

EC300

Elevator Intelligent Integrated Controller



Product Introduction

The EC300 Elevator Intelligent Integrated Controller is a new-generation four-quadrant intelligent elevator control system that integrates drive technology, energy feedback technology, control technology, and network communication technology into a unified design concept. By organically combining four-quadrant drive, control, and management, it is specifically applied to elevator scenarios with potential energy loads. The system delivers comprehensive improvements in energy efficiency, safety and reliability, operational simplicity, and cost-effectiveness.



Function Features

- High-efficiency regenerative energy-saving technology
- Supports up to 64 floors, with a maximum elevator speed of 10 m/s
- Safety enable hardware input compliant with EN81 standards
- Supports mobile APP and LCD operator commissioning
- Supports in-car commissioning, with hall call boards automatically adapting to physical floors
- Mainboard features a simple HMI, convenient for on-site debugging
- Supports CAN and RS485 communication interfaces, providing flexible system wiring
- Supports direct landing, with automatic generation of multiple speed curves and automatic detection of ultra-short floors
- Intelligent door logic learning, elevator fault grading, and automatic brake force detection
- Highly integrated power module with compact structure, suitable for small machine room control cabinet designs
- Rich and advanced elevator operation functions to meet diverse customer requirements
- New PWM dead-time compensation technology effectively reduces motor noise and elevator energy loss
- During floor self-learning, the system intelligently detects hoistway switches, and the motor auto-tuning includes automatic adjustment of the current loop

Function Highlights

Higher Efficiency and Energy Saving

- Adopts four-quadrant VFD control technology. During elevator operation, excess mechanical energy (potential and kinetic) is converted into AC power and fed back to the grid via EC300's space vector modulation of the IGBT drive signals. The energy feedback efficiency exceeds 80%.

Safer and More Comfortable

- Safety enable hardware control: In the event of a safety fault, the system immediately locks at the base level, shuts down IGBT output, and stops operation.
- Real-time monitoring of hoistway switches and position prevents wrong-floor operation.
- DSP uses TI dual-core control chips from the USA, offering high communication speed, fast curve-tracking response, high control precision, and strong anti-interference capability.

Greener and More Environmentally Friendly

- AFE active front end: Precisely controls the DC bus voltage, enabling efficient energy feedback. Feedback current harmonic <5%, meeting IEC61000-3-2 and GB/T14549 grid harmonic standards. Replaces traditional brake resistor energy dissipation, making it easier for the elevator to achieve VDI4707 Class A energy efficiency certification.

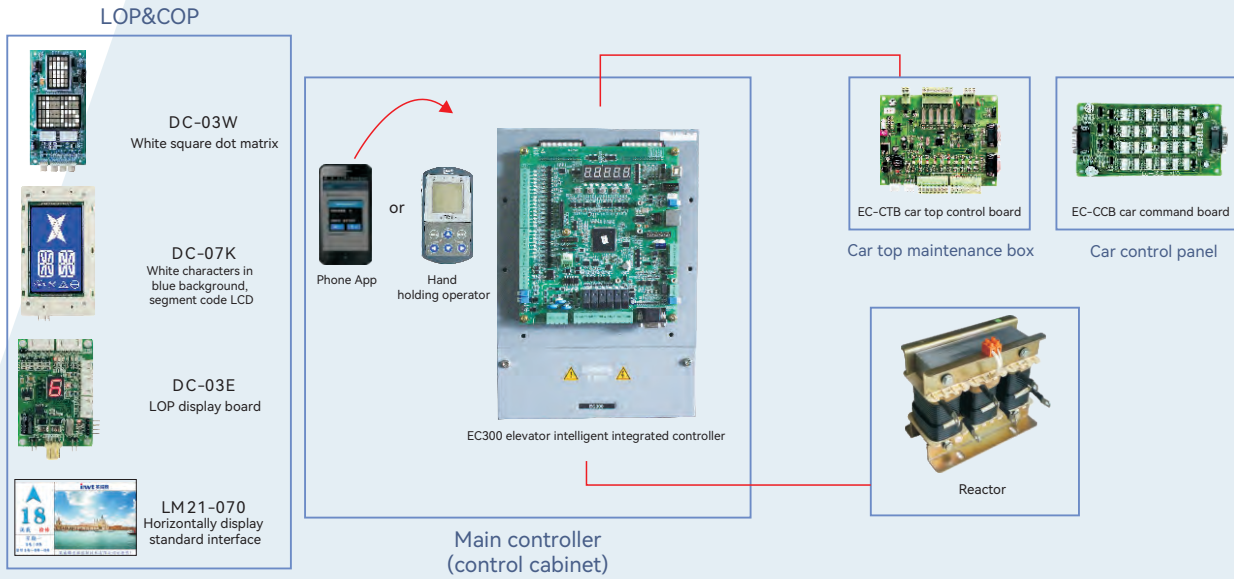
Smarter and More Reliable

- Built-in data black box function: Continuously monitors and records elevator operation. In the event of an instantaneous fault, the control chip automatically identifies and logs the fault in memory.

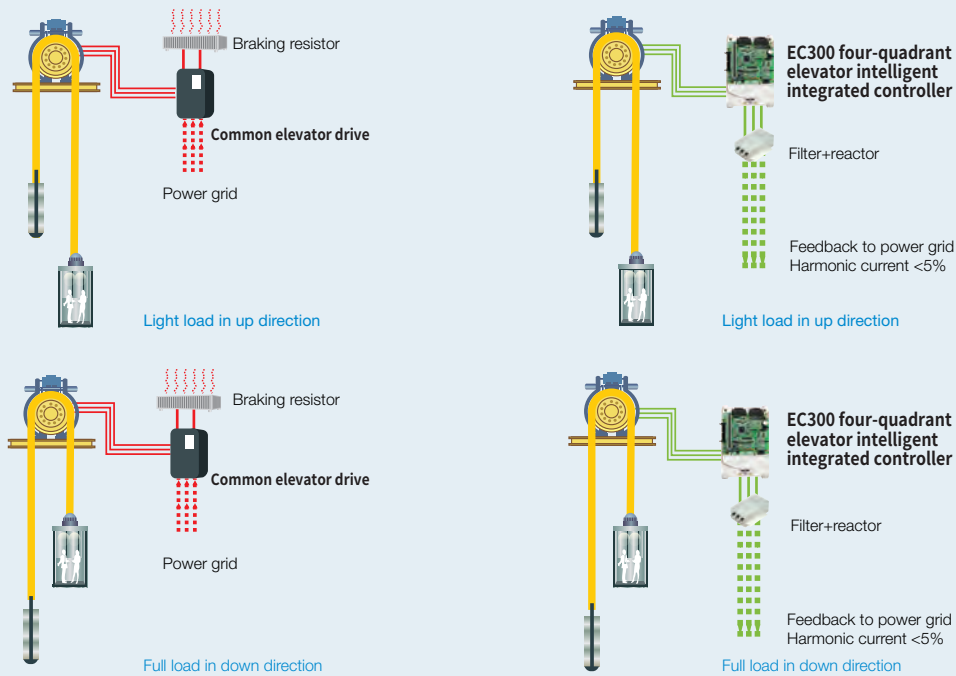
Technical Specifications

Item		Specifications
Input and output	Rated input voltage	AC 380V~440V
	Rated input frequency	50Hz or 60Hz, allowed range: 47 ~ 63Hz
	Rated output voltage	0 ~ input voltage, error < 5%
	Rated output frequency	0 ~ 400Hz
Basic specifications	Control mode	V/F, SVC, FVC
	Maximum output frequency	400Hz
	Speed range	1:100 (SVC), 1: 1000 (FVC)
	Speed control accuracy	±0.5% (SVC), ±0.1% (FVC)
	Starting torque	0.5Hz/150% (SVC) 0Hz/180% (FVC)
	Overload capability	150% of the rated current for 60s; 180% of the rated current for 10s; 200% of the rated current for 1s;
	Carrier frequency	1.0~16KHz, able to automatically adjust the carrier frequency according to load characteristics
	Fault protection	Multiple protections including power-on short circuit detection, input and output phase loss protection, overcurrent protection, overvoltage protection, motor protection, door motor fault, encoder protection, as well as comprehensive elevator fault handling functions
Energy feedback	When the traction machine is generating electricity, the EC300 feeds power back to the grid that meets the grid requirements.	
Peripheral interface	Digital input	24 channels of standard switch input 9~30V 3 channels of high voltage detection input 110V/220V
	Analog input	1channel of AI, input voltage: 0~10V
	Communication port	2 sets of CANbus, 2 sets of Modbus
	Relay output	Standard with 6 channels of relay NO outputs, 5A/250 VAC
	Encoder port	Standard with SIN/COS, UVW, 12V incremental encoder interfaces optional ECN1313, resolver PG card
	DP port	Optional DP communication card (converts from SPI to Ethernet)
	STO port	External expansion STO card
Features	Operation mode	Normal run, inspection, re-leveling, door-open re-leveling, UPS operation, and hoistway self-learning
	Speed loop	Two sets of parameters for start and stop under low-speed speed loop
	Current loop	Separate adjustment for low-speed and high-speed sections
	Stopping method	Distance-based stopping principle, with real-time generation of the travel curve for direct and precise leveling.
	Starting torque compensation	Two independent regulation methods using the speed loop and position loop, enabling smooth start without a load weighing device.
	Hoistway auto-tuning	Accurately records floor positions and forced deceleration switch positions
	Power-on auto-tuning	After the synchronous machine is powered on, the first maintenance operation can automatically learn the electrical angle.
	Automatic voltage regulation	Maintains constant output voltage automatically when grid voltage fluctuates
Others	Mounting method	Wall mounting
	Operating environment temperature	-10~50°C, derating is need when temperature is higher than 40°C
	Ingress protection level	IP20
	Braking unit	No need
	Braking resistor	No need
	Input AC reactor	standard

Topology Diagram



Energy Feedback Comparison Diagram



Electricity Saving Rate Statistics Table

Load ratio	Energy-saving rate
0% no-load operation	45.82%
25% no-load operation	30.63%
40% no-load operation	22.76%
50% no-load operation	20.89%
75% no-load operation	36.64%
100% no-load operation	47.52%
Overall power saving rate: 30.04%	

Model Description

EC300-7R5-4

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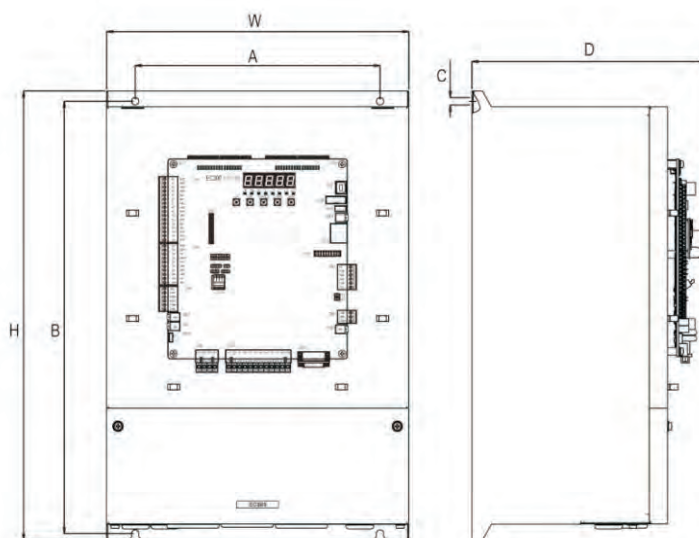
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Field identifier	Identifier description	Details
①	Product series abbreviation	EC: elevator-dedicated 300: Four-quadrant intelligent integrated controller
②	Rated power	7R5: 7.5kW
③	Voltage degree	4: AC 3PH 380~440V

Configuration

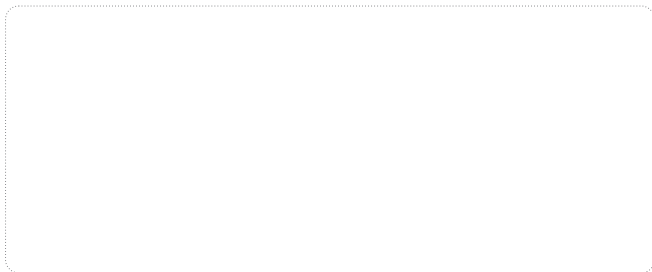
Model	Rated power (kW)	Input current (A)	Output current (A)	Carrier frequency (kHz)	Input reactor model
EC300-7R5-4	7.5	25	18.5	1~15 (6)	ERL20A10504
EC300-011-4	11	32	27	1~15 (6)	ERL20A10504
EC300-015-4	15	40	34	1~15 (6)	ERL35A06004
EC300-018-4	18.5	47	37	1~15 (6)	ERL45A04704
EC300-022-4	22	56	46	1~15 (6)	ERL45A04704
EC300-030-4	30	70	62	1~15 (6)	ERL60A03504

Appearance and Installation Dimensions



Input voltage	Power (kW)	W (mm)	H (mm)	D (mm)	A (mm)	B (mm)	Diameter of mounting hole (mm)	Mounting bolt
3PH AC380V	7.5-15	223	347	181	150	334.5	Φ7	M6
	18.5-30	290	426	225	235	410	Φ7	M6

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E-mail: overseas@invt.com

Website: www.invt.com

SHENZHEN INVT ELECTRIC CO.,LTD. INVT Guangming Technology Building, Songbai Road, Matian, Guangming District, Shenzhen, China

Industrial Automation: • HMI • PLC • VFD • Servo System • Elevator Intelligent Control System

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