Persist in our goals, energy technology

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V20.10

ENA100 series

General vector inverter

Shenzhen Encom Electric Technologies CO.,LTD.

About ENCOM

Shenzhen ENCOM Electric Technology Co., Ltd. is a national high-tech enterprise with independent intellectual property rights. We focus on the R&D, Production and Sales of products in the field of industrial automation. Our main products include Frequency Inverter, Servo, PLC, and Solar Pumping Systems, etc. Founded in the year 2004, ENCOM has passed ISO9001:2015 quality management system certification, EU, CE certification, won national innovation fund, Shenzhen strategic emerging industry fund, product innovation award, the most investment value award and other honors, and won the title of "top 10 domestic brands of low-voltage frequency inverters" for many times. We invested more than RMB100 million to establish our own technology park, total building area of 38,000 square meters. The park main business is R&D and manufacturing of high-tech industries such as electric drive, intelligent manufacturing and new energy. It has formed a smart manufacturing space integrating R&D, office, production and residence, built a unique green landscape, basketball court, leisure platform, multi-functional conference room, cultural activity center, public restaurant and necessary open space for supporting the park life, effectively meeting the work and life experience of high-end talents and enterprises in the Park.

TOP10 brand in China

ISO9001: 2015

CE

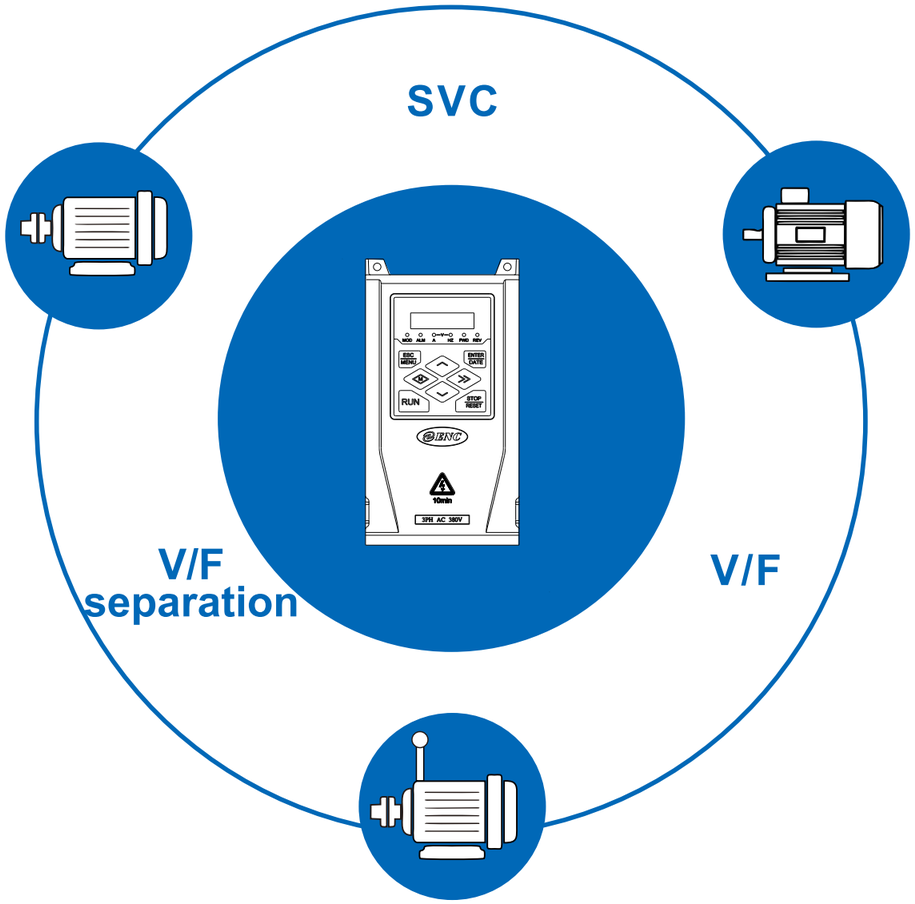
ENA100 series

General vector inverter

ENA100 is a cost-effective universal vector inverter with a power range of 0.4KW to 75KW. Built-in macro functions for typical industry applications, which greatly facilitates customer to operate. Models below 30KW are equipped with a built-in braking unit as standard. Suitable for higher ambient temperature occasions.It is widely used in various fields such as fans and pumps, textiles and other machinery, and stone and other processing.

- Compact design Rational use of space
- Advanced control technology
- EMC design Strong anti-interference ability
- Quick installation Simple & convenient
- Stable & reliable sending waveform technology
- Motor Parameter self-learning

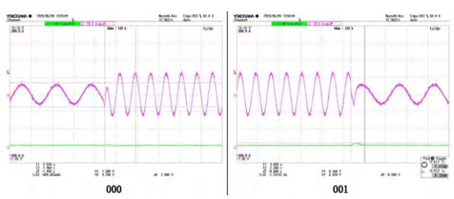
Control algorithm



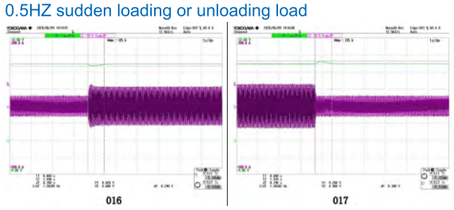
Dynamic response

- ☐ Torque response:
  ≤20ms (without PG quantity control)
- ☐ Starting torque:
  1.0Hz, 150% rated torque (V/F control)
  0.5Hz up to 180% torque (No PG open loop vector)
- ☐ Control accuracy:
  ±1% rated synchronous speed (V/F control)
  ±0.3% rated synchronous speed (No PG quantity control)

22KW electric state as below



0.5HZ sudden loading or unloading load



60HZ sudden loading or unloading load

Two-in-one drive

- ☐ Motor type: can drive both synchronous and asynchronous motors
- ☐ One-key switch between synchronous motor and asynchronous motor, convenient for debugging
- ☐ Convenient stocking, effectively shorten the cycle of the library
- ☐ ENA100 supports both synchronous and asynchronous motors

Synchronous motors + Asynchronous motors = ENA100 supports both synchronous and asynchronous motors

Convenient and practical keyboard

The simultaneous use of ENA100 local and remote control keyboard

- ☐ Support dual keyboard display
- ☐ Support the simultaneous use of local keyboard and external control keyboard
- ☐ External external control keyboard can realize parameter upload and download function
- ☐ The local keyboard and external control keyboard of traditional inverter can only one to use, ENA100 local and external control keyboard can be used simultaneously

☐ Built-in multiple application macros, only need to set one parameter for different industries

- F00.24=0
- F01.15=0
- F01.00=2
- F01.17=25

... ...

The conventional inverter set a total of 24 parameters

F09.49=1(Air compressor)

- F01.15=1
- F01.00=1
- F01.17=25
- F01.18=30

... ...

The conventional inverter set a total of 23 parameters

F09.49=2(Extruder)

- F01.15=0
- F11.00=1
- F12.00=1
- F01.13=3

... ...

For water pump, The conventional inverter need to set a total of 32 parameters in the past inverter

For draught fan, The conventional inverter need to set a total of 17 parameters in the past inverter

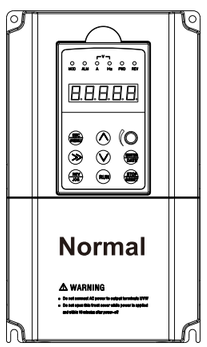
F09.49=3/4
(Draught fan & Water pump)

No derating at 50℃ and below

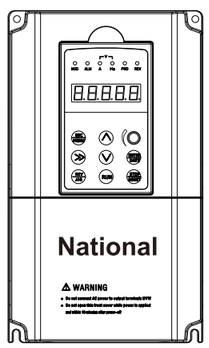
☐ Passed many rigorous tests: salt spray test, high and low temperature impact test, vibration test, etc.

☐ Normal inverter is 30℃, national standard temperature is 40℃, ENA100 is 50℃

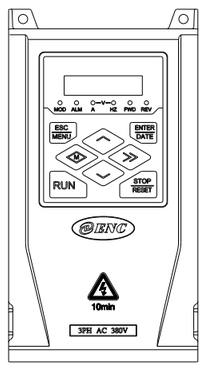
30℃



40℃



50℃



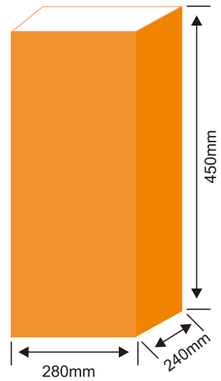
The difference of power section:

Conventional general series power section ：0.4KW～55KW
ENA100 series power section：0.4KW～75KW

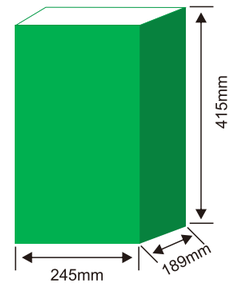
Brake unit:

Conventional general series:
Three-phase 380V, 0.75KW~15KW is built-in brake unit
Three-phase 380V, 18.5KW~55KW is optional built-in brake unit
ENA100 series:
Single-phase 220V, 0.4KW~2.2KW is built-in brake unit
Three-phase 380V, 0.75KW~22KW is built-in brake unit
Three-phase 380V, 30KW~75KW, need to be equipped with external brake unit in advance

Conventional general inverter 30KW

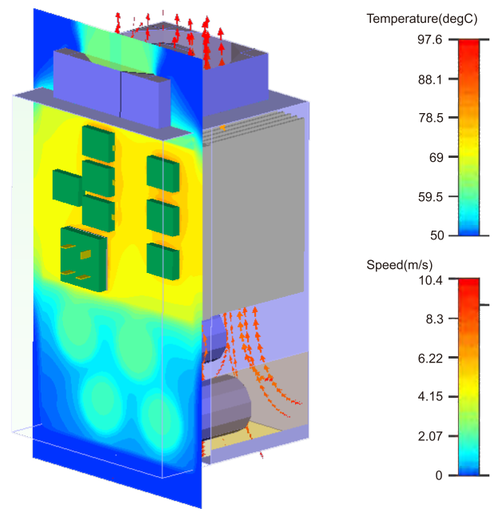


ENA100-4T0300



※The ENA100 series compared with conventional general series
The maximum reduction of volume to the same power model is more than 36%

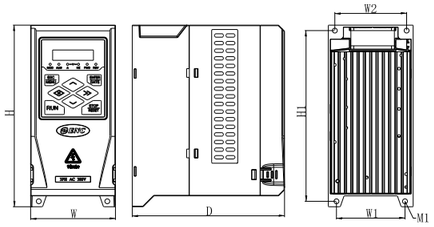
Safe and reliable independent air flue



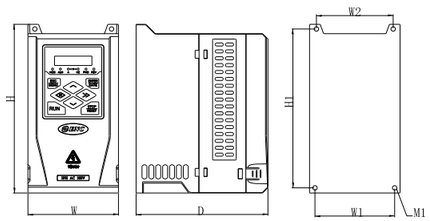
Item			Item description
Input	Rating volt., frequency		1 phase 220V Grade：1 phase 220V, 50Hz/60Hz 3 phase 380V Grade：3 phase 380V, 50Hz/60Hz
	Allowed volt. range		1 phase 220V Grade：200～260V 3 phase 380V Grade：320～460V
Output	Voltage		0～Iuput voltage
	Frequency		0～600HZ
	Over loading capacity		Heavy Load：150% of rated current for 1minute; Light Load：120% of rated current for 1 minute.
Control performance	Control mode		Without PG vector control, open loop V/F control, Without PG torque control, support synchronous and asynchronous motors
	Velocity control precision		±0.3% rated synchronous speed(vector control)； ±1% rated synchronous speed(V/F control)；
	Speed regulation range		1:100（vector control）； 1:50（V/F control）；
	Start-up torque		1.0Hz:150% rated torque(V/F control)； 0.5Hz:150% rated torque (vector control)；
	Speed fluctuation		±0.3% rated synchronous speed (Without PG vector control, Without PG torque control)；
	Torque response		⩽20ms(vector control)；
	Frequency precision		Digital setting:max. frequency×±0.01%； Analog setting:max.frequency×±0.5%
	Frequency resolution	Analog setting	0.1% of max. frequency
		Digital setting precision	0.01Hz
		Exterior impulse	0.1% of max. frequency
	Torque boost		Automatic torque boost； manual torque boost 0.1～12.0%
	V/Fcurve (volt. Frequency characteristic)		Setting rated frequency at the range of 5～600Hz, by choosing constant torque, degressive torque 1， degressive torque 2, degressive torque 3， self-defined V/F total 5 kinds of curve.
	Acceleration Deceleration curve		Two methods: linear acceleration and deceleration and S curve acceleration and deceleration; 15 kinds of acceleration and deceleration time, time unit (0.01s, 0.1s, 1s)
	Brake	Power consumption brake	ENA100 series three-phase 22KW and below power section has built-in braking unit, only need to add braking resistor between (+) and PB; 30KW and above can connect external braking unit between (+) and (-) to achieve Energy consumption braking.
		DC brake	Start, stop action for option, action frequency 0～15Hz, action current 0～100% of rated current, action time 0～30.0s
	Jog		Jog frequency range：0Hz～up limit frequency；jog acceleration and deceleration time 0.1～6000.0 seconds for setting.
	Multi-section speed run		Realized by inbuilt PLC or control terminal; with 15 section speed, each section speed with separately acceleration and deceleration time; with inbuilt PLC can achieve reserve when power down.
	Built-in PID controller		Convenient to make closed-loop control system
	Automatic energy saving run		Optimize V/F curve automatically to achieve power saving run according to the load status.
	Automatic voltage regulate(AVR)		Automatically keep output voltage constant, when the power grid voltage fluctuation
	Automatic current limiting		Current limited automatically under run mode in avoid of inverter over-current frequently to trip.

Item		Item description
	Carrier modulation	Modulate carrier wave automatically according to the load characteristic.
	Speed tracking restart	Make rotating motor smoothly start without shocking
Running function	Running command specified channel	Keypad specified, control terminal specified, communication specified can switch through various means.
	Running frequency specified channel	Main & auxiliary specified to a realize one main adjusting and one fine control. Digital specified, analog specified, pulse specified, pulse width specified, communication specified and others, which can be switched by many means at any time.
	Binding function	Run command channel and frequency specified channel can bind together randomly and switch synchronously
Input and Output characteristic	Digital input channel	5 general-purpose digital input channels, the maximum frequency is 1KHz, one of which can be used as a pulse input channel, the maximum input is 20KHz
	Analog input channel	2 analog input channels, of which AI1 is 0～10V output, AI2 channel is 0～20mA or 0～10V input optional.
	Pulse output channel	0.1 ～20KHz pulse square signal output to achieve settingfrequency, output frequency and other physical quantity output.
	Analog output channel	1 analog signal output, AO1 channel can choose 0～20mA or 0～10V to realize the output of physical quantities such as set frequency and output frequency1 analog signal output, AO1 channel can choose 0～20mA or 0～10V to realize the output of physical quantities such as set frequency and output
	Digital output	2 Y outputs, Y2 can achieve the highest frequency output of 20K, 1 Rel output
Unique function	Rapid current limit	Limit inverter over current to the greatest point, and make it run more stably
	Monopulse control	Suitable for working site where need one button to control inverter start and stop, first press to start, then press to stop, and that cycle repeats. Its very simple and reliable.
	Fixed length control	Realize fixed length control
	Timing control	Timing control function: setting time range 0.1Min～ 6500.0Min
	Virtual terminal	Five group virtual input & output IO can realize simply logical control
Keypad	Keypad display	The parameters as setting frequency, output frequency, output voltage, output current can be displayed
	Button Locked	Lock all or part of the buttons
	Dual keyboard operation	Can use external keyboard to achieve dual keyboard control (local and remote control)
Protection function		Motor power on Shot circuit test, input & output phase loss protection, over-current protection, over voltage protection, under voltage protection, over heat protection, overload protection, under load protection, relay absorption protection, terminal protection and no stop protection under power off.
Ambient	Application site	Indoor, not bare to sunlight, no dust, no corrosive gas, no flammable gas, no vapor, no water drop or salt etc.
	Altitude	Under 1000 meter.（above 1000 meter require to reduce volume to use, output current reduce about 10% of rated currenvolt per 1000 meter high）
	Environment temperature	-10℃～+50℃
	Environment humidity	Smaller than 95%RH，no drop condenses
	Vibration	Smaller than 5.9 M/S²(0.6g)
	Storage temperature	-40℃～+70℃
structure	Protection grade	Ip20
	Cooling mode	Forced air cooling and natural
Installation mode		Wall hanging and cabinet installation

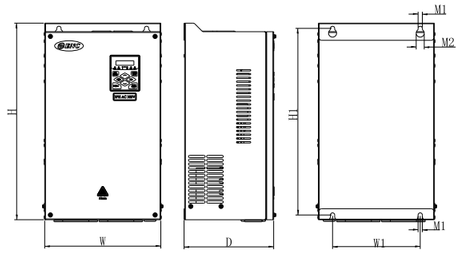
Installation dimension



(Fig. a)



(Fig. b)



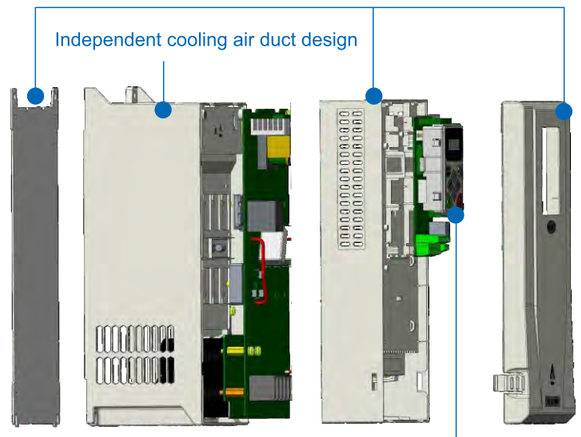
(Fig. c)

Model	H (mm)	H1 (mm)	W (mm)	W1 (mm)	W2 (mm)	D (mm)	M1 (mm)	M2 (mm)	Fig. No.
ENA100-2S0004	167	157	78	63	66	140	φ4.5	-	Fig. a
ENA100-2S0007									
ENA100-2S0015	171.5	161.5	92	81	78	134	φ4.5	-	Fig. b
ENA100-2S0022									
ENA100-4T0007	167	157	78	63	66	140	φ4.5	-	Fig. a
ENA100-4T0015									
ENA100-4T0022	171.5	161.5	92	81	78	134	φ4.5	-	Fig. b
ENA100-4T0037									
ENA100-4T0055	229	217	120	105	108	162	φ5.5	-	Fig. b
ENA100-4T0075									
ENA100-4T0110	291	276	160	144	141	180.5	φ6	-	Fig. b
ENA100-4T0150									
ENA100-4T0185	291	276	190	174	171	180	φ6.5	-	Fig. b
ENA100-4T0220									
ENA100-4T0300	415	394	245	185	-	189	φ9	φ17	Fig. c
ENA100-4T0370									
ENA100-4T0450	482	466	290	210	-	210	φ9	φ17	Fig. c
ENA100-4T0550									
ENA100-4T0750	482	466	333	220	-	205	φ9	φ17	Fig. c

Note: (These information is for reference only, please refer to the manual, if the product is changed, without notice.)

Product Architecture

Three-layer structure design of the whole machine



1 Display panel

2 Part of the application sites