2. Product Information

2.1 Designation Rules

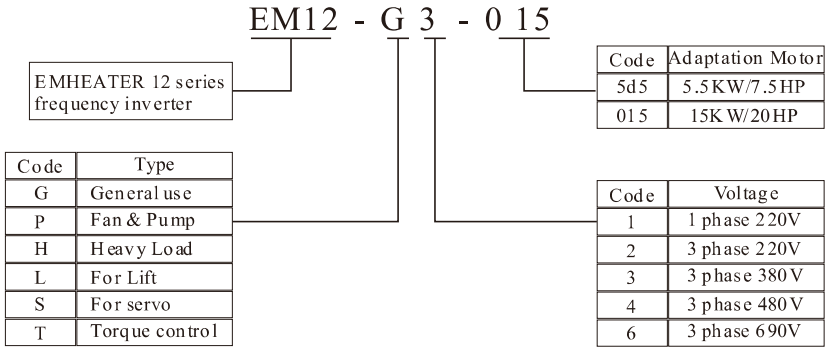

Diagram 2-1 Designation rules

2.2 Nameplate

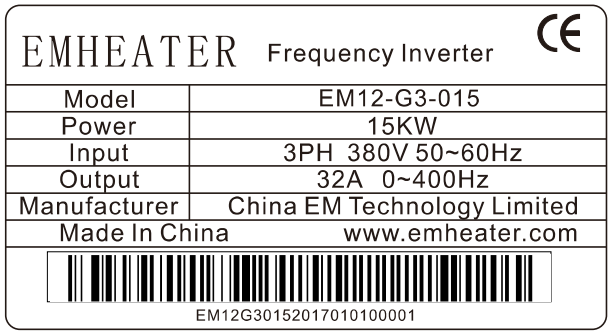

Diagram 2-2 Nameplate

2.3 EM12 Series Frequency Inverter

Table 2-1 Models and technical data of EM12

Model	Power Capacity (KVA)	Input Current (A)	Output Current (A)	Adaptable Motor		Thermal Power Consumption (KW)
				KW	HP	
Single-phase 220V，50/60Hz						
EM12-G1-d75	1.5	8.2	4	0.75	1	0.030
EM12-G1-1d5	3	14	7	1.5	2	0.055
EM12-G1-2d2	4	23	9.6	2.2	3	0.072
Three-phase 220V，50/60Hz						
EM12-G2-d75	3	5	3.8	0.75	1	0.030
EM12-G2-1d5	4	5.8	5.1	1.5	2	0.055
EM12-G2-2d2	5.9	10.5	9	2.2	3	0.072
EM12-G2-004	8.9	14.6	13	3.7	5	0.132
EM12-G2-5d5	17	26	25	5.5	7.5	0.214
EM12-G2-7d5	21	35	32	7.5	10	0.288
EM12-G2-011	30	46.5	45	11	15	0.489
EM12-G2-015	40	62	60	15	20	0.608

Model	Power Capacity (KVA)	Input Current (A)	Output Current (A)	Adaptable Motor		Thermal Power Consumption (KW)
				KW	HP	
EM12-G2-018	57	76	75	18.5	25	0.716
EM12-G2-022	69	92	91	22	30	0.887
EM12-G2-030	85	113	112	30	40	1.11
EM12-G2-037	114	157	150	37	50	1.32
EM12-G2-045	134	180	176	45	60	1.66
EM12-G2-055	160	214	210	55	75	1.98
EM12-G2-075	231	307	304	75	100	2.02
Three-phase 380V，50/60Hz						
EM12-G3-d75/P3-1d5	3/4	5/5.8	2.1/3.8	0.75/1.5	1/2	0.050
EM12-G3-1d5/P3-2d2	4/5.9	5.8/10.5	3.8/5.1	1.5/2.2	2/3	0.066
EM12-G3-2d2/P3-004	5.9/8.9	10.5/14.6	5.1/9	2.2/3.7	3/5	0.120
EM12-G3-004/P3-5d5	8.9/11	14.6/20.5	9/13	3.7/5.5	5/7.5	0.195
EM12-G3-5d5/P3-7d5	11/17	20.5/26	13/17	5.5/7.5	7.5/10	0.262
EM12-G3-7d5/P3-011	17/21	26/35	17/25	7.5/11	10/15	0.445
EM12-G3-011/P3-015	21/24	35/38.5	25/32	11/15	15/20	0.553
EM12-G3-015/P3-018	24/30	38.5/46.5	32/37	15/18.5	20/25	0.651
EM12-G3-018/P3-022	30/40	46.5/62	37/45	18.5/22	25/30	0.807
EM12-G3-022/P3-030	40/57	62/76	45/60	22/30	30/40	1.01
EM12-G3-030/P3-037	57/69	76/92	60/75	30/37	40/50	1.20
EM12-G3-037/P3-045	69/85	92/113	75/91	37/45	50/60	1.51
EM12-G3-045/P3-055	85/114	113/157	91/112	45/55	60/75	1.80
EM12-G3-055/P3-075	114/134	157/180	112/150	55/75	75/100	1.84
EM12-G3-075/P3-090	134/160	180/214	150/176	75/90	100/125	2.08
EM12-G3-090/P3-110	160/192	214/256	176/210	90/110	125/150	2.55
EM12-G3-110/P3-132	192/231	256/307	210/253	110/132	150/200	3.06
EM12-G3-132/P3-160	231/250	307/385	253/304	132/160	200/250	3.61
EM12-G3-160/P3-200	250/280	385/430	304/377	160/200	250/280	4.42
EM12-G3-200/P3-220	280/355	430/468	377/426	200/220	280/300	4.87
EM12-G3-220/P3-250	355/396	468/525	426/465	220/250	300/370	5.51
EM12-G3-250/P3-280	396/445	525/590	465/520	250/280	370/400	6.21
EM12-G3-280/P3-315	445/500	590/665	520/585	280/315	400/420	7.03
EM12-G3-315/P3-355	500/565	665/785	585/650	315/355	420/500	7.81
EM12-G3-355/P3-400	565/630	785/883	650/725	355/400	500/530	8.51
EM12-G3-400/P3-450	630/650	883/920	725/820	400/450	530/600	9.23
EM12-G3-450/--	650	920	820	450	600	9.52

2.4 Technical Specifications

Table 2-2 Technical specifications of EM12

Item		Specifications	
Standard functions	Maximum frequency	Vector control: 0~320 Hz V/F control: 0~3200 Hz	
	Carrier frequency	0.5–16 kHz (The carrier frequency is automatically adjusted based on the load features.)	
	Input frequency resolution	Digital setting: 0.01 Hz Analog setting: maximum frequency x 0.025%	
	Control mode	Sensor-less vector control (SVC) Closed-loop vector control (FVC)（+ PG card） Voltage/Frequency (V/F) control	
	Startup torque	G type: 0.5 Hz/150% (SVC); 0 Hz/180% (FVC) P type: 0.5 Hz/100%	
	Speed range	1:100 (SVC)	1:1000(FVC)

Item		Specifications	
	Speed stability accuracy	± 0.5% (SVC)	± 0.02% (FVC)
	Torque control accuracy	± 10% (SVC)	± 5% (FVC)
	Overload capacity	G type: 60s for 150% of the rated current, 3s for 180% of the rated current P type: 60s for 120% of the rated current, 3s for 150% of the rated current	
	Torque boost	Auto boost Manual boost 0.1%~30.0%	
	V/F curve	Straight-line V/F curve Multi-point V/F curve N-power V/F curve (1.2-power, 1.4-power, 1.6-power, 1.8-power, square)	
	V/F separation	Two types: complete separation; half separation	
	Acceleration/deceleration curve	Straight-line ramp S-curve ramp Four groups of acceleration/deceleration time with the range of 0.0s~65000s	
	DC braking	DC braking frequency: 0.00 Hz ~ maximum frequency Braking time: 0.0s~36.0s Braking trigger current value: 0.0%~100.0%	
	JOG control	JOG frequency range: 0.00Hz~50.00 Hz JOG acceleration/deceleration time: 0.00s~6500.0s	
	Built-in simple PLC, multiple speeds	It realizes up to 16 speeds via the simple PLC function or combination of DI terminal states.	
	Built-in PID	It realizes closed loop control system easily.	
	Auto voltage regulation (AVR)	It can keep constant output voltage automatically when the mains voltage fluctuation.	
	Overvoltage/ Over current stall control	The current and voltage are limited automatically during the running process so as to avoid frequently tripping due to overvoltage / over current.	
	Rapid current limit function	It can auto limit running current of frequency inverter to avoid frequently tripping.	
	Torque limit and control	(Excavator characteristics) It can limit the torque automatically and prevent frequently over current tripping during the running process. Torque control can be implemented in the VC mode.	
Individualized functions	High performance	Control of asynchronous motor and synchronous motor are implemented through the high-performance current vector control technology.	
	Instant power off not stop	The load feedback energy compensates the voltage reduction so that the frequency inverter can continue to run for a short time.	
	Rapid current limit	To avoid frequently over current faults of the frequency inverter.	
	Virtual I/O	Five groups of virtual DI/DO can realize simple logic control.	
	Timing control	Time range: 0.0~6500.0 minutes	
	Multi-motor switchover	Two motors can be switched by two groups of motor parameters.	
	Multiple communication protocols	It supports communication bus via Modbus-RTU, PROFIBUS-DP, CANlink and CANopen.	
	Motor overheat protection	The optional I/O extension card enables AI3 to receive the motor temperature sensor input (PT100, PT1000) so as to realize motor overheat protection.	
	Multiple encoder types	It supports various encoders such as differential encoder, open-collector encoder, resolver, UVW encoder, and SIN/ COS encoder.	
	Advanced background software	It supports the operation of frequency inverter parameters and virtual oscillograph function, by which the state of frequency inverter can be monitored.	
RUN	Running command giving	key panel; Control terminals; Serial communication port; You can switch between these giving in various ways.	
	Frequency giving	There are 10 kinds frequency giving: digital setting, analog voltage setting, analog current setting, pulse setting and serial communication port setting. You can switch between these giving in various ways.	
	Auxiliary frequency giving	There are 10 kinds auxiliary frequency giving. It can implement tiny tuning of	

Item		Specifications
		auxiliary frequency and frequency synthesis.
	Input terminal	Standard: ● 6 digital input (DI) terminals, one of which supports up to 50 kHz high-speed pulse input ● 3 analog input (AI) terminals, AI1,AI2 support 0V~10 V or 0mA~20mA input, AI3 support -10V~+10V Expanding capacity: ● many DI terminals
	Output terminal	Standard: ● 1 high-speed pulse output terminal (open-collector) that supports 0–50 kHz square wave signal output (Can be used as DO output) ● 2 relay output terminal ● 2 analog output (AO) terminals, both of them supports 0mA~20mA current output and 0V~10V voltage output. Expanding capacity: ● many DO terminals ● many relay output terminals
Display and keypad operation	LED display	It displays the parameters.
	Parameters copy	Optional LCD keypad can copy parameters. (Option)
	Key locking and function selection	It can lock the keys partially or completely and define the function range of some keys so as to prevent misoperation.
	Protection mode	Motor short-circuit detection at power-on, input/output phase loss protection, over current protection, overvoltage protection, less voltage protection, overheat protection and overload protection,etc.
Environment	Installation location	Indoor, no direct sunlight, dust, corrosive gas, combustible gas, oil smoke, vapour, drip or salt.
	Altitude	Lower than 1000 m
	Ambient temperature	-10°C~ +40°C (de-rated if the ambient temperature is between 40°C and 50°C)
	Humidity	Less than 95%RH, without condensing
	Vibration	Less than 5.9 m/s2 (0.6 g)
	Storage temperature	-20°C ~ +60°C

2.5 Product appearance and installation dimension

2.5.1 Product appearance

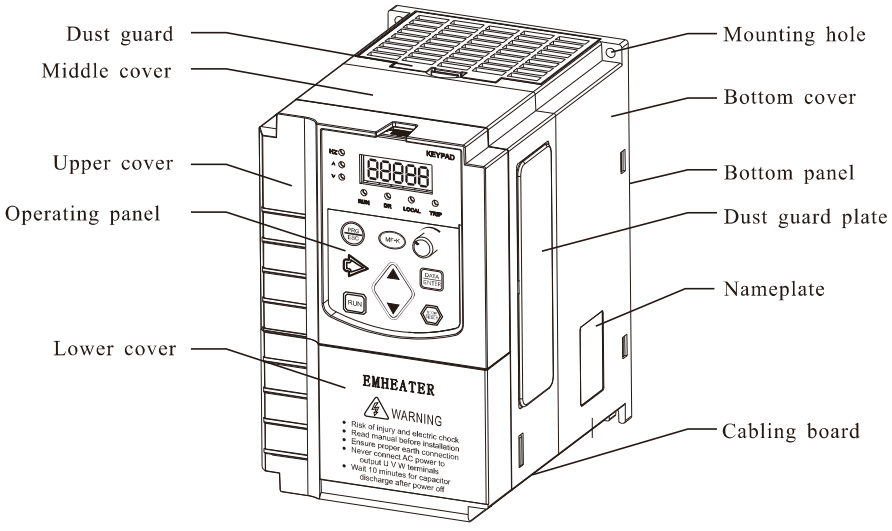

Diagram 2-3 Product appearance (With potentiometer)

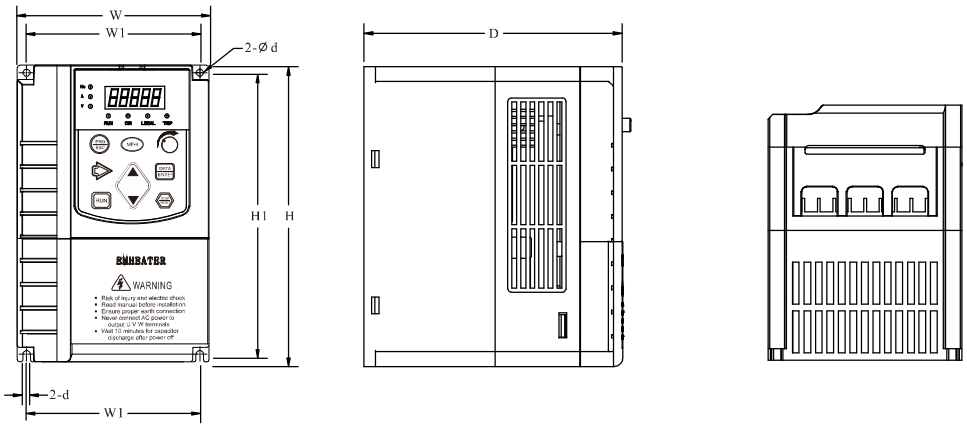

Diagram 2-4 Appearance and installation dimension of EM12 series (Plastic housing structure)

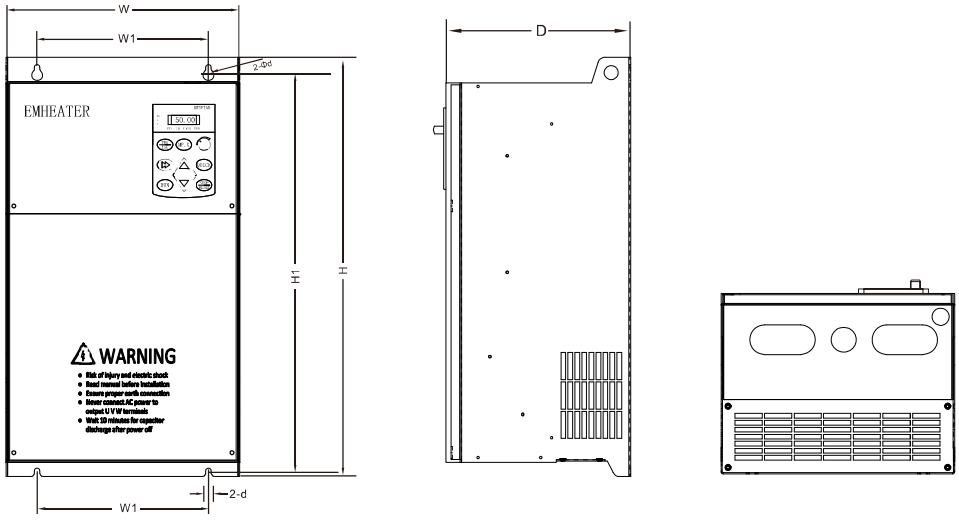

Diagram 2-5 Appearance and installation dimension of EM12 series (Metal housing structure)

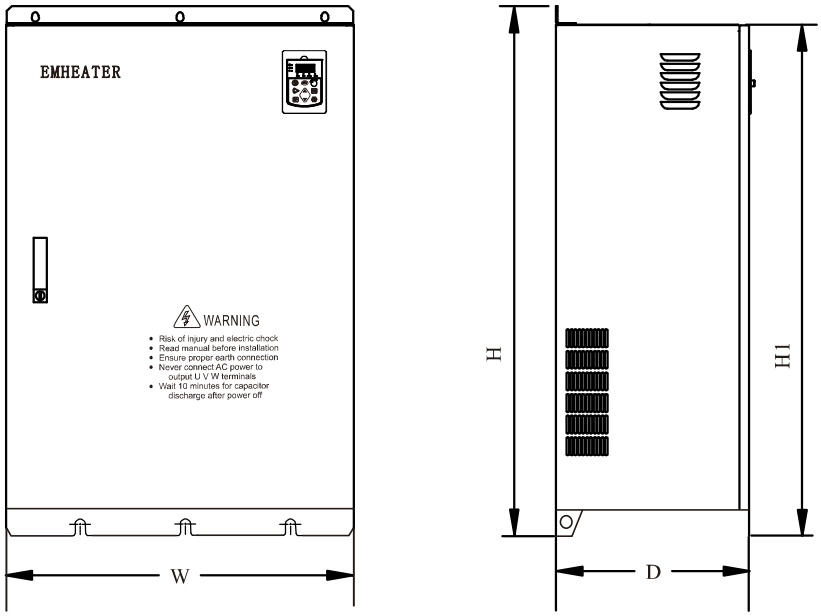

Diagram 2-6 Appearance and installation dimension of EM12 series (Cabinet structure)