

PURPOSE

Inverters of the FA-1F series are designed to control single-phase AC motors with auxiliary starting capacitor.

# FA-1F004 ÷ FA-1F022

KEY FUNCTIONS

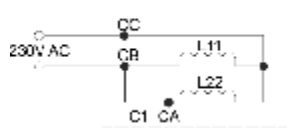
- \* ability to change the direction of the motor rotation;
- \* ability to adjust the rotational speed in the range of 0 to 400 Hz;
- \* high torque at low rotational speeds;
- \* great freedom of programming inputs and outputs, both digital and analog;
- \* PLC mode - the ability to program up to seven operations performed once or cyclically by the inverter. For each of the steps, you can determine speed, acceleration/deceleration time and duration;
- \* multi-function operator panel with the ability of dismantling and connecting on the outside of the inverter.



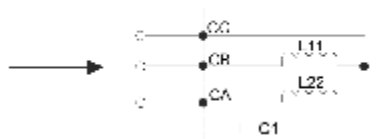
FA-1F004

WARNING!

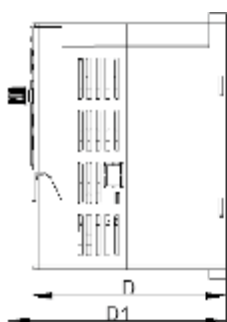
Before connecting the single-phase motor, it is necessary to change the internal wiring to eliminate the starting capacitor.



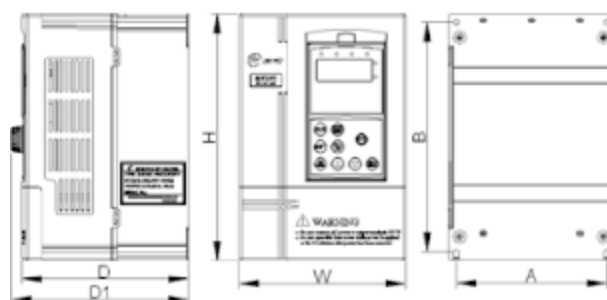
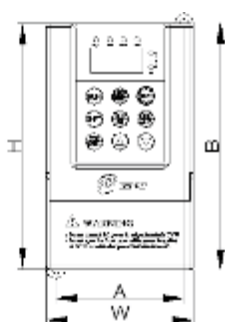
Typical scheme of single-phase motor with starting capacitor



Modified wiring of the engine



FA-1F004, FA-1F007, FA-1F015 inverters

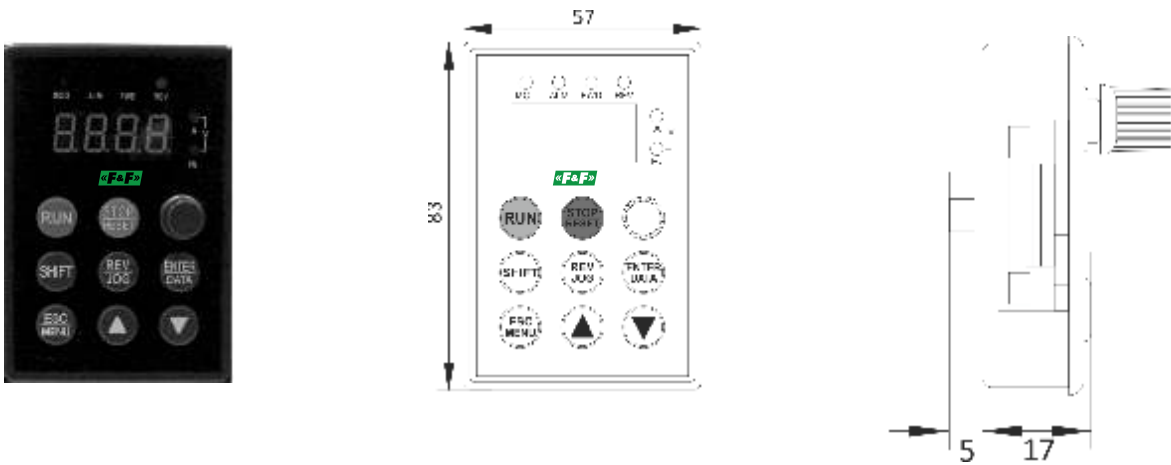


FA-1F022 inverter

TYPES

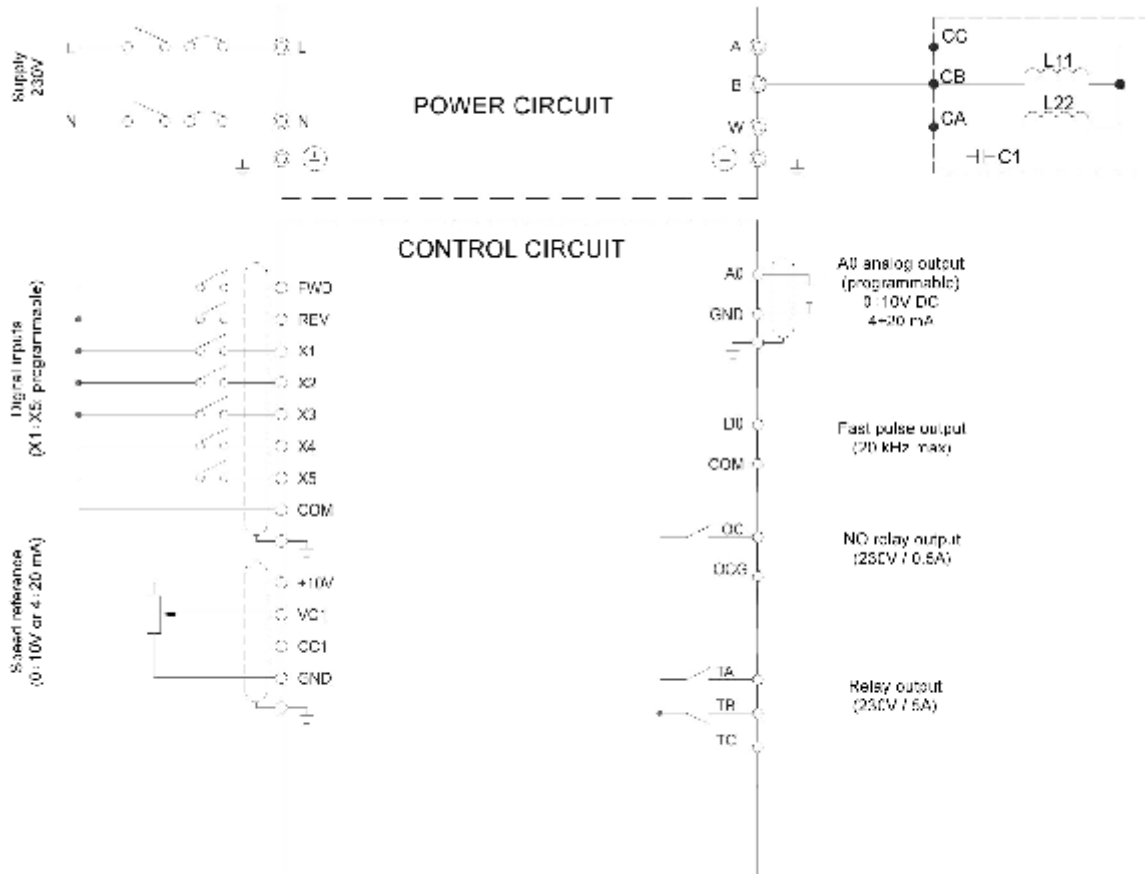
Inverter type	Input voltage V	Power input kVA	Output voltage V	Output current A	Motor power max kW	Height H mm	Width W mm	Depth D mm
FA-1F004	1×230V	1.1	1×230V	4A	0.4kW	141.5	85	112.5
FA-1F007	1×230V	1.8	1×230V	7A	0.7kW	141.5	85	112.5
FA-1F015	1×230V	2.8	1×230V	10A	1.5kW	141.5	85	112.5
FA-1F022	1×230V	3.8	1×230V	16A	2.2kW	230	155	155

CONTROL PANEL



Control panel is detachable from the main body of the inverter. This allows for external mounting on a switchboard door for quick access to settings and adjustment of the parameters of the inverter.

IN/OUT DESCRIPTION



## SPECIFICATIONS

Function		Technical data
Power supply	Voltage and frequency	1× 230V (±10%), 50/60Hz (±5%)
	Output voltage	230V
	Output frequency	0.00÷400 Hz
	V/F control characteristic	1) Constant torque characteristics 2) Reduced torque characteristics 3) SVPWM vector control
	Starting torque	100% for 0.50 Hz
	Speed control dynamics	1: 100
	Speed control dynamics	±0.5%
	Torque boost	Automatic or defined by the user (0.1÷20%)
	Acceleration/deceleration	Linear characteristic or in accordance to program curve S
	Accuracy frequency reference	Digital frequency reference: 0.01Hz Analog frequency reference: 1% of maximum frequency
	Overload	1) 150% rating current for 1 minute 2) 200% rating current for 0.5 sec
Protection	Inverter protection	1) Against too high and too low power voltage 2) Against exceeding the maximum current 3) Against too high load 4) Against inverter overheating
	Safety switch	Input or button can be programmed as a safety switch that will immediately cut off the voltage from the outputs of the inverter
	Settings protection	Inverter settings can be protected with PIN number
Braking	Deceleration using DC and the external braking resistor	
IO	2 digital inputs: FWD and REV	Two digital inputs to which are permanently assigned commands of operating forwards (FWD) and reverse (REV)
	5 digital inputs	1) Universal, programmable digital inputs – ability to assign up to 40 different functions to each input. 2) The X5 input can be configured to operate as a quick pulse input.
	1 analog input	1) They can work both as voltage outputs (0÷10V) and current outputs 4÷20mA (Selectable via a switch on the main board of the inverter). 2) The analog input can be used for setting rotational speed of the motor.
	1 analog output	1) They can work both as voltage outputs (0÷10V) and current outputs 4÷20mA (Selectable via a switch on the main board of the inverter) 2) Analog outputs can be programmed to indicate: a. preset and current frequency b. output current and voltage c. voltage on DC bus d. temperature of IGBT terminal power e. PID regulator setpoint f. values of the feedback of the PID controller

IO	1 fast transistor output	<p>1) Fast pulse outputs (frequency: 20 kHz max). Indications:</p> <ul style="list-style-type: none"> <li>a. preset and current frequency</li> <li>b. current and output voltage</li> <li>c. voltage on DC bus</li> <li>d. temperature of IGBT terminal power</li> <li>e. PID controller setpoint</li> <li>f. values of the feedback of the PID controller</li> </ul> <p>2) Transistor load – 20 mA / 27 V max</p>
	2 relay outputs 5A	<p>1) The output relay for signaling failure of the inverter 2) Load capacity of contact 5 A/250 V AC or 5 A/30 V DC</p>
	2 relay outputs	<p>1) Universally program relay output for indicating, among other things:</p> <ul style="list-style-type: none"> <li>a. operation of the drive</li> <li>b. operational readiness of the drive</li> <li>c. reaching the preset frequency</li> <li>d. inverter error</li> <li>e. notification of external error</li> <li>f. operation in PLC mode</li> <li>g. other</li> </ul> <p>T contact load - 5A/250 V AC OC contacts load - 0.5A/250 AC</p>
Speed adjustment	<p>1) Wide range of speed settings, including combinations of digital inputs, analog inputs, potentiometer and keys on control panel, pulse inputs and motopotentiometer 2) Multi-speed - user can set 16 different speeds and eight times of acceleration/deceleration 3) PLC mode - user can define sequences of up to eight steps that will be automatically executed by the inverter. For each step user can define motor speed, acceleration/deceleration time and the duration of the step, as well as whether the sequence is to be executed once or in a loop.</p>	
PID	<p>Built-in PID regulator increases the ability to match the drive operation to the requirements of the technological process. Preset value and feedback signal can be entered from one of the following sources:</p> <ul style="list-style-type: none"> <li>1) Control panel (keys or potentiometer)</li> <li>2) Analog input</li> <li>3) Digital input</li> <li>4) Pulse input</li> </ul>	
Environmental conditions	Working temperature	-10°C ÷ 40°C. If the temperature exceeds 40°C, then maximum output current is reduced by 1% with each additional °C
	Storage	-20÷65°C
	Humidity	Below 90%, without humidity condensation
	Height	0÷1000 m
	Assembly	Installation in a vertical position inside the control cabinet with good ventilation and on the mounting plate made of non-combustible material. Mounting method must also protect the inverter from direct sunlight, dust, humidity and corrosive or explosive gases.
	Ventilation	Cooling by natural and forced air flow