Automation for a Changing World

Delta Sensorless Vector Control Compact Drive VFD-EL Series

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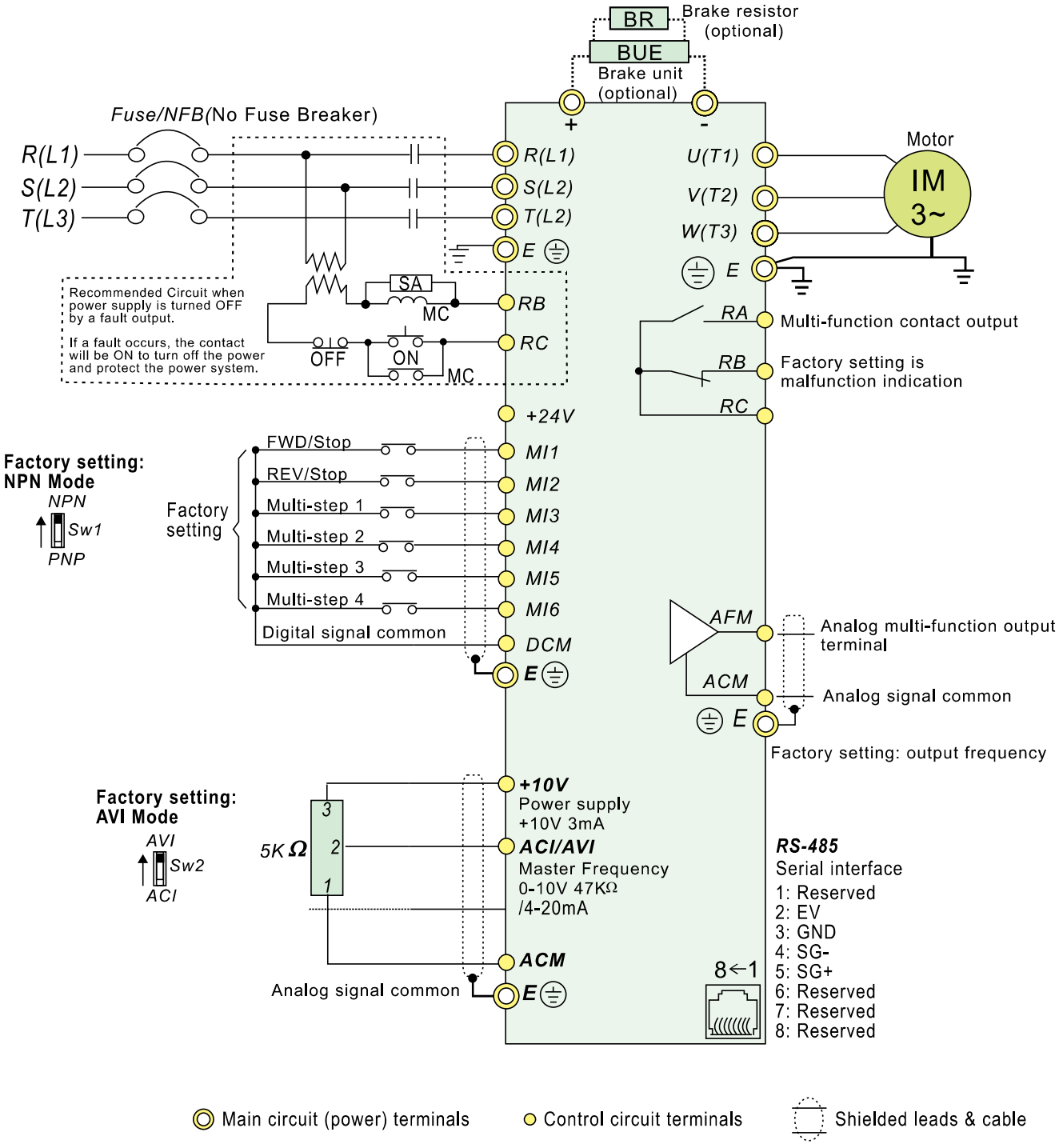
DELTA

Smarter. Greener. Together.

Standard Wiring Diagram

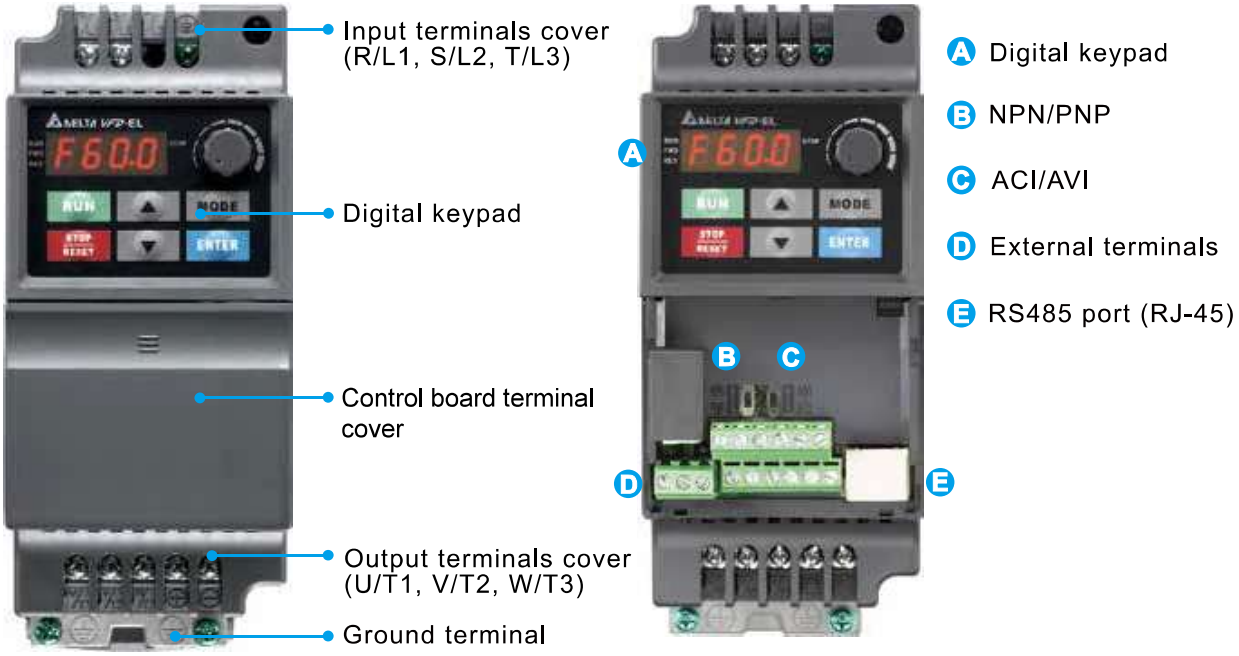


NOTE

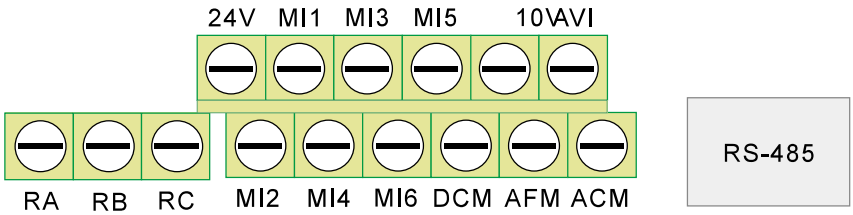
It is recommended to install circuit breaker at the control terminal to protect the circuit from operation abnormality or sudden power outage.

The protection circuit uses the multi-function output terminal of the AC motor drive for connection. When an abnormal condition (closed contact) occurs, the external power supply is disconnected to protect the power system of the AC motor drive.

External Parts



Control Terminals



Model Explanation

VFD 007 EL 23 A

Product
(Variable Frequency Drive)

Applicable Motor Capacity
002: 0.25 HP(0.2 kW) 015: 2 HP(1.5 kW)
004: 0.5 HP(0.4 kW) 022: 3 HP(2.2 kW)
007: 1 HP(0.75 kW) 037: 5 HP(3.7 kW)

EL Series

Input Voltage
11: 115 V Single-Phase 23: 230 V 3-Phase
21: 230 V Single-Phase 43: 460 V 3-Phase

Version
A: Standard drive

Specifications

115V	Voltage Class		115 V					
	Model Number VFD-___ EL		002		004		007	
	Max. Applicable Motor Output (kW)		0.2		0.4		0.75	
	Max. Applicable Motor Output (Hp)		0.25		0.5		1.0	
Output Rating	Rated Output Capacity (kVA)		0.6		1.0		1.6	
	Rated Output Current (A)		1.6		2.5		4.2	
	Maximum Output Voltage (V)		3-phase proportional to twice the input voltage					
	Output Frequency (Hz)		0.1 ~ 599 Hz					
	Carrier Frequency (kHz)		2-12					
Input Rating	Rated Input Current (A)		Single-phase					
			6.4		9		18	
	Rated Voltage/Frequency		Single-phase 100-120 V, 50/60 Hz					
	Voltage Tolerance		±10% (90-132 V)					
	Frequency Tolerance		±5% (47-63 Hz)					
	Cooling Method		Natural cooling				Fan cooling	
	Weight (kg)		1.1		1.1		1.4	

230V	Voltage Class		230 V					
	Model Number VFD-___ EL		002	004	007	015	022	037
	Max. Applicable Motor Output (kW)		0.2	0.4	0.75	1.5	2.2	3.7
	Max. Applicable Motor Output (Hp)		0.25	0.5	1.0	2.0	3.0	5.0
Output Rating	Rated Output Capacity (kVA)		0.6	1.0	1.6	2.9	4.2	6.5
	Rated Output Current (A)		1.6	2.5	4.2	7.5	11.0	17.0
	Maximum Output Voltage (V)		3-phase proportional to input voltage					
	Output Frequency (Hz)		0.1 ~ 599 Hz					
	Carrier Frequency (kHz)		2-12					
Input Rating	XXXE L21A	Rated Input Current (A)	4.9	6.5	9.5	15.7	24	--
		Rated Voltage/Frequency	Single-phase, 200 - 240 V, 50/60 Hz					
	XXXE L23A	Rated Input Current (A)	1.9	2.7	4.9	9	15	20.6
		Rated Voltage/Frequency	Single-phase/3-phase, 200 - 240 V, 50/60 Hz					3-phase, 200-240 V, 50/60 Hz
	Voltage Tolerance		±10% (180 - 264 V)					
	Frequency Tolerance		±5% (47 - 63 Hz)					
	Cooling Method		Natural cooling		Fan cooling			
	Weight (kg)		1.2	1.2	1.2	1.7	1.7	1.7

460V	Voltage Class		460 V				
	Model Number VFD-___ EL		004	007	015	022	037
	Max. Applicable Motor Output (kW)		0.4	0.75	1.5	2.2	3.7
	Max. Applicable Motor Output (hp)		0.5	1.0	2.0	3.0	5.0
Output Rating	Rated Output Capacity (kVA)		1.2	2.0	3.3	4.4	6.8
	Rated Output Current (A)		1.5	2.5	4.2	5.5	8.2
	Maximum Output Voltage (V)		3-phase proportional to input voltage				
	Output Frequency (Hz)		0.1 ~ 599 Hz				
	Carrier Frequency (kHz)		2-12				
Input Rating	Rated Input Current (A)		3-phase				
			1.8	3.2	4.3	7.1	9.0
	Rated Voltage/Frequency		3-phase, 380 - 480 V, 50/60 Hz				
	Voltage Tolerance		±10% (342 ~ 528 V)				
	Frequency Tolerance		±5% (47 ~ 63 Hz)				
	Cooling Method		Natural cooling		Fan cooling		
	Weight (kg)		1.2	1.2	1.2	1.7	1.7

Control Characteristics	Control System		SPWM (Sinusoidal Pulse Width Modulation) control (V/F control)
	Frequency Setting Resolution		0.01 Hz
	Output Frequency Resolution		0.01 Hz
	Torque Characteristics		Including the auto-torque/auto-slip compensation; starting torque can be 150% at 5.0Hz
	Overload Endurance		150% of rated current for 1 minute
	Skip Frequency		Three zones, setting range 0.1 - 599 Hz
	Accel/Decel Time		0.1 to 600 seconds (2 Independent settings for Accel/Decel time)
	Stall Prevention Level		Setting 20 to 250% of rated current
	DC Braking		Operation frequency 0.1 - 599.0 Hz, output 0-100% rated current Start time 0-60 seconds, stop time 0-60 seconds
	Regenerated Braking Torque		Approx. 20% (up to 125% possible with optional brake resistor)
	V/F Pattem		Adjustable V/F pattern
Operating Characteristics	Frequency Setting	Keypad	Setting by ▲▼
		External Signal	Potentiometer 5 k / 0.5 W, 0 to +10 V_{DC}, 4 to 20 mA, RS-485 interface; Multi-function Inputs 3 to 6 (15 steps, Jog, up/down)
	Operation Setting Signal	Keypad	Set by RUN and STOP
		External Signal	2 wires / 3 wires (MI1, MI2, MI3), JOG operation, RS-485 serial interface (MODBUS)
	Multi-function Input Signal		Multi-step selection 0 to 15, Jog, accel / decel inhibit, 2 accel / decel switches, counter, external Base Block, ACI / AVI selections, driver reset, UP / DOWN key settings, NPN / PNP input selection
	Multi-function Output Indication		AC drive operating, frequency attained, counter attained, zero speed, Base Block, fault indication, overheat alarm, emergency stop and status selections of input terminals
	Analog Output Signal		Output frequency / current
Alarm Output Contact			Contact will be ON when drive malfunctions (1 Form C / change-over contact or 1 open collector output)
Operation Functions			AVR, accel / decel S-Curve, overvoltage / overcurrent stall prevention, 5 fault records, reverse inhibition, momentary power loss restart, DC braking, auto torque / slip compensation, adjustable carrier frequency, output frequency limits, parameter lock / reset, PID control, external counter, MODBUS communication, abnormal reset, abnormal re-start, power-saving, fan control, sleep/wake frequency, 1st / 2nd frequency source selections, 1st / 2nd frequency source combination, NPN / PNP selection
Protection Functions			Over voltage, over current, under voltage, external fault, overload, ground fault, overheating, electronic thermal, IGBT short circuit, PTC
Display Keypad			6-key, 7-segment LED with 4-digit, 4 status LEDs, master frequency, output frequency, output current, custom units, parameter values for setup and lock, faults, RUN, STOP, RESET, FWD / REV
Built-in EMC Filter			For 230 V 1-phase and 460 V 3-phase models
Environmental Conditions	Enclosure Rating		IP20
	Pollution Degree		2
	Installation Location		Altitude 1,000 m or lower, keep from corrosive gasses, liquid and dust
	Ambient Temperature		-10 °C to + 50 °C (40 °C for side-by-side mounting) Non-Condensing and not frozen
	Storage/ Transportation Temperature		-20 °C to 60 °C
	Ambient Humidity		Below 90% RH (non-condensing)
	Vibration		9.80665 m/s^2 (1G) less than 20 Hz, 5.88 m/s (0.6 G) at 20 to 50 Hz
Certifications