EP66

FREQUENCY INVERTER

0.4kW - 90kW / 0.5HP - 120HP

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FREQUENCY INVERTER

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HIGHLIGHTS

DSP based high-tech motor control concept, suitable for V/Hz, SENSORLESS VECTOR, PMM synchronous motor control,SPEED/TORQUE control mode

Intelligent AUTOTUNING functions for quick and easy set-up

Rugged construction, IP66/NEMA 4X

Flexible configurable 4 line character display – ready for any common field bus

Removable cable conduit plate, including vent with humidity barrier

Space inside the drive for customer options like, main/emergency switch, start/stop selectors, potentiometer and brake resistor

Optional BYPASS switch built in

C3 class filter standard – optional C1 EMC filter build in for 1. Environment (residential area)

All standard inverter functions built in, to make it suitable for various industrial,civil,and retrofit applications

Smart PC-tools, for inverter control, parametrization and troubles hooting. parameter-duplication stick

Ready for the worldwide market, due to approved international standards

Naming rule

Model naming rule

EP66 - 0007 T3 I1

Mark	Structure Code
I1～I6	Frame Size

Mark	Input Power Type
S2	1-phase 220~240VAC
T2	3-phase 220~240VAC
T3	3-phase 380~480VAC

Motor power

Mark	0007	0015	0022	......
Motor power(kW)	0.75	1.5	2.2	......

Product series：EP66

Function naming rule

U5 F15 AD01 B1 R3

	Mark		Note
Filter	R3	EMC C3 level filter	Note 1
Braking mode	B1	Dynamic braking	Note 2
Keypad type	AD01	Segment LCD	Note 3
Communication	F15	Modbus terminal block	Note 4
Certificate type	U5	UL+CE	Note 4

Note 1: R3: EMC C3 level, test condition: power cable is 25m shielded wire.

Note 2: Dynamic braking: The inverter model for S2 and T2 is optional; The inverter model for T3:

Standard (≤15kW); Optional (≥18.5kW)

Note 3: EP66 supports 4 kinds of keypad type, user can select as needed;

Keypad code	Keypad definition
AD01	AD English 1-line LCD keypad without potentiometer
AD02	AD English 4-line LCD keypad without potentiometer

Note 4: certification and communication type

Structure code	Certificate	Certificate code	Communication	Communication code
I1～I3	U5	CE+UL	F2	Modbus
	U1	CE	F15	CAN communication (free protocol) +Modbus
I4～I6	U1	CE	F15	CAN communication (free protocol) +Modbus

Technical Specifications

Items		Contents
Input	Rated Voltage Range	T3 380V-480V +10%/-15%； S2/T2 220V-240V ±15%
	Rated Frequency	50/60Hz
Output	Rated Voltage Range	3-phase 0-Input
	Frequency Range	0.50～650.0Hz
Control Mode	Carrier Frequency	800~16000Hz; Fixed carrier-wave and random carrier-wave can be selected by F159.
	Input Frequency Resolution	Digital setting: 0.01Hz; Analog setting: Max frequency 0.1%
	Control Mode	Sensorless Vector Control (open-loop vector control) V/F control, PMSM sensorless vector control
	Start Torque	0.5 Hz / 150% (SVC), 5% of rated speed / 100% of rated torque (PMSM)
	Speed-control Scope	1:100 (SVC), 1:20 (PMSM)
	Steady Speed Precision	±0.5%（SVC）
	Torque Control Precision	±5%（SVC）
	Overload Capacity	150% rated current, 60 seconds.
	Torque Elevating	Auto torque promotion, manual torque promotion includes 1-20 curves.
	V/F Curve	3 kinds of modes: beeline type, square type and under-defined V/F curve.
	Startup mode	Direct startup, speed track startup (V/F control)
	DC Braking	DC braking frequency: 0.2~50.00 Hz, braking time: 0.00~30.00s
	Jogging Control	Jogging frequency range: Min frequency~ Max frequency, Jogging acceleration/ deceleration time: 0.1~30.00s
	Auto Circulating Running and multi-stage speed running	Auto circulating running or terminals control can realize 15-stage speed running.
	Built-in PID adjusting	Easy to realize a system for process closed-loop control
	Auto voltage regulation (AVR)	When the source voltage changes, the modulation rate will be adjusted automatically, resulting in an unchanged output voltage
Operation Function	Frequency Setting	Potentiometer or external analog signal (0～5V, 0～10V, 0～20mA); keypad (terminal)▲ / ▼ keys, external control logic and automatic circulation setting.
	Start/Stop Control	Terminal control, keypad control or communication control.
	Running Command Channels	3 kinds of channels from keypad panel, control terminal and MODBUS.
	Frequency Source	Frequency sources: given digit, given analog voltage, given analog current and given MODBUS
	Accessorial frequency Source	6 kinds of accessorial frequency
Optional	Built-in EMI filter, built-in braking unit, Modbus, tele-control panel	
Protection Function	Input phase loss, Output phase loss, input under-voltage, DC over-voltage, over-current, inverter over-load, motor over-load, current stall, over-heat, external disturbance, under-load, pressure control, analog line disconnected, oPEn fault, STO function.	
Display	Output frequency, rotate-speed (rpm/min), output current, output voltage, DC bus voltage, PID feedback value, PID setting value, linear-velocity, types of faults, and parameters for the system and operation; LED indicators showing the current working status of inverter.	
Environment Conditions	Equipment Location	In harsh conditions, prevent dust of other thing from entering inverter totally. Completely protected against jets of water and heavy waves. Meeting EN 60529 standard.
	Environment Temperature	-10℃～+40℃

Items		Contents
Environment Conditions	Vibration Strength	Below 0.5g (acceleration)
	Height above sea level	1000m or below (derating use if higher than 1000m)
Protection level		IP66/NEMA 4X
Class of pollution		PD2
Applicable Motor		0.4～90kW

Functions of Control Terminals

Terminal	Type	Description	Function	
DO1	Output signal	Multifunctional output terminal 1	When token function enabled, the value between this terminal and CM is 0V, 24V when disabled; The max output frequency is 100KHz when high-frequency output; DO1 is high frequency output and it is not recommended to use intermediate relay.	The functions of output terminals shall be defined per manufacturer's value. Their initial state may be changed through changing function codes.
DO2		Multifunctional output terminal2	When the token function is valid, the value between this terminal and CM is 0V; when disabled, the value is 24V.	
TA		Relay contact	TC is a common point, TB-TC are normally closed contacts, TA-TC are normally open contacts. The contact capacity of 15Kw and below 15Kw inverter is 10A/125VAC, N0/NC 3A or 250VAC/30VDC.	
TB				
TC				
AO1[note1]	Analog output	Running frequency	It is connected with frequency meter, speedometer or ammeter externally, and its minus pole is connected with GND. See F423～F426 for details.	
AO2[note1]		Current display	It is connected with ammeter externally, and its minus pole is connected with GND. See F427～F430 for details.	
10V	Analog power supply	Self contained power supply	Internal 10V self-contained power supply.When used externally,it can only be used as the power supply for voltage control signals with restricted current below 20mA.	
AI1[note2]	Input Signal	Voltage analog input port	When analog speed control is adopted, the voltage signal is inputted through this terminal. The range of voltage input is 0～10V, grounding: GND. When potentiometer speed control is adopted, this terminal is connected with center tap, earth wire to be connected to GND.	
AI2[note2]		Voltage / Current analog input port	When analog speed control is adopted, the voltage or current signal is input through this terminal. The range of voltage input is 0~5V or 0~10V and the current input is 0～20mA, the input resistor is 500Ohm, and grounding: GND. If the input is 4～20mA, it can be realized through adjusting parameter F406. The voltage or current signal can be chosen by coding switch. See table 4-2 for details, the current channel (0-20mA) is chosen before delivery.	
24V	Power supply	Control power supply	Power: 24±1.5V, grounding is CM; current is restricted below 50mA for external use.	
CM	Common port	Grounding of control power supply	The grounding of 24V power supply and other control signals.	
DI1	Digital input control terminal	Jogging terminal	When this terminal is valid, the inverter will have jogging running. The jogging function of this terminal is valid under both at stopped and running status. This terminal can also be used as high-speed pulse input port. The max frequency is 50K.	The functions of input terminals shall be defined per manufacturer's value. Other functions can also be defined by changing function codes.
DI2		External Emergency Stop	When this terminal is valid, "ESP" malfunction signal will be displayed.	
DI3		"FWD" Terminal	When this terminal is valid, inverter will run forward.	
DI4		"REV" Terminal	When this terminal is valid, inverter will run reversely.	
DI5		Reset terminal	Make this terminal valid under fault status to reset the inverter.	
DI6		Free-stop	Make this terminal valid during running can realize free stop.	
DI7[note3]		Running terminal	When this terminal is in the valid state, inverter will run by the acceleration time.	
DI8[note3]		Stop terminal	Make this terminal valid during running can realize stop by the deceleration time.	

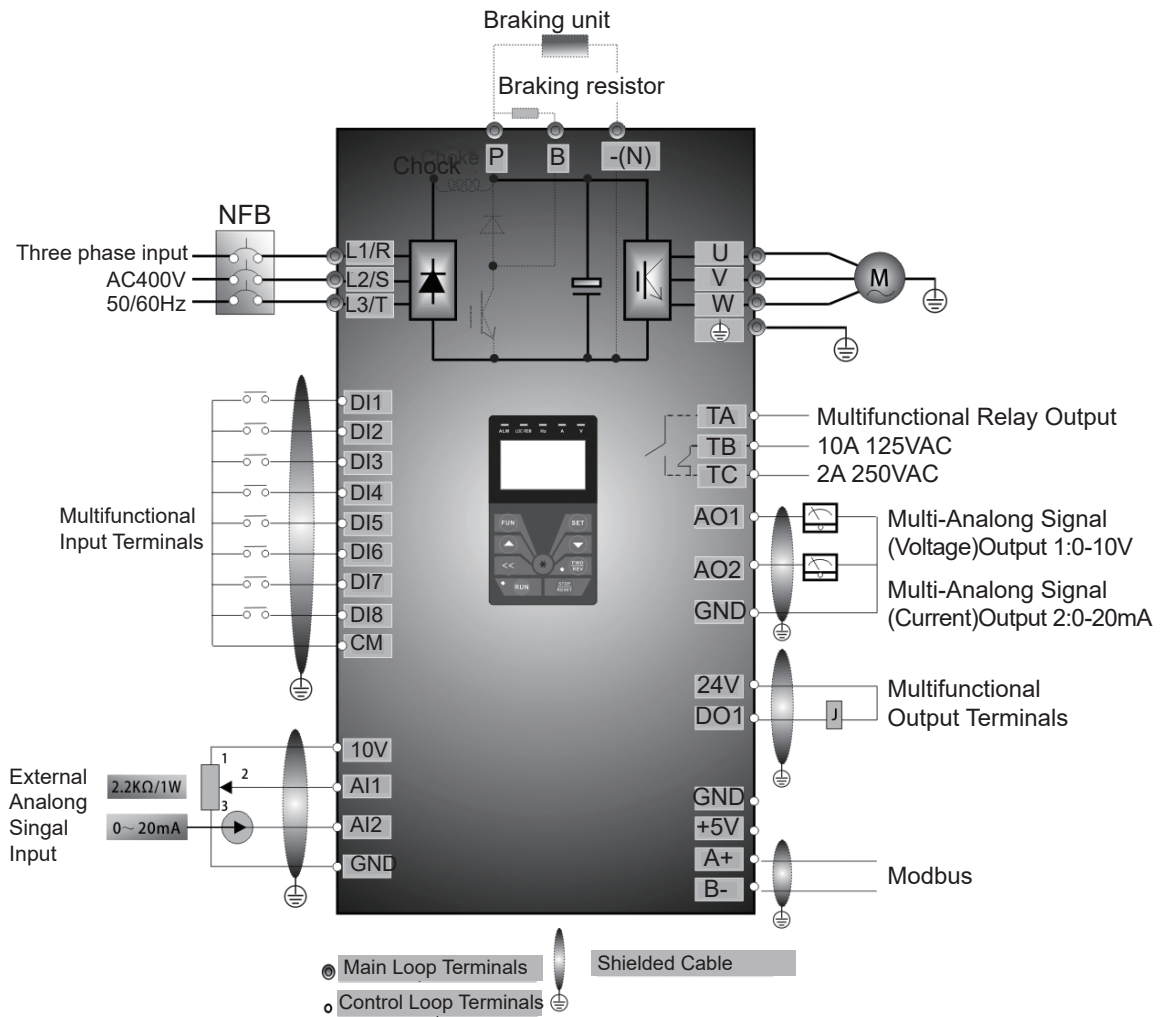| Terminal	Type	Description	Function
GND	Analog grounding	Self-contained Power supply Ground	Ground terminal of external control signal (voltage control signal or current source control signal) is also the ground of 10V power supply of this inverter.
+5V	Power	Self-contained power	Grounding for digital signal
A+	485 communication terminals	Positive polarity of differential signal	Standard: TIA/EIA-485(RS-485) Communication protocol: Modbus Communication rate: 1200/2400/4800/9600/19200/38400/57600bps
B-		Negative polarity of Differential signal	

Note:

1.AO1 can output voltage and current signal, and AI2 can only output current.

2.AI1 can only accept voltage signal, AI2 can only accept voltage signal and current signal.

3.15 kW and below 15 kW inverters have no DO2, AO2, DI7 and DI8 terminals.

TA	TB	TC	DO1	24V	CM	DI1	DI2	DI3	DI4	DI5	DI6	10V	AI1	AI2	GND	AO1

TA	TB	TC	DO1	DO2	24V	CM	DI1	DI2	DI3	DI4	DI5	DI6	DI7	DI8	+10V	AI1	AI2	GND	AO1	AO2

GND	+5V	A+	B-

Product List

Model	Rated current	Remote Keypad	Structure code	Weight (kg)	Dmensions (W×H×D-mm)	Cooling mode	Remarks
EP66-0004S2	0.4kW-2.5A-0.3HP		I1	6.2	200×412×198	Self cooling	1-phase plastic hanging
EP66-0007S2	0.75kW-4.5A-1HP		I1	6.2	200×412×198	Self cooling	
EP66-0015S2	1.5kW-7A-2HP		I1	6.2	200×412×198	Self cooling	
EP66-0022S2	2.2kW-10A-3HP		I1	6.2	200×412×198	Air cooling	
EP66-0004T2	0.4kW-2.5A-0.5HP		I1	6.2	200×412×198	Self cooling	3-phase plastic hanging
EP66-0007T2	0.75kW-4.5A-1HP		I1	6.2	200×412×198	Self cooling	
EP66-0015T2	1.5kW-7A-2HP		I1	6.2	200×412×198	Self cooling	
EP66-0022T2	2.2kW-10A-3HP		I1	6.2	200×412×198	Air cooling	
EP66-0004T3	0.4kW-1.2A-0.5HP		I1	6.2	200×412×198	Self cooling	
EP66-0007T3	0.75kW-2A-1HP		I1	6.2	200×412×198	Self cooling	
EP66-0015T3	1.5kW-4A-2HP	AD-A-1 Or AD-A-2	I1	6.2	200×412×198	Self cooling	
EP66-0022T3	2.2kW-6.5A-3HP		I1	6.2	200×412×198	Air cooling	
EP66-0030T3	3.0kW-7A-4HP		I1	6.2	200×412×198	Air cooling	
EP66-0040T3	4.0kW-9A-5.5HP		I1	6.2	200×412×198	Air cooling	
EP66-0055T3	5.5kW-12A-7.5HP		I2	8.2	242×418×198	Air cooling	
EP66-0075T3	7.5kW-17A-10HP		I2	8.2	242×418×198	Air cooling	
EP66-0110T3	11kW-23A-15HP		I3	11.3	242×471×228	Air cooling	
EP66-0150T3	15kW-32A-20HP		I3	11.3	242×471×228	Air cooling	
EP66-0185T3	18.5kW-38A-25HP		I4	25	242×650×325	Air cooling	3-phase metal hanging
EP66-0220T3	22kW-44A-30HP		I4	25	242×650×325	Air cooling	
EP66-0300T3	30kW-60A-40HP		I4	25	242×650×325	Air cooling	
EP66-0037T3	37kW-75A-50HP		I5	40	308×680×379	Air cooling	
EP66-0450T3	45kW-90A-60HP		I5	40	308×680×379	Air cooling	
EP66-0550T3	55kW-110A-75HP		I5	40	308×680×379	Air cooling	
EP66-0750T3	75kW-150A-100HP		I6	57	370×770×404	Air cooling	
EP66-0900T3	90kW-180A-120HP		I6	57	370×770×404	Air cooling	

Wiring diagram

Braking unit

Braking resistor

Chock

P   B   -(N)

NFB

Three phase input
AC400V
50/60Hz

L1/R
L2/S
L3/T

U
V
W

M

DI1
DI2
DI3
DI4
DI5
DI6
DI7
DI8
CM

Multifunctional
Input Terminals

TA — Multifunctional Relay Output
TB — 10A 125VAC
TC — 2A 250VAC

AO1 — Multi-Analong Signal (Voltage)Output 1:0-10V

AO2
GND — Multi-Analong Signal (Current)Output 2:0-20mA

24V
DO1 — Multifunctional Output Terminals

10V
AI1
AI2
GND

External
Analong
Singal
Input

2.2KΩ/1W

0～20mA

GND
+5V
A+
B- — Modbus

⦾ Main Loop Terminals   Shielded Cable
○ Control Loop Terminals

Basic Wiring Diagram for Three-phase AC drives (NPN type)

Note:

1. Connect power terminals L1 and L2 with power grid for single-phase inverters.

2. Remote-control panels are connected with 8 core telephone wire. 485 communication port is on the control terminals.

3. 485 communication port has built-in standard MODBUS communication protocol. The terminal sequence is GND, +5V, A+, B-.

4. Inverter(≤15kW) has 6 multifunctional input terminals DI1~DI6.

5. The contact capacity of inverter is 10A/125VAC, NO/NC: 3A 250VAC/30VDC.