

Kinco
FV100/CV100 Series



Kinco Automation
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K1E08-1407



Kinco®

Kinco VFD
FV100 Series
CV100 Series

Kinco Automation

Corporate Profile



Kinco Automation is a leading supplier of industrial automation products and solutions from China with full line of automation products including industrial human machine interfaces (HMI), AC servo systems, stepper systems, PLC, VFD and field bus products. Kinco aims to help you achieve a leading position in your market.

Reliable partner of your success

- ☐ Gain the competitive edge
- ☐ Support your business
- ☐ Serve your needs

High standard of quality management

- ☐ 100% function and reliability test before delivery
- ☐ Quality control and tracking go through the full product life cycle
- ☐ Certificated process control and quality management capability

Proven performance

- ☐ Customers in over 40 countries and in diverse markets and sectors

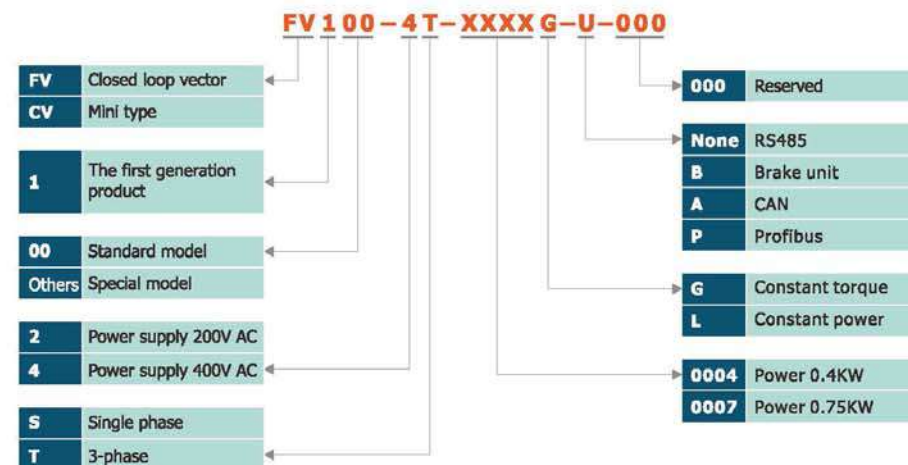
Perpetual innovation

- ☐ 8% of annual turnover invested in R&D
- ☐ Experienced international R&D teams
- ☐ Patent applications continue to rise every year
- ☐ Market-driven R&D: we organize our R&D activities around the voice from the customers



Provide Chinese Automation Solutions for Global Customers

Selection Guide



Technical Specification

Item	Description
Input	
Rated Voltage/frequency	3-phase 380V~440V AC, 50Hz/60Hz
Applicable voltage range	Voltage: 320V~460V. Voltage unbalancedness: <3%. Frequency tolerance:±5%.
Output	
Rated voltage	380V
Frequency	0Hz~300Hz
Overload capacity	G Type:150% 1 minute, 180% 10 seconds
Control characteristics	
Control method	Vector control without PG, Vector control with PG, V/F control
Modulation system	Space vector PWM modulation
Starting Torque	0.5Hz: 150% of rated torque(Vector control without PG), 0.5Hz: 200% of rated torque(Vector control with PG)
Frequency accuracy	Digital setting: Max. frequency×±0.01% Analog setting: Max. frequency×±0.2%
Frequency resolution	Digital setting: 0.01Hz. Analog setting: Max. frequency×0.05%
Torque boost	Manual torque boost: 0%~30.0%
V/F pattern	4 patterns:1 pattern is V/F curve setting by users. 3 patterns are drop torque characters curve (2.0 power,1.7 power,1.2 power)
Acceleration/Deceleration curve	Linear acceleration/deceleration. Four kinds of acceleration/deceleration time are optional
DC braking	Braking starting frequency: 0.00~60.00Hz Braking time: 0.0~10.0s Braking current: 0.0~100.0%
Auto current limit	Auto limit the current during operation to prevent frequent overcurrent trip.
Customized function	
Jogging	Jogging frequency range: 0.00Hz~50.00Hz. Jogging acceleration/deceleration time: 0.1~60.0s.
Multiple speed operation	Implement multiple speed operation by digital inputs.
Operation function	
Operation command	Keypad setting, Terminal setting, Communication setting
Frequency command	Keypad setting, Analog input, Pulse input, Communication setting
Auxiliary frequency setting	Implement flexible auxiliary frequency trim and frequency synthesis.
Pulse output	0~100KHz pulse output.
Analog output	2 channels analog output(0/4~20mA or 0/2~10V).
Operation panel	
LED Display	Display setting frequency, output frequency, output voltage, output current and so on, about 20 parameters.
Parameters copy	Copy parameters by operation panel.
Keys lock and function selection	Lock part of keys or all the keys. Define the function of part of keys.
Protection function	
Open phase protection(optional), overcurrent protection, overvoltage protection, undervoltage protection, overheat protection, overload protection and so on.	
Environment	
Operating site	Indoor, installed in the environment free from direct sunlight, dust, corrosive gas, combustible gas, oil mist, steam and drip.
Altitude	Derated above 1000m, the rated output current shall be decreased by 10% for every rise of 1000m
Ambient temperature	-10℃~40℃, derated at 40℃~50℃.
Humidity	5%~95%RH, non-condensing.
Vibration	Less than 5.9m/s ² (0.6g)
Storage temperature	-40℃~70℃
Structure	
Protection class	IP20
Cooling method	Air cooling, with fan control.
Installation method	Wall-mounted
Efficiency	45kW or below: ≥93%; 55kW or above: ≥95%

General Product Series

FV100-4T-□□□□G 3-phase 380V AC constant torque VFD

Model	0007	0015	0022	0037	0055	0075	0110	0150	0185	0220	0300	0370	0450	
FV100-4T-□□□□G														
The power of suitable motor(kW)	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	
Output Voltage(V)	3-phase 0~rated input voltage													
Rated current(A)	2.3	3.7	5.5	8.8	13	17	25	32	37	45	60	75	90	
Overload capacity	150% 1 Minute, 180% 10 Seconds													
Rated voltage/frequency	3-phase 380V~440V AC; 50Hz/60Hz													
Allowable voltage range	320V~460V AC; Voltage unbalancedness: ≤3%; Allowable frequency fluctuation: ±5%													
Rated current(A)	3.4	5.0	5.8	10.5	14.5	20.5	26	35	38.5	46.5	62	76	92	
Brake unit	Built-in													
Protection class	IP20													
Cooling method	Air cooling Cooling by fan													

Model	0550	0750	0900	1100	1320	1600	1850	2000	2200	2500	2800	3150	3550	4000
FV100-4T-□□□□G														
The power of suitable motor(kW)	55	75	90	110	132	160	185	200	220	250	280	315	355	400
Output Voltage(V)	3-phase 0~rated input voltage													
Rated current(A)	110	152	176	210	252	304	350	380	426	470	520	600	650	690
Overload capacity	150% 1 Minute, 180% 10 Seconds													
Rated voltage/frequency	3-phase 380V~440V AC; 50Hz/60Hz													
Allowable voltage range	320V~460V AC; Voltage unbalancedness: ≤3%; Allowable frequency fluctuation: ±5%													
Rated current(A)	113	157	180	220	240	320	326*	352*	385*	437*	491*	580*	624*	670*
Brake unit	External brake unit													
Protection class	IP20													
Cooling method	Cooling by fan													

* 185KW above models standard equip with DC reactor externally.

FV100-4T-□□□□L 3-phase 380V AC constant power VFD

Model	0015	0022	0037	0055	0075	0110	0150	0185	0220	0300	0370	0450	0550	
FV100-4T-□□□□L														
The power of suitable motor(kW)	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	
Output Voltage(V)	3-phase 0~rated input voltage													
Rated current(A)	3.7	5.5	8.8	13	17	25	32	37	45	60	75	90	110	
Overload capacity	115% 1 Minute, 160% 0.5 Second													
Rated voltage/frequency	3-phase 380V~440V AC; 50Hz/60Hz													
Allowable voltage range	320V~460V AC; Voltage unbalancedness: ≤3%; Allowable frequency fluctuation: ±5%													
Rated current(A)	5.0	5.8	10.5	14.5	20.5	26	35	38.5	46.5	62	76	92	113	
Brake unit	Built-in													
Protection class	IP20													
Cooling method	Air cooling Cooling by fan													

Model	0750	0900	1100	1320	1600	1850	2000	2200	2500	2800	3150	3550	4000	4500
FV100-4T-□□□□L														
The power of suitable motor(kW)	75	90	110	132	160	185	200	220	250	280	315	355	400	450
Output Voltage(V)	3-phase 0~rated input voltage													
Rated current(A)	152	176	210	252	304	350	380	426	470	520	600	650	690	775
Overload capacity	115% 1 Minute, 160% 0.5 Second													
Rated voltage/frequency	3-phase 380V~440V AC; 50Hz/60Hz													
Allowable voltage range	320V~460V AC; Voltage unbalancedness: ≤3%; Allowable frequency fluctuation: ±5%													
Rated current(A)	157	180	220	240	320	336	352*	385*	437*	491*	580*	624*	670*	755*
Brake unit	External brake unit													
Protection class	IP20													
Cooling method	Cooling by fan													

* 200KW above models standard equip with DC reactor externally.

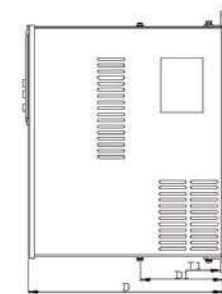
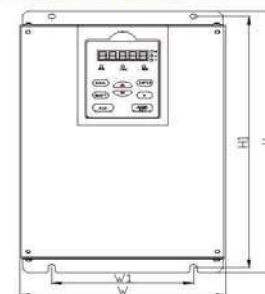
General Product Series

FV100-2S-□□□□G Single phase 200V AC constant torque VFD

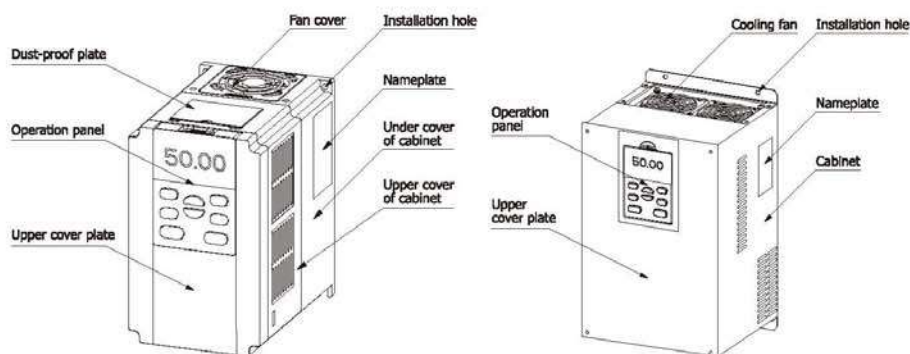
Model	0004	0007	0015	0022
FV100-4T-□□□□G				
The power of suitable motor(kW)	0.4	0.75	1.5	2.2
Voltage(V)	3-phase 0-rated input voltage			
Rated current(A)	2.5	4.0	7.5	10
Overload capacity	150% 1 Minute; 180% 10 Seconds; 200% 0.5 Second; 10 minutes interval (inverse time limit speciality)			
Rated voltage/frequency	Single phase 200V-240V AC; 50Hz/60Hz			
Allowable voltage range	180V-260V AC; Voltage unbalancedness: ≤3%; Allowable frequency fluctuation: ±5%			
Rated current(A)	5.3	8.2	14.0	23
Brake unit	Built-in			
Protection class	IP20			
Cooling method	Air cooling			

External Dimension

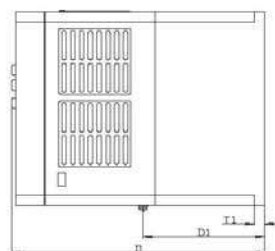
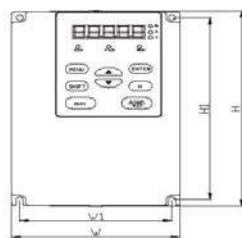
FV100-4T-0055G ~ □V100-4T-4000G



External Dimension

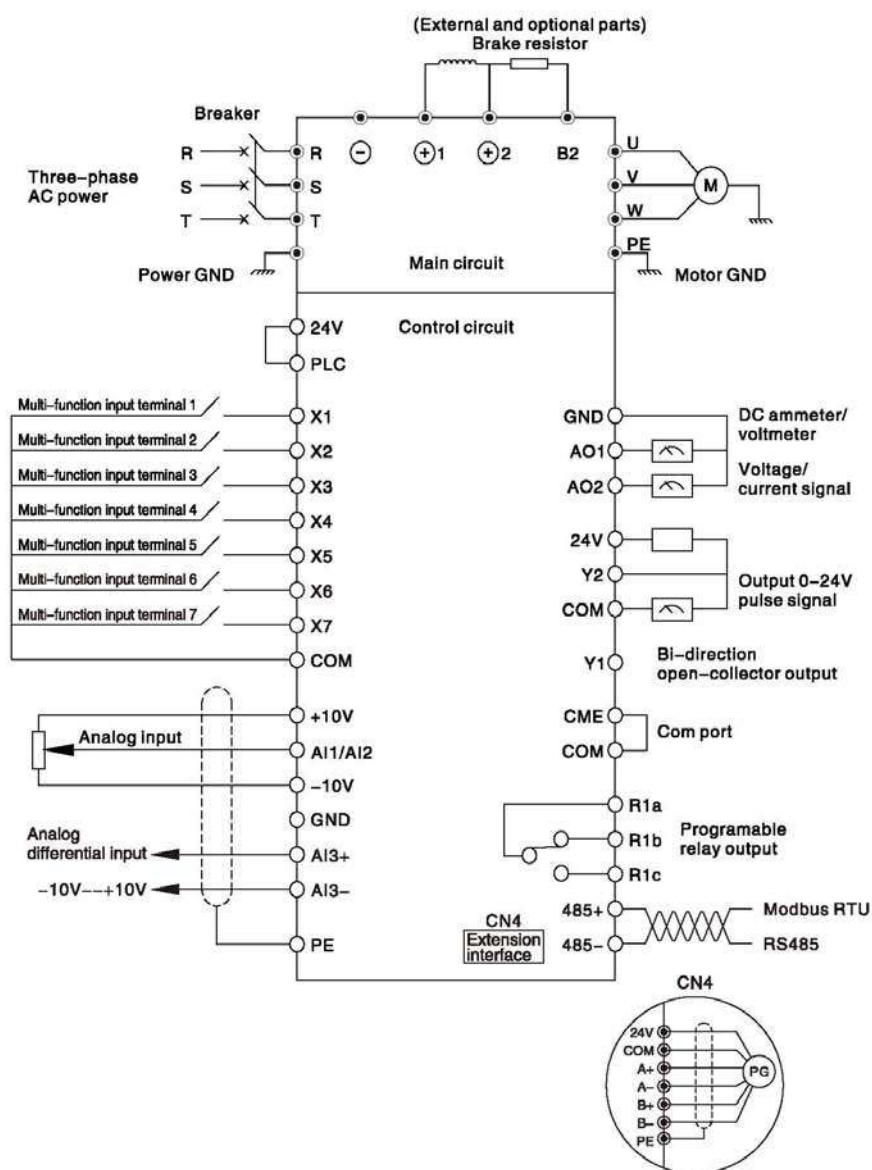


VFD that power under FV100-4T-0037G



Models of Inverter (G: Constant torque load L: Draught fan and water pump load)	External dimension(mm)								Weight (kg)
	W	H	D	W1	H1	D1	T1	Installation hole "d"	
FV100-2S-0004G	115	186	171	106	176	65	7	5	1.5
FV100-2S-0007G									
FV100-2S-0015G									
FV100-2S-0022G									
FV100-4T-0007G	115	186	171	106	176	65	7	5	1.5
FV100-4T-0015G									
FV100-4T-0022G									
FV100-4T-0037G									
FV100-4T-0055G	169	287	202	102	271	80	2	5.5	4.5
FV100-4T-0075G	204	342	201	140	328	82	2	7	6.5
FV100-4T-0110G									
FV100-4T-0150G									
FV100-4T-0185G									
FV100-4T-0220G	297	451	224	200	433	89	2.5	7	17
FV100-4T-0300G	320	535	224	220	512	88.5	2.5	7	25
FV100-4T-0370G	373	649	262	240	628	108	2.5	10	30
FV100-4T-0450G									
FV100-4T-0550G									
FV100-4T-0750G									
FV100-4T-0900G	440	713	276	270	689	119.5	3	10	35
FV100-4T-1100G	530	925	335	340	841	177	3	14	90
FV100-4T-1320G									
FV100-4T-1600G									
FV100-4T-1850G									
FV100-4T-2000G	690	1020	380	500	923	207	4	14	130
FV100-4T-2200G									
FV100-4T-2500G									
FV100-4T-2800G									
FV100-4T-3150G	810	1228	400	520	1132	207	4	14	215
FV100-4T-3550G									
FV100-4T-4000G									

Wiring Diagram of Product Terminal



Terminal Type of Main Loop's Input and Output

Terminal type

Suitable model: FV100-2S-0004G~FV100-2S-0022G

Machine Bottom L N ⊖ ⊕/B1 B2 U V W PE

Suitable model: FV100-4T-0007G~FV100-4T-0037G

Machine Bottom R S T ⊖ ⊕/B1 B2 U V W PE

Suitable model: FV100-4T-0055G~FV100-4T-0150G

Machine Bottom R S T ⊖ ⊕1 ⊕2/B1 B2 U V W PE

Suitable model: FV100-4T-0185G~FV100-4T-0370G

Machine Bottom B2 R S T ⊖ ⊕1 ⊕2/B1 U V W PE

Suitable model: FV100-4T-0450G~FV100-4T-0750G

Machine Top R S T

Machine Bottom ⊕1 ⊕2 ⊖ U V W PE

Suitable model: FV100-4T-0900G~FV100-4T-1320G

Machine Top R S T ⊖

Machine Bottom ⊕1 ⊕2 U V W ⊕

Suitable model: FV100-4T-1600G~FV100-4T-4000G

Machine Top R S T ⊖

Machine Bottom ⊕1 ⊕2 ⊕ U V W

Descriptions of the main loop terminals

Terminal name	Function description
L, N	Single phase 220v AC input terminal
R, S, T	3-phase 380v AC input terminal
⊖	DC negative bus output terminal
⊕1, ⊕2	Reserved terminal for external DC reactor
⊕2, ⊖	Terminal for external brake unit
B1, B2	Access terminal of brake resistor
U, V, W	3-phase AC output terminal
PE	Earth terminal

Control loop terminals arrange as follows:

AO1	AO2	AI3+	+10V	24V	PLC	X4	X5	X6	X7	R1a	R1b	R1c		
⊕	AI1	AI2	AI3-	GND	X1	X2	X3	COM	485+	485-	CME	Y1	Y2	⊖

Arrangement diagram of control terminals.

CNA Function Table of Connector Terminal

Category	Terminal silk screen	Name	Description of terminal function	Specification
Shield	⊕	Earth shield	GND for the shield layer of terminal. Shield layer of the analog signal cable, 485 communication cable, motor power cable can be connected here	Connect the PE terminal of Internal main circuit
Power supply	+10	Power	Provide +10V reference power	Provide 5mA current at most
	GND	Power GND	GND for analog signal and +10 power supply	Internal isolation from COM and CME
Analog input	AI1	Analog single-ended input AI1	Receive the analog voltage or current single-ended input, they are selected by jumper AI1 (Reference ground:GND)	Input voltage range: -10V~+10V (Input resistor: 45kΩ) Resolution: 1/4000
	AI2	Analog single-ended input AI2	Receive the analog voltage or current single-ended input, they are selected by jumper AI2 (Reference ground:GND)	Input current range: 0mA~20mA, Resolution: 1/2047Jumper to select)
	AI3+	Analog voltage differential input AI3+ or analog voltage single-ended input.	When connected to the analog voltage differential input, AI3+ is the same-phase input and AI3- is the inverted input; when connected to the analog voltage single-ended input, AI3+ is signal input, AI3- is GND (Reference ground: GND)	Input voltage range: -10V~+10V (Input resistor: 15kΩ) Resolution: 1/4000
	AI3-	Analog voltage differential input AI3- or analog voltage single-ended input.		
Analog output	AO1	Analog output 1	Providing analog voltage or current output, they are selected by the Jumper AO1 (The default setting is output voltage)	Voltage output range: 0V~10V Current output range: 0/4~20mA
	AO2	Analog output 2	Providing analog voltage or current output, they are selected by the Jumper AO2 (The default setting is output voltage)	Voltage output range: 0V~10V Current output range: 0/4~20mA
Communication	RS485+ RS485-	RS485 communication connector	RS485 difference signal positive RS485 difference signal negative	Standard RS485 communication connector (Use twisted-pair or shield cable please)
Multi-function input terminal	X1 ~ X6	Multi-function input terminal 1		Optocoupler Isolation Input Input resistor: R=3.3kΩ Maximum input frequency of X1~X6: 200kHz Maximum input frequency of X7: 100kHz Input voltage range: 2~30V
	X7	Multi-function input terminal or pulse input	Can be defined as multi-function digital input terminal	
Multi-function output terminal	Y1	Bi-direction open-collector output	Can be defined as multi-function digital output terminal (Com port: CME)	Optocoupler Isolation output Maximum working voltage: 30v Maximum output current: 50mA
	Y2	Open collector pulse output terminal	Can be defined as multi-function pulse signal output terminal (Com port: COM)	Maximum output frequency: 100kHz
Power supply	24V	+24v power supply	Providing +24V power	Maximum output current: 200mA
Common port	PLC	Multi-function input common port	Common port of Multi-function input (Short cut with 24V in default)	Common port of X1~X7, PLC is isolated from 24V internally
	COM	Common port of 24V power supply	Three common ports in all, cooperate with other terminals	COM is isolated from CME and GND internally
	CME	Y1 output common port	Common port of multi-function output terminal Y1	
Relay output terminal 1	R1a	Relay output	Can be defined as multi-function relay output terminal	R1a~R1b: Normally closed, R1a~R1c: normally open Contact capacity : AC250V/2A (COSΦ=1) AC250V/1A (COSΦ=0.4) DC30V/1A
	R1b			
	R1c			Input voltage of relay output terminal's overvoltage class is overvoltage class II

Accessory	Model	Function
PG card	PG-LZA-12	A/B/Z Open collector input(12V),with CANopen communication port.

CV100 Mini Type Vector Inverter



Product Characteristics

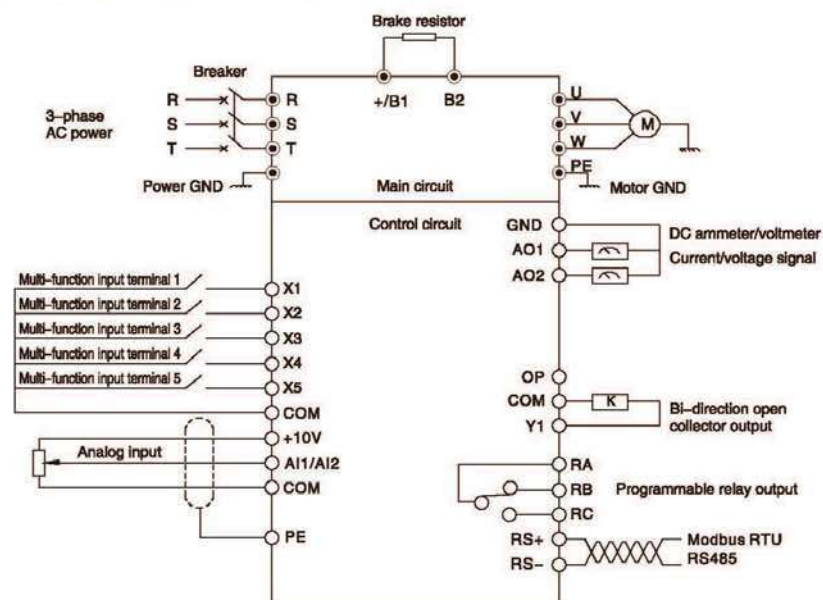
- Control Mode: V/F control
- Carrier frequency up to 15KHz
- Auto torque boost and auto slip compensation function
- Built-in PID control
- Standard equipped Modbus(RS485 baud rate up to 38400bps)
- Sleep/wake up function

Technical Specification

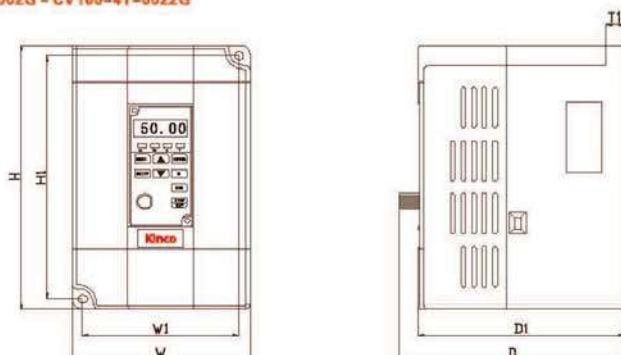
Items	Description
Input	Rated Voltage/frequency 4T: 3-phase, 380V~440V; 50Hz/60Hz; 2S: Single phase, 200V~240V; 50Hz/60Hz
	Allowable voltage range 4T: 320V~460V; 2S:180V~260V; Voltage unbalancedness:<3%; Frequency: ±5%
Output	Voltage 0~ Rated input voltage
	Frequency 0Hz~300Hz (0Hz~1000Hz custom)
Main control characteristics	Overload capacity G Type: 150% rated current for 1 minute, 180% rated current for 10 seconds.
	Control method V/F control
	Starting torque Auto torque rising
	Frequency accuracy Digital setting: Max. frequency × ±0.01%; Analog setting: Max. frequency × ±0.2%
	Frequency resolution Digital setting: 0.01Hz; Analog setting: Max. frequency × 0.05%
	Torque boost Manual torque boost: 0%~30.0%
	V/F pattern 4 patterns: 1 V/F curve mode set by user and 3 kinds of torque-de-rating modes (2.0 power, 1.7 power, 1.2 power)
	Acceleration/Deceleration curve Linear acceleration/deceleration. Four kinds of acceleration/deceleration time
	Auto current limit Limit current during operation automatically to prevent frequent overcurrent trip.
	Operation command Keypad setting, terminal setting, communication setting
Customized function	Frequency command Digital setting, analog voltage setting, analog current setting.
	Auxiliary frequency setting Implement flexible auxiliary frequency trim and frequency synthesis
Protection function	Analog output 2 channel analog output (0/4~20mA or 0/2~10V).
	Overcurrent protection, overvoltage protection, undervoltage protection, overheat protection, overload protection, missing phase protection (selectable) and so on.
Environment	Altitude Derated above 1000m, the rated output current shall be decreased by 10% for every rise of 1000m.
	Ambient temperature -10℃~ +40℃ (derated at 40℃~50℃)
	Humidity 5%~95%RH, non-condensing
	Vibration Less than 5.9m/s² (0.6g)
Storage temperature	-40℃~ +70℃

Wiring Diagram of Product Terminal

Applicable models: CV100-2S-0002G - CV100-4T-0022G



CV100-2S-0002G - CV100-4T-0022G



Terminal Type of Main Loop's Input and Output

Terminal Type	Single-phase Input(Top)	L	N	PE	PE	RS+	RS-	
	3-phase Input(Top)	R	S	T	PE	PE	RS+	RS-
	Bottom	U	V	W	+/B1	B2		

Terminal name	Function description
L, N	Single phase 220V AC input terminal
R, S, T	3-phase 380V AC input terminal
+B1, B2	Access terminal of brake resistor
U, V, W	3-phase AC output terminal
PE	Earth terminal
RS+	RS485+
RS-	RS485-

RA	RB	RC	AI1	AI2	+10V	X1	X2	X3	X4	X5	Y1	AO1	AO2	OP	COM	PE
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CNA Function Table of Connector Terminal

Category	Terminal silk screen	Name	Description of terminal function	Specification
Shield	PE	Earth shield	GND for the shield layer of terminal. Shield layer of the analog signal cable, 485 communication cable, motor power cable can be connected here	Connect the PE terminal of internal main circuit
Power supply	+10	+10V Power	Provide +10V reference power	Provide 5mA current at most
Communication	RS+	RS485 communication connector	RS485 difference signal positive	Standard RS485 communication connector (Use twisted-pair or shield cable please)
	RS-		RS485 difference signal negative	
Analog input	AI1	Analog single-ended input AI1	Receive the analog voltage or current single-ended input, they are selected by jumper AI1 (Reference ground:COM)	Input voltage range: -10V→+10V (Input resistor: 45kΩ) Resolution: 1/4000 Input current range: 0mA~20mA, Resolution: 1/2000(Jumper to select)
	AI2	Analog single-ended input AI2	Receive the analog voltage or current single-ended input, they are selected by jumper AI2 (Reference ground:COM)	
Analog output	AO1	Analog output 1	Providing analog voltage or current output, they are selected by the Jumper AO1. The default setting is output voltage, see to description of function code A6.28. (Reference ground: COM)	Voltage output range: 0V~10V Current output range: 0A~20mA
	AO2	Analog output 2	Providing analog voltage or current output, they are selected by the Jumper AO2. The default setting is output voltage, refer to the function code A6.29 (Reference ground: GND)	
Multi-function input terminal	X1~ X5	Multi-function input terminal	Can be defined as multi-function digital input terminal. Please see to description of function code A6.00~A6.04 (A6 group).	Optocoupler isolation input Input resistor: R=3.3kΩ Input voltage range of X1~X5: 2~30V
Multi-function output terminal	Y1	Bi-direction open collector output	Can be defined as multi-function digital output terminal. Please see to description of function code A6.14 (A6 group) (Com port: COM)	Optocoupler isolation output Maximum working voltage: 30V Maximum output current: 50mA
Power supply	24V	+24v power supply	Providing +24V power	Maximum output current: 200mA
Common port	COM	Common port of 24V power supply	Cooperate with other terminals	

Kinco Inverter Brake Resistor Selection

1. 380V Inverter brake resistor selection

Inverter power (Three phase G type)	Brake unit	Brake resistor			
		Standard resistance	Qty.	Liminal resistance of brake resistor	Standard power
0.75KW	Standard	750Ω	1	125Ω	110W
1.5KW		400Ω	1	100Ω	280W
2.2KW		250Ω	1	100Ω	320W
3.7KW		150Ω	1	66.7Ω	550W
5.5KW		100Ω	1	66.7Ω	800W
7.5KW		75Ω	1	66.7Ω	1070W
11KW	Built-in	50Ω	1	25Ω	1600W
15KW		40Ω	1	25Ω	2000W
18.5KW		32Ω	1	20Ω	4800W
22KW		27.2Ω	1	20Ω	4800W
30KW		20Ω	1	14Ω	6000W
37KW		16Ω	1	14Ω	9600W
45KW	selectable	13.6Ω	1	10Ω	9600W
55KW		20Ω	2	7Ω	6000W*2
75KW		13.6Ω	2	5Ω	(resistance after parallel connection) 9800W*2
90KW		13.6Ω	2	5Ω	9600W*2
110KW		5Ω	4	3.5Ω	(resistance after serial-parallel connection) 6000 W*4
132KW		5Ω	4	3.5Ω	6000W*4
160KW	External brake unit	3Ω	6	2.5Ω	6000 W*6

2. 220V Inverter brake resistor selection

Inverter power (Three phase G type)	Brake unit	Brake resistor			
		Standard resistance	Qty.	Liminal resistance of brake resistor	Standard power
0.4KW	Standard	200Ω	1	100Ω	100W
0.75KW		150Ω	1	100Ω	150W
1.5KW		150Ω	1	100Ω	150W
2.2KW		50Ω	1	35Ω	400W

Notes:

1. The resistance of brake resistor should be bigger than the liminal value. The selection is calculated basing on braking time 10S. For applications in industries such as crane and oil field, long braking time is required, the resistance should be magnified for several times according to actual situations.

2. Avoid using ripple resistors: 1) Ripple resistor possesses negative temperature characteristic. After working for some time, the resistance of ripple resistor decreases with temperature rising. The brake unit will be easy to explore if resistance is too small; 2) The parasitic inductance of ripple resistor is large, which may cause brake unit broken easily; Aluminum Power Resistors are recommended. Please select larger resistance for ripple resistors.

3. If brake resistor power is smaller than the listed standard power, the brake resistor will burn up easily. The larger the brake resistor power is, the less the possibility there is brake resistor burn-out.

4. In sheet 1: for 55KW/75KW/90KW inverters, there are two brake resistors in parallel, the equivalent resistance is 12000W 10Ω, 19200W 6.8Ω respectively; For 110KW/132KW inverters, there are 4 brake resistors paired up in parallel, then connected in series, the equivalent resistance is 24000W 5Ω; For 160KW inverter, there are 6 brake resistors paired up in parallel, then connected in series, the equivalent resistance is 36000W 4.5Ω.