

HEDY



HD700 AC Drive

Guangzhou HEDY Industrial Automation CO., Ltd.

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Company Profile



Guangzhou HEDY Industrial Automation CO., Ltd. is a subsidiary of HEDY GROUP.

HEDY GROUP headquarters is located at Yunpu Industry Park, Huangpu District, Guangzhou. It covers an area of nearly 133,334m² with a floor area of 200,000m². It is one of the best electronic industrial parks in China.

HEDY GROUP is a diversified group company that sets up a number of subsidiaries, operating different types of products: industrial automation, IT, household appliance, real estate, hotel, medicine and so on. Its subsidiary "HEDY Holding Co., Ltd." listed in 2004.

Guangzhou HEDY Industrial Automation CO., Ltd. (HDIAC) is professional at R&D, manufacture and sales of industrial automation control equipments. The R&D and business centers are located in Nanshan District, Shenzhen (2000m²), and the supply chain is located in HEDY GROUP headquarter (3000m²). The professional team has over 70 engineers. The key engineers have many years of Drive R&D experience. We have an extremely comprehensive and quality guaranteed producing chain which includes the molding, punching, injecting, coating, AI, SMT, assembling and so on.

Theory of business: Global synchronic research and development, total design and manufacture, and international brand operation.

Vision: We have dedicated ourselves to be one of the world's top industrial control equipment suppliers.

Mission: We have made great efforts to focus on the needs of customers, provide competitive solutions and services, continue to create the maximum profit for the customers and make contributions to our national electrical automation industry.



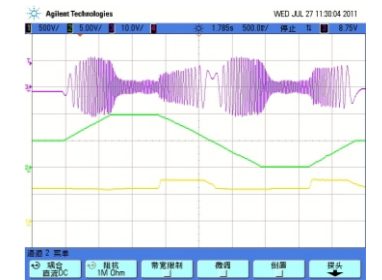
Product Outlook

Performance Features

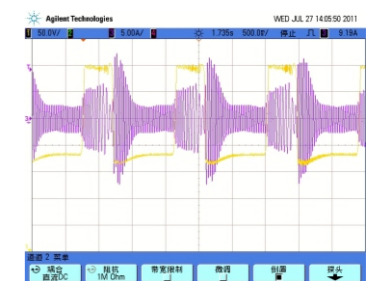
- Advanced motor control algorithm
- High performance open loop vector control
- Optimal V/F mode
- Excellent ramp slope control
- Fast auto-tune (less than 1 minute)
- Overload:
 - 150% rated output current, 1 minute
- Low frequency torque:
 - 0.5Hz: 100% rated torque
 - 1Hz: 150% rated torque

The Main Hardware Features

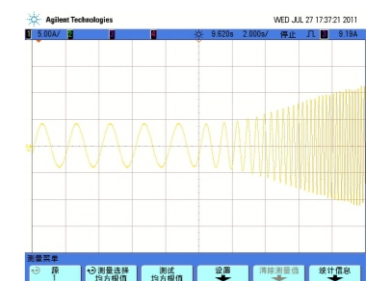
- Dual CPU processing, more precise control
- Standard configuration 5-digit LED keypad, standard RJ45 Keypad connector
- 5.5 kW and above with standard DC choke
- 22kW and below with standard internal brake unit
- Above 22kW models, if the internal brake unit fitted or not, could be selected by the model reference
- Internal EMC filter with breakpoint design, convenient for access and disconnection, meet different application requirements
- PCBA coating process, increase environment adaptability
- Unique control terminals: simple electronic switch set to complete the conversion between source and sink of I/O terminals
- Reference (current) loose, trip or not could be selected
- IGBT thermal design
- Wireless fan block design, easy to replace or maintain
- Connecting auxiliary fan makes the drive suitable for worse environment



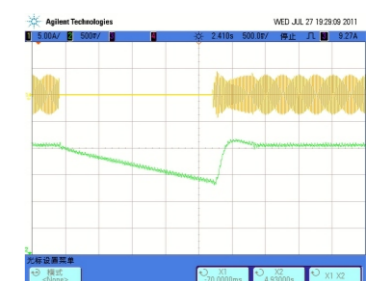
0.1s urgent Acce. & Dece. running



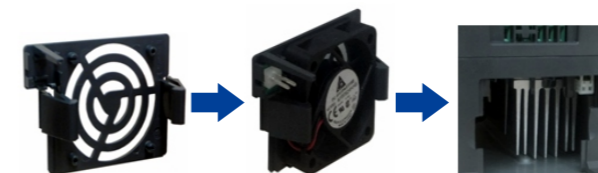
Excellent voltage and current control



V/ Fmode 0.5Hz urgent full load operation



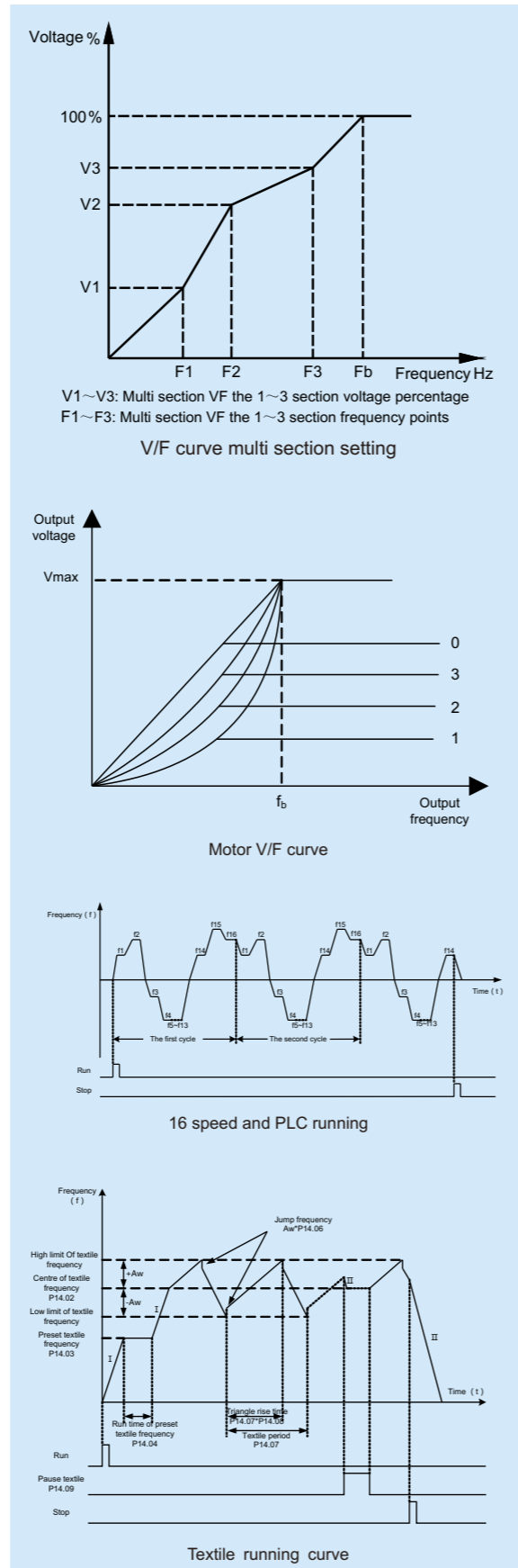
Excellent spinning



Product Outlook

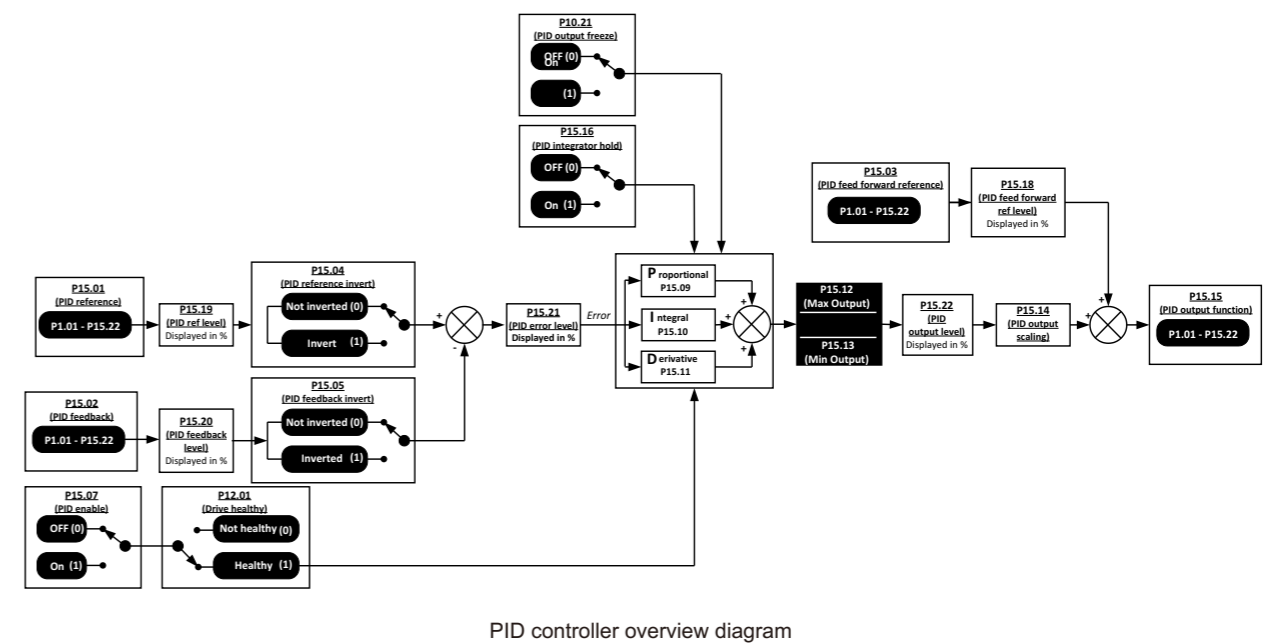
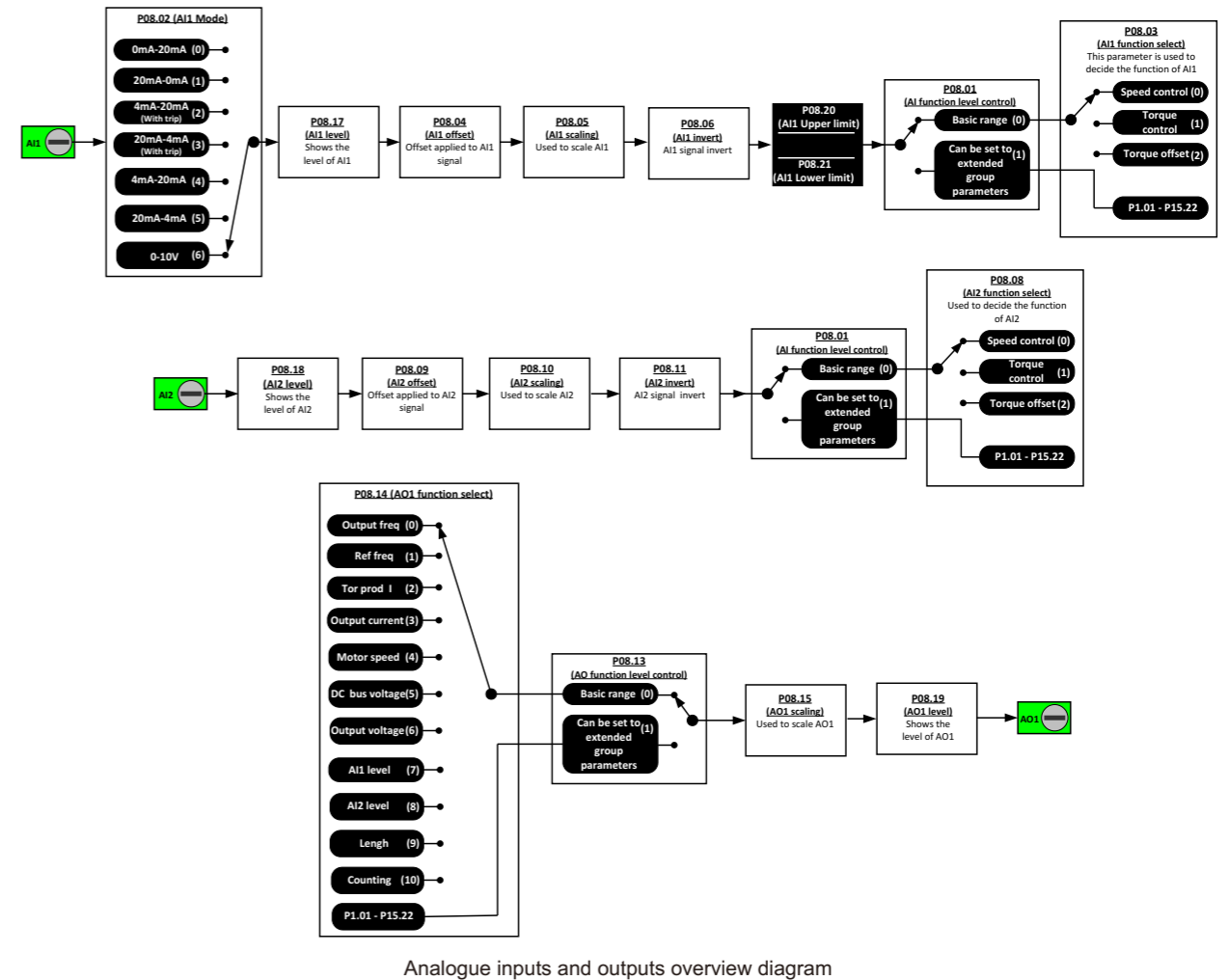
The Main Function Features

- Balance on easy use and powerful function
- Powerful programmable platform makes users program easier
- Built-in advanced function blocks:
 - 2 threshold control blocks
 - 2 logic control blocks
 - 3 variable selectors
 - brake logic control block
- Programmable I/O terminals
- Internal energy meter, the user calculate energy saving conveniently
- Low DC voltage operation mode (380V products can work on 220V power supply)
- The stop mode can be controlled when power off
- AVR
- Switching frequency automatic adjustment
- Catch spinning function
- Injection braking
- Jump frequency control function
- Keypad disconnected trip could be controlled
- Powerful electronic potentiometer function, adjust reference conveniently
- Standard serial comms. and optional fieldbus
- The comprehensive warning and protection function:
 - Fast protection for output shortage, over current, over load, over voltage, under voltage, phase loss, over heat (heatsink and junction), external trip, etc.
 - Motor heat protection from terminals
- Warning information display or not could be selected
- Preset speed select, 16 preset speeds (decided by control terminals)
- PID control
- User define V/F:
 - 3 point line setting
 - 1.2 law ramp
 - 1.7 law ramp
 - 2.0 law ramp
- Automatic sleep mode function
- Textile function
- Pulse counting
- Length control



Logic Diagram

The design of logic diagram makes the user understand and set parameters conveniently.

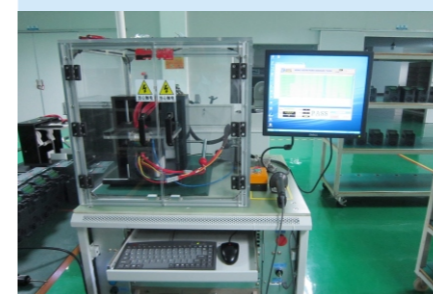


General Technical Data

Input power	Input voltage U_{in}	200V (-10%)~240V (+10%) 1/3 PH 380V (-10%)~480V (+10%) 3PH 500V (-10%)~690V (+10%) 3PH
	Input frequency	50Hz/60Hz(±2Hz)
	Maximum supply imbalance	≤3%
Power output	Output voltage	0V~ U_{in}
	Output frequency	0Hz~300Hz
Main performance function	Voltage control	V/F, Open loop Vector Control
	Switching frequency	1kHz~15kHz
	Adjust speed range	Open loop vector control -1:100, V/F mode -1:50
	Start torque	0.5Hz: 100% rated torque 1Hz: 150% rated torque
	Torque accuracy	7%
	Reference resolution	Digital- 0.01Hz, Analogue- 0.1%×Maximum frequency
	Acce. & Dece. rate	0.1s~3600min
	Voltage boost	0.1%~30.0%
	Overload	E, G type: 150% rated output current, 1 minute P type: 110% rated output current, 1 minute
	V/F	4 types: V/F (user can program) and ramp (2.0 power, 1.7 power, 1.2 power)
	DC injection	Injection frequency: 0.0%~100.0% maximum frequency Injection current: 0.0%~300.0% rated current Injection time: 0.00s~60.00s
	Dynamic braking	The utilization rate of dynamic braking : 0.0%~100.0%
	Jog	Jog frequency: 0.00Hz~maximum frequency Jog acceleration rate: 0.1s~600.0s Jog interval time: 0.1s~600.0s
	Preset	16 preset speeds (decided by control terminals)
	AVR	Maintain the rated output voltage when the input power supply voltage changed
Special function	Textile	For textile machines control
	Simple PLC	Onboard PLC
	Length control	Winding control
	PID control	Process control (reference close loop control)
	Advanced function blocks	2 logic control blocks 1 binary selector 2 threshold control blocks 3 variable selectors

General Technical Data

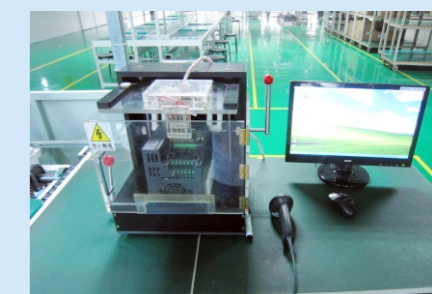
Control terminal	Reference source	Digit: Keypad, motorized pot (E-Pot), pulse, comms. Analogue: AI1: 0V~10V, 0(4) mA~20mA; AI2: 0V~10V
	Operating mode	Keypad, Control terminal, Serial comms.
	Digital input terminals	DI1~DI7: Programmable terminals and DI6 can be set as pulse input, 0Hz~60Hz; DI7 can be high frequency pulse input (1Hz~50.0kHz) or PTC thermistor input
	Digital output terminals	DO1~DO2: Programmable terminals, Max. output current: 50mA, DO2 can be the terminal to output pulse (0.1kHz~50.0kHz), and output PWM
	Analogue output Terminals	AO1: programmable terminal, 0V~10V
	Status relay	2 programmable relays, contactor data: AC250V/2A (COS φ=1) AC250V/1A (COS φ=0.4) DC30V/1A
Comms.	Connector	2 terminals (A&B) and RJ45 port
	Protocol	Modbus RTU
Environment	Altitude	1000m rated 1000m~3000m, 1% rated current derating per 100m
	Operating temperature	-10℃~+40℃
	Maximum humidity	≤90%RH, no-condensing
	Vibration	≤5.9m/s ² (0.6g)
	Storage temperature	-40℃~+70℃
	Running environment	Indoor, non-flammable, no corrosive gasses, no contamination with electrically conductive material, avoid dust which may restrict the fan
Optional module	LCD Keypad, HDOM-232, HDOM-USB, Profibus module, Keypad pallet, HDSOFT (PCTools), etc.	
Protection	Output shortage, over current, over load, over voltage, under voltage, phase loosing, over heat (heatsink and junction), external trip, etc.	
Efficiency	1.5kW and below: ≥89% 2.2kW~22kW: ≥93% 30kW and above: ≥95%	
Mounting method	Surface mounting, through hole, cubicle standing	
Enclosure	IP20, IP21 (by adding optional device)	
Cooling method	220V/0.4kW model is nature cool, others are forced air cool	



Automatic DT test platform

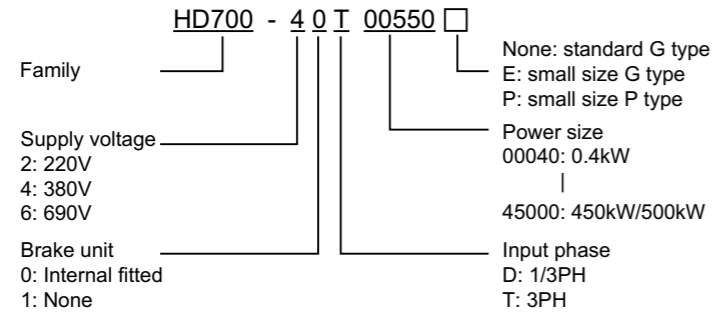


Automatic PCBA ATE test platform



Automatic FLASH test platform

Model Reference



Power size of HD700 is referred to the standard 4 poles induction motor at rated voltage.

E, G: Heavy duty P: Normal duty

Overload of E, G type: 150% rated output current, 1 minute

Overload of P type: 110% rated output current, 1 minute

220V Rating Data

Power supply: 200Vac~240Vac, 50Hz/60Hz, single/three phase

Model Name	Default Carrier Frequency (kHz)	Drive Power Size (kVA)	Rated Input Current (A)		Rated Output Current (A)	Motor Power (kW)	Size
			1/3PH				
HD700-20D00040	6	1.1	7.1/4		2.8	0.4	A
HD700-20D00075	6	1.9	12.8/7.1		5	0.75	A
HD700-20D00150	6	3.0	20.5/11.3		8	1.5	A
HD700-20D00220	6	4.2	24/14.5		11	2.2	B
HD700-20D00400	6	6.7	16.5		17.6	4	C

380V Rating Data

Power supply: 380Vac~480Vac, 50Hz/60Hz, three phase

Model Name	Default Carrier Frequency (KHz)	G				P				Size
		Drive Power Size (kVA)	Rated Input Current (A)	Rated Output Current (A)	Motor Power (kW)	Drive Power Size (kVA)	Rated Input Current (A)	Rated Output Current (A)	Motor Power (kW)	
HD700-40T00075	6	1.7	3.6	2.5	0.75	-	-	-	-	A
HD700-40T00150	6	2.8	5.7	4.2	1.5	-	-	-	-	A
HD700-40T00220E	6	3.4	6.1	5.2	2.2	-	-	-	-	A
HD700-40T00220	6	3.8	8.3	5.8	2.2	-	-	-	-	B
HD700-40T00400	6	6.3	13.2	9.5	3.7	-	-	-	-	B
HD700-40T00550E	6	8.6	14.3	13	5.5	-	-	-	-	B
HD700-40T00550P	6	-	-	-	-	8.6	14.3	13	5.5	B
HD700-40T00550	6	8.6	12.4	13	5.5	-	-	-	-	C
HD700-40T00750	6	11	16.1	17	7.5	-	-	-	-	C
HD700-40T01100P	6	-	-	-	-	15.2	21	23	11	C
HD700-40T01100	6	16.5	24	25	11	21	31	32	15	D
HD700-40T01500	6	21	31	32	15	25	36	38	18.5	D
HD700-40T01850	6	25	36	38	18.5	30	44	46	22	E
HD700-40T02200	6	30	44	46	22	40	58	60	30	E
HD700-40T03000E	3	40	58	60	30	50	72	75	37	E1
HD700-40T03700E	3	50	72	75	37	-	-	-	-	E1
HD700-40T03000	3	40	58	60	30	50	72	75	37	F
HD700-40T03700	3	50	72	75	37	63	93	96	45	F

380V Rating Data

Power supply: 380Vac~480Vac, 50Hz/60Hz, three phase

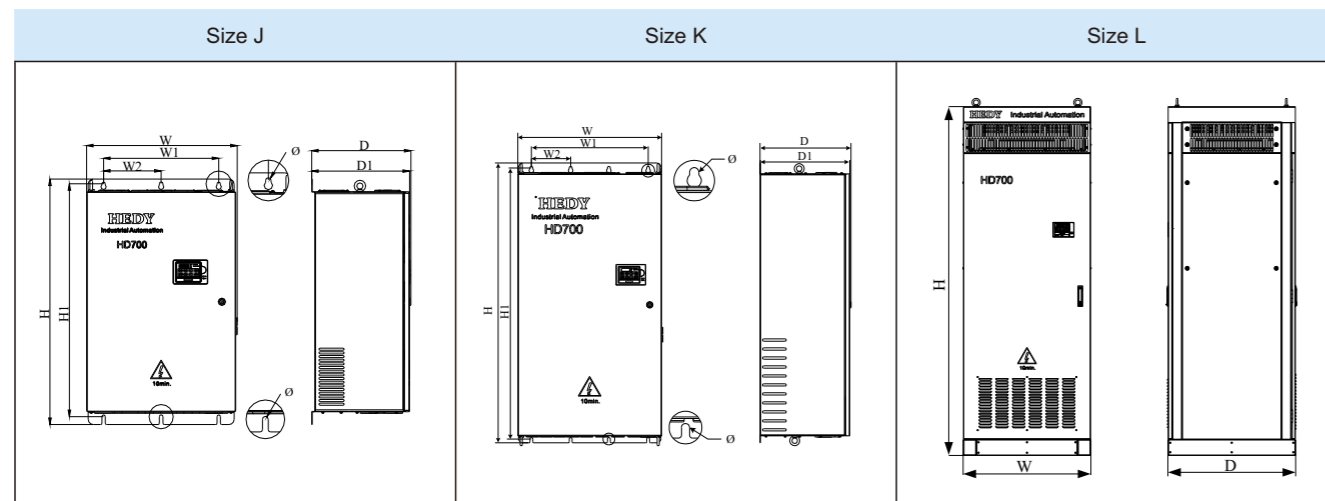
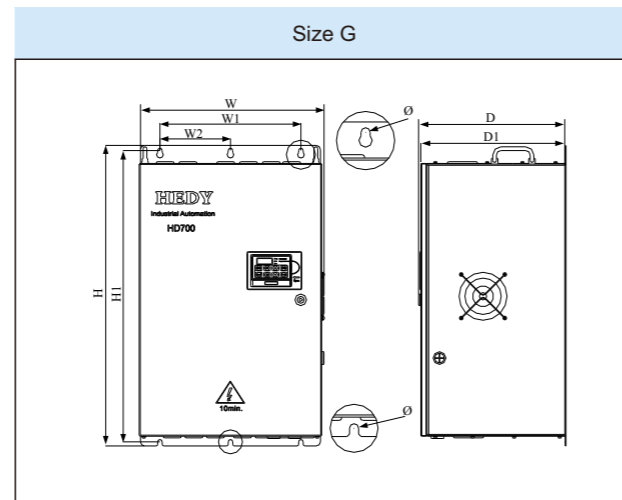
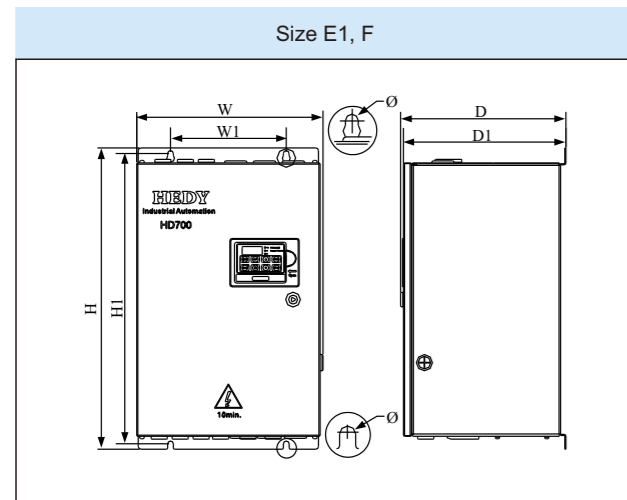
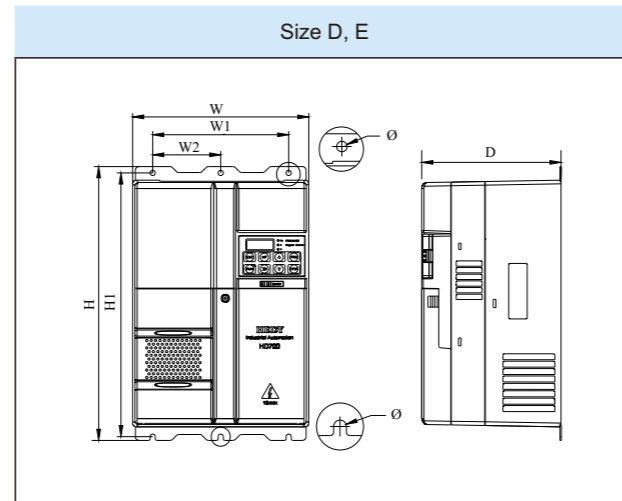
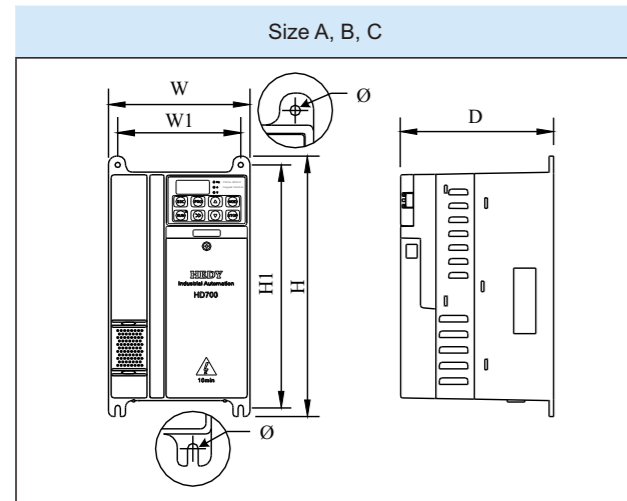
Model Name	Default Carrier Frequency (KHz)	G				P				Size
		Drive Power Size (kVA)	Rated Input Current (A)	Rated Output Current (A)	Motor Power (kW)	Drive Power Size (kVA)	Rated Input Current (A)	Rated Output Current (A)	Motor Power (kW)	
HD700-40T04500	3	63	93	96	45	83	121	125	55	F
HD700-40T05500	3	83	121	125	55	103	151	156	75	F
HD700-40T07500	3	103	151	156	75	119	175	180	90	F
HD700-40T09000	3	119	175	180	90	139	204	210	110	G
HD700-40T11000	3	139	204	210	110	169	248	256	132	G
HD700-40T13200	3	169	248	256	132	205	301	310	160	G
HD700-40T16000E	3	205	301	310	160	231	340	350	185	J
HD700-40T18500E	3	231	340	350	185	255	375	387	200	J
HD700-40T20000E	3	255	375	387	200	280	415	427	220	J
HD700-40T16000	3	205	301	310	160	231	340	350	185	K
HD700-40T18500	3	231	340	350	185	255	375	387	200	K
HD700-40T20000	3	255	375	387	200	310	457	471	250	K
HD700-40T25000	3	310	457	471	250	343	505	520	280	K
HD700-40T28000	3	343	505	520	280	403	592	610	315	K
HD700-40T31500	2	403	592	610	315	444	653	673	355	L
HD700-40T35500	2	444	653	673	355	495	728	750	400	L
HD700-40T40000	2	495	728	750	400	551	810	835	450	L
HD700-40T45000	2	551	810	835	450	622	915	943	500	L

690V Rating Data

Power supply: 500Vac~690Vac, 50Hz/60Hz, three phase

Model Name	Default Carrier Frequency (KHz)	G				P				Size
		Drive Power Size (kVA)	Rated Input Current (A)	Rated Output Current (A)	Motor Power (kW)	Drive Power Size (kVA)	Drive Power Size (kVA)	Rated Output Current (A)	Motor Power (kW)	
HD700-60T03000	3	43	36	36	30	51	49	51	37	F
HD700-60T03700	3	61	49	51	37	65	52	54	45	F
HD700-60T04500	3	65	52	54	45	75	61	63	55	F
HD700-60T05500	3	75	61	63	55	103	83	86	75	F
HD700-60T07500	3	103	83	86	75	120	97	100	90	F
HD700-60T09000	3	120	97	100	90	157	127	131	110	G
HD700-60T11000	3	157	127	131	110	179	145	150	132	G
HD700-60T13200	3	179	145	150	132	209	170	175	160	G
HD700-60T16000E	3	209	170	175	160	237	192	198	185	J
HD700-60T18500E	3	237	192	198	185	276	224	231	200	J
HD700-60T20000E	3	276	224	231	200	296	235	248	220	J
HD700-60T16000	3	209	170	175	160	237	192	198	185	K
HD700-60T18500	3	237	192	198	185	276	224	231	200	K
HD700-60T20000	3	276	224	231	200	327	266	274	250	K
HD700-60T25000	3	327	266	274	250	350	285	293	280	K
HD700-60T28000	3	350	285	293	280	392	318	328	315	K
HD700-60T31500	2	392	318	328	315	462	375	387	355	L
HD700-60T35500	2	462	375	387	355	509	413	426	400	L
HD700-60T40000	2	509	413	426	400	576	468	482	450	L
HD700-60T45000	2	576	468	482	450	651	529	545	500	L

Diagram of Mounting



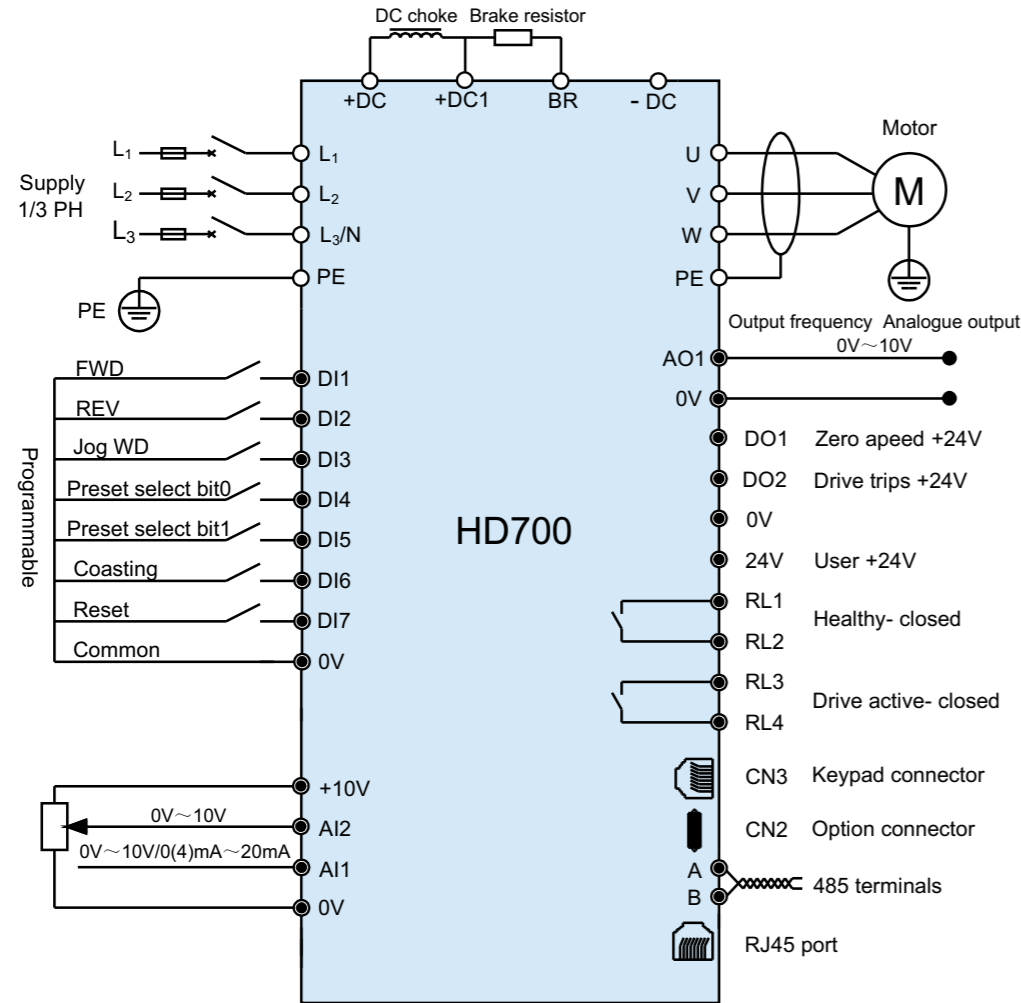
Mechanical Dimension

Size	Model Name	W (mm)	W1 (mm)	W2 (mm)	H (mm)	H1 (mm)	D (mm)	D1 (mm)	Mounting Hole Ø (mm)	Weight (kg)	Comments
A	HD700-20D00040	97.4	80	-	202.4	190	148.8	-	5	1.4	-
	HD700-20D00075										
	HD700-20D00150										
	HD700-40T00075										
	HD700-40T00150										
B	HD700-40T00220E	142.4	123.5	-	220.4	208	155.5	-	5	2.2	-
	HD700-20D00220										
	HD700-40T00220										
	HD700-40T00550E										
C	HD700-40T00550P	163.1	142	-	300	280	176.8	-	6	4.5	Internal DC choke
	HD700-20D00400										
	HD700-40T00750										
	HD700-40T01100P										
D	HD700-40T01100	238.5	184	92	370	356.5	189	-	7	8.8	Internal DC choke
	HD700-40T01500										
E	HD700-40T01850	238.5	184	92	435.5	422	200.3	-	7	12.1	Internal DC choke
	HD700-40T02200										
E1	HD700-40T03000E	320	210	-	510	490	226	222.5	8	20	-
	HD700-40T03700E										
F	HD700-40T03000	355.5	221	-	573	552.5	315.5	310	10	40	Internal DC choke
	HD700-40T03700										Internal DC choke
	HD700-40T04500										Internal DC choke
	HD700-40T05500										External DC choke
	HD700-40T07500										External DC choke
	HD700-60T03000										Internal DC choke
	HD700-60T03700										Internal DC choke
	HD700-60T04500										Internal DC choke
	HD700-60T05500										External DC choke
	HD700-60T07500										External DC choke
G	HD700-40T09000	445.6	340	170	725	701.5	355	349.5	10	63	External DC choke
	HD700-40T11000										
	HD700-40T13200										
	HD700-60T09000										
	HD700-60T11000										
J	HD700-60T13200	575.5	440	220	937	889	379.3	373.8	13	104	External DC choke
	HD700-40T16000E										
	HD700-40T18500E										
	HD700-40T20000E										
	HD700-60T16000E										
K	HD700-60T18500E	640	520	175	1246.5	1207.5	405.5	400	13	150	External DC choke
	HD700-40T16000										
	HD700-40T18500										
	HD700-40T20000										
	HD700-40T25000										
	HD700-40T28000										
	HD700-60T16000										
	HD700-60T18500										
	HD700-60T20000										
	HD700-60T25000										
HD700-60T28000											

Mechanical Dimension

Size	Model Name	W (mm)	W1 (mm)	W2 (mm)	H (mm)	H1 (mm)	D (mm)	D1 (mm)	Mounting Hole \varnothing (mm)	Weight (kg)	Comments
L	HD700-40T31500	804	-	-	2200	-	804	-	-	350	Internal AC choke
	HD700-40T35500										
	HD700-40T40000										
	HD700-40T45000										
	HD700-60T31500										
	HD700-60T35500										
	HD700-60T40000										
HD700-60T45000											

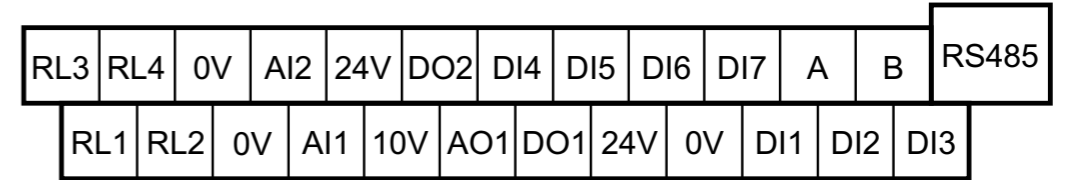
Typical Cabling



Note:

- All the programmable control terminal functions are factory default set;
- For control wire, recommend using unshielded twisted pair, shielded cable or shielded twisted pair;
- 5.5kW~280kW models (including 220V/4kW, except size E1 models), internal DC choke is fitted. 315kW~450kW models with AC reactor fitted.

Control Terminal Control Terminal Diagram



Control Terminal And Comms. Port

Type	Terminal Name	Function	Technical Specification
Serial comms.	RS485	RJ45 port	Two lines, Modbus RTU protocol
	A	485 plus signal	Same function with RJ45 port, mainly for multi network
	B	485 minus signal	
Digit input	DI1~DI5	Programmable digital input terminals	The common can be 0V or 24V by setting the P09.21 (default is 0V) Input resistance: 10k Ω High logic threshold: 10V \pm 1V Sample time: 1ms
	DI6	Normal digital input Length counting Number counting	<ul style="list-style-type: none"> • Same as DI1~DI5 • Length counting by input pulse Sample time: 5ms • Number counting by input pulse Sample time: 5ms Note: pulse frequency range is 0Hz~60Hz
	DI7	Normal digital input High frequency pulse input Motor thermister input	<ul style="list-style-type: none"> • Same as DI1~DI5, but Input resistance is 5kΩ • High frequency pulse input Frequency range: 1kHz~50kHz • Only when P09.21=1 input can be thermister Trip resistance: 3kΩ Reset resistance: 1.8kΩ Sample time: 5ms
Digital output	DO1	Programmable digital output terminal1	Output: 24V/0V Maximum output current: 50mA Updating rate: 20ms
	DO2	Programmable digital output terminal1	<ul style="list-style-type: none"> • Same with DO1 • High frequency pulse output (0.1kHz~50kHz) • PWM output (10kHz)
Analogue input & output	AI1	Programmable analogue input1	0V~10V, Input resistance: 100k Ω , 0 (4) mA~20mA Load resistance:188 Ω , Minimum potentiometer resistance: 0.5k Ω Resolution: 0.1%, Accuracy: 2%, Sampling period: 5ms
	AI2	Programmable analogue input1	0V~10V, Input resistance: 30k Ω Minimum potentiometer resistance: 0.5k Ω Resolution: 0.1%, Accuracy: 2% Sampling period: 5ms
	AO1	Programmable analogue output	0V~10V, Maximum output current: 5mA, Resolution: 0.4% Accuracy: \pm 5%, Update rate: 5ms
Rail supply & Relay	10V	Analogue reference rail	Accuracy: 2%, Maximum output current: 20mA
	24V	User supply (2)	Accuracy: \pm 15%, Maximum output current: 100mA
	0V	Common (3)	Common reference point for control signal
	RL1, RL2	Programmable Relay1 output contactors	Type: normal open Update rate: 5ms Contactor rating: 250VAC/2A(cos ϕ =1); 250VAC/1A(cos ϕ =0.4); 30VDC/1A Default: Relay1: closed when powered and healthy Relay2: closed when drive is active
	RL3, RL4	Programmable Relay2 output contactors	

Keypad

LCD Keypad



Keypad Function

Switches	Function Description
	In different level display, pressing the switch will return to the last level. Long press on the switch will display the value of normal display parameter decided by P05.01. When the Keypad is locked, 5 seconds pressing on the switch will unlock.
	Programmable switch, it can be function of Jog, Fwd./Rev., Coasting stop by setting P05.07. Default function is jog.
	Enter next level of the keypad display.
	When it is keypad control mode (P00.03 or P10.07=0), pressing the switch will make the drive run.
	<ul style="list-style-type: none"> Stop, the switch will stop the drive unless the keypad is locked totally. Reset the drive if the keypad is not locked totally.
	Used to select parameters and edit their values. In keypad mode, they are used to increase and decrease the speed of the motor.
	<ul style="list-style-type: none"> In run/stop mode and pressing the switch, the LED display will be output frequency, reference frequency, output current, output voltage, DC bus voltage in turn. In the edit of parameter value mode, pressing the switch will change the bite of the value.

Note: If there is a conflict on the content of parameter, pressing switch can not enter the next parameter.

Options

LCD keypad	Remote keypad	Profibus module (SELV)	Keypad pallet
HDOM-232 (SELV)	HDOM-USB (SELV)	HDSOFT (PCTools)	HDOM-IO-Logic

Quality Assurance & Reliability (CE/UL Certification)

Meet the following standard requirements :

- IEC/EN 61800-5-1 **Adjustable speed electrical power drive systems** - Part 5-1: Safety requirements- Electrical, thermal and energy
 - IEC/EN 61800-3 **Adjustable speed electrical power drive systems** - Part 3: EMC requirements and specific test methods
 - UL 508C Power Conversion Equipment
 - GB/T 12668.2 **Adjustable speed electrical power drive systems** - part 2: General requirements-Rating specifications for low voltage adjustable frequency a.c. power drive systems
 - GB 12668.3 **Adjustable speed electrical power drive systems** - part 3: EMC product standard including specific test methods
 - IEC 60529 Degrees of protection provided by enclosures (IP Code)
- Meet C3 without external EMC filter.



Service Items

1. Global warranty service
2. Field maintenance or Carry-in Service
3. Convenient and fast spare parts localization supply services
4. 24 hours technical consulting hot-line service
5. The expert site technical support service
6. Industry system solutions support service
7. Professional technical training service

Certificates



OHSMS Certificate



Environment Management System Certificate

Service Net



Quality Management System Certificate



Quality Management System Certificate (HDIAC)