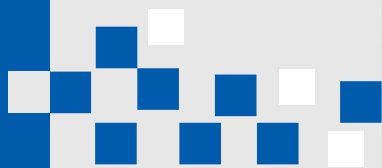
Product Series

■ V9-H-4T□□□L Three phase 400V variable torque / light load application

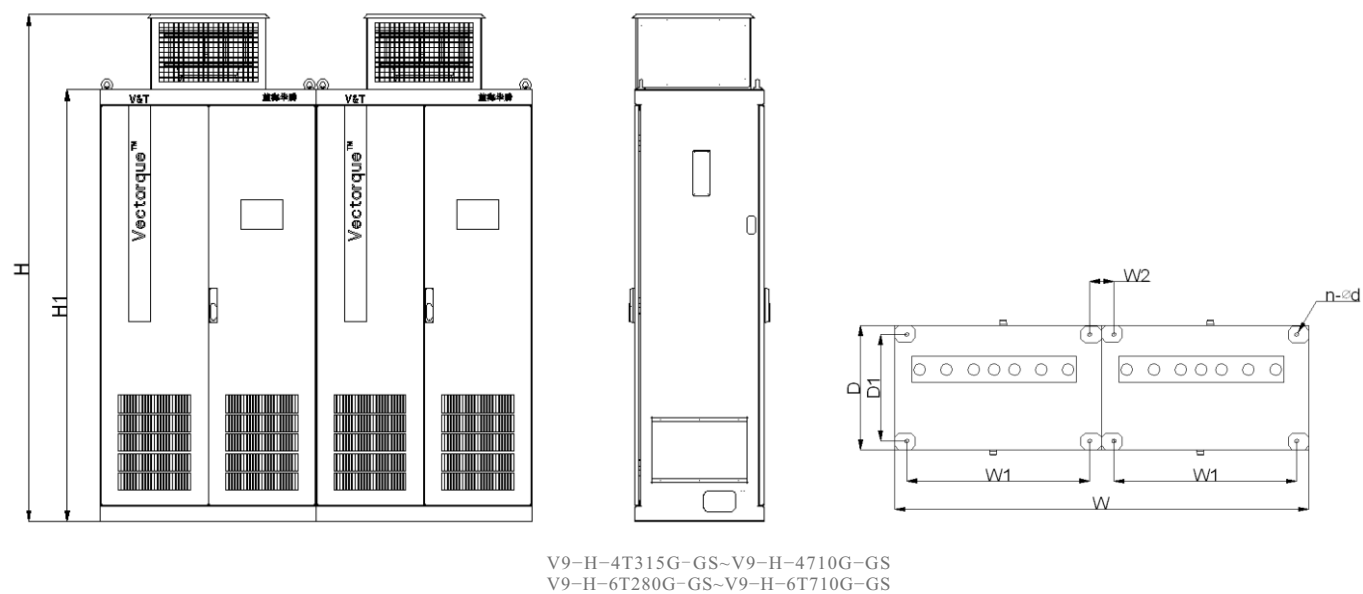
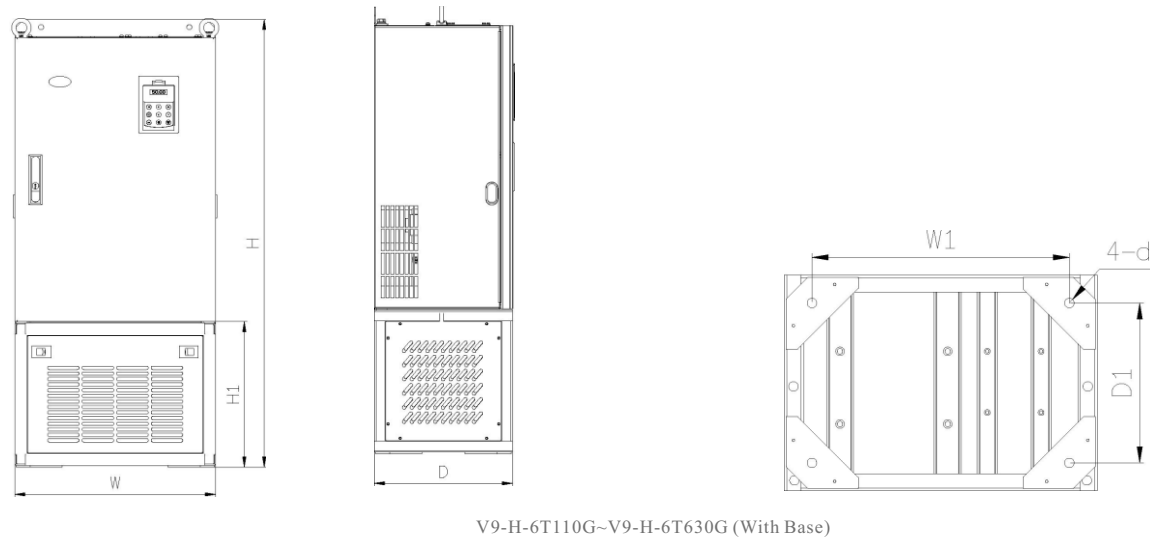
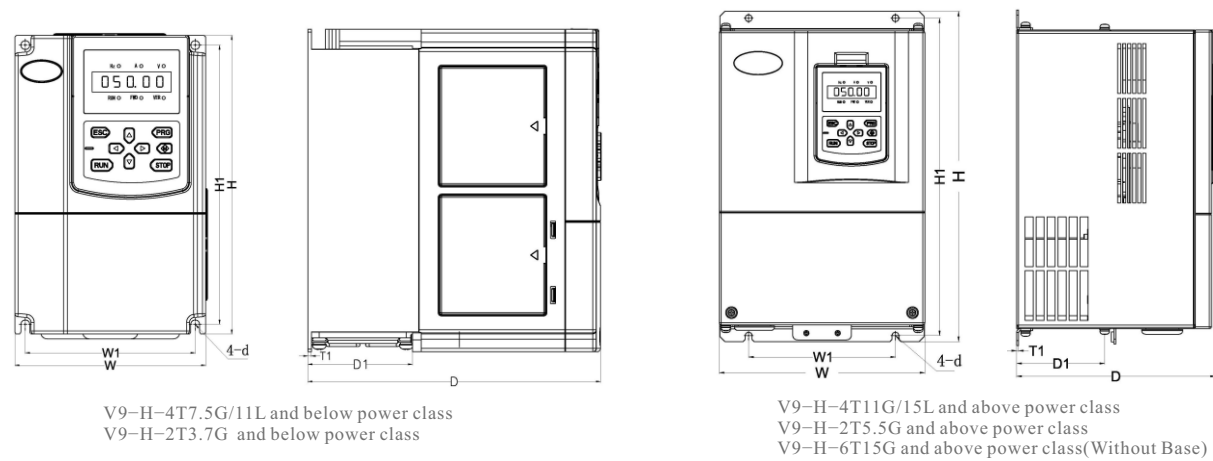
Rated Power (kW)		1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132
Applicable motor (kW)		1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132
Output	Voltage (V)	Three-phase 0 to rated input voltage																
	Rated current (A)	3.3	5.0	7.5	11	17	22	29	35	45	57	70	91	110	144	180	216	242
Input	Overload capability	150% for 60s, 180% for 10s, 200% for 0.5s, interval: 10 minutes (Inverse time characteristic)																
	Rated voltage / frequency	Three-phase 380V/480V; 50Hz/60Hz																
	Allowable voltage	323V ~ 528V; voltage imbalance ≤3%; allowable frequency fluctuation: ±5%																
	Rated current (A)	3.6	5.5	8.3	12	19	25	32	39	50	61	77	100	121	158	198	238	266
DC reactor		Without built-in DC reactor							Built-in DC reactor as option									
Brake chopper		Built-in as standard							Built-in as option									
Protection level		IP20																
Cooling mode		Natural cooling			Force air cooling													
Rated Power (kW)		160	185	200	220	250	280	315	355	400	450	500	560	630	710			
Applicable motor (kW)		160	185	200	220	250	280	315	355	400	450	500	560	630	710			
Output	Voltage (V)	Three-phase 0 to rated input voltage																
	Rated current (A)	325	365	405	440	495	547	610	695	770	866	950	1100	1200	1300			
Input	Overload capability	150% for 60s, 180% for 10s, 200% for 0.5s, interval: 10 minutes (Inverse time characteristic)																
	Rated voltage / frequency	Three-phase 380V/480V; 50Hz/60Hz																
	Allowable voltage	323V ~ 528V; voltage imbalance ≤3%; allowable frequency fluctuation: ±5%																
	Rated current (A)	282	326	352	385	437	491	580	670	755	840	920	1050	1150	1250			
DC reactor		Built-in DC reactor as standard			External DC reactor as standard											Built-in AC reactor as standard		
Brake chopper		External																
Protection level		IP20																
Cooling mode		Force air cooling																

■ V9-H-6T□□□G Three phase 690V constant torque / heavy load application

Rated Power (kW)		15	18.5	22	30	37	45	55	75	90	110	132	160	185	200	220
Applicable motor (kW)		15	18.5	22	30	37	45	55	75	90	110	132	160	185	200	220
Output	Voltage (V)	Three-phase 0 to rated input voltage														
	Rated current (A)	20	25	28	35	45	52	65	86	98	120	150	176	204	220	245
	Overload capability	150% for 60s, 180% for 10s, 200% for 0.5s, interval: 10 minutes (Inverse time characteristic)														
Input	Rated voltage / frequency	Three-phase 660V/690V; 50Hz/60Hz														
	Allowable voltage	587V ~ 793V; voltage imbalance ≤3%; allowable frequency fluctuation: ±5%														
	Rated current (A)	25	30	35	40	47	52	65	85	96	116	145	168	196	210	230
Brake chopper		Built-in as option							External							
Protection level		IP20														
Cooling mode		Force air cooling														
Rated Power (kW)		250	280	315	355	400	450	500	560	630	710	800				
Applicable motor (kW)		250	280	315	355	400	450	500	560	630	710	800				
Output	Voltage (V)	Three-phase 0 to rated input voltage														
	Rated current (A)	275	325	350	395	435	490	545	600	680	770	860				
	Overload capability	150% for 60s, 180% for 10s, 200% for 0.5s, interval: 10 minutes (Inverse time characteristic)														
Input	Rated voltage / frequency	Three-phase 660V/690V; 50Hz/60Hz														
	Allowable voltage	587V ~ 793V; voltage imbalance ≤3%; allowable frequency fluctuation: ±5%														
	Rated current (A)	255	290	335	378	415	466	520	580	655	750	840				
Brake chopper		External														
Protection level		IP20														
Cooling mode		Force air cooling														



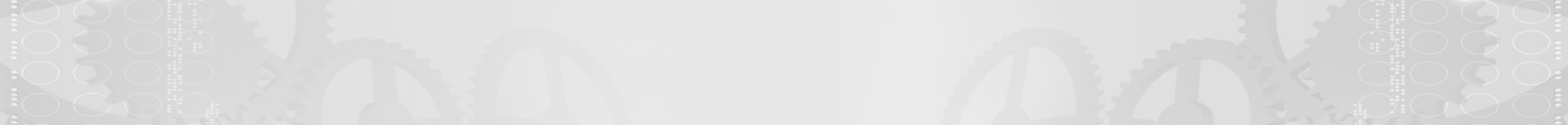
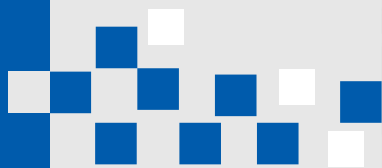
Product Outline, Mounting Dimensions, and Weight



Note: This cabinet-type drive can be added power distribution cabinet with 500mm width. The switch components can be specified by customers.

■ Dimensions of 220V/400V Products

Voltage	Model	Outline and mounting dimensions (mm)							Approximate weight (kg)
		W	H	D	W1	H1	T1	Mounting hole d	
200V	V9-H-2T0.4G	118	190	155	105	173	3	5.5	1.5
	V9-H-2T0.75G			175			4		2.2
	V9-H-2T1.5G			155			3		1.5
	V9-H-2T2.2G			175			4		2.2
	V9-H-2T3.7G	155	249	185	136	232	8	5.5	3
	V9-H-2T5.5G	198	299	190	160	283	1.2	6	8
	V9-H-2T7.5G								
	V9-H-2T11G	223	348	208	195	335	1.5	6	10
	V9-H-2T15G	264	430	235	230	418	1.5	7	18
	V9-H-2T18.5G								
	V9-H-2T22G	305	545	270	245	523	1.5	10	35
	V9-H-2T30G								
	V9-H-2T37G	338	580	310	270	560	1.5	10	52
	V9-H-2T45G								
	V9-H-2T55G								
	V9-H-2T75G								
	V9-H-2T90G	400	917	323	320	890	3.0	12	75
	V9-H-2T110G	540	890	385	370	855	4.0	14	85
	V9-H-2T132G	700	1010	385	520	977	4.0	14	125
400V	V9-H-4T0.75G/1.5L	118	190	155	105	173	3	5.5	1.5
	V9-H-4T1.5G/2.2L	118	190	175	105	173	4	5.5	2.6
	V9-H-4T2.2G/3.7L								
	V9-H-4T3.7G/5.5L								
	V9-H-4T5.5G/7.5L	155	249	185	136	232	8	5.5	3
	V9-H-4T7.5G/11L								
	V9-H-4T11G/15L	198	299	190	160	283	1.2	6	8
	V9-H-4T15G/18.5L								
	V9-H-4T18.5G/22L	223	348	208	195	335	1.5	6	10
	V9-H-4T22G/30L								
	V9-H-4T30G/37L	264	430	235	230	418	1.5	7	18
	V9-H-4T37G/45L								
	V9-H-4T45G/55L	305	545	270	245	523	1.5	10	35
	V9-H-4T55G/75L								
	V9-H-4T75G/90L	338	580	310	270	560	1.5	10	52
	V9-H-4T90G/110L								
	V9-H-4T110G/132L								
	V9-H-4T132G/160L								
	V9-H-4T160G/185L	400	917	323	320	890	3.0	12	75
	V9-H-4T185G/200L								
	V9-H-4T200G/220L	540	890	385	370	855	4.0	14	85
	V9-H-4T220G/250L								
	V9-H-4T250G/280L	540	890	416	370	855	4.0	14	90
	V9-H-4T280G/315L								
	V9-H-4T315G/355L	700	1010	385	520	977	4.0	14	125
	V9-H-4T355G/400L								
	V9-H-4T400G/450L	810	1358	425	520	1300	4.0	14	215
	V9-H-4T450G/500L								
	V9-H-4T500G/560L								
	V9-H-4T560G/630L								
	V9-H-4T630G/710L	1000	2351.5	600	-	-	-	-	430
	V9-H-4T315G/355L-GS								440
	V9-H-4T355G/400L-GS								450
	V9-H-4T400G/450L-GS								480
	V9-H-4T450G/500L-GS								480
	V9-H-4T500G/560L-GS								500
	V9-H-4T560G/630L-GS								520
	V9-H-4T630G/710L-GS								520



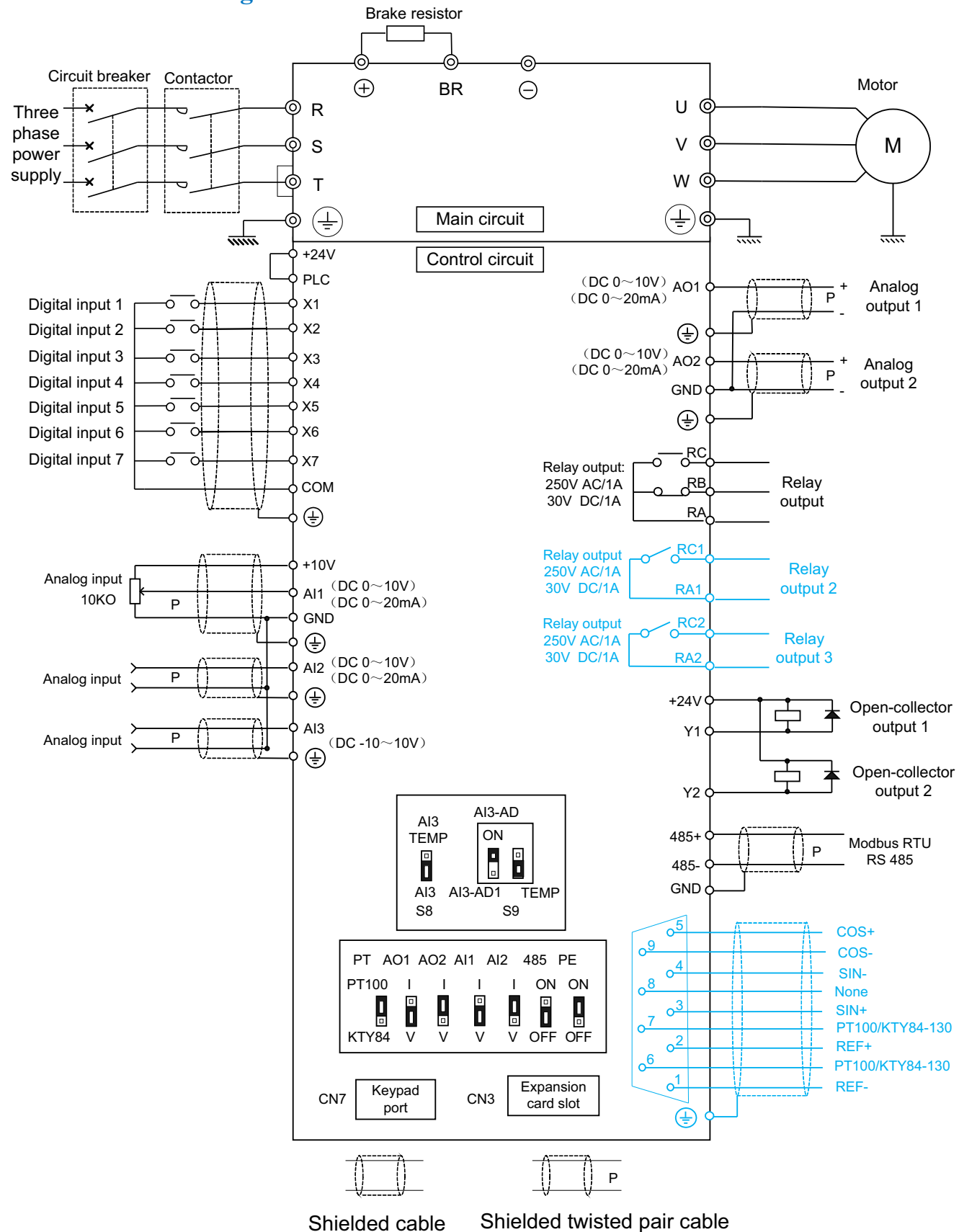
■ Dimensions of 690V Products

Voltage	Model	Power Range (kW)	Base	Outline and Mounting Dimension (mm)								Approximate Weight (kg)
				W	H	D	W1	H1	D1	T1	d	
690V	V9-H-6T15G V9-H-6T30G	15~30	No	285	440	220	200	425	107.5	2.5	7	17
	V9-H-6T75G V9-H-6T55G	37~55	No	315	575	227	220	553	123.5	2.5	10	25
	V9-H-6T75G V9-H-6T90G	75~90	No	400	615	265	270	590	123.5	3.0	10	35
	V9-H-6T110G V9-H-6T132G	110~132	Yes No	465 465	1042 745	325 325	382 343	339 715	238 156	— 3.0	14 12	— 55
	V9-H-6T160G V9-H-6T220G	160~220	Yes No	540 540	1206 890	385 385	459 370	365 855	300 205.5	— 4.0	14 14	— 85
	V9-H-6T250G V9-H-6T355G	250~355	Yes No	700 700	1380 1010	385 385	614 520	412 977	294 210	— 4.0	15 14	— 125
	V9-H-6T400G V9-H-6T630G	400~630	Yes No	810 810	1698 1358	425 425	728 520	418 1300	339 210	— 4.0	15 14	— 215
	V9-H-6T280G-GS V9-H-6T450G-GS	280~450	—	800	2352	600	684	2000	516	—	30	530
	V9-H-6T500G-GS V9-H-6T710G-GS	500~710	—	1000	2352	600	884	2000	516	—	20	600

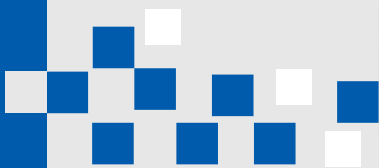
Optional Accessories

Item	Name	Model	Description
Keypad	LED keypad	V9-DP01	From 0.75kW to 7.5kW: LED keypad as standard.
	LCD Keypad	V9-DP02	● 11kW and above power products with LCD keypad as standard. ● The products 0.75kW to 7.5kW with V9-DP01 LED keypad as standard. If V9-DP02 keypad is selected to replace the default V9-DP01 keypad, please add -14 hardware non-standard suffix to the model.
	Keypad pallet	V9-DP05	The mounting accessories is used to help the keypad be installed on the external control cabinet.
	Keypad extension cable	CB1-150	1.5-meters keypad extension cable.
	Keypad extension cable	CB1-300	3-meters keypad extension cable.
PG Card	Resolver	—	● 0.75kW to 3.7kW: not support. ● 5.5 to 7.5kW: optional. Please add -63 hardware non-standard suffix to the model. ● 11kW to 710kW: standard.
	Open collector, push pull incremental encoder	EX-PG01	Power supply +12~24V, open collector, push-pull type encoder feedback card. If selected, please add -02 suffix to the model, and separate ordering is also supported.
		EX-PG03	Power supply +12~24V, open collector, push-pull type encoder feedback card. If selected, please add -16 suffix to the model, and separate ordering is also supported.
		EX-PG20	Power supply +12~24V, open collector, push-pull type encoder feedback card, with two relay outputs. Separate ordering is supported.
	TTL incremental encoder	EX-PG02	Power supply +5V, differential type encoder feedback card If selected, please add -09 suffix to the model, and separate ordering is also supported.
		EX-PG04	Power supply +5V, differential type encoder feedback card with TTL type encoder signal output. If selected, please add -20 suffix to the model, and separate ordering is also supported.
		EX-PG15	Power supply +5V, differential type encoder feedback card, with open collector type encoder signal output. Separate ordering is supported.
		EX-PG21	Power supply +5V, differential type encoder feedback card, with two relay outputs. Separate ordering is supported.
Relay	Relay extension card	EX-PG22	Two relay outputs. Separate ordering is supported.
Communication Card	Modbus-RTU	—	The standard product V9-H has RS485 terminal whose the communication protocol is Modbus-RTU.
	CANopen	EX-CA04	Support CANopen DS301,DS303,DS305. Installation method: external or internal. If selected, please add -48 suffix to the model, and separate ordering is also supported.
	Profibus-DP	EX-CA06	Support Profibus-DP DPV0. Installation method: external or internal. If selected, please add -59 suffix to the model, and separate ordering is also supported.
	ProfiNET	EX-CA13	Support profiNet industrial Ethernet communication, with TTL encoder interface and encoder signal output Installation method: internal. If selected, please add -PRT suffix to the model and separate ordering is not supported.
Brake Chopper	Built-in brake chopper	-06	Built-in brake chopper. Applicable to: 18.5 to 110 kW. If selected, please add -06 suffix to the model.
DC Reactor	Built-in DC reactor	-64	Built-in DC reactor. Applicable to: 18.5 to 110 kW. If selected, please add -64 suffix to the model.
Base	Inverter base	-GS	90kW and above power products are optional. If selected, please add -GS suffix to the model.

Terminal Wirings



The black part is a standard function of V9-H-4T7.5G/11L and below, and comes standard with LED keyboard
The blue part is the V9-H-4T11G/15L and above power level increase function, standard LCD keyboard



V9 Series Universal Variable Speed AC Drives

High performance · Reliability · Flexibility · Convenience



Typical Application Selection List

Application Field	Application Device	Mode	Application Characteristics
Standard series product	2AC220V: V9-H-2S**G (from 0.4kW to 2.2kW)		
	3AC220V: V9-H-2T**G (from 0.4kW to 132kW)		
	3AC380V: V9-H-4T**G/**L (from 0.75kW to 710kW)		
	3AC690V: V9-H-6T**G (from 15kW to 710kW)		
	Note: for higher power products, please contact the manufacture or local agent for customization.		
Machine tool	Machine tool spindle	V9-H	Position loop control, orientation control, EtherCAT communication (VA series) and 2nd encoder interface can be matched with a variety of host computers.
	CNC engraving and milling machine	V9-H	Excellent deep field weakening control algorithm can ensure speed stability at high speed.
	NC drilling rig	V9-H-H3	Maximum speed is up to 250,000rpm.
	Grinder	V9-H	High-speed operation, stability, reliability and non-fault.
	Speed control without encoder	V9-H	Even when running in open loop, it still has great cutting force and high speed stability accuracy.
Plastic and metal processing	Injection molding machine (Asynchronous motor)	V9-I	Standard VFD with injection molding machine interface card.
	Injection molding machine (Asynchronous motor)	V9-J	Integrated energy-saving control cabinet, with power frequency and variable frequency conversion switching.
	Injection molding machine (Synchronous motor)	V9-I	Pressure control, flow control, high energy saving effect and higher efficiency. Applicable to electrohydraulic mixing injection molding machine.
	Extruder	V9-H	Large extrusion force, no tripping and uniform rate of flow.
	Die-casting machine	V9-H	Fast speed, large torque and good multi pump cascade synchronization performance.
	Blow molding machine	V9-I	high energy saving effect, with power frequency and variable frequency conversion switching.
Fan and pump	Fan	V9-H	With speed sensor-less flying start function.
	Pump (water supply)	V9-H-P0	Multiple sleep and wake-up functions can meet different requirements. With Modbus-RTU convenient to communicate with various controllers. With address conversion function, it is convenient to communicate with various controllers without changing the controllers' program.
	Central air-conditioning / cold storage	V9-H-P0	Realize constant temperature control and high energy saving rate.
	Air compressor	V9-H	Supports PM motor and induction motor and has the functions of large torque and fast pressure response. With Modbus-RTU it is convenient to communicate with various controllers. With address conversion function, it is convenient to communicate with various controllers without changing the controllers' program.
	Maglev Centrifugal Blower	V9-H	Supports PM motor and induction motor and high switching frequency setting to meet the high-speed motor.
	Turbo Blower	V9-H	Smooth, fast and stable starting, small bearing friction. Support PM motor, induction motor and high switching frequency setting to meet the high-speed motor.
	Centrifuge	V9-H	Large torque, fast acceleration and deceleration, strong environmental adaptability and flying start function.
Crane / lifting machine	Hoist mechanism	V9-GH	Mechanical brake control logic, large torque, quickly current limit function and conical motor control function.
	Traveling mechanism	V9-GA	Anti swing function, smooth acceleration and deceleration and stepless speed regulation function.
	Tower crane	V9-GH	Wide voltage range adaptability, the hook controlled stably and without shaking.
	Construction elevator	V9-SY	Integrated control cabinet and inverter are optional.
	Elevator	AICE	Integrated elevator controller, integrated elevator control cabinet and electrical package.
	Escalator	V9-H	Through infrared sensor, the speed automatically switches to low speed or high speed operation, and the acceleration and deceleration process is smooth without impact.

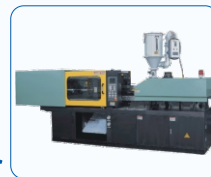
Application Field	Application Device	Mode	Application Characteristics
Oil field	Walking-beam pumping unit	V9-U	Support synchronous motor and asynchronous motor, with resolver interface configured by default. High energy saving rate, and current limit function to meet the actual oil well conditions.
	Tower pumping unit	V9-U	
	Oil transfer pump	V9-H	Auto start and stop according to the actual pressure.
Textile industry	Spinning frame	V9-B	Through hole installation mode, the heat sink is exposed at the back of the control cabinet for easy cleaning.
	Spinning frame	V9-H	Universal installation mode, multi-step PLC function and under voltage control function avoiding wire breakage caused by accidental power failure.
	Terylene Spring Machine	V9-H	Process PID realizes high precision synchronization.
	Winder	V9-H	With multi-step PLC function, it has operation process curve according to actual requirements.
	Circular machine	V9-H	Large starting torque and strong adaptability to voltage fluctuation.
Metal processing	Dual inverter steel wire drawing machine	V9-T	The drawing motor and take-up motor working together.
	Straight line wire drawing machine	V9-T	Smooth control with pendulum or without pendulum control mode can be selected according to the actual requirements.
	Fine wire drawing machine	V9-T	Minimum 0.001mm fine wire.
	Power pay-off frame	V9-T	Synchronous operation, good speed following performance.
	Replace torque motor	V9-H	Open-loop torque control, high reliability and low maintenance cost.
	Steel bar cutting machine	V9-H	Fixed length cutting and high precision.
Printing and packaging industry	Cold rolling mill	V9-T	Good synchronization performance, fast speed following and fast torque response.
	Slitting machine / Compounding machine	V9-T	Accurate roll diameter calculation ensures stable tension of winding and unwinding.
	Reeling waste side machine / Re-reeling machine	V9-T	With wire break warning, automatic stop, pendulum and floating roll in place at one time.
	Blow molding machine	V9-H	Excellent acceleration and deceleration performance ensure product consistency.
	Coating machine/ Creasing machine	V9-T	Toque control with encoder can be used to draw 30g ultra-thin paper.
	Leather winding machine	V9-H	Torque control without encoder, torque control and speed control can switch smoothly.
	Fishing net machine / Netting machine	V9-H	Torque control without encoder.
	Paper making machine	V9-H	Common DC bus and multi-drive series products are also available.
	Rotary knife	V9-H	Fast response and cutting speed with high cutting accuracy. Master-follower synchronization is available.
	Material receiving machine	V9-H	In torque control, it can operate stably under high torque reference.
Stone, brick, and wood industry	Wire saw machine	V9-H	Torque control, uniform cutting force and large torque at low speed.
	Brick machine	V9-H	High energy saving rate, large torque and fast lifting and lowering
	Wood veneer lathe	V9-H	Quickly start, quickly stop, strong resistance to voltage fluctuation, large torque, speed stable running, high working efficiency and high yield rate.
	Wood guillotine machine	V9-H	
	Wood planning machine	V9-H	
Industrial power supply	Electromagnetic stirring drive	V9-H-EMS	Special functions for electromagnetic stirring and multiple mixing modes are available. Frequency and voltage can be adjusted independently, frequency and current can be adjusted independently.
	Variable frequency power supply	V9-H-C9	Frequency and voltage can be adjusted independently, it also has voltage acceleration and deceleration time.
	Resonant power supply	V9-H-C9.01	Frequency scan, voltage rise, voltage keeping functions, manual test, semi automatic test, full automatic test, voltage monitoring, current monitoring and flash-over protection, etc.
	Middle frequency power supply	V9-H-C9.02	Frequency and voltage can be adjusted independently. Maximum frequency is up to 3000Hz.
Other Application	Industrial washing machine	V9-H	High environmental adaptability, large washing capacity and stable operation even under high speed.
	Musical fountain	V9-H	Strong anti-interference ability will not interfere with audio signal. Current limit is stable to avoid tripping.
	Ceramic machinery	V9-H	Strong protection ability, corrosion resistance of PCB board, stable operation and fault-free.
	Mechanical vibrator	V9-H	Excellent current limit function ensures stable operation of forward and reverse switching.
	Tubular pile machine / Pile driver / Ramming machine	V9-H	Multi-step speed running and bulldozer characteristics ensure stable current control without tripping.
	Electric door	V9-H	In place self-check function and the limit failure automatic stop function.
	Belt conveyor	V9-H-6T	Automatic load balancing function and master-slave following function.
	Ball mill/ Grinder/ Crusher	V9-H	Multi-step speed operation and timed shutdown.
	Mixer	V9-H	Large torque at each speed and good mixing effect.
	Treadmill / Running machine	V9-H-2T	High speed stability accuracy, strong load capacity and feet no numbness.
	Electric climbing aid	V9-H	Vector control technology, excellent dynamic performance, accurate torque control and automatic speed adaptation reduce the physical consumption of maintenance personnel and improve work efficiency.
	Electric screwdriver	V9-H	Speed upper limitation, torque control and the output torque reaching torque reference.
	Dynamometer	V9-H	High accuracy of speed control and stabilization and torque control with fast response and high accuracy.

Applications of Typical Industries



Electric Vehicle Controller

- Simple and convenient wiring and prominent structure design of high protection level.
- Accurate torque control perfectly matches with engine working.
- Energy saving mode and super battery endurance.
- Built-in CAN-BUS communication with high stability, reliability and strong anti-interference capability.



Injection Molding Industry

- Both products are available: Integrated Energy-Saving Control Cabinet and dedicated drive for Injection Molding Machine.
- Unified asynchronous servo motor and synchronous servo motor control with pressure and flow control.
- Without high-pressure throttle and loss of overflowed energy, energy-saving rate can reach to 25%~70%.
- Design of independent duct makes rear parts and top fan convenient to disassemble and easy to maintain; it also has strong environmental adaptability and high protection level.

Air Compressor Industry

- Large torque, stable running speed and stable pressure control.
- High reliability and long service life.
- Synchronous motor drive, asynchronous motor drive, magnetic suspension motor drive, air suspension motor drive, etc.
- With intelligent sleep and low pressure wake-up function, energy saving rate can reach to 20%~50%.
- Standard Modbus-RTU communication can be compatible with various air compressor controllers.



Machine Tool Industry

- Excellent vector control and field weakening algorithm ensure large torque at low speed and strong high-speed cutting force.
- Support multiple encoder types: sine/cos encoder, incremental encoder and resolver, with functions of encoder frequency division output and second encoder input.
- Special function for machine tool spindles: EtherCAT communication, second encoder input, position reference, etc.
- Successfully drive 250000 RPM drilling machine.



Ceramics Machinery

- Strong adaptability of environmental temperature.
- Professional solutions for anti-interference and lightning protection.
- Reliable and stable operation, and corrosion prevention.
- Trip-less, reliable control and protection for power modules.

Oil Field

- Special inverter for pumping unit, stable control even without RBU(s) or DBU(s).
- Higher power saving effect, less harmonic and reactive current.
- High quality Outdoor Control Cabinet is available, with constant temperature control, it can work reliably in low temperature environment for a long time.
- It is applicable to control synchronous motor and asynchronous motor.
- AFE(s) and RBU(s) are available for higher energy saving effect and higher power factor requirements.



Elevator Industry

- Elevator integrated controller and electrical package are available, it can be selected according to customers' requirements.
- With optimized CAN and Modbus communication technology, it has quickly communication speed and strong anti-interference ability.
- With a variety of safety protection functions, it can meet the latest standards.
- Application of Internet of Things technology to achieve remote monitoring, commissioning and upgrade firmware.



Mine Winch

- With abundant experience in the renovation of winch, we can provide different types of winch renovation solutions.
- Vector technology platform provides excellent control performance for the winch.
- A variety of protection functions to ensure more secure and reliable system.
- Intelligent fault diagnosis to reduce the cost of maintenance and workloads.



Variable Frequency Power

- Voltage and frequency can be controlled separately, so do current and frequency.
- Special function for electromagnetic stirring, with multiple operation modes.
- Acceleration and deceleration function of voltage and frequency.
- SPWM and SVPWM modulation mode.
- Over-modulation function.



Textile industry

- Reduce the rate of breakage and improve the efficiency of production.
- Specially external heat sink and easy to clean the cotton in the heat sink.
- Unique voltage control function ensures normal deceleration in case of instantaneous power failure.
- With multi-step PLC function, users can set it according to actual application.

Stone Processing

- Simple and convenient operation, and less connection cable.
- Smooth running curve to reduce the stone damage rate, and smooth starting to reduce mechanical damage and maintenance costs.
- Providing the constant tension control with anti-breakage rope, main and auxiliary functions for frequency reference safe stopping function, and alarm prompt function.



Wood Processing

- Built-in technology algorithm of rotary cutting machine, rolling machine, and peeling machine.
- Wide voltage range, particularly suitable for harsh conditions in the rural power grid.
- High precision and fast rotary cutting to increase the yield under the premise of keeping the uniformity of thickness for the wood veneer.
- Stable and reliable work makes customers enjoy high-quality green power.



Printing and Packaging Industry

- High-performance vector control and torque control technology can achieve the constant linear speed and constant tension control.
- Applicable for devices of cutting machine, coating machine, paper-made machine, printing machine, compound machine, rolling dying machine, etc.
- With torque control without encoder speed feedback, it can replace torque motor widely.



Municipal Engineering

- Central air conditioning/refrigeration house: Constant temperature control, high efficiency of energy-saving, and low noise.
- Centralized water supply in constant pressure: Built-in one-for-all expansion card for water supply, multi-period water supply in constant pressure with timing loop, solving the phenomena of overflowing and water hammer in the switching process.
- Sewage treatment: Built-in adaptive torque control in the main and auxiliary drive of centrifugal equipment for quick acceleration and deceleration, suitable for harsh environment.
- Various fan drives: Designed for the fan, high efficiency of energy-saving, noise optimization, built-in automatic speed tracking function and maximum power up to 800kW.



Crane

- Excellent torque control and reliable brake control sequence.
- Professional crane control functions: speed monitoring, torque monitoring, torque verification, power optimization, position counting, anti-swing function for gantry, trolley and slew, etc.
- Extensively applied to: port, shipping, ocean engineering, mine, architecture, metallurgy, factory and various kinds of industries' lifting machines.



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