



Automation for a Changing World

# **Delta Sensorless Vector Control Compact Drive VFD-EL-W Series**



[www.deltaww.com](http://www.deltaww.com)

 **DELTA**  
Smarter. Greener. Together.

# Sensorless Vector Control Compact Drive VFD-EL-W Series

*Simple Speed Control  
Horizontal Movement  
Fixed Load Applications*



Frame A1



Frame A2



Frame B

## | Safety and Reliability



150% / 60secs overload capability



Energy-saving



CE certification

## | Easy Maintenance



Natural cooling (Frame A1):  
no maintenance required



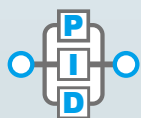
Fan cooling (Frame A2, Frame B):  
easy fan installation, reliable design,  
fast dust removal



## | Complete Functions



Single / multi-pump control:  
constant pressure mode & alternative operation



Built-in PID feedback control



Protection: overload, over voltage / over current stall prevention



# Applications

## Edge Banding Machine

- Communication isolation reduces the interference of HMI
- One drive for two motors in parallel
- Optimized accel. / decel. improve system efficiency
- Small size, lightweight, easy maintenance and installation



## Logistics Conveyor

- Built-in RS-485 COM port for high-speed communication
- Fast and stable tension control
- Small and compact design to save installation space



## Material Handling Machine

- Multiple speed adjustment modes for different applications
- AVR function to ensure the stability and reliability
- Speed tracking function for continuing operation after power resumes from an instantaneous power failure



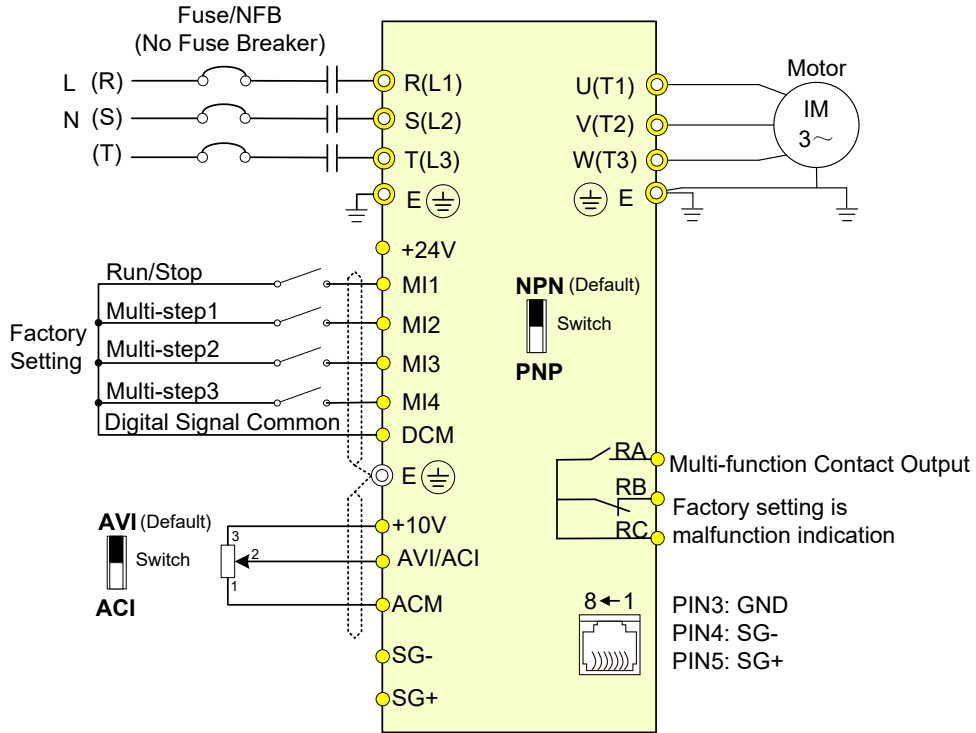
## Constant Pressure Pump

- Build-in PID pressure control; no need for external PID device to save system cost
- Built-in automatic inspection and restoration functions in case of water outage; no external PLC needed
- System leakage control function
- Multi-pump control: alternates pump operation in cycle (One drive supports max. 4 pumps)



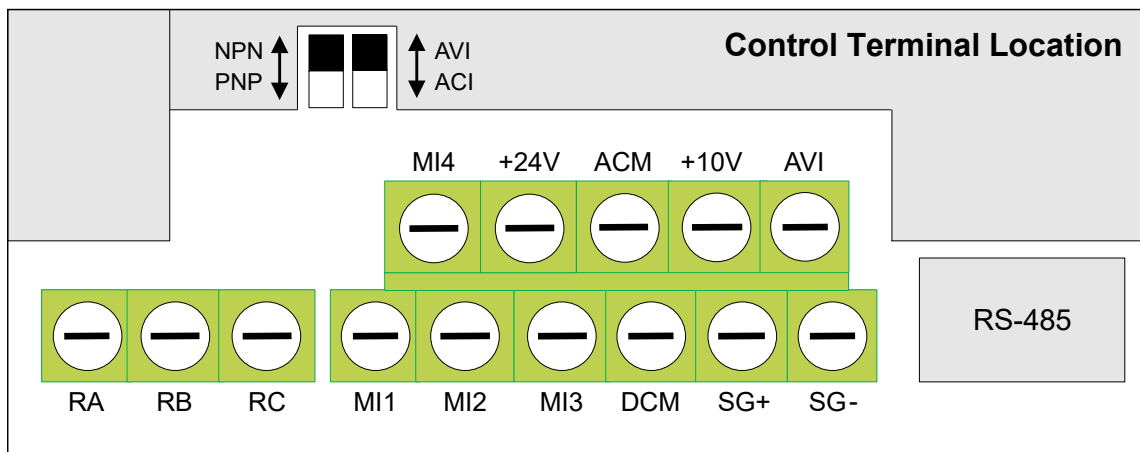
# Wiring

## 230V/460V Models



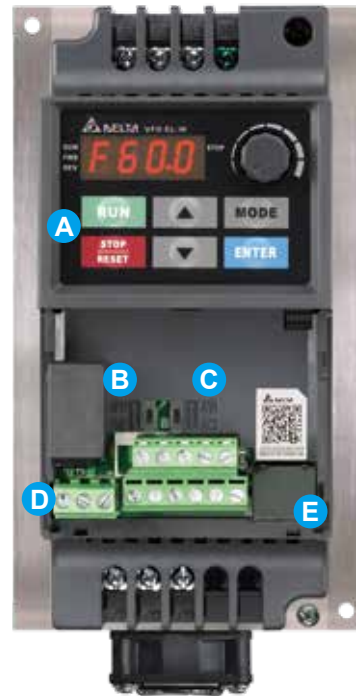
● Main Circuit (power) Terminals   
 ● Control Circuit Terminals   
 Shielded Leads & Cable  
**NOTE** Terminal SG+, SG- are joined to PIN5, PIN4 of RJ45 Connector

# Control Terminals



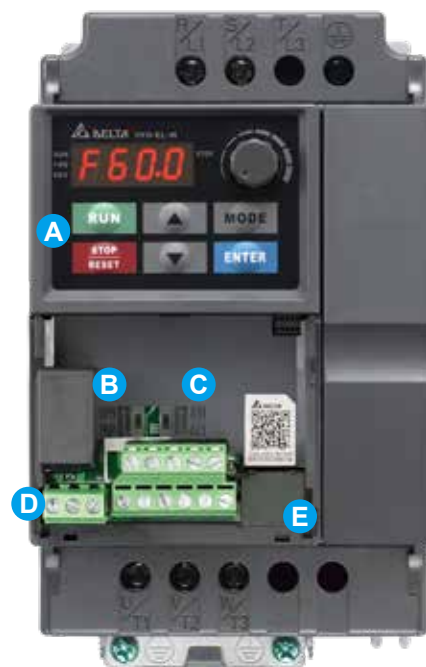
# Frames and Appearances

## ■ Frame A1/A2



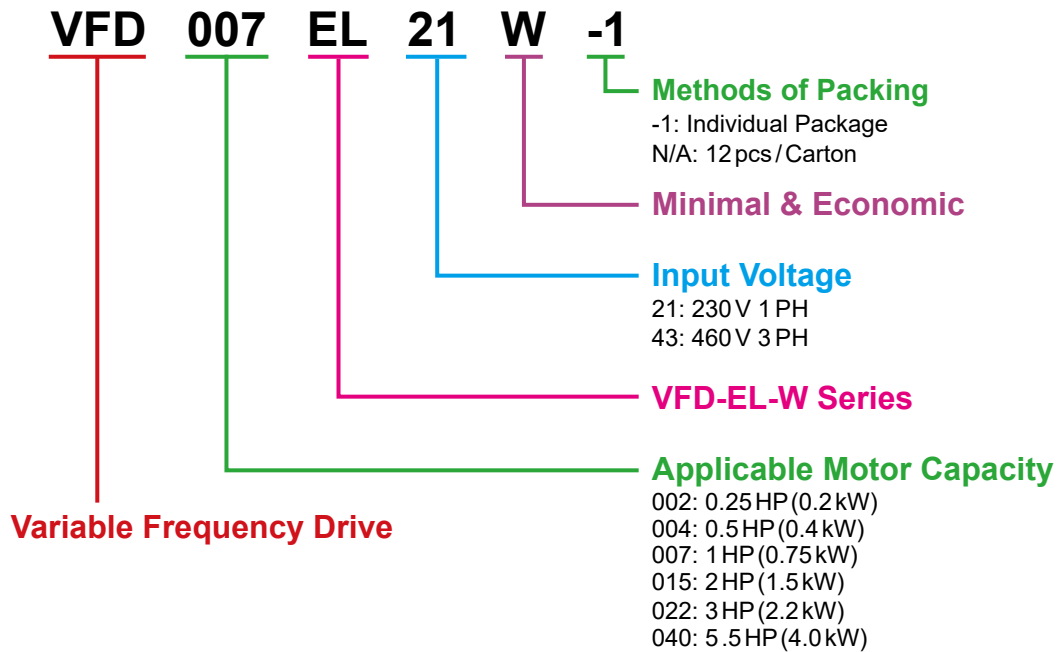
- A** Digital Keypad
- B** Choose NPN/PNP
- C** Choose ACI/AVI
- D** Control Terminals
- E** RS-485 Terminal (RJ45)

## ■ Frame B



- A** Digital Keypad
- B** Choose NPN/PNP
- C** Choose AVI/ACI
- D** Control Terminals
- E** RS-485 Terminal (RJ45)

# Model Explanation



# Specifications

## Product Specifications

Voltage		230V					460V				
Frame		A1		B			A1		A2	B	
Model	VFD-__EL21W(-1)	002	004	007	015	022	004	007	015	022	040
	VFD-__EL43W(-1)										
Max. Applicable Motor Output (kW)		0.2	0.4	0.75	1.5	2.2	0.4	0.75	1.5	2.2	4.0
Max. Applicable Motor Output (HP)		0.25	0.5	1.0	2.0	3.0	0.5	1.0	2.0	3.0	5.5
Output Rating	Rated Output Capacity (kVA)	0.6	1.0	1.6	2.9	4.2	1.2	2.0	3.3	4.4	7.4
	Rated Output Current (A)	1.6	2.5	4.2	7.5	11.0	1.5	2.5	4.2	5.5	9.0
	Maximum Output Voltage (V)	3-Phase Proportional to Input Voltage									
	Output Frequency (Hz)	0.1 ~ 400									
	Carrier Frequency (kHz)	2 ~ 12 (Default 8kHz)									
Input Rating	Rated Input Current (A)	4.9	6.5	9.3	15.7	24.0	1.8	3.2	4.3	7.1	10.0
	Rated Voltage / Frequency	Single Phase, AC 200V ~ 240V, 50 / 60Hz					Three Phase, AC 380V ~ 480V, 50 / 60Hz				
	Voltage Tolerance	±10% (180V ~ 264V)					±10% (342V ~ 528V)				
	Frequency Tolerance	±5% (47Hz ~ 63Hz)									
Weight (kg)		1.0			1.4		1.0		1.4		
Cooling Method		Natural Cooling			Fan Cooling		Natural Cooling		Fan Cooling		
Brake Unit		N/A									
DC Choke		N/A									
EMI Filter		N/A									

# Specifications

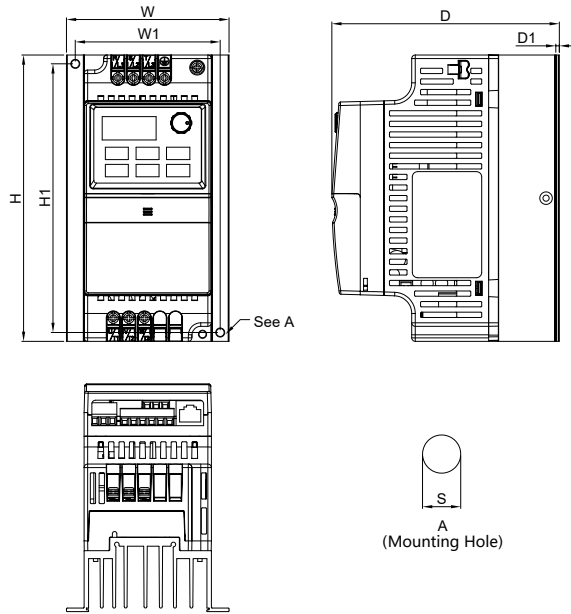
## General Specifications

Control Characteristics	<b>Control System</b>		SPWM (Sinusoidal Pulse Width Modulation) control (V/F Control, Vector Control)
	<b>Frequency Setting Resolution</b>		0.01 Hz
	<b>Output Frequency Resolution</b>		0.01 Hz
	<b>Torque Characteristics</b>		Including the auto-torque, auto-slip compensation; starting torque can be 150% at 5 Hz
	<b>Overload Endurance</b>		150% of rated current for 1 minute
	<b>Skip Frequency</b>		Three zones, setting range 0.1 ~ 400 Hz
	<b>Accel./Decel. Time</b>		0.1 to 600 secs (2 independent setting for accel./decel. time)
	<b>Stall Prevention Level</b>		Setting 20 to 250% of rated current
	<b>DC Brake</b>		Operating frequency 0.1~400 Hz, Output 0 ~ 100% rated current Start time 0~60 secs, stop time 0~60 secs
<b>V/F Pattern</b>		Adjustable V/F pattern	
Operating Characteristics	<b>Frequency Setting</b>	<b>Keypad</b>	Setting by ▲ ▼
		<b>External Signal</b>	Potentiometer: 5kΩ/0.5W, 0 to +10 VDC, 4 to 20 mA Multi-function input MI2 ~ MI4 (8 steps: Including the main speed, jog, up/down); RS-485 serial interface
	<b>Operating Setting Signal</b>	<b>Keypad</b>	Setting by RUN and STOP
		<b>External Signal</b>	RUN/STOP by MI1 (default) or 2-wire/3-wire control (MI1, MI2, MI3), jog operation, RS-485 serial interface (Modbus)
	<b>Multi-function Input Signal</b>		8-speed switch (including the main speed): ban commands for acceleration/deceleration, 2-speed switch for accel./decel., counter, jogging (inching), external base block, driver reset, NPN/PNP inputs, AVI/ACI analog inputs  Switch to a speed as the default.
<b>Multi-function Output Signal (only Relays)</b>		AC drive operating, frequency attained, zero speed, counter, over-torque inspection, external base block, operating modes, anomaly alarm, overheating alarm, emergency stop	
<b>Protection Functions</b>			Over voltage, over current, under voltage, anomalies, overload, overheating, electronic thermal relays, PTC overheating protection
<b>Operation Functions</b>			Built-in voltage regulators, accel./decel. S-curve, over-voltage/over-current stall prevention, 5 anomalous logs, reverse ban, restart for instantaneous power outage, DC brake, automatic toque/slip compensation and motor parameter adjustment, carrier frequency setting, output frequency limits, parameter reset, PID control, external counter, Modbus protocol, reset and restart for anomalies, energy-saving, fan control (for models with fans), 1 <sup>st</sup> /2 <sup>nd</sup> frequency sources and combination, NPN/PNP inputs
<b>Display Keypad (optional)</b>			6 function keys, 4-digit 7-segment LED, 4 status LEDs, adjustable frequency, self-defined units, parameter settings and lock function, anomaly alarms, Run/Stop/Reset buttons
Environmental Conditions	<b>Enclosure Rating</b>		IP20
	<b>Pollution Degree</b>		2
	<b>Installation Location</b>		Altitude 1,000m or lower, keeping from corrosive gases, liquids and dust
	<b>Operating Temperature</b>		-10°C to 50°C (VFD007EL21W(-1) requires fan accessories)
	<b>Storage/Transportation Temperature</b>		-20°C to 60°C
	<b>Ambient Humidity</b>		Below 90% RH (non-condensing)
<b>Vibration</b>		1.0 mm, peak to peak 2–13.2 Hz; 0.7–1.0 G, 13.2–55 Hz; 1.0 G, 55–512 Hz; compliant with IEC 60068-2-6	
<b>Certification</b>			CE, RoHS, GB 12668.3



# Dimensions

## ■ Frame A1

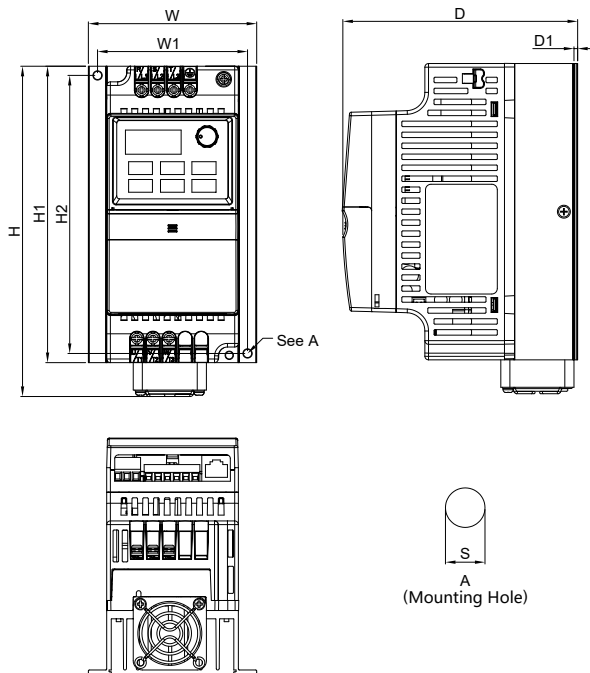


### Model

- VFD002EL21W(-1)
- VFD004EL21W(-1)
- VFD004EL43W(-1)
- VFD007EL21W(-1)
- VFD007EL43W(-1)

Frame		W	W1	H	H1	D	D1	S
A1	mm	92.0	82.0	162.0	152	128.7	2.00	5.4
	inch	3.62	3.23	6.38	5.98	5.07	0.08	0.21

## ■ Frame A2

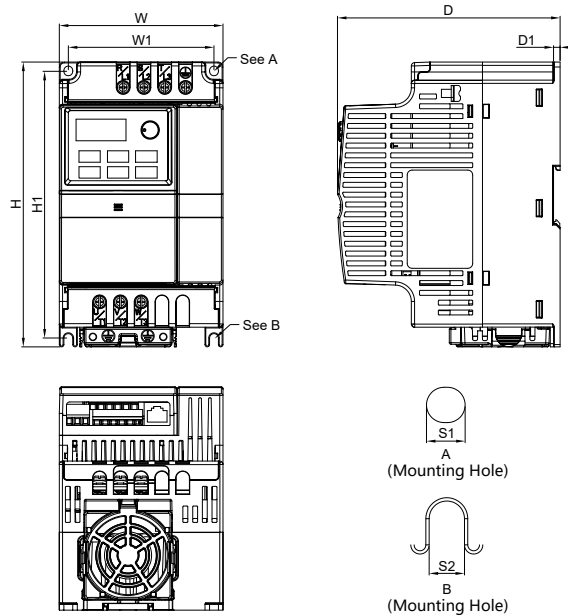


### Model

- VFD015EL43W(-1)

Frame		W	W1	H	H1	H2	D	D1	S
A2	mm	92.0	82.0	180.5	162.0	152	128.7	2.00	5.4
	inch	3.62	3.23	7.11	6.38	5.98	5.07	0.08	0.21

■ Frame B



**Model**

- VFD015EL21W(-1)
- VFD022EL21W(-1)
- VFD022EL43W(-1)
- VFD040EL43W(-1)

Frame		W	W1	H	H1	D	D1	S1	S2
B	mm	100.0	89.0	174.0	162.9	136.0	4.0	5.9	5.4
	inch	3.94	3.50	6.85	6.42	5.35	0.16	0.23	0.21

## Ordering Information

Frame	Cooling Method	Operating Temperature	Power Range	Models
Frame A1	Natural Cooling	-10°C~50°C	230 V: 0.2~0.75 kW 460 V: 0.4~0.75 kW	VFD002EL21W(-1) VFD004EL21W(-1) VFD004EL43W(-1) VFD007EL21W(-1)* VFD007EL43W(-1)
Frame A2	Fan Cooling		460 V: 1.5 kW	VFD015EL43W(-1)
Frame B			230 V: 1.5~2.2 kW 460 V: 2.2~4.0 kW	VFD015EL21W(-1) VFD022EL21W(-1) VFD022EL43W(-1) VFD040EL43W(-1)



**NOTE** VFDxxxELxxW-1 and VFDxxxELxxW share the same electrical specifications.

\*VFD007EL21W(-1): to reach 50°C operating temperature, a fan kit MKEL-AFKM1 is required (without derating).

\*VFD007EL21W(-1): to reach 40°C operating temperature, no need for a fan kit (without derating).

# Accessories

## Keypad CE



### VFD-PU06

- 5 digits
- Parameter duplication and recording
- RJ11 connector
- RS-485 communication



### VFD-PU08V

- 4 digits
- RJ45 connector
- RS-485 communication



### VFD-PU08

- 4 digits
- RJ45 connector
- RS-485 communication



\* RJ45 cable is not included for VFD-PU08 & VFD-PU08V.

## Cable

### RJ45 Cable



No.	Model	Length	
		mm	inch
1	UC-CMC003-01A	300	11.8
2	UC-CMC005-01A	500	19.6
3	UC-CMC010-01A	1000	39.0
4	UC-CMC015-01A	1500	59.0
5	UC-CMC020-01A	2000	78.7
6	UC-CMC030-01A	3000	118.1
7	UC-CMC050-01A	5000	196.8

## Fan kit

### MKEL-AFKM1



## Reactor

### RF220X00A





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