



Automation for a Changing World

# Integrated Elevator Drive IED-G Series



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

 **DELTA**  
Smarter. Greener. Together.



## Delta Electronics, an expert in drive control technology, introduces you to a new elevator drive integrating comprehensive elevator control functions: the IED-G series.

The Delta Elevator Drive - IED-G Series is a compact drive that inherits Delta's core drive control technology and includes a vector control function to provide precise control of both synchronous and asynchronous tractors for a safe and smooth ride. The complete and intelligent elevator control functions are built-in to substantially reduce the required installation and tuning time and sequence. The drive also supports various encoder feedback cards and provides versatile elevator accessory options for users. In addition to precise elevator control, the IED-G series provides a power regeneration function when installed with Delta's energy feedback devices: the Active Front End-AFE2000 Series and the Power Regenerative Unit - REG2000 Series. The IED-G drive is your most reliable and energy saving elevator solution that offers durability and a long product lifespan.



### Control

- Synchronize control for two IED-G series without additional group control cards
- Group control up to 8 IED-G series with a group control card
- Self diagnosis functions
- Control up to 64 floors

### Design

- Compact design; suitable for a small installation space or limited to no control room space
- Reserved screw holes for user to design their own ideal top cover
- 7 step display and LED indicators for drive status

### Drive

- Supports induction and permanent magnet motors
- Emergency Power Supply (EPS) function
- Supports varied encoder signal types

### Tune

- Hoist-way auto-learning function can detect and record door position precisely
- Static auto-tuning function provides auto-learning of motor specification

### Energy Saving

- Power regeneration function - available when installed with Delta's Active Front End (AFE2000 series) or Power Regenerative Unit (REG2000 series)
- Scheduled lighting and air circulation time function for the car
- Standby mode to save energy

### Efficiency

- Direct stop
- Peak hour operation - improves peak hour operation efficiency
- Full-load bypass - responses to car calls and ignores hall calls when the car reaches its maximum capacity





# Elevator Control Functions

## IED-G Standard

### ► Auto-learn hoistway

Auto-detects total floor height and individual floor height. Parameter setting instructions are displayed on the digital keypad LCD screen for the user to easily complete the hoistway settings.

### ► Inspection Mode

Upon receiving an inspection signal, the system clears all car/hall calls and enters inspection mode. When the direction command is enabled, the elevator begins to operate at inspection speed.

### ► Fire Emergency Mode

Upon receiving fire signals, the car clears all car/hall calls and closes the door. The elevator then moves to the base station and keeps the door open.

### ► Car Lock Mode

When car lock mode is activated, the elevator clears all car/hall calls and moves to the designated base station. The door stays open at the base station and enters energy-saving mode. The user may adjust the Timer to set the car lock schedule.

### ► VIP Mode/ Attendant Mode

When the attendant mode is switched ON, the elevator only responds to car calls while hall calls are disabled. The attendant controls the floor stops while hall call signals flash on the control panel of the car.

### ► EPS Mode

When a sudden power failure occurs, the EPS system begins operation. Once the elevator receives backup power, it accelerates slowly to the nearest floor and leaves the door open.

### ► Full-load By-pass

The elevator ignores hall calls and only responds to car calls when it reaches maximum weight capacity.

### ► Test Run

In normal operation mode, users may test elevator efficiency in the control room using this mode.

### ► Test Run Waiting Time

To set the waiting time before the next test run begins.

### ► Idling Return

The car returns to the designated base station for standby when no signal comes in after a certain time period

### ► Fire Emergency Return

Upon receiving fire signals, the car decelerates to the nearest floor with doors closed, and then moves directly to the base station and opens its doors.

### ► Random Call Test Mode

The elevator responds to the system command and stops at a random floor for test purposes.

### ► Power ON Auto-Leveling

When power returns after a sudden power failure occurs and the elevator is stuck between floors, the elevator accelerates slowly to the nearest floor and opens its door.

### ► Homing Mode (Power ON)

Each time when connected to power, the car moves at low speed to the terminal home floor.

### ► Homing Mode (Inspection)

When switched from inspection mode to auto-mode, the car moves at low speed to the terminal home floor.

### ► Non-Service Floor

Users can set a non-service floor in the system and the car will bypass this floor.

### ► Energy-saving Fans and Lighting Control

Fan and lighting are switched OFF for energy-saving purposes when the car is not moving after a certain time period. When the car receives a hall call, the fan and lighting are switched ON.

### ► Single/Dual Leveling Sensor

Provides single and dual leveling sensor mode for car leveling accuracy.

### ► Schedule Service

User can select different time settings for car service floors.

### ► Peak Hour Operation

Saves passenger waiting time during peak hours and improves operation efficiency.

### ► False Call Cancellation (Car)

Double-click the floor button to clear a false car call.

### ► False Call Cancellation (Hall)

Double-click the call button to clear a false hall call.

### ► Car Call Cancelling at Final Stop

When the car arrives at the final car call floor in one direction, the system automatically clears all remaining calls in the other direction.

### ► Floor Numbering

User-defined floor numbering allows users to number floors according to preference.

### ► Foolproof

- (1) Clears all call signals when the car arrives at the terminal floor.
- (2) Light-load operation detection function provides transport to a maximum of 3 floors.

### ► Schedule and Peak Hour Service

The system supports schedule and peak hour time settings for elevator operations.

### ► Hall Call Service Control

Up/down collective-selective control instructs the cars to respond to hall calls for upward/downward lifting.

### ► I/O Terminals for Cartop Board

Provides cartop terminals for the user to flexibly define the terminal function.

### ► Sleep Mode for Fans and Lighting

Fans and lighting enter sleep mode when no calls come in during certain time periods to save energy.

### ► Real-time Displays Operation Status

The LCD screen displays the status of elevator operation, speed, direction, terminals and other functions

### ► Disable Hall Call

The car will not respond to hall calls.

### ► Disable Car Call

The car will not respond to car calls.

### ► Disable Hall Call Service During Inspection

Hall call service is disabled when the elevator is in inspection mode.

### ► "INS" Signal for Inspection

The hall LCD screen displays the "INS" signal and car location floor when the elevator is in inspection mode

### ► Flashing Floor for Inspection

Displays the location floor of the car when the elevator is in inspection mode.

### ► Auto-Leveling Function Off

The car will not execute leveling according to the sensor and the user can level the car manually.

### ► Deceleration Function Off

The car will not decelerate according to the deceleration signal.

### ► Encoder Pulse Offset Function Off

The system will not perform any diagnosis inspection of the encoder pulse signal.

### ► Leveling Diagnosis Function Off

The system will not perform any diagnosis inspection of the leveling signal.

### ► Max. Operation Duration Function Off

The system will not inspect the maximum operation time of one operation cycle.

### ► High Voltage Safety Function Off

The system will not inspect the high voltage input signal.

### ► Direct Stop

Automatically calculates the speed curve from start to stop by distance.

## IED-G Door Control

### ► Two-Door Mode

Supports door opening of the front and rear door.

### ► Door Control Test

Allows manual control of door opening and closing to test the door control efficiency.

### ► Door Block and Reopen

When the system receives a blockage signal at the leveling area, the car door reopens to ensure passenger safety.

### ► Door Block Overtime

The cartop alarm activates when the system receives a continuous door blockage signal for a period of time.

### ► Door Opening Test when Powered

Every time power is applied, the system auto-detects the door width by opening/closing the door when it arrives at the door zone.

### ► Door Open Duration Setting

Users can set different door opening durations for front and rear doors for regular mode and for handicap mode.

### ► Door Close Delay Protection

When a door closing command fails to detect the door closing limit signal, hoistway doorlock signal and car doorlock signal, the system automatically clears the door closing command and responds with an error.

### ► Door Open

The car door opens when the car arrives at the door zone in regular operation mode.

### ► Landing Open

When the elevator enters the door zone, the car door opens before leveling is complete. The system will output a leveling signal for the car to slowly climb to the leveling position.

### ► Shorten Door Closing Time

Allows a user to press the door closing button to close the door early, before the car door reaches its maximum door open limit.

### ► Re-open with Car Button

Closing doors can be reopened by clicking the open button in the car.

### ► Re-open with Hall Button

Closing doors can be reopened by clicking the hall button.

### ► Independent Car/Hall Control of Front/Rear Doors

The system controls the front or rear door service via the designated car or hall control board.

### ► Door Holding Time

Door holding time duration as door opens and closes.

### ► Door Close Retry

The system waits for a period of time to retry closing the door and repeats door closing until the obstacle is removed. The door close retry times are defined according to user settings.

### ► Door Open Disabled

Disabled door opening functions when the elevator is in testing or inspection mode.

### ► Door Open Standby

The car enters standby mode with door open under auto control mode.

### ► Door Open at Non-door Zone

The door can open at a non-door zone or non-leveling area when the elevator is in inspection mode.

### ► Doorlock Signal

Sends a doorlock signal instead of the door closing limit attained signal to the system.

## IED-G Protection

### ► Next Floor Landing

If the system receives a continuous leveling abnormal signal during operation, the car automatically moves to the nearest floor for leveling and parks at that floor.

### ► Contactor Inspection

Emergency stop command is sent to the elevator to stop the car when the contactor feedback signal is abnormal, such as input/output (motor) contactor, brake contactor, star-delta motor contactor or others.

### ► Motor Stall Prevention

Emergency stop command is sent to the elevator to stop the car when the system detects that the encoder feedback speed signal does not match with the output control speed signal.

### ► Encoder Error Protection

Emergency stop command is sent to the elevator to stop the car when the encoder feedback signal is abnormal.

### ► Doorlock Failure Protection

Emergency stop command is sent to the elevator to stop the car when the doorlock error or hoistway doorlock error occurs. Once the doorlock function is retrieved, the car moves to the leveling area for homing then the door opens and the system returns to normal operation.

### ► Car Door Unlock Failure Protection

A car door unlock failure error is reported to the system when the door opening command is given and the system detects a door open deceleration sensor or door open limit sensor but fails to unlock the car door.

### ► Hoistway Door Unlock Failure Protection

An hoistway door unlock failure error is reported to the system when the door opening command is given and the system detects a door open deceleration sensor or door open limit sensor but fails to unlock the hoistway door.

### ► Overload Protection

The car door remains open when the capacity is overloaded.

## IED-G Drive

### ► Synchronous and Asynchronous Motors Control

Supports geared type synchronous motor and high efficiency asynchronous motor controls.

### ► Auto-tuning with Load

Supports auto-tuning with and without load connection to the system to facilitate the inspection process, no need for removing loads before the inspection process.

### ► No Load Cell

Built-in starting torque compensation technology provides a smooth start.

### ► Multiple Control Modes

Supports V/F, V/F+PG, SVC and FOC+PG(IM/PM) control modes.

### ► Encoder Error Inspection

Inspects signal fail and feedback signal errors.

### ► Safety Check Before Release Mechanical Brake

The system double checks if the 3-phase power is short-circuited before releasing the mechanical brake.

### ► Emergency Power Supply

Provides an emergency power supply when sudden power failure occurs or the power supply is unstable. The system automatically detects the light load direction then moves to the nearest floor and opens the door.

### ► Supporting Encoder Signals

Encoder types: ABZ, Sin/Cos  
Absolute types: ABZ+UVW, SIN/COS+Sinusodal (ERN1387), SIN/COS+Endat(ERN1313), SIN/COS+Hiperface

Features  
IED-G

One Drive for All Control Needs IED-G



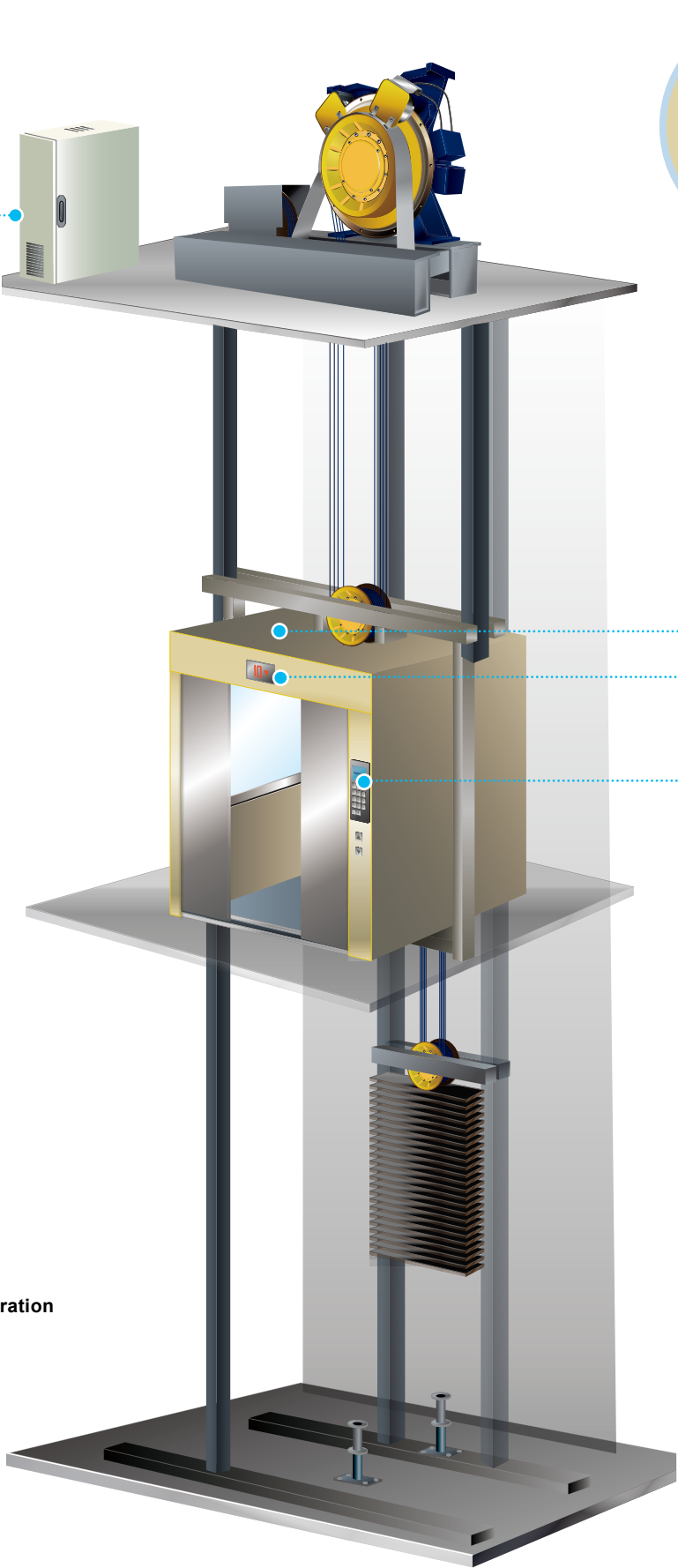
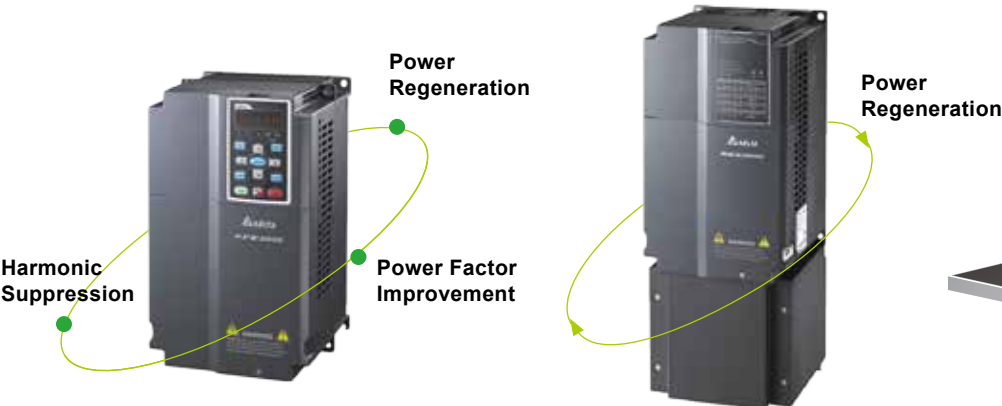
Delta provides energy feedback devices to help elevators save energy. The Active Front End - AFE2000 Series and the Power Regenerative Unit - REG2000 Series provide power regeneration functions that collect regenerative energy and convert it into reusable electricity for other facility use. They reduce total energy consumption and lower the temperature in the control room.

【 Optional 】

Active Front End  
AFE2000 Series

【 Optional 】

Power Regenerative Unit  
REG2000 Series



Floor Display Board

- EA-FM02SVTG1: Vertical matrix display board Standard Type
- EA-FM02SHTG1: Horizontal matrix display board Standard Type
- EA-FMPMLVTG1: LCD display type

Integrated Cartop and Floor Button Board

- EA-CTPG1: Integrated cartop and floor button board
- EA-CP16G1: Button expansion board

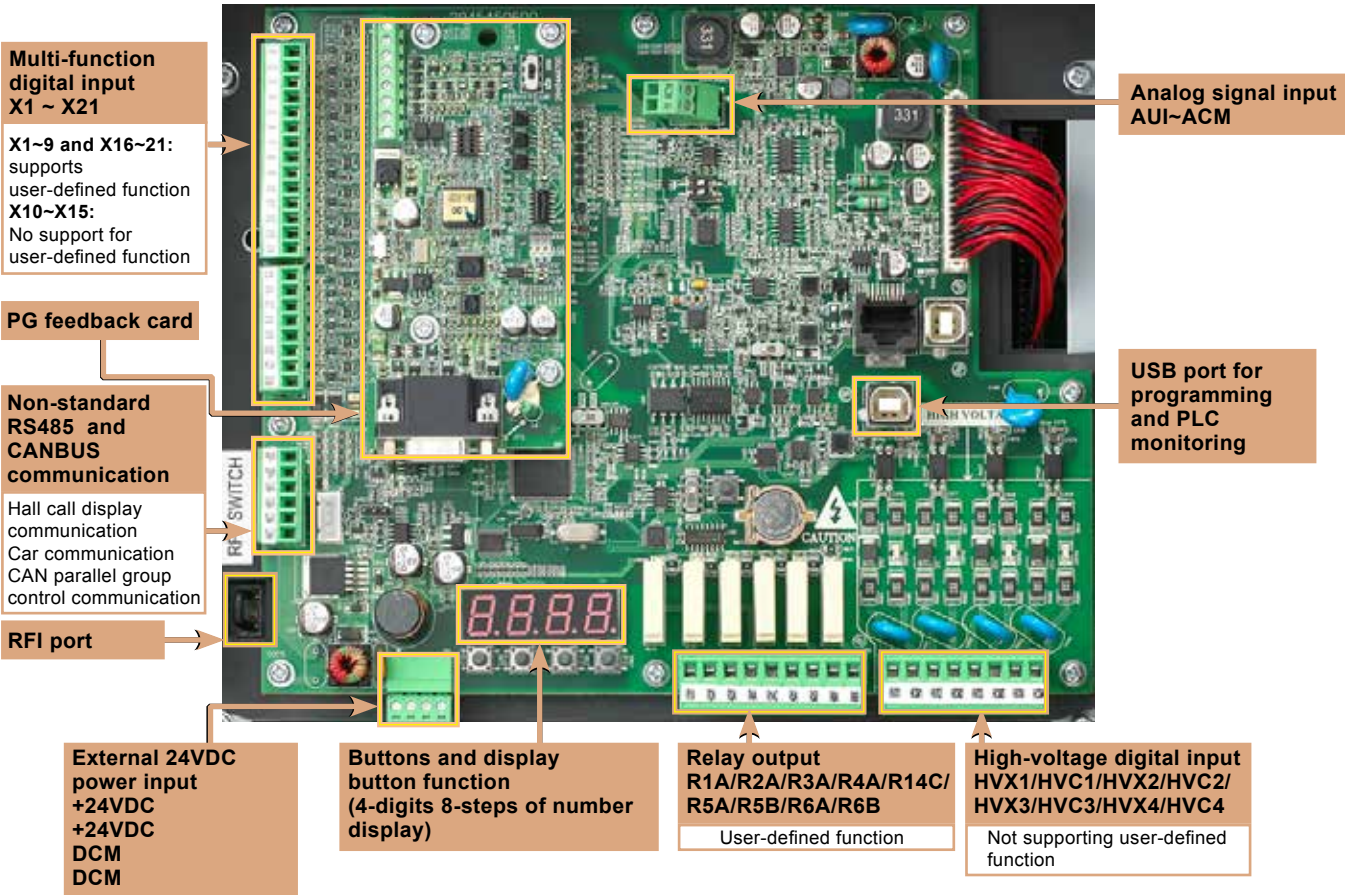
【 Optional 】

External Digital Keypad

- KPIG-CC01
- Controller setting
- Drive setting
- Parameter copy

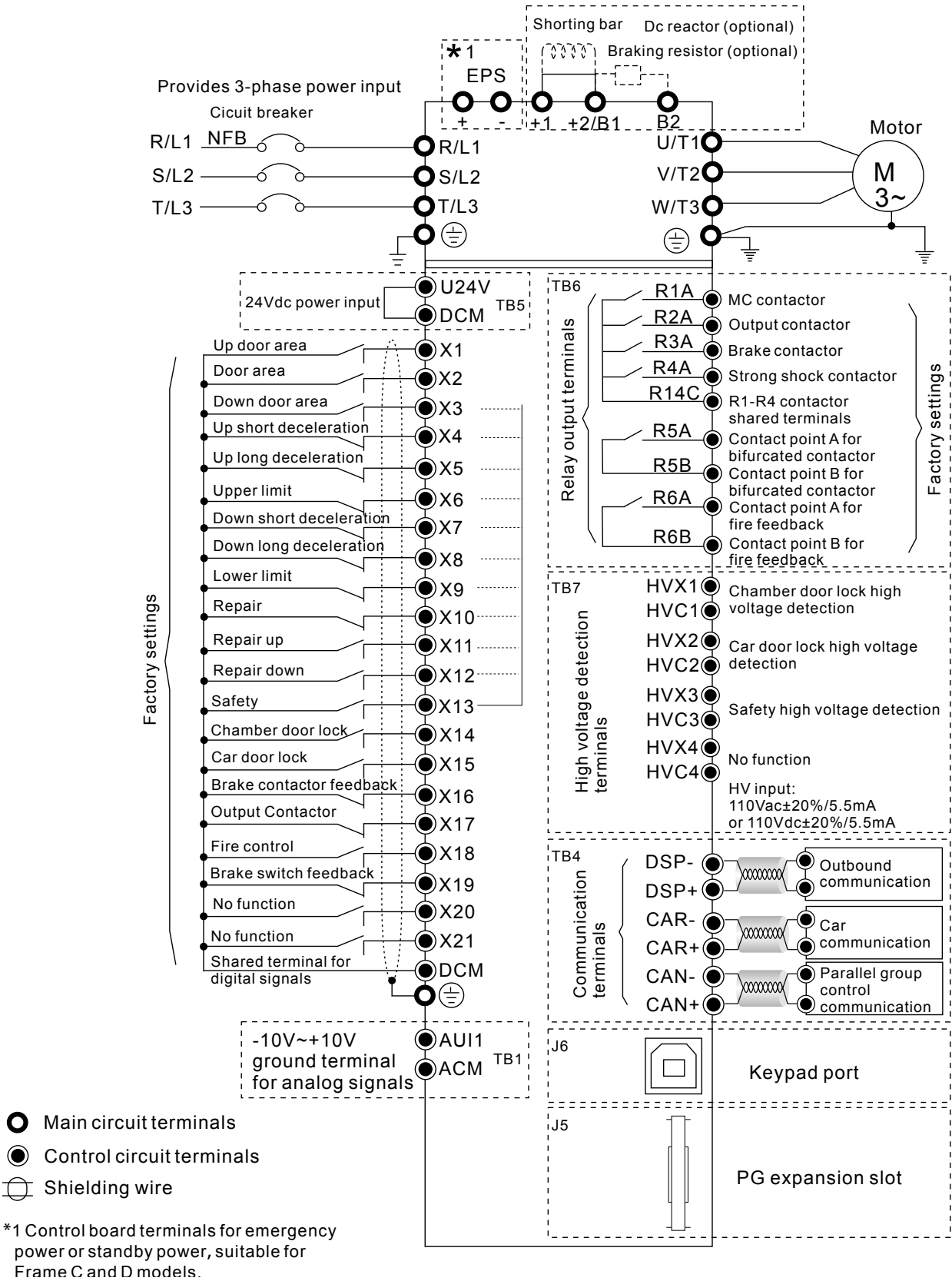


Control Terminals



Name	Quantity	Terminal Explanation
Multi-function digital input	21	1. User-defined functions 2. Non-isolated photocoupler input 3. Input impedance: 9k 4. Input voltage: 0~24V
High-voltage digital input port (TB7)	4	1. User-defined functions 2. Resistive load 3. Inductive load
Multi-function relay output (TB6)	6	1. Function defined: safety, 2. Isolated photocoupler input 3. Input impedance: 20k 4. Input voltage: 0~110Vac/ 0~110Vdc
Non-standard RS485 communication (TB4)	2	1. Communication for hall display accessory 2. Communication for car accessory
CANBUS communication (TB4)	1	1. Communication for CAN parallel group control
USB port (J6)	1	1. Communication for the optional handheld type digital keypad KPIG-CC01
Analog signal input (TB1)	1	1. Input voltage: +10V ~ -10V 2. Input impedance: 20k 3. Resolution 12 bit"

Wiring

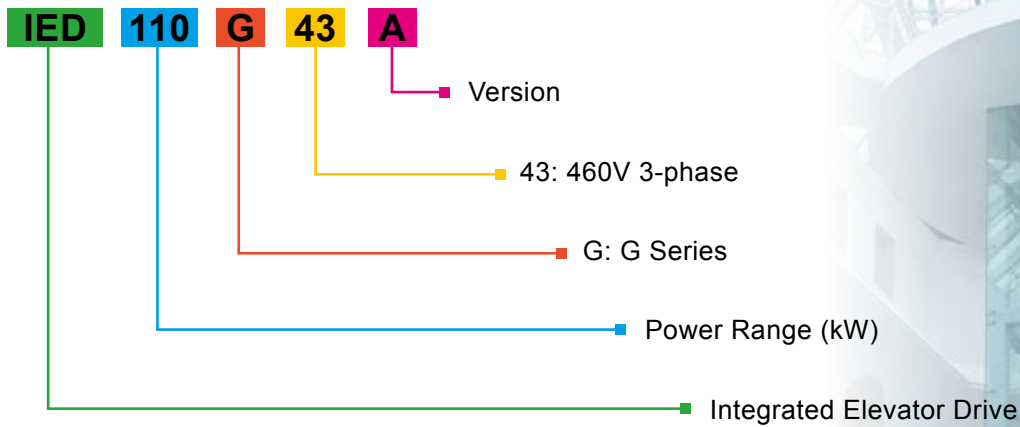


Specifications


460V Series

Frame		C					D	
Model IED__ _ G43A		055	075	110	150	185	220	300
Power Range (kW)		5.5	7.5	11	15	18.5	22	30
Power Range (HP)		7.5	10	15	20	25	30	40
Output	Rated Output Capacity (kVA)	10.4	13.5	18.3	24	30.3	36	46.2
	Rated Output Current (A) for General Applications	13	17	23	30	38	45	58
	Rated Output Current (A) for Elevator Applications	14.9	19.4	26.3	34.3	43.4	51.4	66.3
	Max. Output Voltage (V)	3 Phase 380~480V, 50/60Hz						
	Range of Output Frequency (Hz)	0.00~400.00Hz						
	Carrier Frequency (kHz)	2~15kHz (8kHz)					2~9kHz (6kHz)	
	Input Current (A)	14.9	19.4	26.3	34.3	43.4	51.4	66.3
	Range of Input Voltage (V)	3 Phase AC 380V~480V ( -10%~+10%), 50/60Hz ( -3Hz~+3Hz)						
	Allowable Range of Voltage Variation (V)	342~528Vac						
	Allowable Range of Frequency Variation (Hz)	47~63Hz						
Drive Weight (Kg)		8	10	10	10	10	13	13
Cooling Method		Fan Cooling						
Brake Chopper		Frame C, D: Included						
DC Reactor		Frame C, D: Optional						
EMI Filter		Frame C, D: Optional						

Model Explanation



Common Characteristics

Control Characteristics	Control System	V/F, VF + PG, SVC, FOC+PG (IM/PM)
	Start Torque	Starting torque: 150% at 0.5Hz and 0Hz under FOC + PG and FOC+PM control modes
	Speed Control Range	1:100 Sensorless vector (up to 1:1000 when using PG card)
	Speed Control Resolution	±0.5% Sensorless vector (up to ±0.02% when using PG card)
	Speed Response Ability	5Hz (up to 40Hz for vector control)
	Max. Output Frequency (Hz)	0.00 to 400.00 Hz
	Output Frequency Accuracy	Digital command ±0.005% at -10°C ~ +40°C, analog command ±0.5% at 25 ±10°C
	Frequency Setting Resolution	Digital command ±0.01Hz, analog command: 1/4096(12-bit) of the max. output frequency
	Torque Limit	Max. is 200% torque current
	Torque Accuracy	±5%
	Accel/Decel Time	0.00 to 600.00 seconds
	V/f Curve	Adjustable V/f curve using 4 independent points and square curve
	Brake Torque	About 20%
	Fan Control	On/Off switch
	Motor Protection	Electronic thermal relay protection
Protection Characteristics	Over-current Protection	The current forces 250% of the over-current protection and 150% of the rated current
	Ground Leakage Current Protection	Higher than 50% of the drive's rated current
	Overload Ability	Constant torque: 150% for 60 seconds, variable torque: 200% for 3 seconds
	Over-voltage Protection	Over-voltage level: Vdc > 800V
	Low-voltage Protection	low-voltage level: Vdc < 400V
	Over-voltage Protection for Input Power	Varistor (MOV)
	Over-temperature Protection	Built-in temperature sensor
	Protection Level	IP00
Environmental Conditions	Operation Temperature	-10°C to 40°C
	Storage Temperature	-20°C to 60°C
	Ambient Humidity	Below 90% RH (non-condensing)
	Vibration	less than 20Hz, 0.6G at 20 to 50Hz
	Cooling Method	Fan cooling (RUN/STOP mode)
	Installation Altitude	Altitude 1,000 m or lower, keep from corrosive gasses, liquid and dust
International Certification		



Accessories

▪ EA-GC08G1



Group Control Card	
Dimensions	132(W) x 114(H) x 25(D) mm
Features	Group control of maximum 8 elevators
	Distributed parking
	Group sub-zoning
	Peak hour operation mode
	Energy saving operation mode

▪ EA-CTPG1



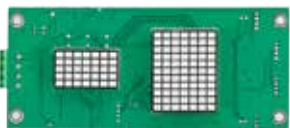
Integrated Elevator Car Signal Board (32 floors)	
Dimensions	150(W) x 102(H) x 26.5 (D) mm
Features	Provides 32 input terminals for floor command
	Pairs with EA-CP16G1 provides 48 floors control
	Pairs with EA-CTPG1 provides to 64 floors

▪ EA-CP16G1



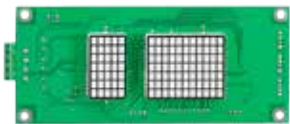
Floor Button Expansion Board (16 Floors)	
Dimensions	150(W) x 102(H) x 26 (D) mm
Features	Must pair with EA-CTPG1
	Provides 16 input terminal for floor command

▪ EA-FM02SVTG1



Floor Display Board (Standard Vertical Type)	
Dimensions	150(W) x 65(H) x 30 (D) mm
Features	7x11 matrix display, color red
	Displays floor number and direction
	Suitable for both car and hall display
	Supports hall call and elevator lock functions

▪ EA-FM02SHTG1



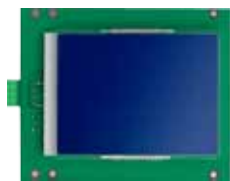
Floor Display Board (Standard Horizontal Type)	
Dimensions	150(W) x 65(H) x 32 (D) mm
Features	7x11 matrix display, color red
	Displays floor number and direction
	Suitable for both car and hall display
	Supports hall call and elevator lock functions

▪ EA-FMPMLVTG1



LCD Floor Display Board	
Board Size	155(W) x 61(H) x 12(D) mm
Screen Size	114(W) x 58(H) mm
Features	Supports both horizontal and vertical display, white font on blue background
	Customized wording and pattern (please contact Delta for more details)
	Displays car full, stop and other elevator status
	Suitable for both car and hall display
	Supports hall call and elevator lock functions

▪ EA-CMPMLVTG1



LCD Floor Display Board	
Board Size	160(W) x 130 (H) x 23.5 (D) mm
Screen Size	122 (W) x 92 (H) mm
Features	Supports both horizontal and vertical display, white font on blue background
	Customized wording and pattern (please contact Delta for more details)
	Displays car full, stop and other elevator status
	Suitable for both car and hall display
	Supports hall call and elevator lock functions

▪ EMED-PGABD-1/  
EMED-PGHSD-1



PG Card	
EMED-PGABD-1	Encoder signal input: ABZ / UVW
EMED-PGHSD-1	Encoder signal input: Heidenhain ERN1387/ECN1313, SINK HIPERFACE

▪ KPIG-CC01



Digital Keypad (Handheld Type)	
Dimensions	60(W) x 90(H) x 40(D) mm
Features	Supports control function and drive parameter settings
	View ERROR code
	Supports parameter duplicate function

IED-G Accessories

EA-IC64G1



IC Card Module	
Dimensions	90(W) x 64.5(H) x 36(D) mm
Features	Built in antenna
	Supports floor control max. 64 floors
	Installed on car/hall control panels

\* Please contact Delta for launch information and product details

EA-VBG1



Voice Module	
Dimensions	113(W) x75(H)x 39(D) mm
Features	Supports audio files in MP3 and WMA file format
	Built-in audio volume control button
	User-defined audio content and music

\* Please contact Delta for launch information and product details

EA-TX04G1



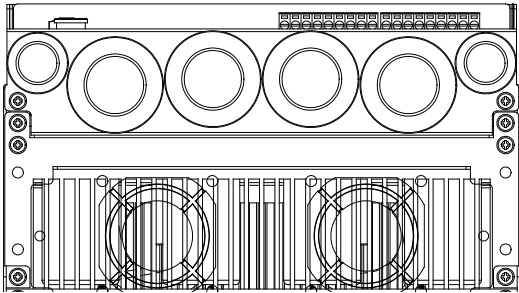
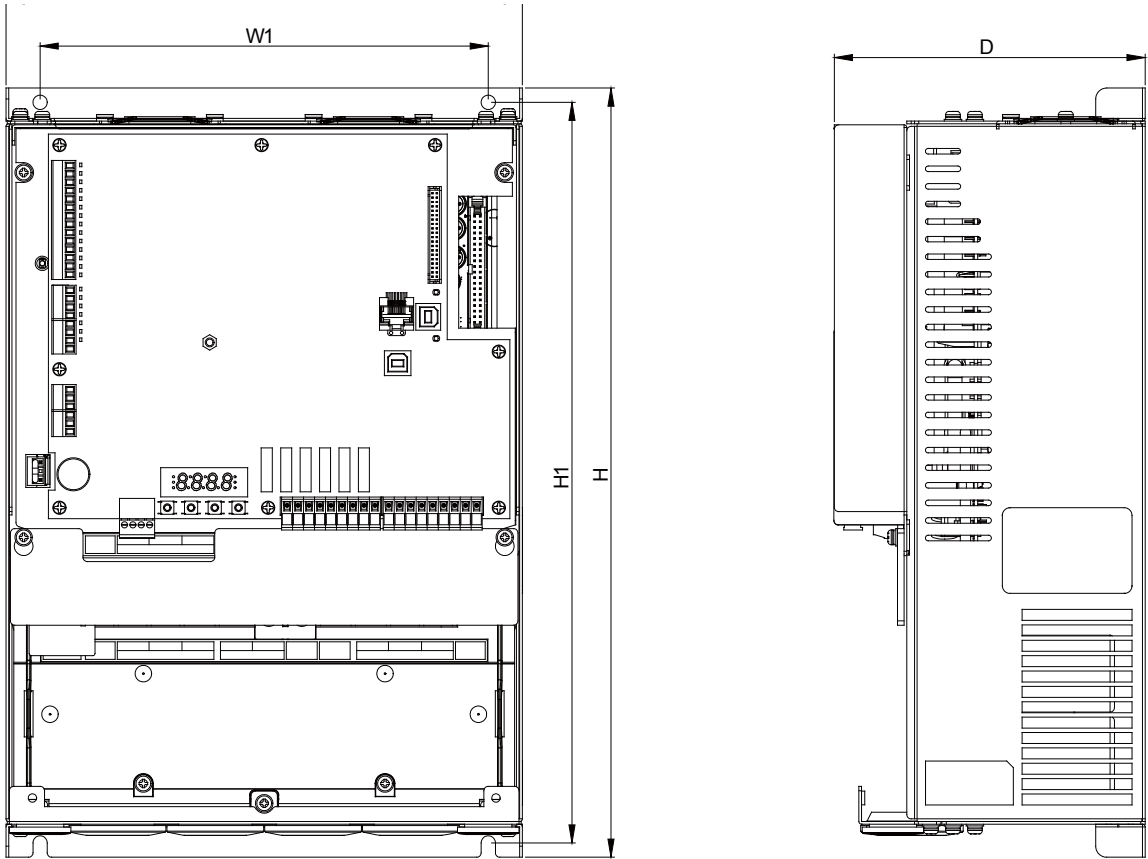
Text (SMS) Module	
Dimensions	113(W) x75(H) x 39(D) mm
Features	Sends error codes via text messages to up to 4 cellular phones
	Simultaneous control of 2 elevators
	Supports GSM 900/1800 frequency bands

\* Please contact Delta for launch information and product details



Dimensions

Frame C

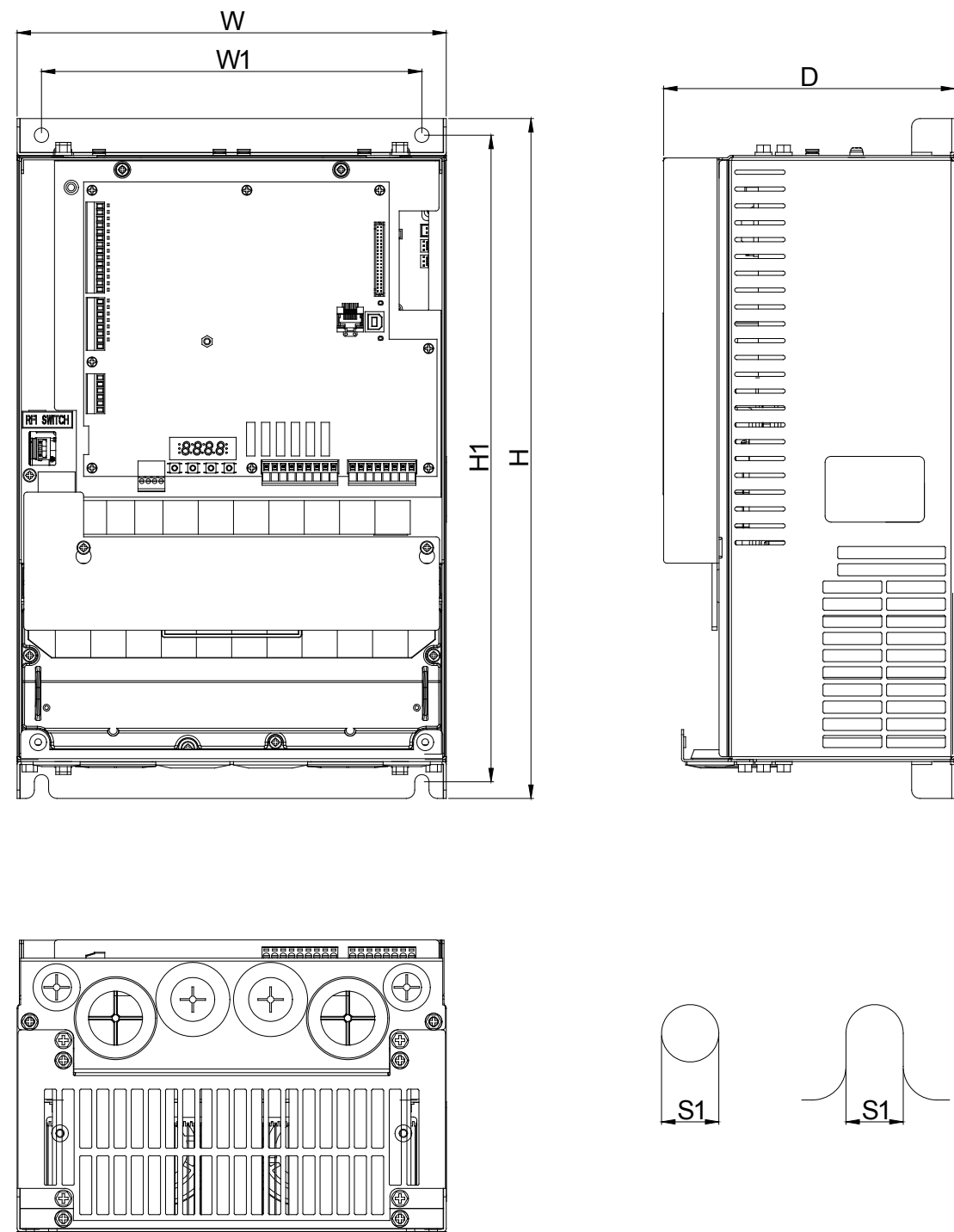


Frame		W	W1	H	H1	D	S1
C	mm	235.0	204.0	350.0	337.0	141.5	6.5
	inch	9.25	8.03	13.78	13.27	5.57	0.26



Dimensions

■ Frame D



Frame		W	W1	H	H1	D	S1
D	mm	255.0	226.0	403.8	384.0	173.0	8.5
	inch	10.04	8.90	15.90	15.12	6.81	0.33

Ordering Information

IED-G Series	
IED055G43A	460V 5.5kW
IED075G43A	460V 7.5kW
IED110G43A	460V 11kW
IED150G43A	460V 15kW
IED185G43A	460V 18.5kW
IED220G43A	460V 22kW
IED300G43A	460V 30kW
Accessories	
EA-FM02SVTG1	Floor display board: 2 digits/ 7-steps display/ vertical type/ standard model
EA-FM02SHTG1	Floor display board: 2 digits/ 7-steps display/ horizontal type/ standard model
EA-FMPMLVTG1	Floor display board: LCD display/ standard model
EA-CMPMLVTG1	Floor display board for car: LCD display/ standard model
EA-GC08G1	Group control board: supports group control up to 8 elevators
EA-CTPG1	Integrated car signal board and floor push button board of 32 floors; selective EA-PACPG1 for mounting
EA-CP16G1	Floor push button expansion board of 16 floors, pairing with EA-CTPG1/G2 is allowed; selective EA-PACPG2 for mounting
KPIG-CC01	Handheld type digital keypad: includes USB cable
EA-IC64G1	IC card module: supports control up to 64 floors <sup>*1</sup>
EA-VBG1	Voice module: supports audio file in MP3 format and SD slot <sup>*1</sup>
EA-TX04G1	Text (SMS) Module:Send error codes via text messages to up to 4 cellular phones and monitors up to 2 elevators <sup>*1</sup>
EMED-R12AG1	1Relay output expansion card of 12 relays <sup>*2</sup>
EA-LCG1	LCD display expansion board: suitable to pair with other LCD display device <sup>*2</sup>

1.Please contact with Delta for more product information and launch date  
2.Relay functions are defined by Delta, user-defined is not allowed)

Global Operations

ASIA (Taiwan)



Taoyuan Technology Center (Green Building)



Taoyuan Plant 1



Taoyuan Plant (Diamond-rated Green Building)

ASIA (China)



Wujiang Plant 3



Delta Electronics

ASIA (Japan)



Tokyo Office

ASIA (India)



Rudrapur Plant (Green Building)

EUROPE



Amsterdam, Netherlands

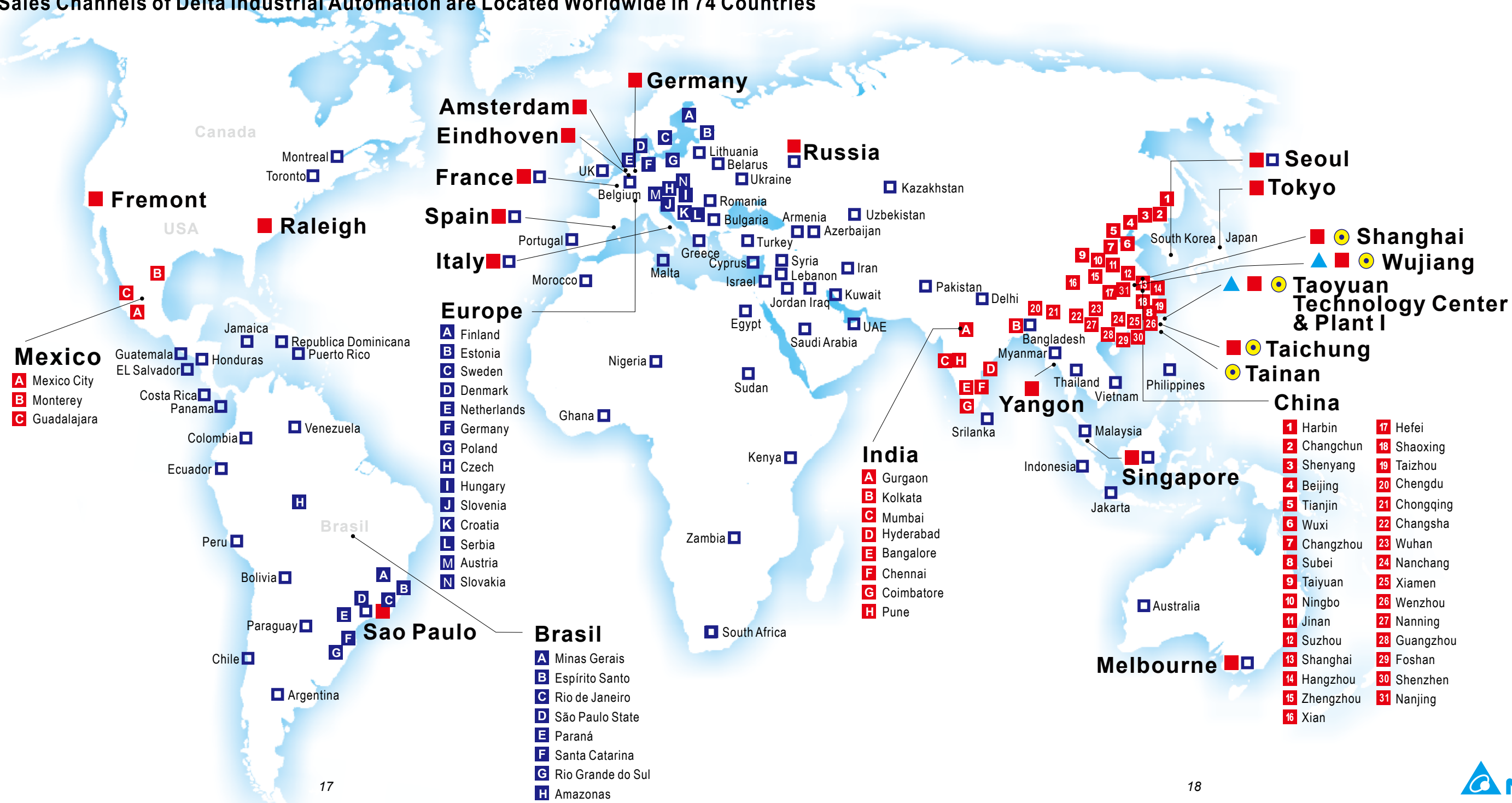
AMERICA



Research Triangle Park

Sales Channels of Delta Industrial Automation are Located Worldwide in 74 Countries

▲ Factories 2 ■ Branch Offices 67 ● R&D Centers 5 ■ Distributors 603







Smarter. Greener. Together.

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