



Digitized Automation for a Changing World

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



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

Send Quote Requests to [info@automatedpt.com](mailto:info@automatedpt.com)  
Call +1(800)985-6929 To Order or Order Online At [Deltaacdrives.com](http://Deltaacdrives.com)

 **DELTA**  
Smarter. Greener. Together.

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

*Simple Speed Control  
Horizontal Movement  
Fixed Load Applications*



**Frame A1**

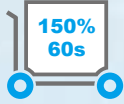


**Frame A2**



**Frame B**

## | Safety and Reliability



150% / 60secs overload capability



Energy-saving



CE certification

## | Easy Maintenance



Natural cooling (Frame A1):  
no maintenance required



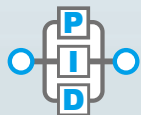
Fan cooling (Frame A2, Frame B):  
easy fan installation, reliable design,  
fast dust removal



## | 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 saves installation space



### Material Handling Machine

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



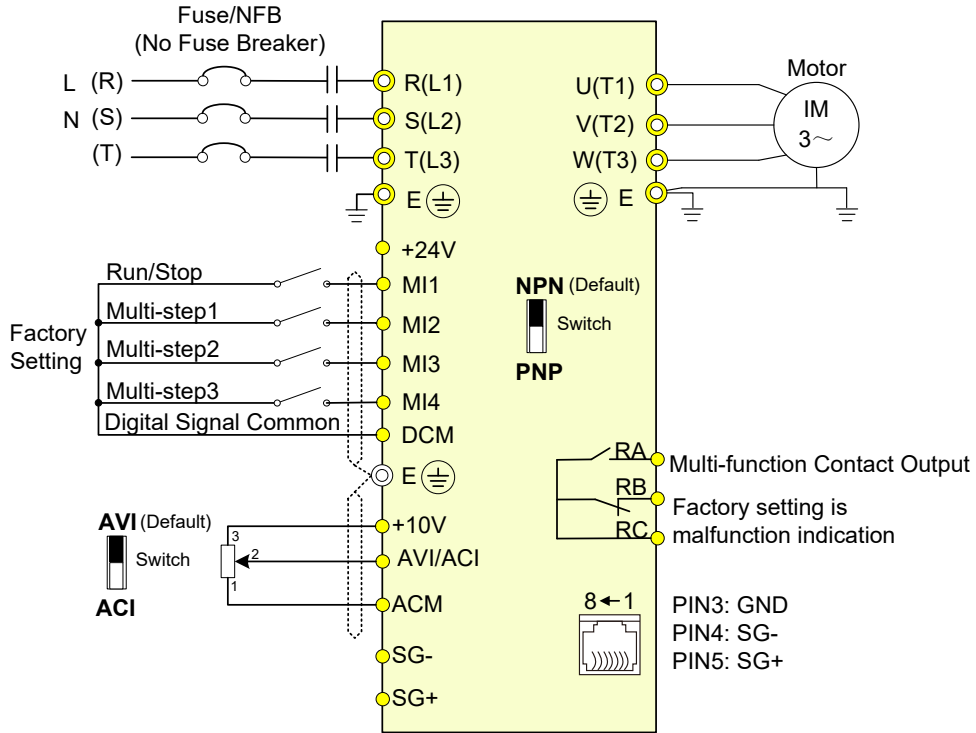
### Constant Pressure Pump

- 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)



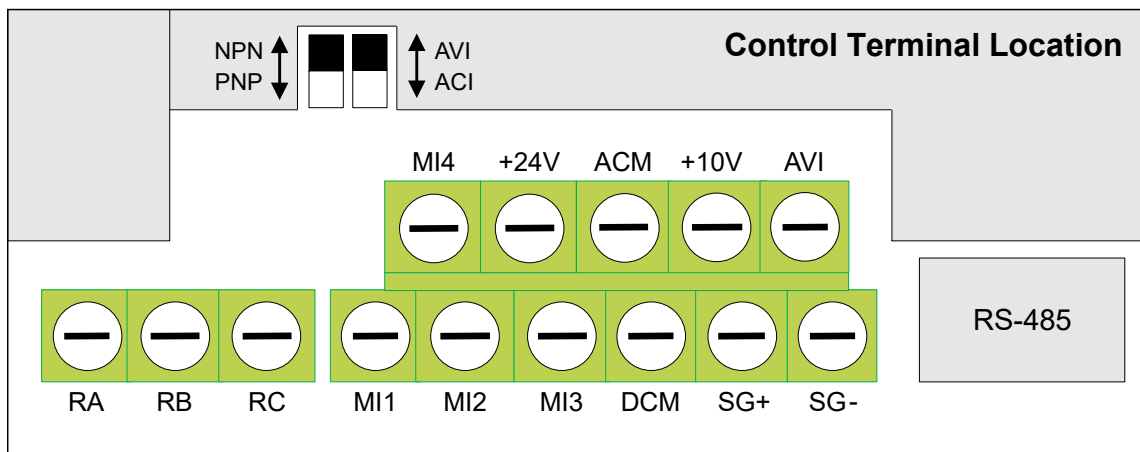
# Wiring

## 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

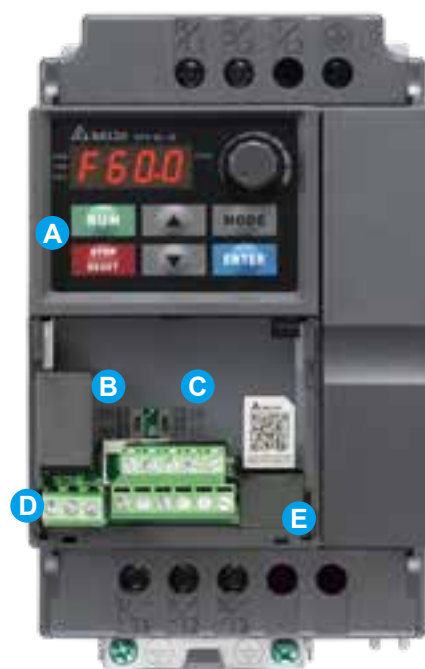


## Frames and Appearances

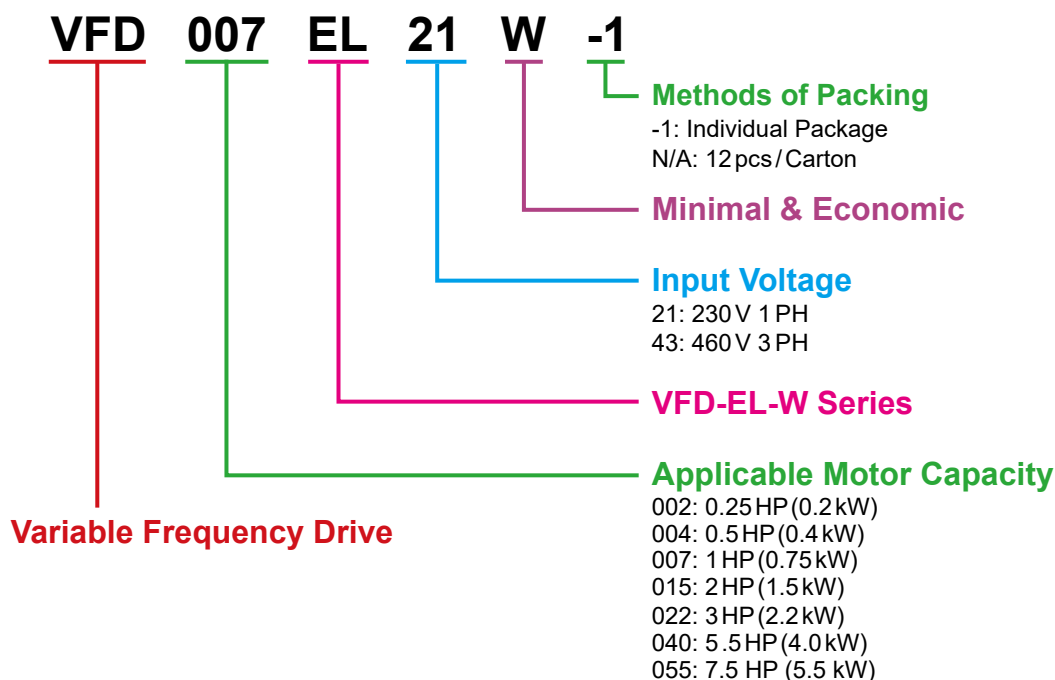
### ■ Frame A1/A2



### ■ Frame B



## Model Explanation




## Specifications

### Product Specifications

Voltage		230 V					460 V					
Frame		A1			B		A1		A2	B		
<b>Model</b>	VFD-__EL21W(-1) VFD-__EL43W(-1)	002	004	007	015	022	004	007	015	022	040	055
<b>Max. Applicable Motor Output (kW)</b>		0.2	0.4	0.75	1.5	2.2	0.4	0.75	1.5	2.2	4.0	5.5
<b>Max. Applicable Motor Output (HP)</b>		0.25	0.5	1.0	2.0	3.0	0.5	1.0	2.0	3.0	5.5	7.5
<b>Output Rating</b>	<b>Rated Output Capacity (kVA)</b>	0.6	1.0	1.6	2.9	4.2	1.2	2.0	3.3	4.4	7.4	9.9
	<b>Rated Output Current (A)</b>	1.6	2.5	4.2	7.5	11.0	1.5	2.5	4.2	5.5	9.0	13.0
	<b>Maximum Output Voltage (V)</b>	3-Phase Proportional to Input Voltage										
	<b>Output Frequency (Hz)</b>	0.1 ~ 400										
	<b>Carrier Frequency (kHz)</b>	2 ~ 12 (Default 8kHz)										2 ~ 12 (Default 4kHz)
<b>Input Rating</b>	<b>Rated Input Current (A)</b>	4.9	6.5	9.3	15.7	24.0	1.8	3.2	4.3	7.1	10.0	17.0
	<b>Rated Voltage / Frequency</b>	Single Phase, AC 200V ~ 240V, 50 / 60Hz					Three Phase, AC 380V ~ 480V, 50 / 60Hz					
	<b>Voltage Tolerance</b>	±10% (180V ~ 264V)					±10% (342V ~ 528V)					
	<b>Frequency Tolerance</b>	±5% (47Hz ~ 63Hz)										
<b>Weight (kg)</b>		1.0			1.4		1.0			1.4		1.5
<b>Cooling Method</b>		Natural Cooling			Fan Cooling		Natural Cooling			Fan Cooling		
<b>Brake Unit</b>		N/A										
<b>DC Choke</b>		N/A										
<b>EMI Filter</b>		N/A										

# Specifications

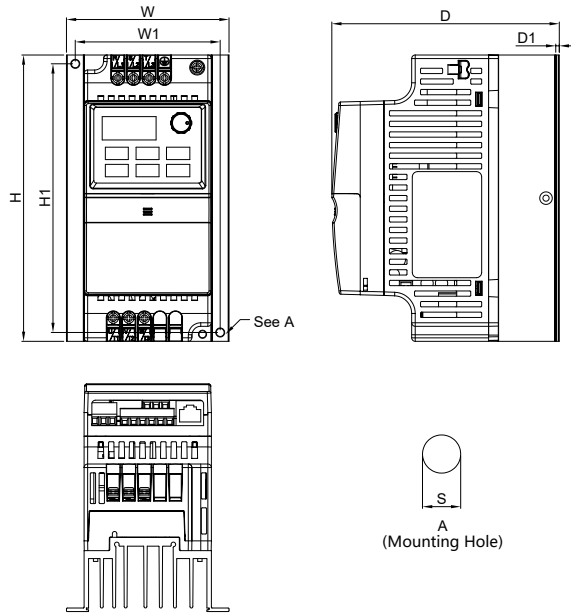
## General Specifications

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>		 , RoHS, GB 12668.3, KC (single package only)	



# Dimensions

## ■ Frame A1

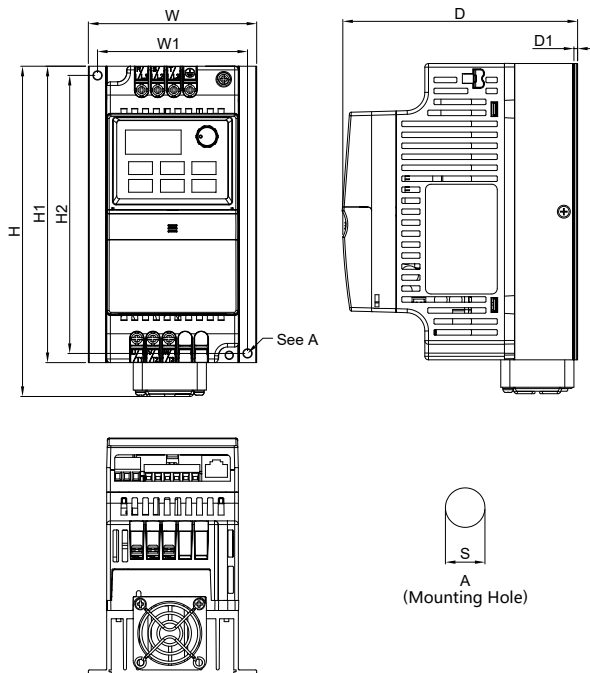


### Model

- 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

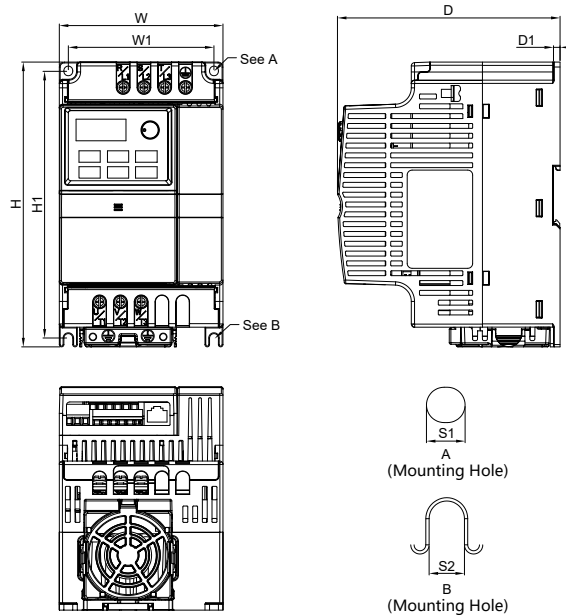


### Model

- 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)  
 VFD055EL43W(-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: 2.2~5.5 kW	VFD015EL21W(-1) VFD022EL21W(-1) VFD022EL43W(-1) VFD040EL43W(-1) VFD055EL43W(-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



#### 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





## Industrial Automation Headquarters

### Taiwan: Delta Electronics, Inc.

Taoyuan Technology Center  
No.18, Xinglong Rd., Taoyuan District,  
Taoyuan City 33068, Taiwan  
TEL: +886-3-362-6301 / FAX: +886-3-371-6301

## Asia

### China: Delta Electronics (Shanghai) Co., Ltd.

No.182 Minyu Rd., Pudong Shanghai, P.R.C.  
Post code : 201209  
TEL: +86-21-6872-3988 / FAX: +86-21-6872-3996  
Customer Service: 400-820-9595

### Japan: Delta Electronics (Japan), Inc.

Industrial Automation Sales Department  
2-1-14 Shibadaimon, Minato-ku  
Tokyo, Japan 105-0012  
TEL: +81-3-5733-1155 / FAX: +81-3-5733-1255

### Korea: Delta Electronics (Korea), Inc.

1511, 219, Gasan Digital 1-Ro., Geumcheon-gu,  
Seoul, 08501 South Korea  
TEL: +82-2-515-5305 / FAX: +82-2-515-5302

### Singapore: Delta Energy Systems (Singapore) Pte Ltd.

4 Kaki Bukit Avenue 1, #05-04, Singapore 417939  
TEL: +65-6747-5155 / FAX: +65-6744-9228

### India: Delta Electronics (India) Pvt. Ltd.

Plot No.43, Sector 35, HSIIDC Gurgaon,  
PIN 122001, Haryana, India  
TEL: +91-124-4874900 / FAX: +91-124-4874945

### Thailand: Delta Electronics (Thailand) PCL.

909 Soi 9, Moo 4, Bangpoo Industrial Estate (E.P.Z),  
Pattana 1 Rd., T.Phraksa, A.Muang,  
Samutprakarn 10280, Thailand  
TEL: +66-2709-2800 / FAX: +66-2709-2827

### Australia: Delta Electronics (Australia) Pty Ltd.

Unit 20-21/45 Normanby Rd., Notting Hill Vic 3168, Australia  
TEL: +61-3-9543-3720

## Americas

### USA: Delta Electronics (Americas) Ltd.

5101 Davis Drive, Research Triangle Park, NC 27709, U.S.A.  
TEL: +1-919-767-3813 / FAX: +1-919-767-3969

### Brazil: Delta Electronics Brazil

Rua Itapeva, 26 - 3º, andar Edifício Itapeva,  
One - Bela Vista 01332-000 - São Paulo - SP - Brazil  
TEL: +55-12-3932-2300 / FAX: +55-12-3932-237

### Mexico: Delta Electronics International Mexico S.A. de C.V.

Gustavo Baz No. 309 Edificio E PB 103  
Colonia La Loma, CP 54060  
Tlalnepantla, Estado de México  
TEL: +52-55-3603-9200

## EMEA

### EMEA Headquarters: Delta Electronics (Netherlands) B.V.

Sales: Sales.IA.EMEA@deltaww.com  
Marketing: Marketing.IA.EMEA@deltaww.com  
Technical Support: [iatechnicalsupport@deltaww.com](mailto:iatechnicalsupport@deltaww.com)  
Customer Support: [Customer-Support@deltaww.com](mailto:Customer-Support@deltaww.com)  
Service: Service.IA.emea@deltaww.com  
TEL: +31(0)40 800 3900

### BENELUX: Delta Electronics (Netherlands) B.V.

Automotive Campus 260, 5708 JZ Helmond, The Netherlands  
Mail: [Sales.IA.Benelux@deltaww.com](mailto:Sales.IA.Benelux@deltaww.com)  
TEL: +31(0)40 800 3900

### DACH: Delta Electronics (Netherlands) B.V.

Coesterweg 45, D-59494 Soest, Germany  
Mail: [Sales.IA.DACH@deltaww.com](mailto:Sales.IA.DACH@deltaww.com)  
TEL: +49(0)2921 987 0

### France: Delta Electronics (France) S.A.

ZI du bois Challand 2, 15 rue des Pyrénées,  
Lisses, 91090 Evry Cedex, France  
Mail: [Sales.IA.FR@deltaww.com](mailto:Sales.IA.FR@deltaww.com)  
TEL: +33(0)1 69 77 82 60

### Iberia: Delta Electronics Solutions (Spain) S.L.U

Ctra. De Villaverde a Vallecas, 265 1º Dcha Ed.  
Hormigueras – P.I. de Vallecas 28031 Madrid  
TEL: +34(0)91 223 74 20

Carrer Llacuna 166, 08018 Barcelona, Spain

Mail: [Sales.IA.Iberia@deltaww.com](mailto:Sales.IA.Iberia@deltaww.com)

### Italy: Delta Electronics (Italy) S.r.l.

Via Meda 2-22060 Novedrate(CO)  
Piazza Grazioli 18 00186 Roma Italy  
Mail: [Sales.IA.Italy@deltaww.com](mailto:Sales.IA.Italy@deltaww.com)  
TEL: +39 039 8900365

### Russia: Delta Energy System LLC

Vereyskaya Plaza II, office 112 Vereyskaya str.  
17 121357 Moscow Russia  
Mail: [Sales.IA.RU@deltaww.com](mailto:Sales.IA.RU@deltaww.com)  
TEL: +7 495 644 3240

### Turkey: Delta Greentech Elektronik San. Ltd. Sti. (Turkey)

Şerifali Mah. Hendem Cad. Kule Sok. No:16-A  
34775 Ümraniye – İstanbul  
Mail: [Sales.IA.Turkey@deltaww.com](mailto:Sales.IA.Turkey@deltaww.com)  
TEL: + 90 216 499 9910

### MEA: Eltek Dubai (Eltek MEA DMCC)

OFFICE 2504, 25th Floor, Saba Tower 1,  
Jumeirah Lakes Towers, Dubai, UAE  
Mail: [Sales.IA.MEA@deltaww.com](mailto:Sales.IA.MEA@deltaww.com)  
TEL: +971(0)4 2690148