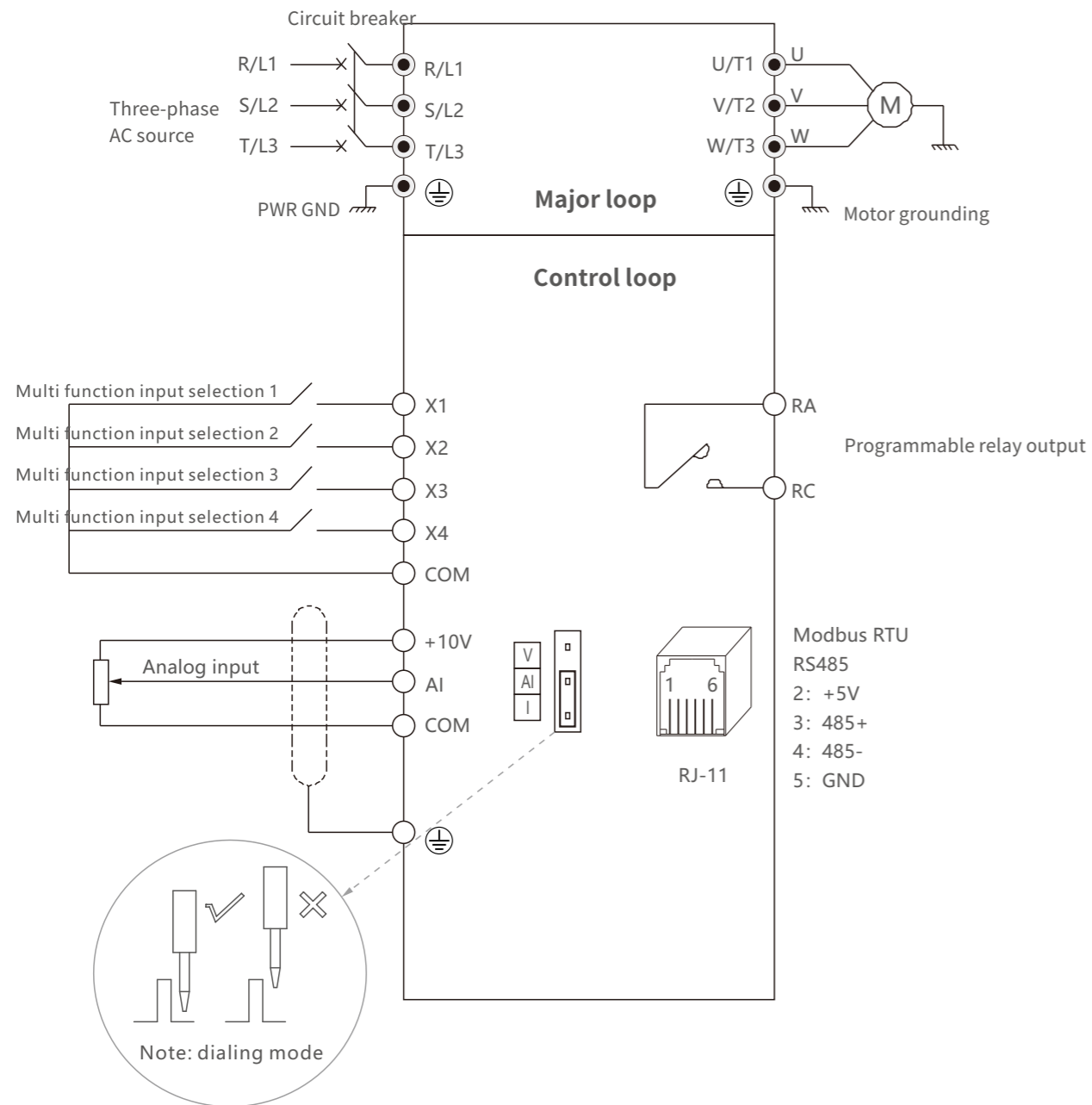


## Control Terminal Function Description



Motion Control VFD

Kinco VFD Catalog

- FV20 Series  
- CV20 Series





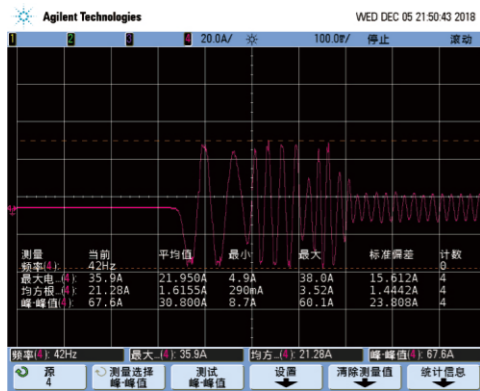
## Product Features

- Low speed, high torque, small torque ripple, automatic current limiting, avoid over current fault caused by sudden load or other reasons
- Optimized structure design, high power density, built-in brake unit under 45KW
- Strict reliability design, support the company background monitoring software

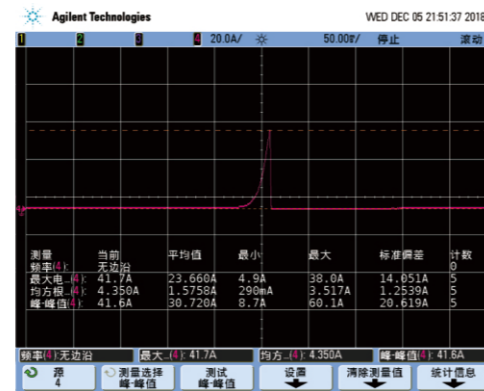
## Product Positioning

FV20: high cost performance vector VFD, Has been fully replaced FV100 series

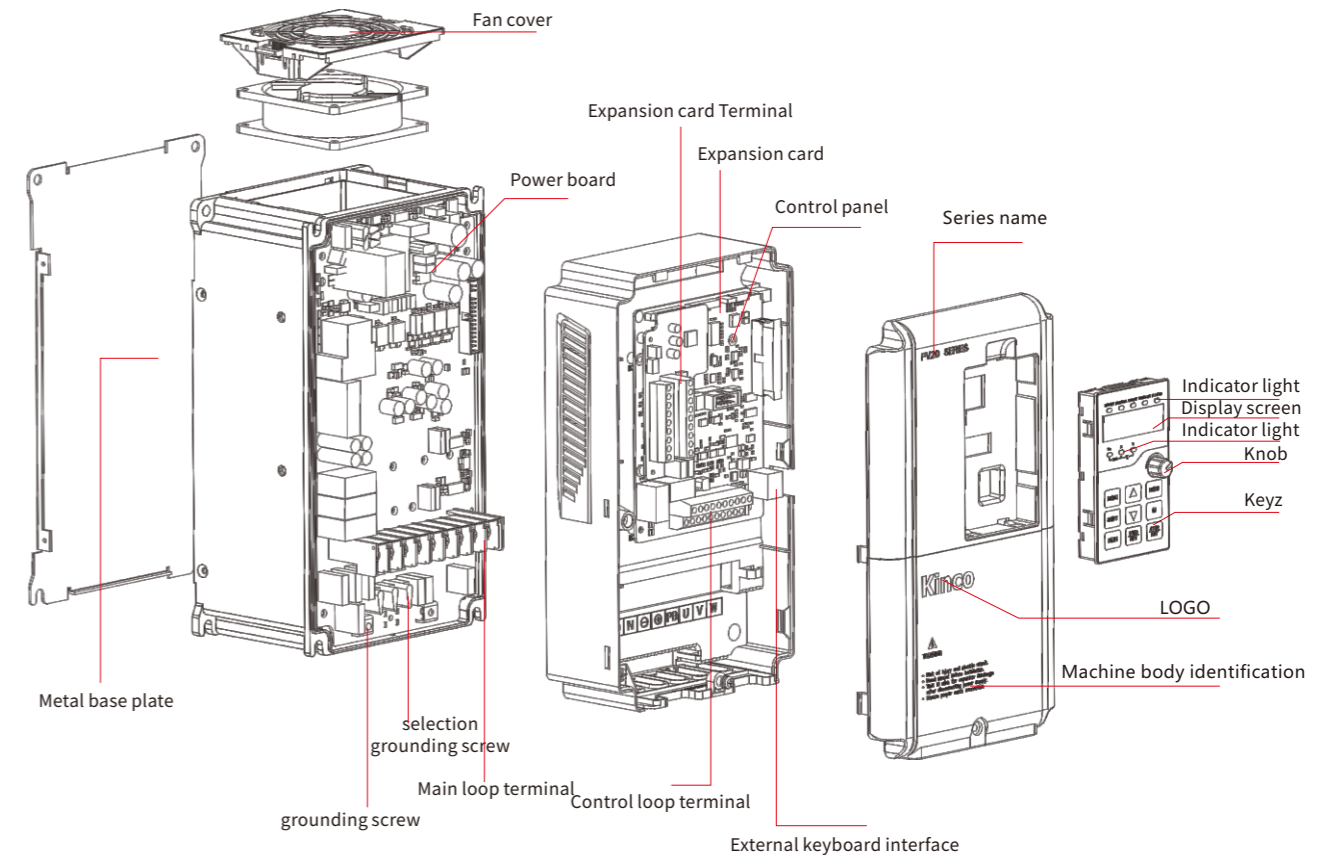
- Low speed, high torque, small torque ripple, automatic current limiting, avoid over current fault caused by sudden load or other reasons



Automatic current limiting function on



Automatic current limiting function off



Forward / Reverse indicator  
ON:Reverse  
OFF: Forward

Current limit indicator  
ON: Current limit  
OFF: No limit

Command source indicator  
LOC:ON: Local control LOC  
REMOTE:OFF: Remote control

Fault indicator  
ON: Fault alarm  
OFF: Normal

Running indicator  
ON :Running;  
Flashing:Self-learning status  
OFF: shutdown state

Unit indicator

Potentiometer

MENU key

ENTER key

Add / Sub key

SHIFT key

Multi-function

Run key

STOP / RESET key

Forward / Reverse key



## Product Model Description

### FV20-4T-0150G/0185L-037

FV	Closed loop vector	037	No.37 software non-standard
2	The second generation product	Nothing	Standard configuration RS485
0	Standard type	0150G	15KW constant torque
...	Other types	0185L	18.5KW constant power
4T	3-phase power supply 380V AC		
2s	Single phase power supply 220v AC		

CAN communication function requires an expansion card

## Technical Specification

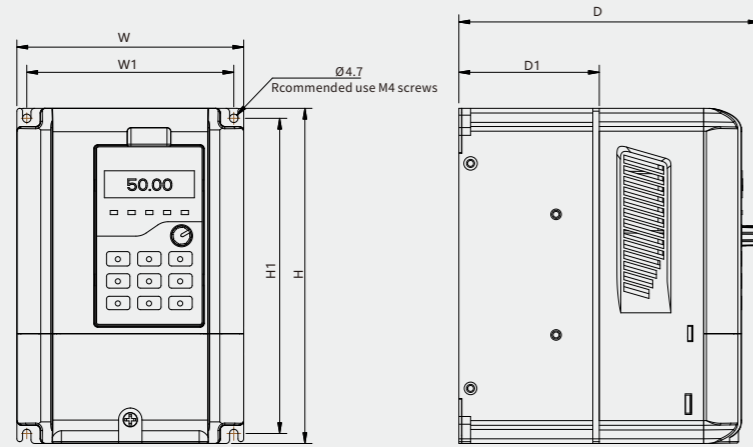
Item	Description	
Input	Rated Voltage/ frequency	single-phase,220V AC,50HZ/60HZ;three-phase,380V AC,50HZ/60HZ three-phase,220V AC,50HZ/60HZ
	Applicable voltage range	4T:320V~460V; 2T/2S:180V~260V; Voltage unbalancedness: <3%; Frequency tolerance: ±5%
Output	Rated voltage	0~Rated input voltage
	Frequency	0Hz~300Hz
	Overload capacity	G Type:150% 1 minute, 180% 10 seconds; L type :110% 1 minute, 150% 1 second
Control characteristics	Control method	Vector control without PG , Vector control with PG , V/F contro
	Modulation method	Space vector PWM modulation
	Starting Torque	0.5Hz: 150% of rated torque(Vector control without PG), 0.0Hz: 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%(Only V / F mode is valid)
	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 or S-curve acceleration and deceleration mode; Four kinds of acceleration and deceleration time
	Auto current limit	The current is automatically limited during operation to prevent frequent over-current fault tripping
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	Digital setting, Analog voltage setting, Analog current setting, Pulse setting
	Auxiliary frequency setting	Implement flexible auxiliary frequency trim and frequency synthesis.
	Pulse output	0.1kHz ~ 100kHz pulse square wave signal output, can achieve the set frequency, output frequency and other physical quantities output
Operation panel	Analog output	2 channels analog output(0/4~20mA or 0/2~10V);Output setting frequency ,output frequency and so on
	LED Display	Display setting frequency, output frequency, output voltage, output current and so on, about 20 parameters.
	Parameters copy	Copy parameters by operation panel.
Protection function	Keys lock and function selection	Lock part of keys or all the keys. Define the function of part of keys to prevent misoperation
	Overcurrent protection, Overvoltage protection, Undervoltage protection, Overheat protection, Overload protection, Open phase protection (optional), etc.	
Environment	Operating site	Indoor, free from direct sunlight, dust, corrosive gas, combustible gas, oil mist, water vapor, drip or salt
	Altitude	Derated above 1000m, the rated output current shall be decreased by 10% for every rise of 1000m
	Ambient temperature	- 10 °C~ + 40 °C (The ambient temperature is between 40 °C and 50 °C, reduce the rating for use)
	Humidity	5%~95%RH, No water condensation
	Vibration	Less than 5.9 M / S2 (0.6g)
Structure	Storage temperature	-40°C~+70°C
	Protection class	IP20
Installation method	Cooling method	Self cooling, air cooling, with fan control
	Wall mounted, cabinet mounted	
Effeciency	45kW or below: ≥93%; 55kW or above: ≥95%	

## Technical Specification

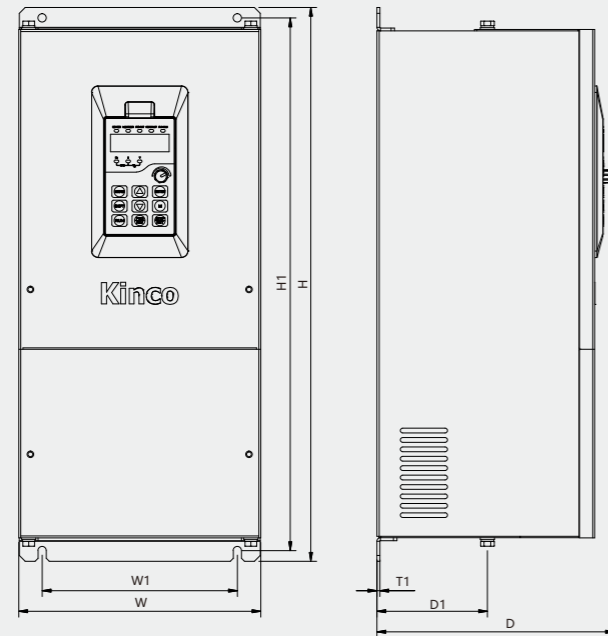
VFD model	Power capacity KVA	Input current A	Output current A	Adaptive motor KW
<b>220V,50/60HZ:Singel-phase 220V AC,50/60HZ</b>				
FV20-2S-0004G	1.0	5.3	2.5	0.4
FV20-2S-0007G	1.5	8.2	4.0	0.75
FV20-2S-0015G	3.0	14.0	7.5	1.5
FV20-2S-0022G	4.0	23.0	10.0	2.2
<b>380V, 50/60HZ:three-phase 380V AC,50/60HZ</b>				
FV20-4T-0007G/0015L	1.5	3.4	2.3	0.75
FV20-4T-0015G/0022L	3.0	5.0	3.7	1.5
FV20-4T-0022G/0037L	4.0	5.8	5.5	2.2
FV20-4T-0037G/0055L	5.9	10.5	8.8	3.7
FV20-4T-0055G/0075L	8.5	14.5	13.0	5.5
FV20-4T-0075G/0110L	11.0	20.5	17.0	7.5
FV20-4T-0110G/0150L	17.0	26.0	25.0	11
FV20-4T-0150G/0185L	21.0	35.0	32.0	15
FV20-4T-0185G/0220L	24.0	38.5	37.0	18.5
FV20-4T-0220G/0300L	30.0	46.5	45.0	22.0
FV20-4T-0300G/0370L	40.0	62.0	60.0	30.0
FV20-4T-0370G/0450L	50.0	76.0	75.0	37.0
FV20-4T-0450G/0550L	60.0	92.0	90.0	45.0
FV20-4T-0550G/0750L	72.0	113.0	110.0	55.0
FV20-4T-0750G/0900L	100.0	157.0	152.0	75.0
FV20-4T-0900G/1100L	116.0	180.0	176.0	90.0
FV20-4T-1100G/1320L	138.0	260.0	210.0	110.0
FV20-4T-1320G/1600L	167.0	232.0	252.0	132.0
FV20-4T-1600G/1850L	200.0	282.0	304.0	160.0
FV20-4T-1850G/2000L	230.0	326.0	350.0	185.0
FV20-4T-2000G/2200L	250.0	352.0	380.0	200.0
FV20-4T-2200G/2500L	280.0	385.0	426.0	220.0
FV20-4T-2500G/2800L	320.0	437.0	470.0	250.0
FV20-4T-2800G/3150L	445.0	491.0	520.0	280.0
FV20-4T-3150G/3550L	500.0	580.0	600.0	315.0
FV20-4T-3550G/4000L	565.0	624.0	665.0	355.0
FV20-4T-4000G/4500L	630.0	670.0	690.0	400.0
FV20-4T-6000G	990.0	1035.0	1050.0	600.0
FV20-4T-8000G	1250.0	1300.0	1350.0	800.0
FV20-4T-10000G	1500.0	1650.0	1725.0	1000.0

## Size

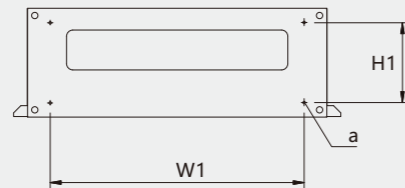
The overall dimension of VFD is shown in the figure below



Applicable model : FV20-4T-0450G/0550L Models below



Applicable model : FV20-4T-0550G/0750L~FV20-4T-8000G

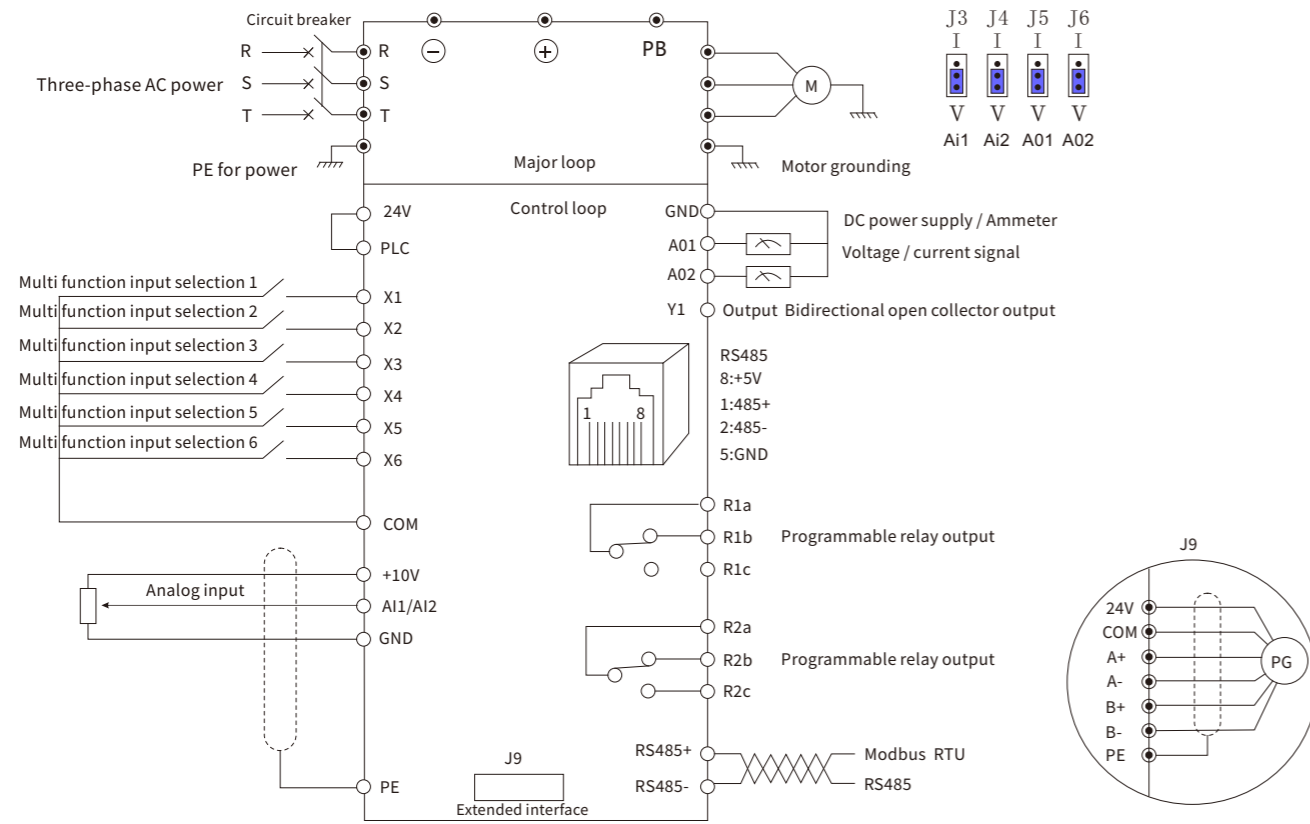


Applicable model : FV20-4T-10000G Model

## Mechanical Parameters

VFD model (G: Constant torque load; L: Fan and pump load)	Outline and installation dimensions (mm)							Approximate weight (Gross weight)
	W	H	D	W1	H1	D1	Mounting hole d	
FV20-2S-0004G	126	186	167	115	175	78	4.7	2
FV20-2S-0007G								
FV20-2S-0015G								
FV20-2S-0022G								
FV20-4T-0007G/0015L								
FV20-4T-0015G/0022L								
FV20-4T-0022G/0037L								
FV20-4T-0037G/0055L	146	256	181	131	243	95	5.8	6
FV20-4T-0055G/0075L								
FV20-4T-0075G/0110L								
FV20-4T-0110G/0150L								
FV20-4T-0150G/0185L	170	320	207	151	303	118.5	5.8	8
FV20-4T-0185G/0220L								
FV20-4T-0220G/0300L								
FV20-4T-0300G/0370L	225	360	224	206	341	130	6.5	9
FV20-4T-0370G/0450L								
FV20-4T-0450G/0550L								
FV20-4T-0550G/0750L	285	617	258	220	596	132	10	35
FV20-4T-0750G/0900L								
FV20-4T-0900G/1100L	320	639	317	240	620	152	11	60
FV20-4T-1100G/1320L								
FV20-4T-1320G/1600L								
FV20-4T-1600G/1850L	530	940	385	340	910	206	14	114
FV20-4T-1850G/2000L								
FV20-4T-2000G/2200L								
FV20-4T-2200G/2500L	690	1006	380	500	974	207	14	156
FV20-4T-2500G/2800L								
FV20-4T-2800G/3150L								
FV20-4T-3150G/3550L	810	1228	400	520	1196	209	14	225
FV20-4T-3550G/4000L								
FV20-4T-4000G/4500L								
FV20-4T-6000G	810	1328	400	520	1296	/	14	450
FV20-4T-8000G								
FV20-4T-10000G	1480	1807	600	Seat type installation W1*H1=1040*440 d=14				460
FV20-2T-0004G	126	186	167	115	175	78	4.7	2
FV20-2T-0007G								
FV20-2T-0015G								
FV20-2T-0022G	146	256	181	131	243	95	5.8	6
FV20-2T-0037G/0055L								
FV20-2T-0055G/0075L	170	320	207	151	303	118.5	5.8	8
FV20-2T-0075G/0110L								
FV20-2T-0110G/0150L								
FV20-2T-0150G/0185L	225	360	224	206	341	130	6.5	9
FV20-2T-0185G/0220L								
FV20-2T-0220G/0300L								

## Wiring Diagram Of Product Terminal



## Product Features

- Output frequency 0 ~ 300Hz
- V / F control and settable V / F curve
- Carrier frequency 6KHz
- Automatic torque lifting and automatic slip compensation
- Built in modbus, RS485 baud rate up to 19200bps

## Technical Specification

Item	Description	
Input	Rated Voltage/frequency	AC220V 50HZ/60HZ; AC380V 50HZ/60HZ
	Applicable voltage range	4T: 320V~460V; 2T: 180V~260V; Voltage unbalancedness: <3%; Frequency tolerance: ±5%
Output	Voltage	0~Rated input voltage
	Frequency	0Hz~300Hz
	Overload capacity	150% 1 minute, 180% 1 seconds; 200% 0.5 second
Main control performance	Control method	V / F control
	Starting Torque	1Hz: 150% of rated torque
	Speed range	1:100
Basic function	Speed stability accuracy	±0.5%
	Frequency setting mode	Panel mode; analog given; communication mode
	Starting mode	Starting again; starting from DC speed; Speed tracking starting
	Stop mode	ImplemenDeceleration stop; free stop; deceleration stop + DC braket stop
	V / F curve	Four V / F curve modes: one user-defined and three torque reduction curves
Acceleration and deceleration mode	Two ways of acceleration and deceleration: straight line and S-curve	
Protection function	With over-current, over-voltage, phase loss, under voltage, overheating, overload protection	
Environment	Operating site	Indoor, free from direct sunlight, dust, corrosive gas, combustible gas, oil mist, water vapor, drip or salt
	Altitude	0m ~ 2000m; derating above 0 ~ 1000m, 10% for each 1000m rise
	Temperature	- 10 °C ~ + 40 °C
	Humidity	5%~95%RH, No water condensation
	Vibration	Less than 5.9 M / S <sup>2</sup>
Storage temperature	-40°C ~ +70°C	
Structure	Protection class	IP20
	Cooling method	air cooling
Other	Installation method	Wall mounted and rail mounted
	Effeciency	≥93%

## FV20 Optional Expansion Card

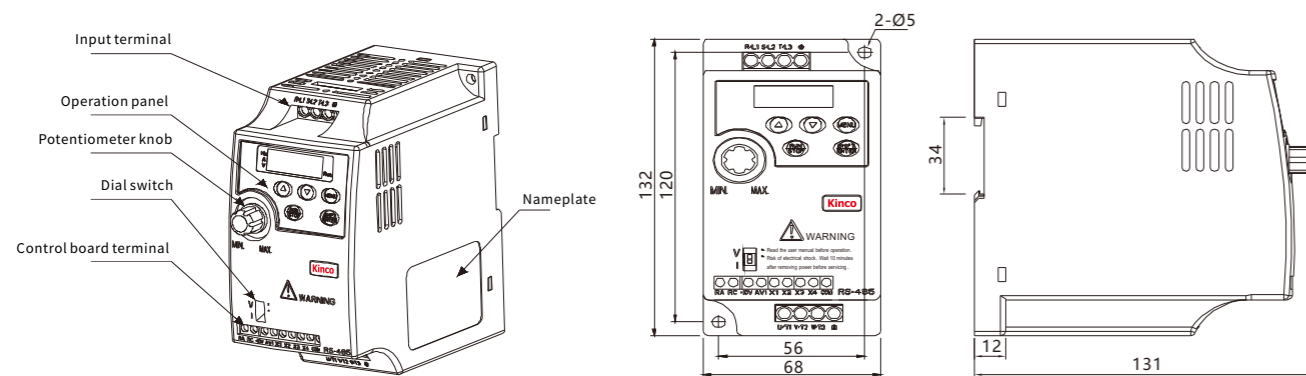
Picture	Model	Description
	FV20-Resolver	Rotate transformer PG card Support rotate encoder, and support CAN function.
	FV20-UVWPG	Collector differential encoder Support ABZUVW encoder and CAN function

## Model Specification

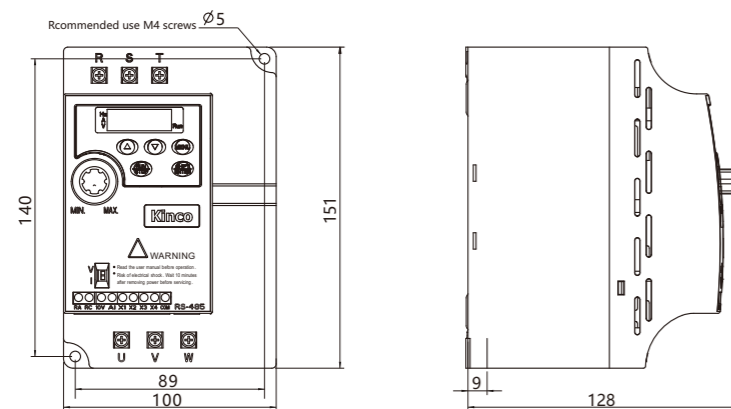
Model	CV20-2S-0004G	CV20-2S-0007G	CV20-2S-0015G	CV20-4T-0007G	CV20-4T-0015G	CV20-4T-0022G	CV20-4T-0037G
Adaptive motor power (kW)	0.4	0.75	1.5	0.75	1.5	2.2	3
Input	Rated voltage / frequency			Single-phase 200V~240V, 50/60Hz			
	Allowable voltage range			180V~260V, Voltage unbalance rate: <3%, Frequency: ±5%			
	Rated current (A)			5.3    8.2    14.0			
Output	Voltage (V)			0~Rated input voltage			
	Rated current (A)			2.5    4.0    7.5			
	Overload capacity			150% rated current 1 minute, 180% rated current 10 seconds			
Protection level	IP20						
Cooling mode	air cooling						

## Product dimensions and installation

Applicable model: CV20-2S-0004G~CV20-2S-0015G



Applicable model: CV20-4T-0007G~CV20-4T-0037G



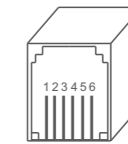
## Control Terminal Function Description

Terminal arrangement of control board



RS-485 pin definition

Pin	1	2	3	4	5	6
Definition	empty	+5V	485+	485-	GND	empty



Category	Terminal Printing	Name	Terminal Function Description	Specifications
Relay output terminal	RA	Relay output	Programmable defined as multi-function relay output terminals	RA—RC: Normally open contact; Contact capacity: AC250V/2A(COSØ=1) AC250V1A(COSØ=0.4) DC30V/1A
	RC			
Power Supply	+10V	+10V	External supply of 10V power reference voltage	Allowable output current 20mA
Analog input	AI	Analog input	Analog voltage or current input, current / voltage. The signal is determined by the dial switch on the control board	Input voltage range: -10v-10v
Digital input	X1	Multi function input terminal	Programmable as a switch input with multiple functions	Optocoupler isolated input; input impedance: 3.3k
	X2			
	X3			
	X4			
Common terminal	COM	Switch value terminal, + 10V power supply common terminal	Switch input terminal and common terminal of + 10V power supply	
Communication port	RS-485	RS 485 communication interface	Modbus communication signal interface, 6-wire two pin socket	Standard RS485 communication interface, please use twisted pair shielded wire