

# Goodrive300 Inverter

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## Brief introduction of Gooddrive300 inverter

Gooddrive300 series inverters are high performance open loop vector inverters for controlling asynchronous AC induction motors and permanent magnet synchronous motors. Applying the most advanced non-velocity sensor vector control technology which keeps pace with the leading international technology and DSP control system, our product enhances its reliability to meet the requirement of environment adaptability, customized and industrialized design with more optimized functions, more flexible application and more stable performance.

## Advantages

- Combined Drive
- Multi function with simple operation
- Reliable quality certificated by TÜV SÜD
- 3 International Mainstream Communications



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# ► Combined Drive



## 1. Applied to multiple motor drives

Vector drive for asynchronous AC induction motors and permanent magnet synchronous motors. Reduce the inventory effectively without considering the motor compatibility.



Remarks:  
1.The traditional permanent magnet synchronous motor includes SPM and IPM.  
2.The variable frequency motor includes high speed spindle.

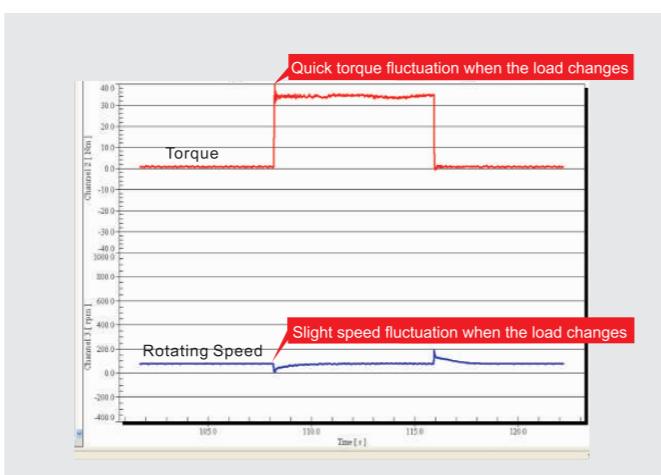
## 2. More Accurate Motor Autotuning

Correct rotating and static motor autotuning. Convenient debugging,easy operation,high control accuracy and quick response speed.

Rotating Autotuning	Static Autotuning
De-couple from the load Applied to the situation with high control accuracy	No need to de-couple from the load Applied when rotating autotuning is not available

## 3. Optimized V/f Control

The current, torque and rotating speed waveforms when sudden loading or unloading in asynchronous motor V/f control mode with 2Hz running frequency and full load.



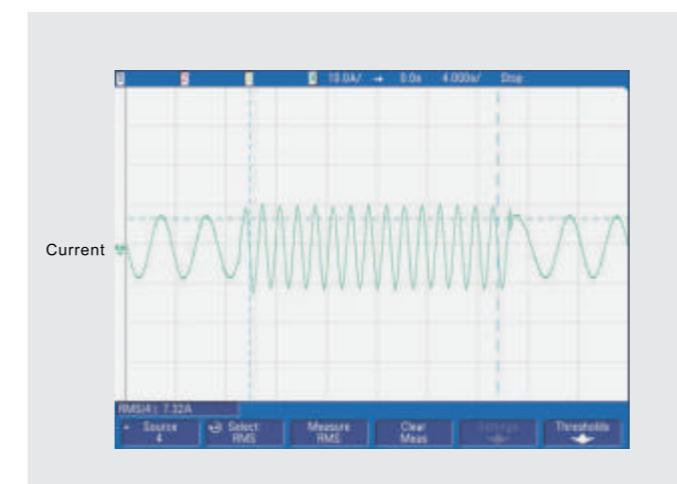
## 4. Advanced Open Loop Vector Control

### (1) Asynchronous Motor

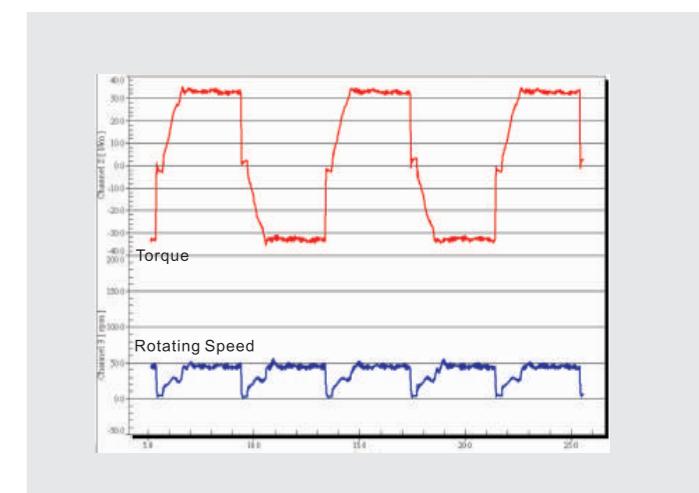
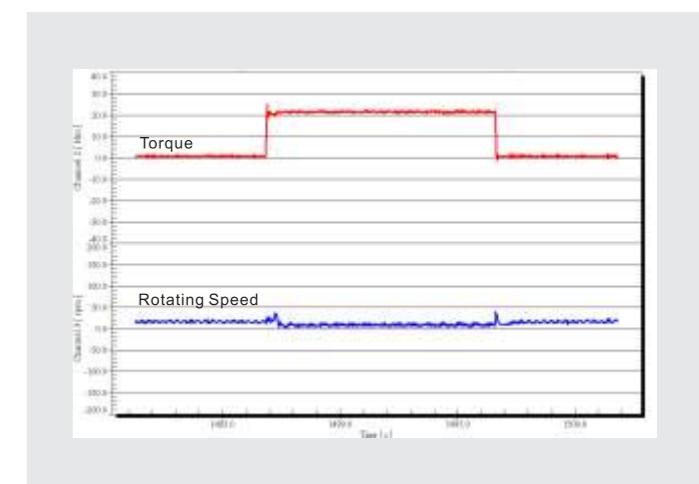
Starting Torque	Dynamic Response	Speed Ratio	Precision of speed stabilization
0.25Hz/150% of rated torque	<20ms	1: 200	± 0.2%

### (2) Synchronous Motor

Starting Torque	Dynamic Response	Speed Ratio
2.5Hz/150% of rated torque	<40ms	1: 20



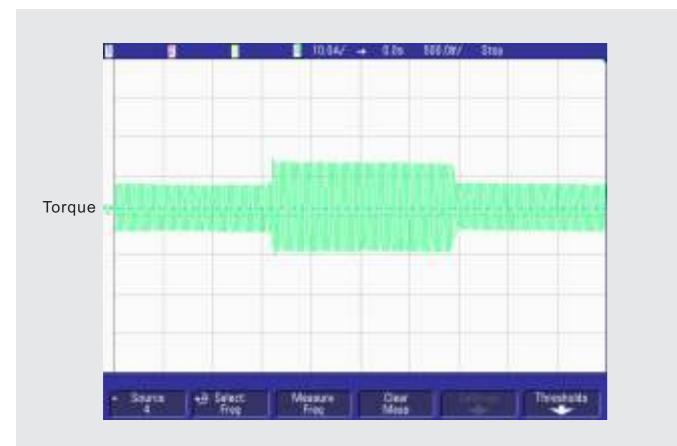
The current, torque and rotating speed waveforms when sudden loading or unloading in asynchronous motor open loop vector control mode with 0.25Hz running frequency and full load.



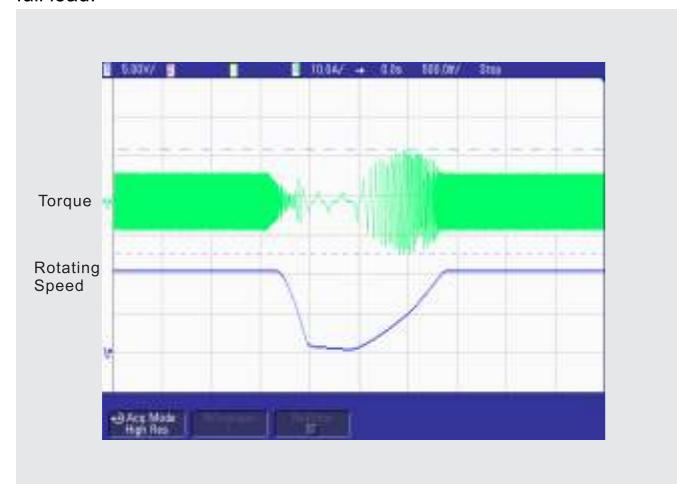
The current, torque and rotating speed waveforms when sudden loading or unloading in synchronous motor open loop vector control mode with 0.25Hz running frequency and full load.

# ► Combined Drive

## 5.Torque Control Mode(open loop)



The current, torque and rotating speed waveforms when sudden loading or unloading in asynchronous motor torque control mode with full load.

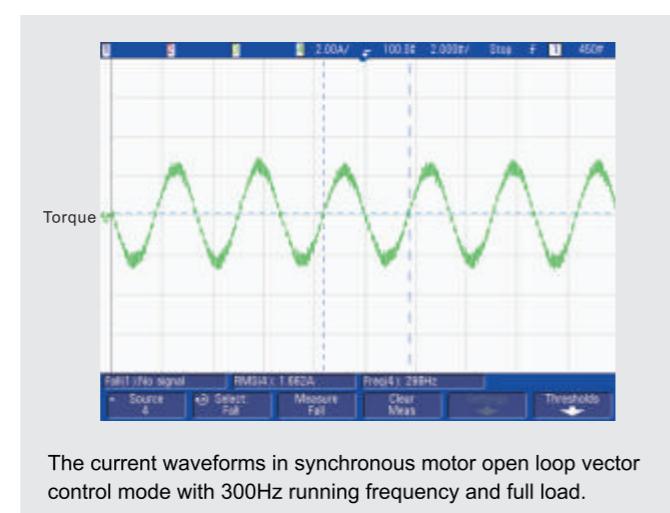


The FWD/REV current, torque and rotating speed waveforms in synchronous motor torque control mode with 100Hz running frequency and full load.

## 6.Smoother and quitter running by applying advanced 3-phase modulation



## 7. Excellent performance on specific motors such as High speed spindle Direct-control motor



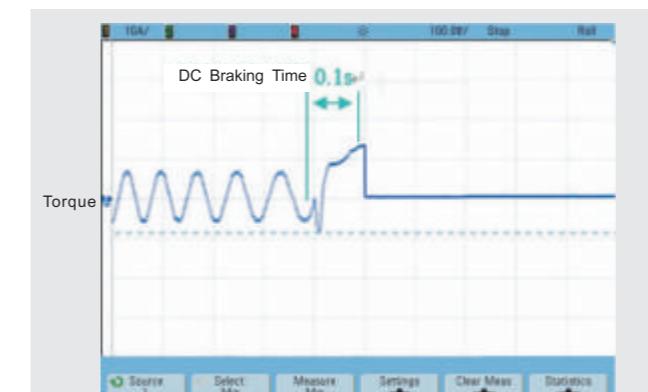
The current waveforms in synchronous motor open loop vector control mode with 300Hz running frequency and full load.

## 8. Perfect voltage and current control, reducing the fault protection times of the inverter

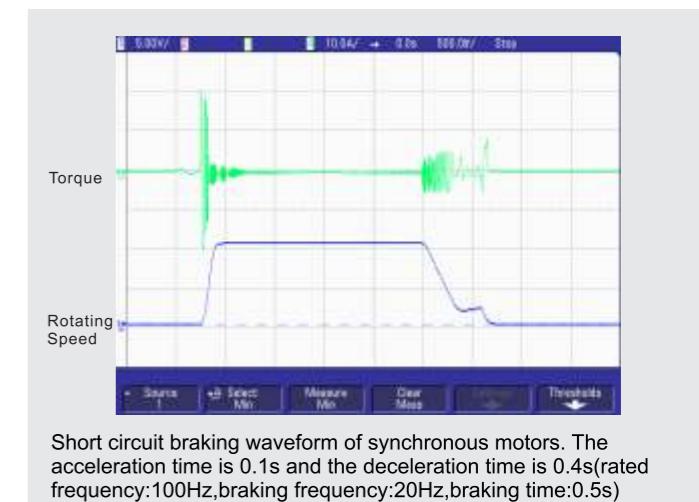
OV stall	OC stall
Adjust the output frequency to avoid overvoltage of the DC bus during deceleration	Adjust the output frequency to avoid overcurrent of the inverter during acceleration

## 9. Multiple braking modes and instant stopping

Dynamic Braking	DC Braking	Flux Braking	Flux Braking
Configure braking units and resistors	No need to configure braking units and resistors	No need to configure braking units and resistors	No need to configure braking units and resistors: instant stopping.
Available on the situation when start the running motor after braking and the situation when keep the moment output after braking to zero speed	Available on the situation when start the running motor after braking and the situation when keep the moment output after braking to zero speed	Available on the situation when start the running motor after braking and the situation when keep the moment output after braking to zero speed	Available on the instant stopping situation with big inertia load and no frequency braking
Big braking torque and fast braking speed	Not available on the situation of big inertia load or instant stopping braking in high speed running	Not available on the situation of big inertia load or instant stopping braking in high speed running	Not available on the situation of big inertia load and frequency and braking(the energy consumed on the stator and its cooling is better than DC braking)

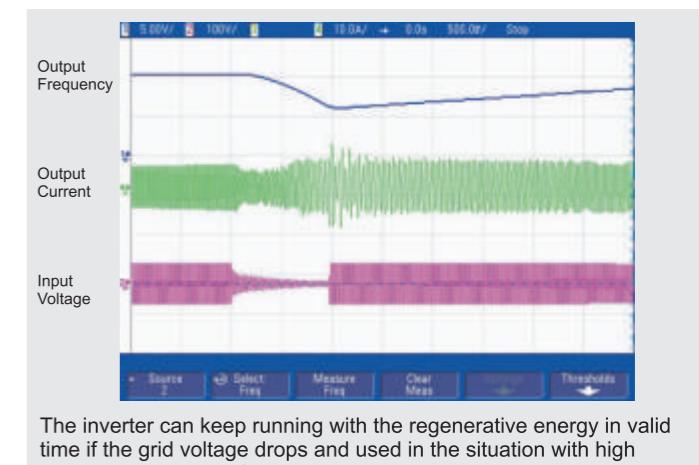
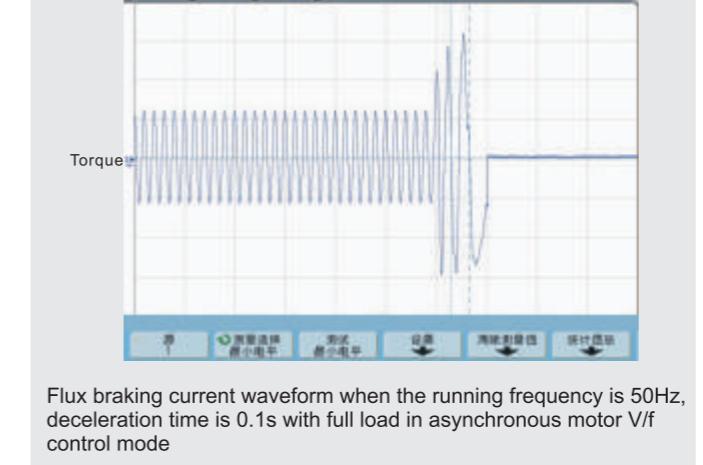


The current waveform in asynchronous motor V/f control mode with 100% braking current when the starting frequency is 10Hz and the braking time is 0.1s.



Short circuit braking waveform of synchronous motors. The acceleration time is 0.1s and the deceleration time is 0.4s(rated frequency:100Hz,braking frequency:20Hz,braking time:0.5s)

## 10. Continuous running in instantaneous power off



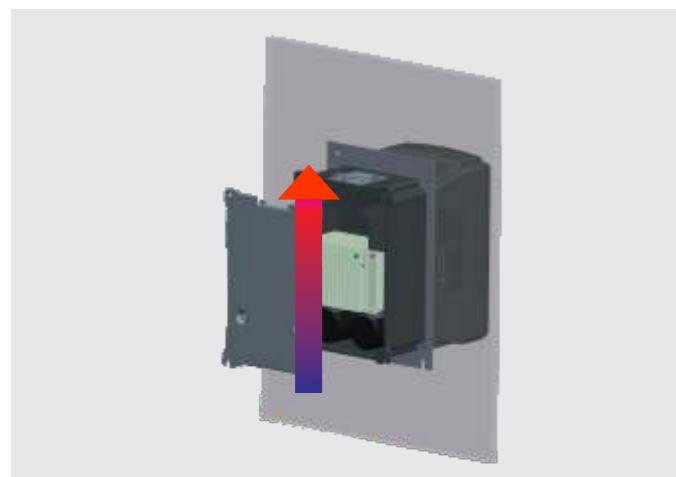
The inverter can keep running with the regenerative energy in valid time if the grid voltage drops and used in the situation with high requirement such as fiberic and textile production line.

# ► Multi-function with simple operation



## 1. Separate Air-duct

The separate air duct prevents the contaminants into the electronic parts/components and greatly improves the protective effect of the inverter, as well as its reliability and service life, to adapt various complicated site environments. It can also facilitate the heat-releasing in control cabinets and the design of heat-releasing in electrical cabinets.



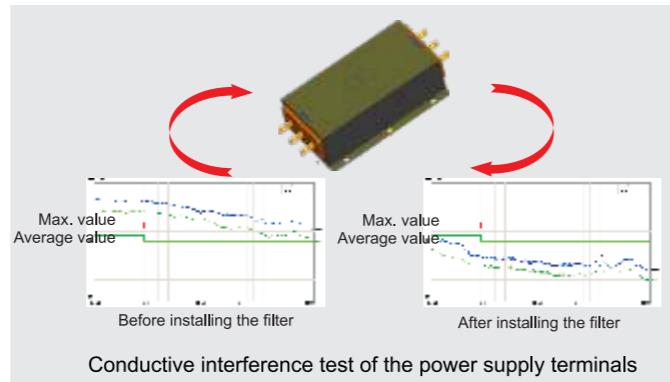
## 2. Multiple Installation Modes

1.5~20KW: wall and flange mounting  
220~315KW: wall and floor mounting  
350~500KW : floor mounting



## 3. C3 input filter (standard configuration) and C2 filter (optional)

C3 input filter is embedded in the factory to meet different application requirements, save installation space and avoid the electromagnetic interference caused by incorrect selection and site installation.



### Remarks:

- (1)C2 filter: EMC performance of the inverter achieves the limited usage requirement in the first environment.
- (2)C3 filter: EMC performance of the inverter achieves the limited usage requirement in the second environment.

## 4. Book Structure

Parallel installation  
Little installation space with less cost and beautiful



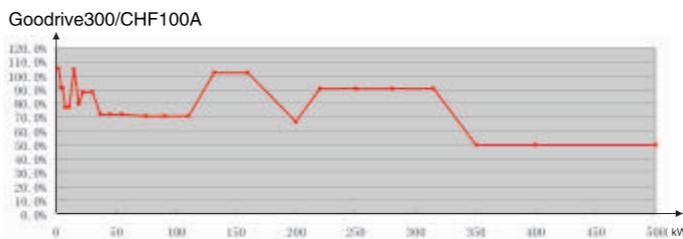
## 5. The rivet design ensures reliable integration connection

Greener  
Stronger corrosion-resistance  
Proper grounding  
Excellent EMC performance



## 6. Smaller Size

Due to the thermal simulation and advanced modularized design, the size of our product is reduced greatly. The width ratio between Goodrive300 and CHF100A is shown in the figure below (the Max. percentage is 50%)



## 7. Various external interfaces and swappable terminal board convenient for replacement and maintenance



Terminal Type	Quantity	Features
ON-OFF input	8 channels	1KHz NPN and PNP
High speed pulse input	1 channel	50KHz NPN and PNP
Analog input	3 channels	0~10V, 0~20MA, -10V~+10V
ON-OFF output	1 channel	Max. output frequency:1KHz
High speed puls output	1 channel	Max. output frequency:50KHz
Analog output	2 channels	0~10V, 0~20MA
Relay output	2 channels	3A/250DAC, 1A/30VDC, NO+NC

## 8. High Performance Keypad

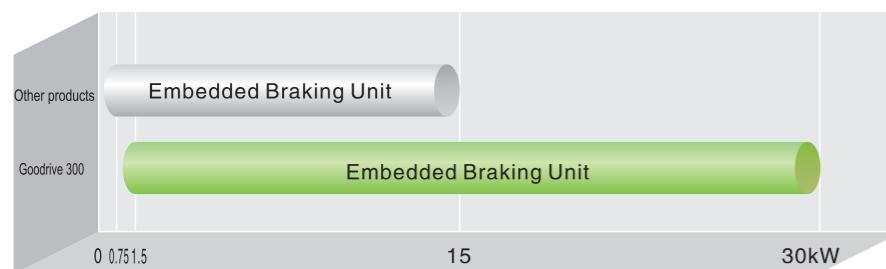
The configured LED keypad supports parameters loading and unloading with Max. length of 200m and digital potentiometer. The optional external LCD keypad supports parameters loading and unloading with displaying 10 lines and 10 rows of Chinese characters and several languages



# ► Multi-function with simple operation

## 9. Embedded braking units of 1.5-30kw inverters

Reduce the occupied space and decrease the cost



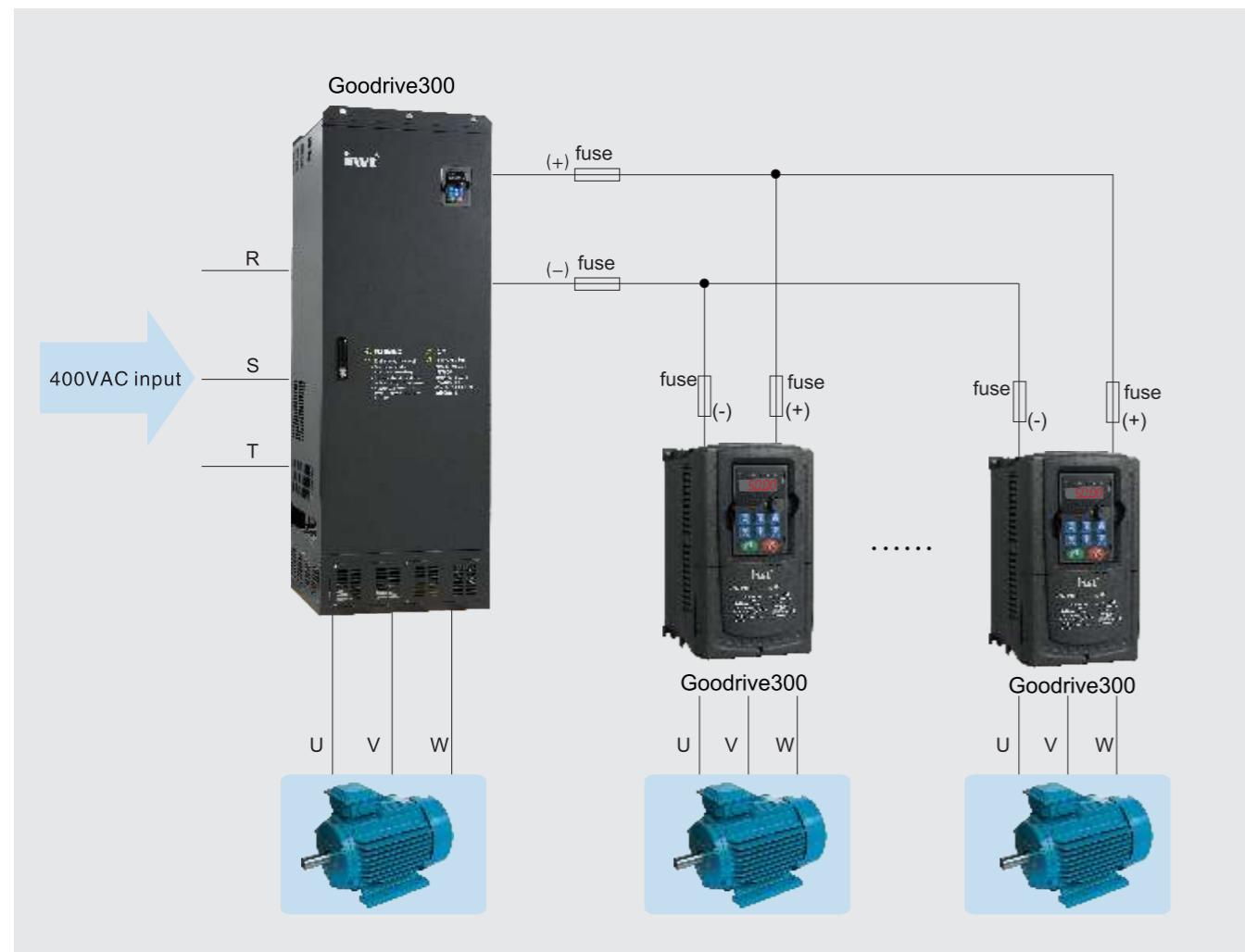
## 11. Available to DC power supply



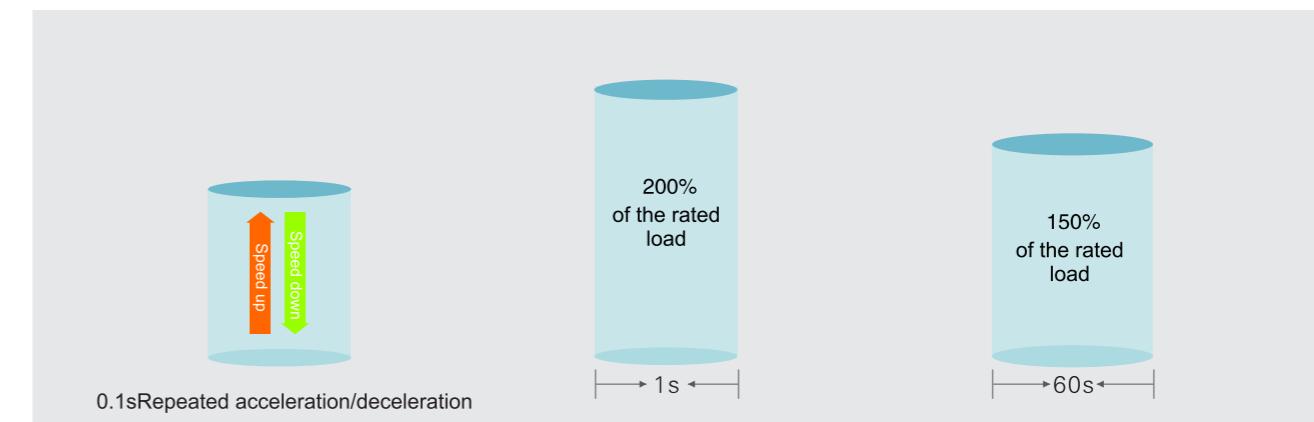
## 10. Supporting common DC bus

Reduce the power lost braking units

Note the impact current the capacity of the input AC system



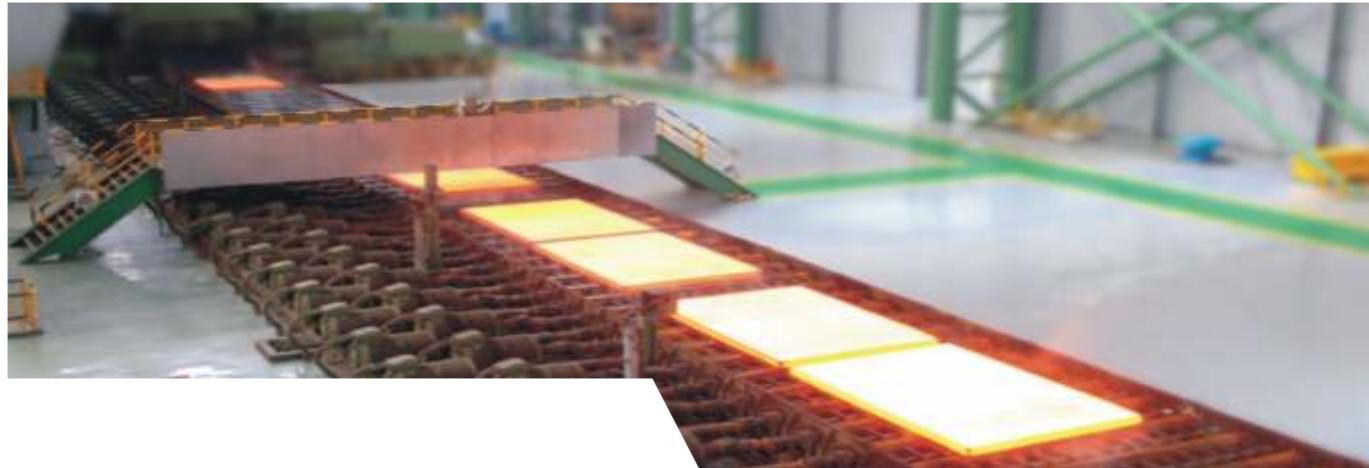
## 12. Heavy Load Design



## 13. Various Application Function

Function	Effect
V/f separation setting	Meet the requirement of different power supplied and realize flexible setting to v/f curves
Two sets of motor parameters	Different motors can use the same inverter, reducing the device input, shifting between two makes electronic drive control more convenient
Virtual terminal function	Make the middle variables as the local virtual I/O quality, save the hardware configuration
Speed Tracking	Available on asynchronous motor and permanent magnet synchronous motor and the situation of big inertia load, reversal rotating during starting and continuous frequency shifting
Delay ON/OFF signal, high speed pulse and relay	Provide more programmable and control modes
Energy Displaying	Display the total consumed energy. No need to use the power meter
Stopping Delay	Ensure the motor is under control and stops safely

# ► Reliable quality certificated by TÜV SÜD

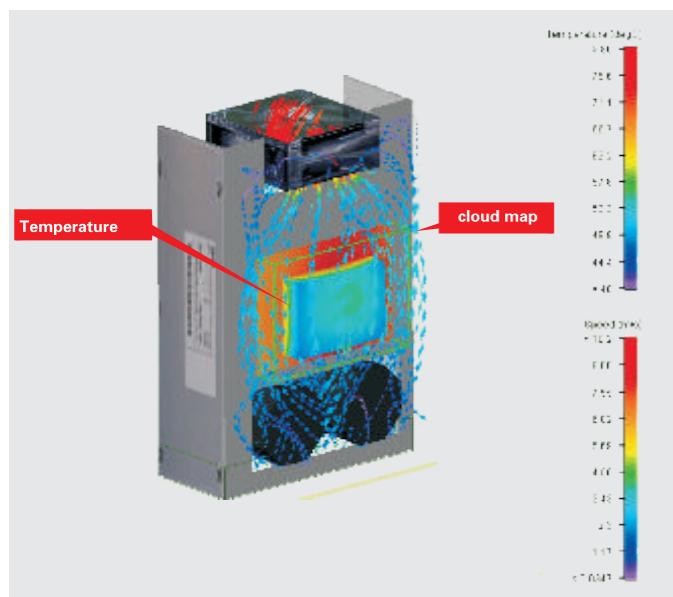


1.The product design follows IEC national standards and passes the CE test of international authority TÜV SÜD, Our company is the unique manufacturer having TÜV-MARK marks in industrial control circle

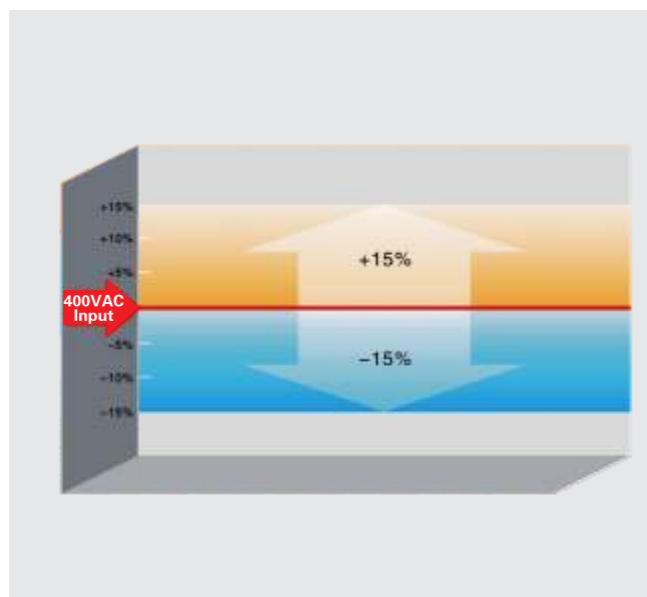


Remarks: 1.Each Goodrive300 inverter has past the test certification  
2.Visit [http://www.tuev-sued.de/industry\\_and\\_consumer\\_products/certificates](http://www.tuev-sued.de/industry_and_consumer_products/certificates) for the TUV certifications

2. Advanced thermal technology makes exact thermal design



3.Wide voltage range meets the requirement of grid environment

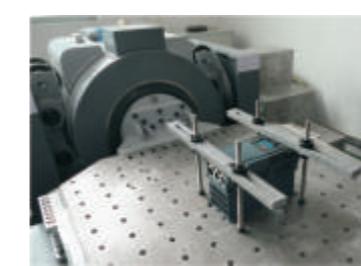


4.Perfect and reliable test system ensure products adapt complicated site environments and our company is the only manufacturer achieved ACT certificate of TÜV SÜD

Experiment Type	Experiment Name	Classification
Mechanical Reliability Experiments	Packaging Experiments	Package compression experiments
		Package Resonance imaging and storage test
		Package random vibration test
		Package dropping test
		Package rolling test
		Package dumping test
		Package inclined impact test
	Impact Test	Half-sine shock test(working and non-working state)
		Trapezoidal wave impulse test(non-working state)
Climatic Environmental Reliability Test	Vibration Test	Sinusoidal vibration test(working state)
		Random vibration test(working and non-working state)
		Low temperature storage test
		High temperature storage test
	Temperature Experiment	Low temperature experiments
		High temperature experiments
		Temperature gradient experiments
		Temperature impact test
		Constant thermal test
		Alternation thermal test
Salt Spray Test	Thermal Test	Constant salt spray test
		Alternation salt spray test
	Low Air Pressure Test	Low temperature and low pressure test
		High temperature and low pressure test

## Remarks :

The full name of ACT is Acceptance of Client's Testing, which means the German TÜV SÜD admit the technology lever of the lab and accept their separate testing data and test reports officially.



Electric Vibration System



Low Pressure Test Chamber  
Constant temperature and humidity test chamber



Natural Convection Test Chamber  
Thermal Shock Test Chamber

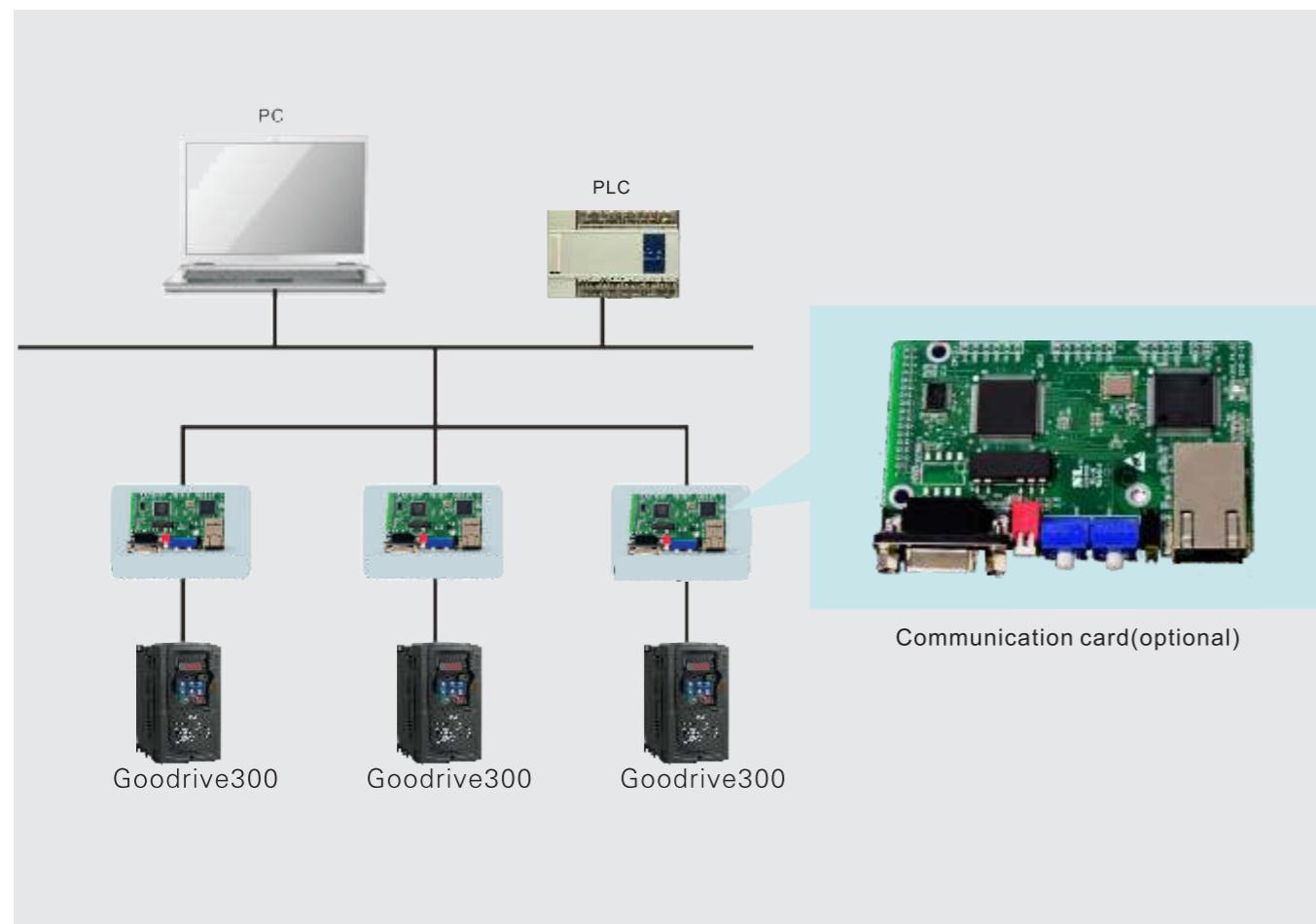
# ► 3 Internation Mainstream Communications



## 1. Multiple communication modes : standard-configured MODBUS communication, Optional communication card with PROFIBUS and Ethernet

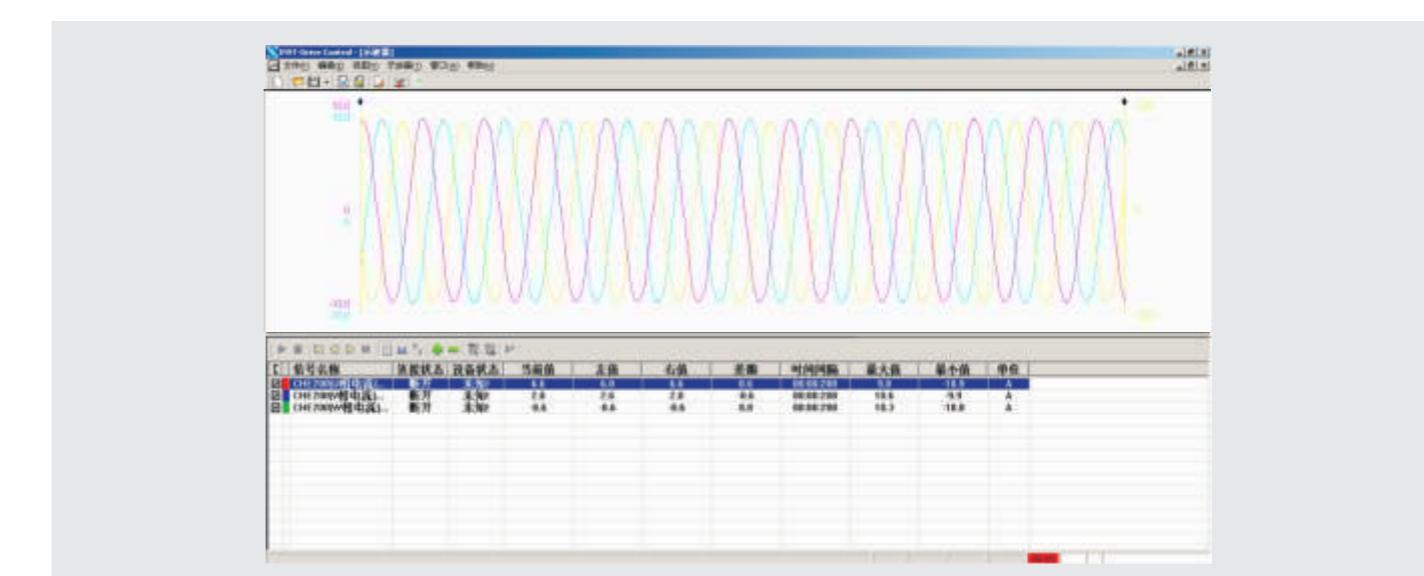
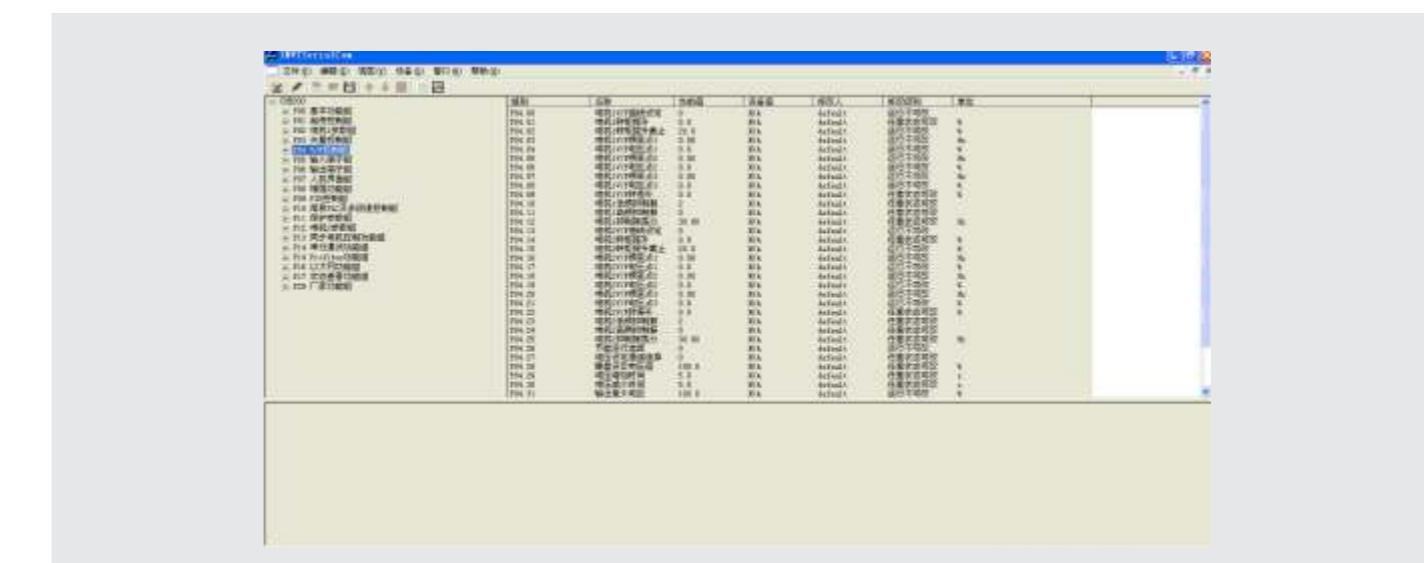
The optional communication card can connect the inverter to Ethernet or the Profibus . There are several functions

- Send control commands(starting, stopping and fault reset) to the inverter
- Send speed or torque reference signal to the inverter
- Read the state and actual value from the inverter
- Modify the parameters of the inverter



## 2. PC Software:easy-to-use

The software carries out tracking and fault location with the function of oscilloscope, making more convenient debugging and programming and facilitaion the current monitoring, back analysis and engineering management.



# ► Product Applications

# ► Technical Parameters

## Goodrive300 Applications



### Permanent Magnet Synchronous Motor

Screw oil pumps, water pumps, compressors, hoisting, chemical fabric devices, plastic machinery, wood processing machinery and machine tools and so on



### Mine

Belt conveyor, hoisting machines air compressors, crushers, ball mills, centrifugal dewaterers and so on



### Machines Tools

Lathes, wood processing machinery, drilling machines, grinding machines, milling machines and air compressors and so on



### Textiles

Carding machines, roving machines, winders, warping machines knitting machines, warp knitting machines and so on



### Oil

Oil pumps, water injection pumps, compressors and so on



### Other Machineries

Hoisting, chemical, industrial, metal processing, EPS and constructive machines and so on

	Function	Specification
Input	Input Voltage(V)	AC 3PH 400V±15%
	Input Frequency(Hz)	50Hz or 60Hz Allowed range: 47~63Hz
Output	Output Voltage(V)	0~input voltage
	Output Frequency(Hz)	0~400Hz
Feature Control Technical	Control Mode	V/f, sensorless vector control
	Motor Type	V/f, Synchronous Motor
	Speed-adjusting Radio	Asynchronous motor and permanent magnet synchronous motor Asynchronous motor 1:200(svc) synchronous motor 1:20(SVC)
	Speed Control Accuracy	± 0.2%(sensorless vector control)
	Speed Fluctuation	± 0.3%(sensorless vector control)
	Torque Response	<20ms(sensorless vector control)
	Torque Control Accuracy	10%(sensorless vector control)
	Starting Torque	Asynchronous motor:0.25Hz/150%(sensorless vector control) Synchronous motor:2.5Hz/151%(sensorless vector control)
	Overload Capability	150% of rated current:1 minute 180% of rated current:10 seconds 200% of rated current:1 seconds
	Frequency Setting Method	Digital setting, analog setting, pulse frequency setting, multi-stage speed running setting, simple PLC setting, PID setting, MODBUS communication setting, PROFIBUS communication setting
Feature Control Running	Auto-adjustment Of The Voltage	Keep a stable voltage automatically when the grid voltage transients
	Fault Protection	Provide over 30 fault protection functions, overcurrent, overvoltage, undervoltage, overheating, phase loss and overload, etc
	Restart After Rotating Speed Tracking	The rotating motor can be started smoothly

# ► Technical Parameters

# ► Ratings

Function	Specification
Interface Peripheral	analog input resolution <10mv
	On-off input Resolution <2mS
	Analog Output 2 channels(AI1,AI2)0~10V/0~20V and 1 channel (AI3)-10~10V
	Analog Output 2 channels (A01,A02)0~10v/0~20mA
	Digital Input 8 channels common input ,the Max,frequency :1kW 1 channel high speed input ,the Max , frequency :50kHz
	Digital Output 1channel high speed pulse output ,the Max,frequency,50kHz 1channel Y terminal open collector pole output
	Relay output RO1A NO,RO1B NC,ROIC common terminal RO2A NO,RO2B NC,RO2C common terminal Contactor capability:3A/AC250V,1A/DC30V
Others	Mountable method wall mountable,flange and floor mountable
	Temperature of the running environment -10~50°C.derate above 40°C
	Protective degree IP20
	Cooling Air-cooling
	Brake unit Built in braking unit for below 30KW including 30kw
	External braking unit for others
	EMC filter Built in C3 fixer,meat the degree requirement of IEC61800-3C3 External filter :meet the degree requirement of IEC61800-3C2

The inverter	Rated Output Power(kw)	input current (A)	Rated Output Current (a)
GD300-1R5G-4	1.5	5.0	3.7
GD300-2R2G-4	2.2	5.8	5
GD300-004G-4	4	13.5	9.5
GD300-5R5G-4	5.5	19.5	14
GD300-7R5G-4	7.5	25	18.5
GD300-011G-4	11	32	25
GD300-015G-4	15	40	32
GD300-018G-4	18.5	47	38
GD300-022G-4	22	56	45
GD300-030G-4	30	70	60
GD300-037G-4	37	80	75
GD300-045G-4	45	94	92
GD300-055G-4	55	128	115
GD300-075G-4	75	160	150
GD300-090G-4	90	190	180
GD300-110G-4	110	225	215
GD300-132G-4	132	265	260
GD300-160G-4	160	310	305
GD300-200G-4	200	385	380
GD300-220G-4	220	430	425
GD300-250G-4	250	485	480
GD300-280G-4	280	545	530
GD300-315G-4	315	610	600
GD300-350G-4	350	625	650
GD300-400G-4	400	715	720
GD300-500G-4	500	890	860

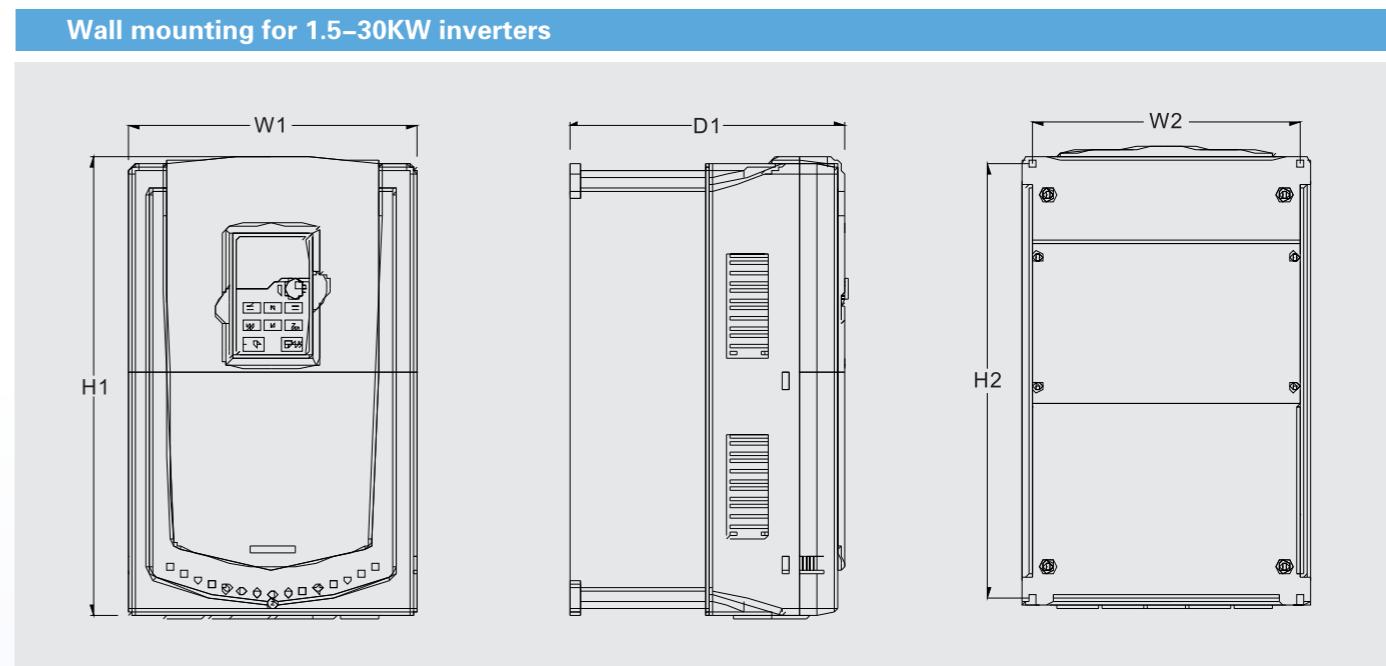
Remarks:

- (1)The input current of the inverter 1.5-315KW is tested when the input voltage is 380V and there is no DC reactor and output/input reactor.
- (2)The output current of the inverter 350-500KW is tested when the input voltage is 380V and there is input reactor
- (3)Rated output current is defined when the rated output voltage is 380V

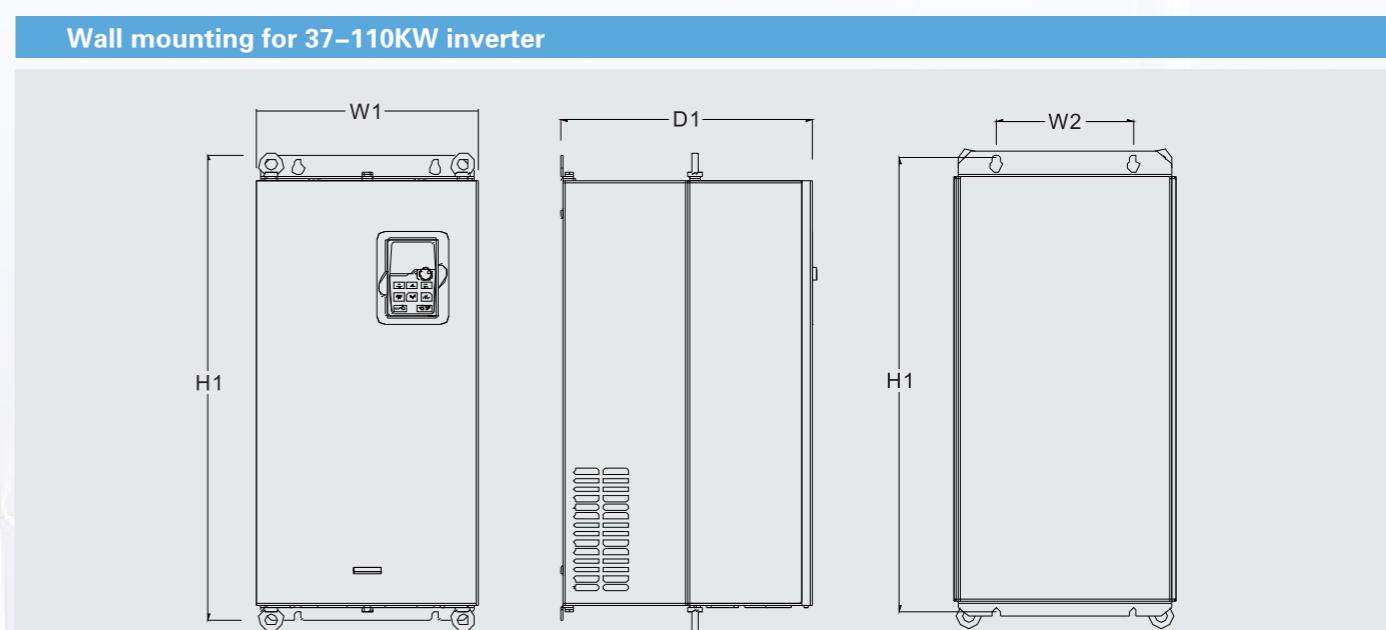
## ► Installation Size (unit: mm)

Installation when wall mounting						
Model	W1	W2	H1	H2	D1	Installation Hole
1.5kW~2.2kW	126	115	193	175	174.5	5
4kW~5.5kW	146	131	263	243.5	181	6
7.5kW~11kW	170	151	331.5	303.5	216	6
15kW~18.5kW	230	210	342	311	216	6
22kW~30kW	255	237	407	384	245	7
37kW~55kW	270	130	555	540	325	7
75kW~110kW	325	200	680	661	365	9.5
132kW~200kW	500	180	870	850	360	11
220kW~315kW	680	230	960	926	379.5	13

Installation size when flange mounting									
Model	W1	W2	W3	W4	H1	H2	D1	D2	Installation Hole
220kW~315kW	750	230	714	680	1410	1390	380	150	13\12
350kW~500kW	600	230	553	—	1700	1678	560	240	22\12

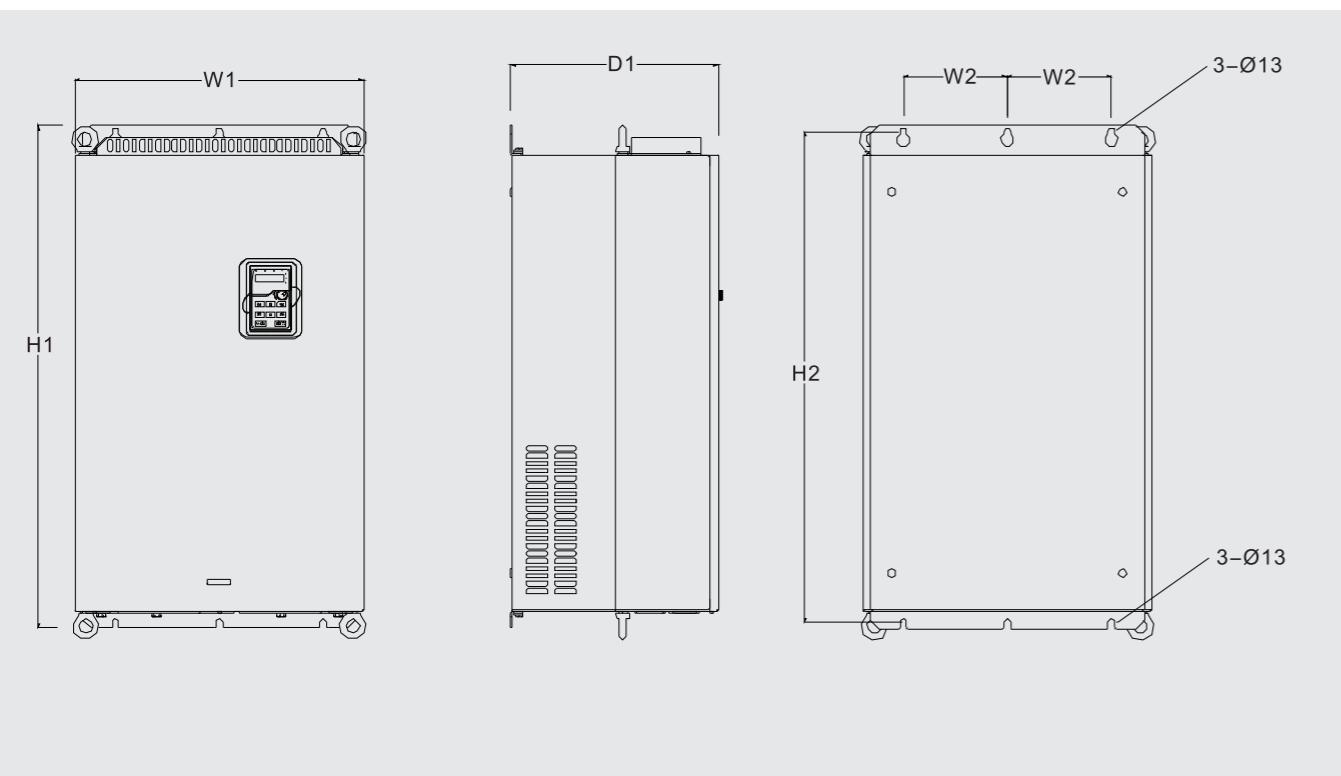


Installation size when flange mounting												
Model	W1	W2	W3	W4	H1	H2	H3	H4	D1	D2	Installation Hole	
1.5kW~2.2kW	150	115	130	7.5	234	220	190	16.5	174.5	65.5	5	
4kW~5.5kW	170	131	150	9.5	292	276	260	10	181	79.5	6	
7.5kW~11kW	191	151	174	11.5	370	351	324	15	216	113	6	
15kW~18.5kW	250	210	234	12	375	356	334	10	216	108	6	
22kW~30kW	275	237	259	11	445	426	404	10	245	119	7	
37kW~55kW	270	130	261	65.5	555	540	516	17	325	167	7	
75kW~110kW	325	200	317	58.5	680	661	626	23	363	182	9.5	
132kW~200kW	500	180	480	60	870	850	796	37	358	178.5	11	

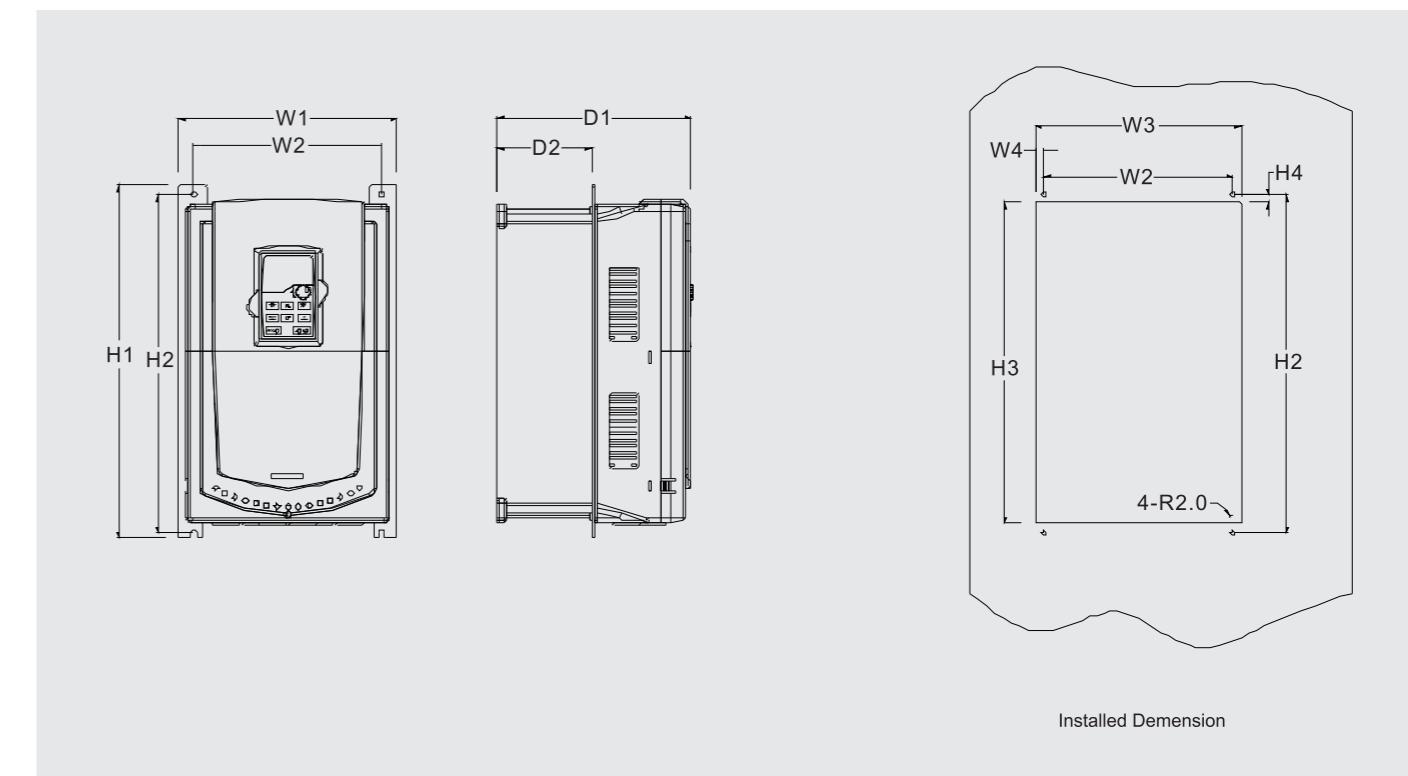


## ► Installation Size (unit: mm)

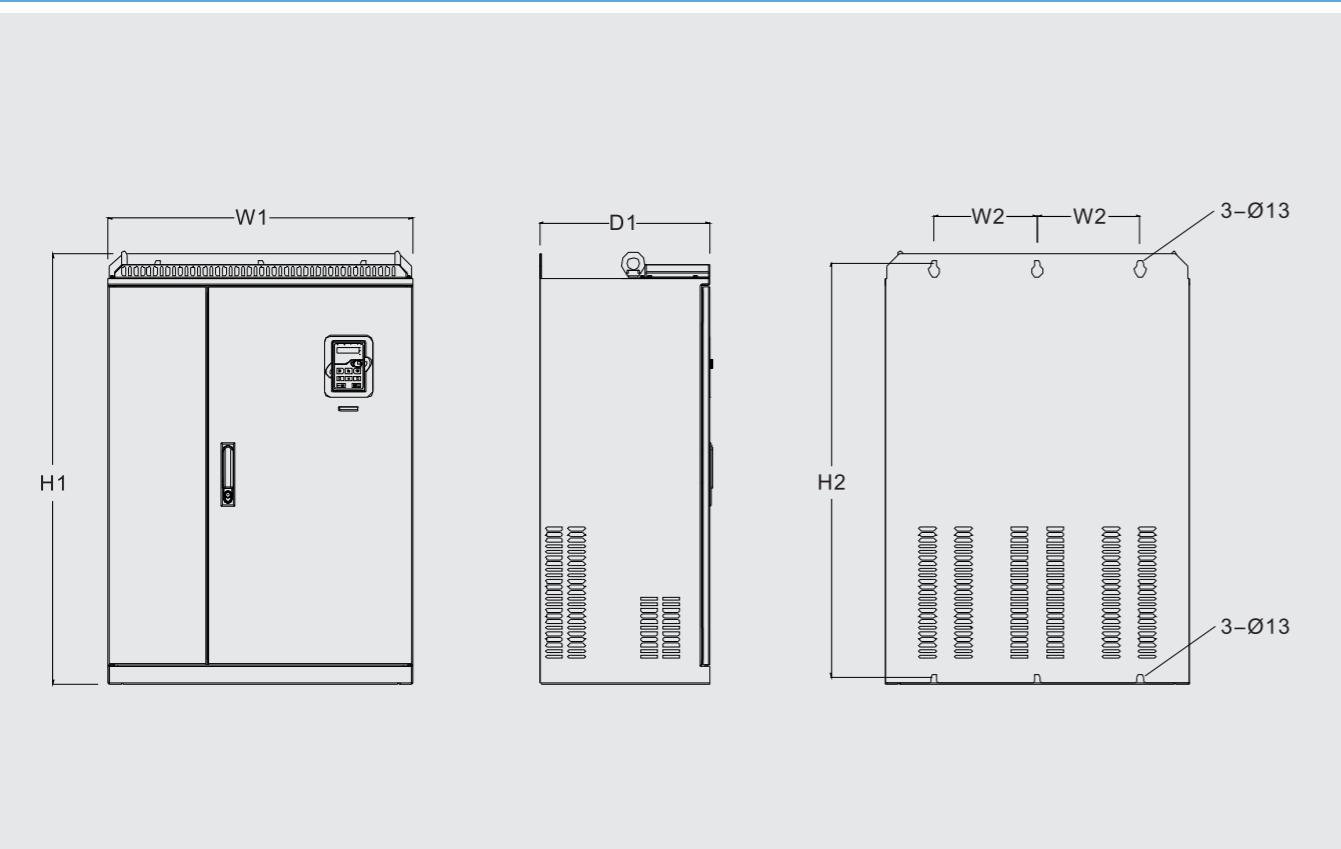
Wall mounting 132–200KW inverters



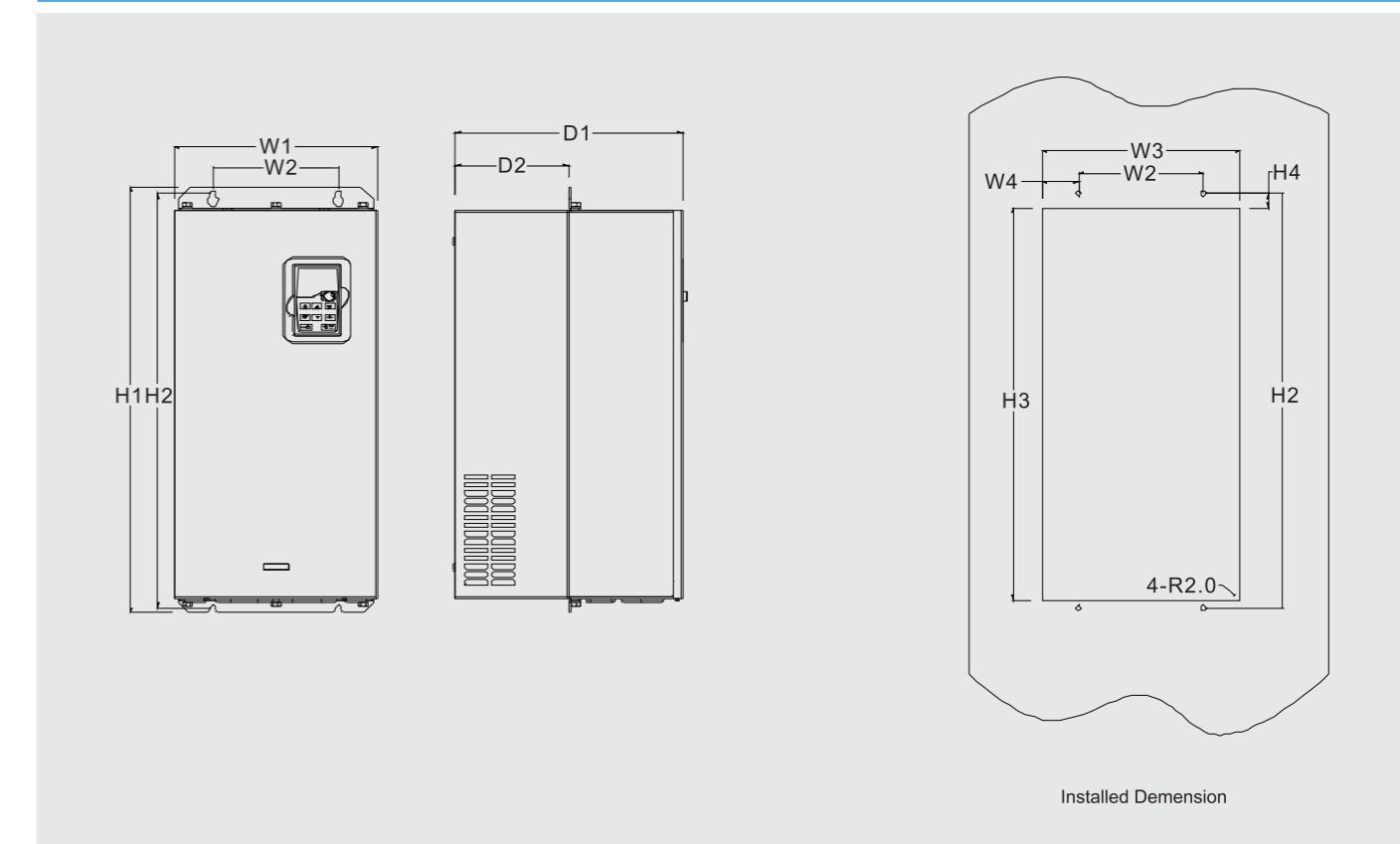
Flange mounting for 1.5–30KW inverters



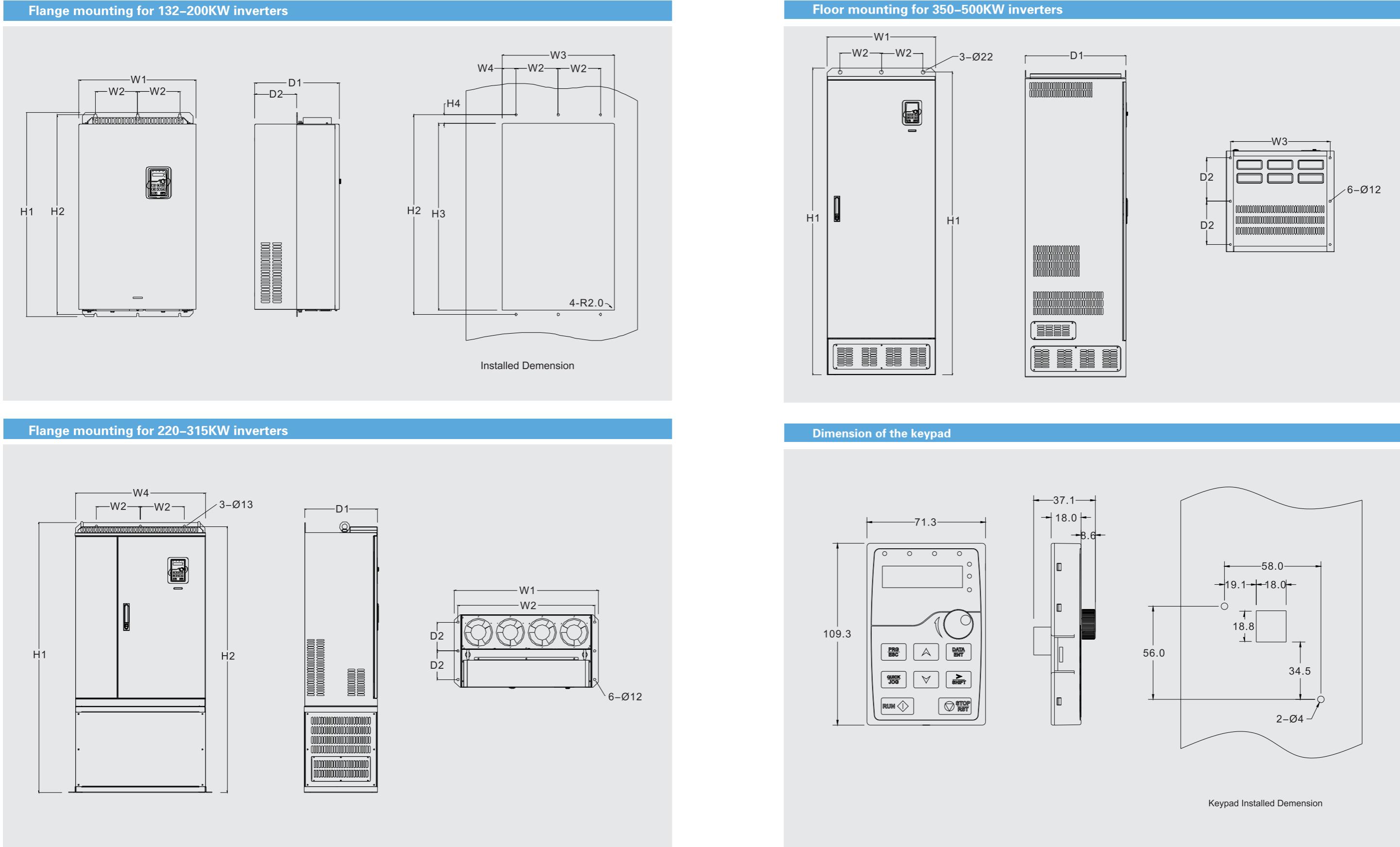
Wall mounting220–315KW inverters



Flange mounting for 37–110KW inverters



## ► Installation Size (unit: mm)



# ► Optional Parts

NO	Optional Parts	Instruction	Picture
1	Flange mounting panel	Needed in 1.5~30kw inverters Not needed in 37~200kw inverters	
2	Installation Base	only needed in 220~315kw inverters .its bases can be built-in an input AC (or DC)	
3	Installation bracket for the keypad	Installation bracket or M3 screw can be used in the installation of exteral keypad. The bracket of 37~500kw inverters is configured The bracket of 1.5~30kw inverters is optional	
4	Heat-relaeasing hole	Inverter needs to derate when selecting a cover Consult with the INVT technicians for the detailed information.	
5	LCD keypad	10rows of DH displaying Compatible with the LCD keypad	
6	Communication card	Compatiable with profibus and Ethernet communication	
7	Assistant power (AC single phase 220V)	Provide for a safer and more convenient inverter debugging when the input main circuit is power off(note as non-standard assistant power supply)	

## 8.Reactor

The inverters of 37KW and above can be connected with external DC reactor.The reactor can improve the power factor and avoid damage to the rectifier bridge caused by overcurrent and damage to the rectifier circuit by harmonic

Power of the inverter	Input Inverter	Dc Reactor	Output Reactor
GD300-1R5G-4	ACL2-1R5-4	—	OCL2-1R5-4
GD300-2R2G-4	ACL2-2R2-4	—	OCL2-2R2-4
GD300-004G-4	ACL2-004-4	—	OCL2-004-4
GD300-5R5G-4	ACL2-5R5-4	—	OCL2-5R5-4
GD300-7R5G-4	ACL2-7R5-4	—	OCL2-7R5-4
GD300-011G-4	ACL2-011-4	—	OCL2-011-4

Power of the inverter	Input Reactor	Dc Reactor	Output Reactor
GD300-015G-4	ACL2-015-4	—	OCL2-015-4
GD300-018G-4	ACL2-018-4	—	OCL2-018-4
GD300-022G-4	ACL2-022-4	—	OCL2-022-4
GD300-030G-4	ACL2-030-4	—	OCL2-030-4
GD300-037G-4	ACL2-037-4	DCL2-037-4	OCL2-037-4
GD300-045G-4	ACL2-045-4	DCL2-045-4	OCL2-045-4
GD300-055G-4	ACL2-055-4	DCL2-055-4	OCL2-055-4
GD300-075G-4	ACL2-075-4	DCL2-075-4	OCL2-075-4
GD300-090G-4	ACL2-090-4	DCL2-090-4	OCL2-090-4
GD300-110G-4	ACL2-110-4	DCL2-110-4	OCL2-110-4
GD300-132G-4	ACL2-132-4	DCL2-132-4	OCL2-132-4
GD300-160G-4	ACL2-160-4	DCL2-160-4	OCL2-160-4
GD300-200G-4	ACL2-200-4	DCL2-200-4	OCL2-200-4
GD300-220G-4	ACL2-220-4	DCL2-220-4	OCL2-220-4
GD300-250G-4	ACL2-250-4	DCL2-250-4	OCL2-250-4
GD300-280G-4	ACL2-280-4	DCL2-280-4	OCL2-280-4
GD300-315G-4	ACL2-315-4	DCL2-315-4	OCL2-315-4
GD300-350G-4	standard configuration	DCL2-350-4	OCL2-350-4
GD300-400G-4	standard configuration	DCL2-400-4	OCL2-400-4
GD300-500G-4	standard configuration	DCL2-500-4	OCL2-500-4

# ► Optional Parts



9.Filter		
The inverter	Input	Output
GD300-1R5G-4	FLT-P04006L-B	FLT-L04006L-B
GD300-2R2G-4		
GD300-004G-4	FLT-P04016L-B	FLT-L04016L-B
GD300-5R5G-4		
GD300-7R5G-4	FLT-P04032L-B	FLT-L04032L-B
GD300-011G-4		
GD300-015G-4	FLT-P04045L-B	FLT-L04045L-B
GD300-018G-4		
GD300-022G-4	FLT-P04065L-B	FLT-L04065L-B
GD300-030G-4		
GD300-037G-4	FLT-P04150L-B	FLT-L04150L-B
GD300-055G-4		
GD300-045G-4		
GD300-075G-4	FLT-P04240L-B	FLT-L04240L-B
GD300-090G-4		

Remarks:

- (1)C2 standard can be achieved of select above external filters
- (2)The inverter of 132K or above select filters referring to the non-standard mode,please consult with INVT technicians for detailed information.

Type	Braking unit type	100% braking rate(∩)	the consumed power of the braking resistor 10% braking	the consumed power of the braking resistor 50% braking	the consumed power of the braking resistor 80% braking	mini braking resistor(∩)
GD300-1R5G-4		326	0.23	1.1	1.8	170
GD300-2R2G-4		222	0.33	1.7	2.6	130
GD300-004G-4	Embedded braking unit	122	0.6	3.0	4.8	80
GD300-5R5G-4		89	0.75	4.1	6.6	60

Type	Braking Unit Type	100% of the braking rate(∩)	The consumed power of the braking resistor 10% braking	The consumed power of the braking resistor 50% braking	The consumed power of the braking resistor 80% braking	mini braking resistor(∩)
GD300-7R5G-4	Embedded braking unit	65	1.1	5.6	9.0	47
GD300-011G-4		44	1.7	8.3	13.2	31
GD300-015G-4		32	2	11	18	23
GD300-018G-4		27	3	14	22	19
GD300-022G-4		22	3	17	26	16
GD300-030G-4		16	5	23	36	9
GD300-037G-4	DBU100H-060-4	13	6	28	44	11.7
GD300-045G-4	DBU100H-110-4	10	7	34	54	
GD300-055G-4		8	8	41	66	6.4
GD300-075G-4		6.5	11	56	90	
GD300-090G-4	DBU100H-160-4	5.4	14	68	108	
GD300-110G-4		4.5	17	83	132	4.4
GD300-132G-4	DBU100H-220-4	3.7	20	99	158	3.2
GD300-160G-4	DBU100H-320-4	3.1	24	120	192	
GD300-200G-4		2.5	30	150	240	2.2
GD300-220G-4	DBU100H-400-4	2.2	33	165	264	
GD300-250G-4		2.0	38	188	300	1.8
GD300-280G-4	Two DBU100H-320-4	3.6×2	21×2	105×2	168×2	
GD300-315G-4		3.2×2	24×2	118×2	189×2	
GD300-350G-4		2.8×2	27×2	132×2	210×2	
GD300-400G-4		2.4×2	30×2	150×2	240×2	
GD300-500G-4	Two DBU100H-400-4	2×2	38×2	186×2	300×2	1.8×2

## ► Network for Sales&Service

