

VFD - E700 Series Specifications

The cost-effective variable speed control solution for *centrifugal pumps*.

- Available in 240V and 480V up to 20HP
- Advanced Magnetic Flux Vector Control for improved starting torque and smooth low speed motor operation
- Auto-tuning allows improved performance using virtually any manufacturer's motor
- All capacities include built-in brake chopper
- USB communications allow fast commissioning and troubleshooting
- Standard RS485 serial communications supporting Modbus® RTU
- Sink / Source selectable I/O
- Supports remote I/O function via network
- Built-in PID Control
- Delivers rated current at 50°C and 14.5kHz carrier frequency with minimal de-rating
- 200% overload for 3 seconds
- 0 to 10V analog output
- CC-Link®, DeviceNet™, Profibus-DP, LonWorks®
- UL Listed for single-phase input
- Standard 5-year warranty



E700 Selection & Dimensions

Output Amps	HP	Model Number (*1)	Dimensions in inches (mm)			Weight Lbs (kg)	Stock
			Height	Width	Depth		
3-Phase 200~240VAC Input & Output							
0.8	1/8	FR-E720-008-NA	5.0 (128)	2.7 (68)	3.2 (81)	1.1 (0.5)	S
1.5	1/4	FR-E720-015-NA	5.0 (128)	2.7 (68)	3.2 (81)	1.1 (0.5)	S
3	1/2	FR-E720-030-NA	5.0 (128)	2.7 (68)	4.5 (113)	1.6 (0.7)	S
5	1	FR-E720-050-NA	5.0 (128)	2.7 (68)	5.3 (133)	2.2 (1.0)	S
8	2	FR-E720-080-NA	5.0 (128)	4.3 (108)	5.4 (136)	3.1 (1.4)	S
11	3	FR-E720-110-NA	5.0 (128)	4.3 (108)	5.4 (136)	3.1 (1.4)	S
17.5	5	FR-E720-175-NA	5.0 (128)	6.7 (170)	5.7 (143)	3.8 (1.7)	S

Output Amps	HP	Model Number (*1)	Dimensions in inches (mm)			Weight Lbs (kg)	Stock
			Height	Width	Depth		
24	7 1/2	FR-E720-240-NA	10.3 (260)	7.1 (180)	6.5 (165)	9.5 (4.3)	S
33	10	FR-E720-330-NA	10.3 (260)	7.1 (180)	6.5 (165)	9.5 (4.3)	S
47	15	FR-E720-470-NA	10.3 (260)	8.7 (220)	7.5 (190)	19.9 (9)	S
60	20	FR-E720-600-NA	10.3 (260)	8.7 (220)	7.5 (190)	19.9 (9)	S
3-Phase 380~480VAC Input & Output							
1.6	1/2	FR-E740-016-NA	5.9 (150)	5.5 (140)	4.5 (114)	3.1 (1.4)	S
2.6	1	FR-E740-026-NA	5.9 (150)	5.5 (140)	4.5 (114)	3.1 (1.4)	S
4	2	FR-E740-040-NA	5.9 (150)	5.5 (140)	5.4 (135)	4.2 (1.9)	S
6	3	FR-E740-060-NA	5.9 (150)	5.5 (140)	5.4 (135)	4.2 (1.9)	S
9.5	5	FR-E740-095-NA	5.9 (150)	5.5 (140)	5.4 (135)	4.2 (1.9)	S
12	7 1/2	FR-E740-120-NA	5.9 (150)	8.7 (220)	5.8 (147)	7.1 (3.2)	S
17	10	FR-E740-170-NA	5.9 (150)	8.7 (220)	5.8 (147)	7.1 (3.2)	S
23	15	FR-E740-230-NA	10.3 (260)	8.7 (220)	7.5 (190)	19.9 (9)	S
30	20	FR-E740-300-NA	10.3 (260)	8.7 (220)	7.5 (190)	19.9 (9)	S

Note:

1. For single-phase input, derate output current by 30%.

E700 Series General Specifications

Control Specifications	Control Method		Soft-PWM control/high carrier frequency PWM control (V/F control, advanced magnetic flux vector control, general-purpose magnetic flux vector control, optimum excitation control can be selected)
	Output Frequency Range		0.2 to 400Hz
	Frequency Setting Resolution	Analog Input	0.06Hz/60Hz (terminal2, 4: 0 to 10V/10bit) 0.12Hz/60Hz (terminal2, 4: 0 to 5V/9bit) 0.06Hz/60Hz (terminal4: 4 to 20mA/10bit)
		Digital Input	0.01Hz
	Frequency Accuracy	Analog Input	Within $\pm 0.5\%$ of the max. output frequency (25°C $\pm 10^\circ\text{C}$)
		Digital Input	Within 0.01% of the set output frequency
Voltage/Frequency			Base frequency can be set from 0 to 400Hz Constant torque/variable torque

	Characteristics		pattern can be selected	
	Starting Torque		200% or more (at 0.5Hz) when advanced magnetic flux vector control is set (3.7K or less)	
	Torque Boost		Manual torque boost	
	Acceleration/Deceleration Time Setting		0.01 to 360s, 0.1 to 3600s (acceleration and deceleration can be set individually); linear or S-pattern acceleration/deceleration mode can be selected.	
	DC Injection Brake		Operation frequency (0 to 120Hz), operation time (0 to 10s), operation voltage (0 to 30%) variable	
	Stall Prevention Operation Level		Operation current level can be set (0 to 200% adjustable), whether to use the function or not can be selected	
Operation Specifications	Frequency Setting Signal	Analog Input	<u>Two points</u> Terminal 2: 0 to 10V, 0 to 5V can be selected Terminal 4: 0 to 10V, 0 to 5V, 4 to 20mA can be selected	
		Digital Input	Entered from operation panel and parameter unit	
	Start Signal		Forward and reverse rotation or start signal automatic self-holding input (3-wire input) can be selected.	
	Input Signal		Seven points You can select from among multi-speed selection, remote setting, stop-on contact selection, second function selection, terminal 4 input selection, JOG operation selection, PID control valid terminal, brake opening completion signal, external thermal input, PU-external operation switchover, V/F switchover, output stop, start self-holding selection, forward rotation, reverse rotation command, inverter reset, PU-NET operation switchover, external-NET operation switchover, command source switchover, inverter operation enable signal, and PU operation external interlock	
	Operational Functions		Maximum/minimum frequency setting, frequency jump operation, external thermal relay input selection, automatic restart after instantaneous power failure operation, forward/reverse rotation prevention, remote setting, ibrake sequence, second function, multi-speed operation, stop-on contact control, droop control, regeneration avoidance, slip compensation, operation mode selection, offline auto tuning function, PID control, computer link operation (RS-485)	
	Output Signal	Output Signal Points	Open Collector Output	Two points
			Relay Output	One point
	Operating Status		You can select from among inverter operation, up-to-frequency, overload alarm, output frequency detection, regenerative brake pre-alarm, electronic thermal relay function pre-alarm, inverter operation ready, output current	

			detection, zero current detection, PID lower limit, PID upper limit, PID forward/reverse rotation output, brake opening request, fan alarm*2, heatsink overheat pre-alarm, deceleration at an instantaneous power failure, PID control activated, during retry, life alarm, current average value monitor, remote output, alarm output, fault output, fault output 3, and maintenance timer alarm
	For Meter Output Points	Analog Output	0 to 10VDC: one point
	For Meter		You can select from among output frequency, motor current (steady), output voltage, frequency setting, motor torque, converter output voltage, regenerative brake duty, electronic thermal relay function load factor, output current peak value, converter output voltage peak value, reference voltage output, motor load factor, PID set point, PID measured value, output power 0 to 10VDC
Indication	Operation Panel Parameter Unit (FR-PU07)	Operating Status	You can select from among output frequency, motor current (steady), output voltage, frequency setting, cumulative energization time, actual operation time, motor torque, converter output voltage, regenerative brake duty, electronic thermal relay function load factor, output current peak value, converter output voltage peak value, motor load factor, PID set point, PID measured value, PID deviation, inverter I/O terminal monitor, I/O terminal option monitor, output power, cumulative power, motor thermal load factor, and inverter thermal load factor.
		Fault Definition	Fault definition is displayed when the fault occurs and the past 8 fault definitions (output voltage/current/frequency/cumulative energization time right before the fault occurs) are stored
	Additional Display By The Parameter Unit (FR-PU04/FR-PU07) Only	Operating Status	Not used
		Fault Definition	Output voltage/current/frequency/cumulative energization time immediately before the fault occurs
		Interactive Guidance	Function (help) for operation guide
	Protective/Warning Function		

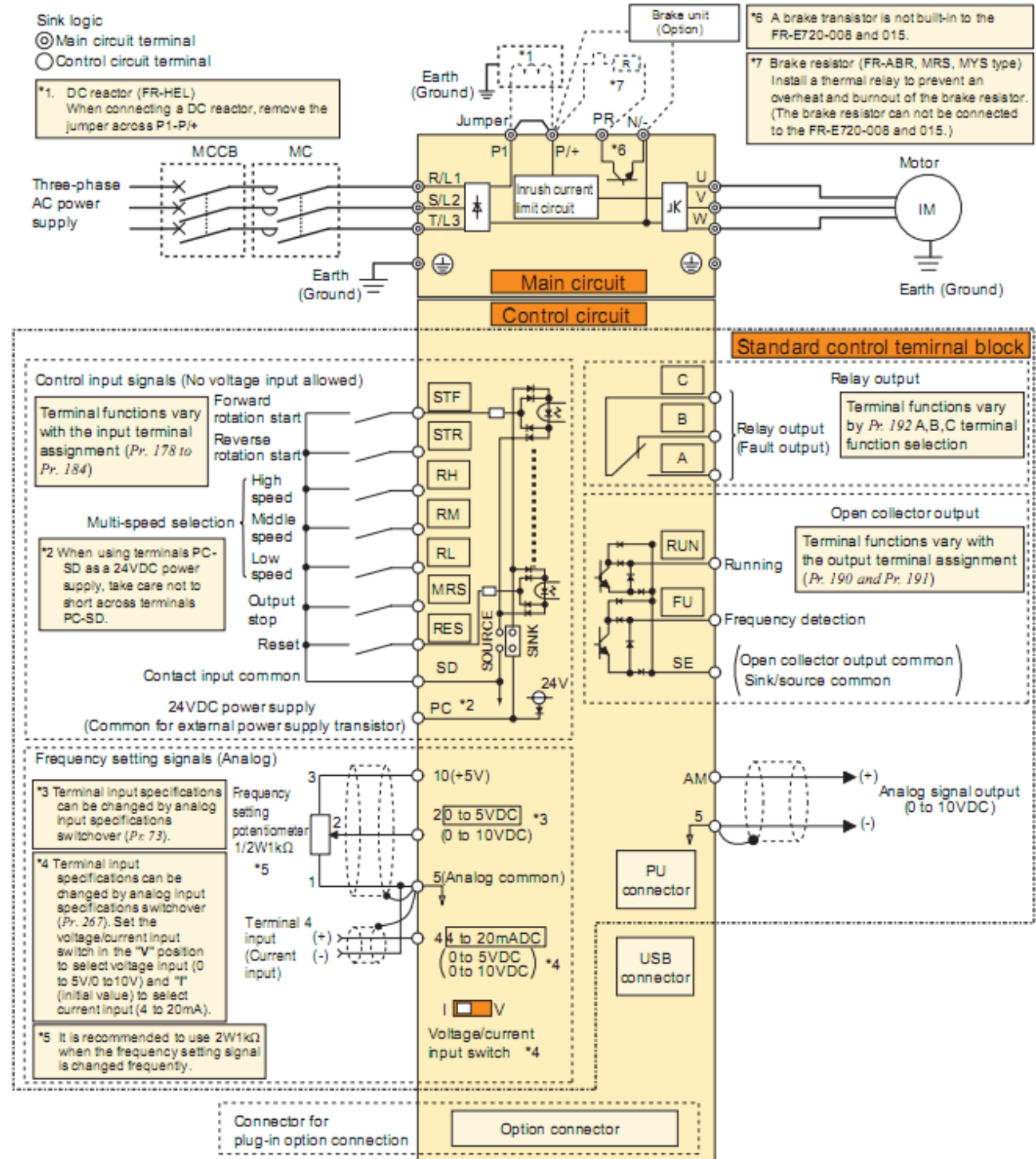
Environment	Ambient Temperature	-10°C to +50°C (14°F to 122°F) (non-freezing) (*3)
	Ambient Humidity	90%RH maximum (non-condensing)
	Storage Temperature (*1)	-20°C to +65°C (-4°F to 149°F)
	Atmosphere	Indoors (without corrosive gas, flammable gas, oil mist, dust and dirt etc.)
	Altitude/Vibration	Maximum 1000m (3280.80 feet) above sea level, 5.9m/s ² or less

Notes:

1. Temperatures applicable for a short time, e.g. in transit.
2. As the FR-E720-050 or less, FR-E740-026 or less is not provided with the cooling fan, this alarm does not function.
3. When using the inverters at the ambient temperature of 40°C (104°F) or less, the inverters can be installed closely attached (0cm clearance).
4. This protective function does not function in the initial status.

Terminal Connection Diagram

- Three-phase 200V power input
- Three-phase 400V power input



NOTE

- To prevent a malfunction caused by noise, separate the signal cables more than 10cm (3.94inches) from the power cables.
- After wiring, wire offcuts must not be left in the inverter. Wire offcuts can cause an alarm, failure or malfunction. Always keep the inverter clean. When drilling mounting holes in an enclosure etc., take care not to allow chips and other foreign matter to enter the inverter.