

HIWIN®

Motion Control & Systems



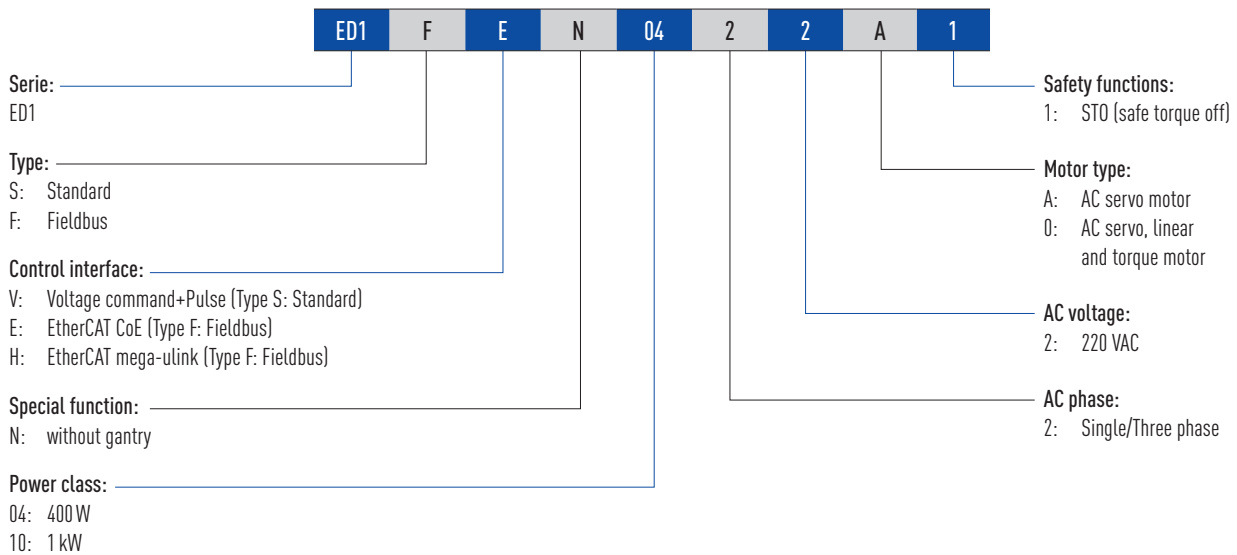
Servo Drive

ED1

Servo Drive

ED1

Order code



Features

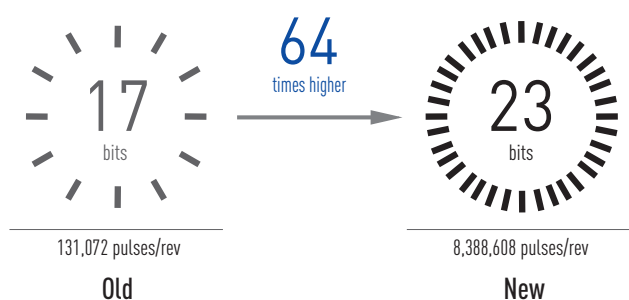
- 3.2 kHz Speed response
- Tuneless function
- Advanced auto-tune function
- Ripple compensation
- Network connectivity
- Support variety motors
- Built-in safe torque off (STO)
- Support multiple encoder types (EnDat, Tamagawa, BiSS-C).



Applications

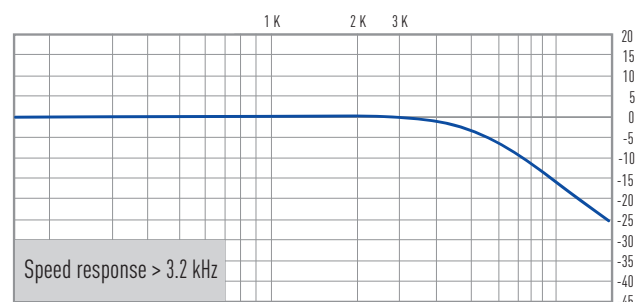
FPD industry, semiconductor industry, automation industry, laser cutting industry, PCB industry.

Improved processing accuracy



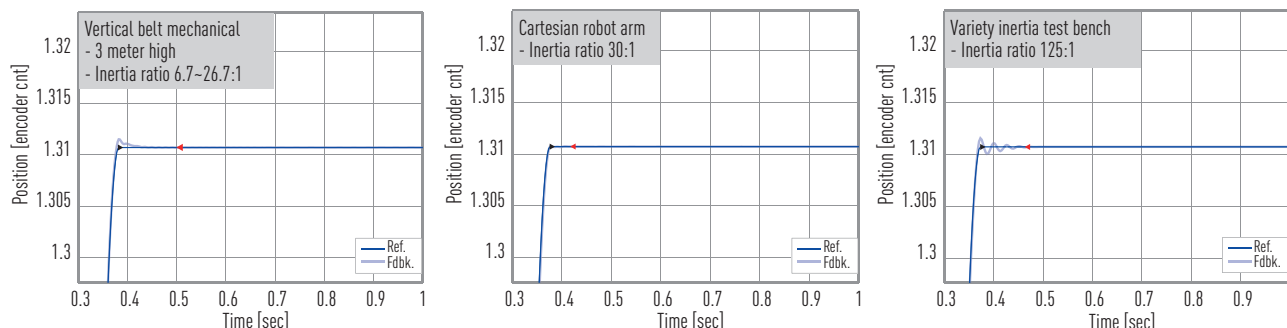
3.2 kHz speed response

Higher speed response, faster settling and higher throughput.



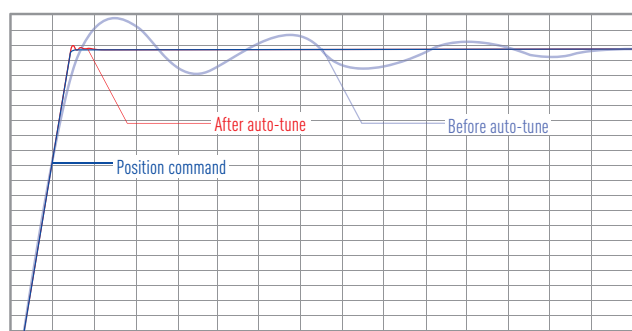
Tuneless function

Brings good performance and stable movement with inertia ratio up to 250:1. Adaptive gain tuning in accordance with load changes.



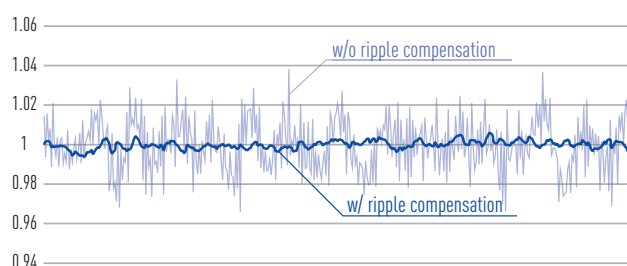
Advanced auto-tune function

Automatic gains tuning, filters adjustment, model following control activation, vibration and resonance suppression to optimize machine performance.



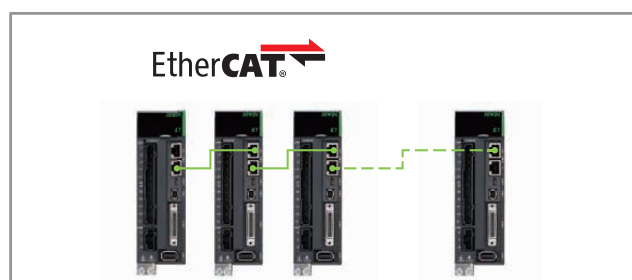
Ripple compensation

Delivers more smooth movement by reducing velocity ripple caused by motor cocking. Servo loop gains are not necessary to change.



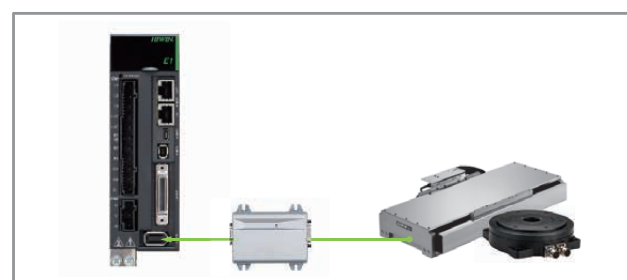
Network connectivity

Supports EtherCAT interfaces and HIWIN mega-ulink communication.



Feedback interface

Built-in digital AqB and serial encoder interface for Tamagawa encoder. With ESC series encoder box E1 drive is able to support analog SIN/COS, EnDat and BiSS-C encoder.



Support variety motors

One drive type for linear motor, AC servo motor and direct-drive motor.



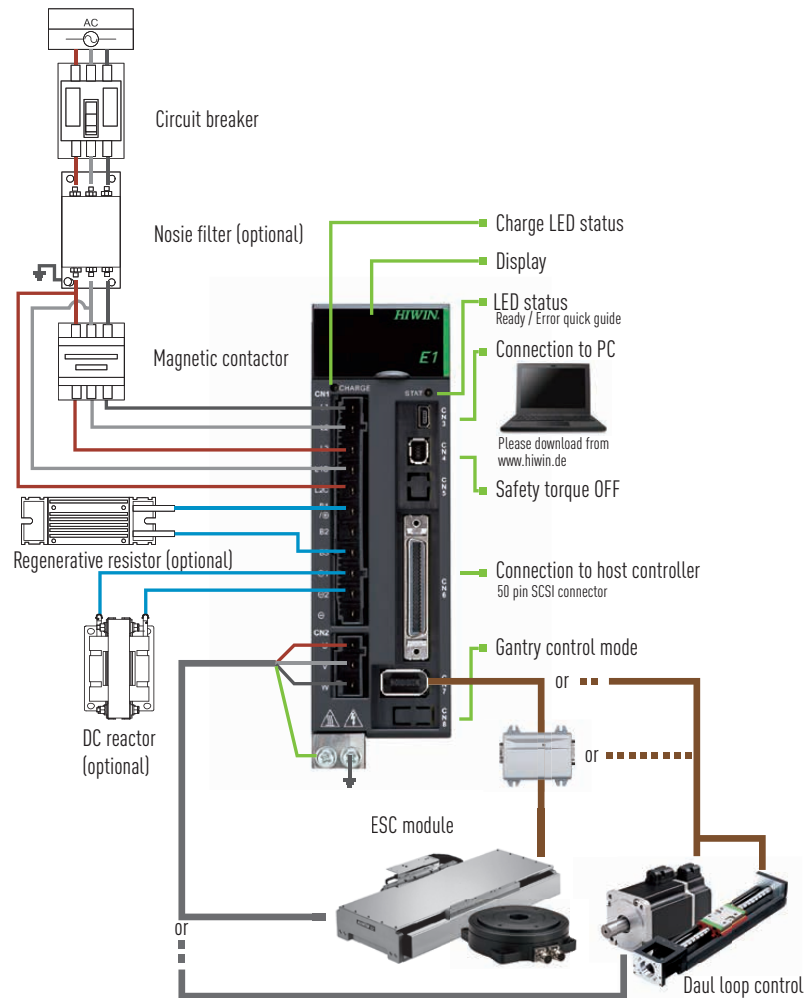
Built-in safe torque off (STO)

Motor power is cut-off when STO is activated.

Servo Drive

ED1

Interfaces



Dimensions

Technical data ED1		400 W	1 kW
Input power	Rated output		
	Rated voltage (line to line)	200 ~ 240 VAC, 50 ~ 60 Hz	
	Number of phases	1 or 3	
	Current	1.5 A _{eff}	5 A _{eff}
Output power	Control power	1 Ø, 200 ~ 240 VAC, 50 ~ 60 Hz	
	Phase voltage	3 Ø, 240 VAC	
	Rated power	400 W	1 kW
	Peak current	10 A _{eff}	23.3 A _{eff}
	Rated current	2.5 A _{eff}	5.6 A _{eff}
	Frame	B	C
	Cooling method	Fan cooling	
	Control method	IGBT PWM space vector control	
	PWM modulation frequency	16 KHz	
	Applicable motor	AC/DM/LM	
	STAT LED indicator	Red: error / green: servo ready	
	Built-in regenerative resistor	-	40 Ω / 40 W
	Dynamic brake	Built-in dynamic brake / delay time of relay: 20 ms	
	Internal dynamic brake resistor	-	10 Ω
	Analog output	Channel: 2 / resolution: 12 bit / output voltage range: ±10 V / accuracy: ±2 % / max. output current: ±10 mA	

Technical data ED1	Rated output	400 W	1 kW
Control function			
Position mode	Signal type	Pulse/direction , CW/CCW , A/B phase	
	Max. input bandwidth	Differential: 5 Mpps, Single-ended: 200 kpps	
	Electronic gear	Gear ratio: pulses/counts Pulses: 1 ~ 1,073,741,824 Counts: 1 ~ 1,073,741,824	
Velocity mode (analog input)	Impedance	14 kΩ	
	Signal format	±10 VDC	
	Max. input bandwidth	100 Hz	
	Specification	16 bit	
Torque mode (analog input)	Impedance	14 kΩ	
	Signal format	±10 VDC	
	Max. input bandwidth	100 Hz	
	Specification	16 bit	
Control mode	– Position mode – Velocity mode – Torque mode – Dual loop mode		
Encoder feedback	Power supply	+5 VDC ±5 %, 400 mA	
	Signal format	Serial signal – resolution: 23 bit (single-turn / multiturn absolute encoder). Bandwidth: 5 MHz Incremental signal – AqB and Z phase signals (digital differentail TTL signal). The maximum input bandwidth of each phase is 5 MHz.	
	Safety function	Encoder power malfunction detection / short circuit protection / undervoltage protection/ overvoltage protection	
	Position counting range	-2,147,483,648 ~ 2,147,483,647 (32 bit)	
	Linear motor / torque motor	Excellent smart cube (ESC) must be connected, depending on encoder type.	
Encoder output			
Emulated encoder Output	Z phase	1. Serial and digital (AqB) encoders are supported. 2. The width of output signal can be adjusted by parameter. 3. Differential signal output 4. Z phase open collector output is supported. 5. Two output methods can be selected. – Only outputs one Z phase signal for the total travel distance. – Outputs one Z phase signal per one revolution.	
	A/B phase	1. Serial and digital (AqB) encoders are supported. 2. Differentail signal output. The maximum output bandwidth is 18 M count/s. 3. The scaling of output can be adjusted. For instance, ten encoder counts = one emulated encoder count.	
	Computer communication Standard USB 2.0 (Mini USB)	Connnet the servo drive with your computer to set parameters, monitor physical quantities and execute trial operations via Thunder.	
General purpose I/O	Input	The functions of general-purpose inputs (I1 ~ I10, photocoupler) can be defined by user. 24 V/5 mA (Each input pin)	
	Output	The functions of general-purpose outputs (O1 ~ O5, photocoupler) can be defined by user. 24 V/0.1 A (Each output pin)	
	Position trigger (PT)	The functions of general-purpose outputs (O1 ~ O5, photocoupler) can be defined by user. 24 V/0.1 A (Each output pin)	

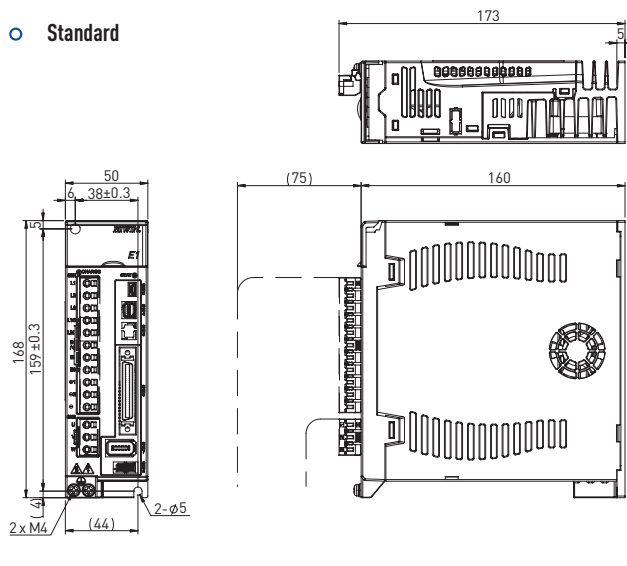
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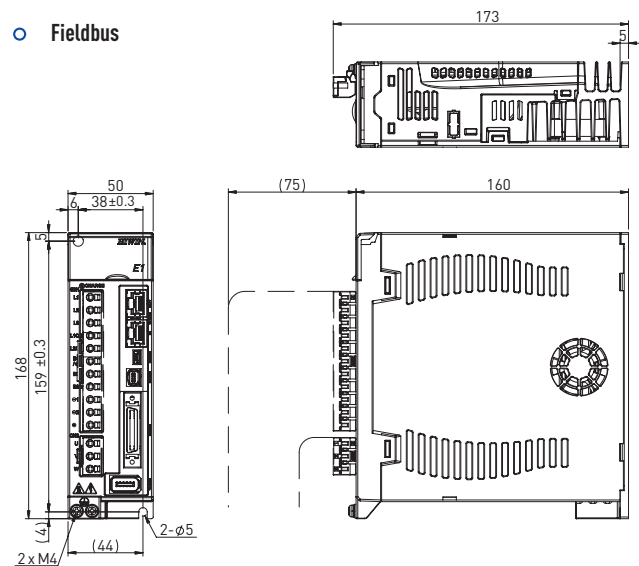
Technical data ED1	Rated output	400 W	1 kW
Encoder output			
Regenerative energy protection	Regenerative resistor	- Without built-in regenerative resistor - If needed, consider external regenerative resistor	- With built-in regenerative resistor - If necessary, external regenerative resistor can be extended
	Protection of regenerative resistor enabled	+HV > 380 VDC	
	Protection of regenerative resistor disabled	+HV < 370 VDC	
	Tolerance	±5 %	
Environment	Insulation voltage	Impedance between main power and ground is 1,500 VAC. (A minute)	
	Operating temperature	0°C ~ 45°C	
	Storage temperature	-20°C ~ 65°C	
	Humidity	Operating and storage temperature: 20 to 85 % RH (Non-condensing)	
	Altitude	Altitude 1,000 M or lower above sea level	
	Vibrating	Less than 5.88 m/s ² 10 to 60 Hz	
	IP rating	IP20	

400 W

Standard

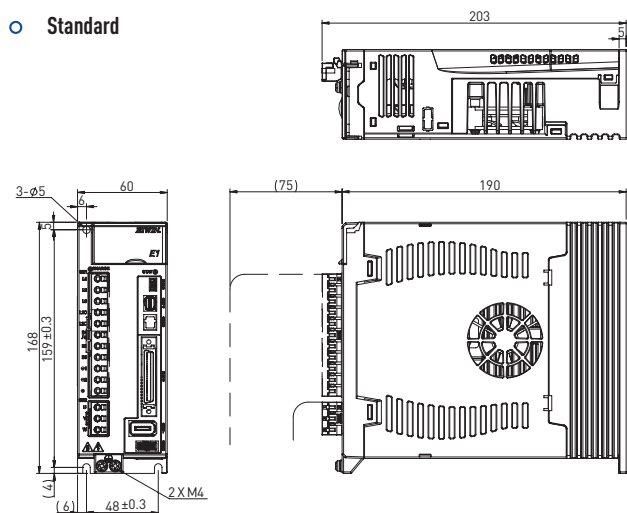


Fieldbus

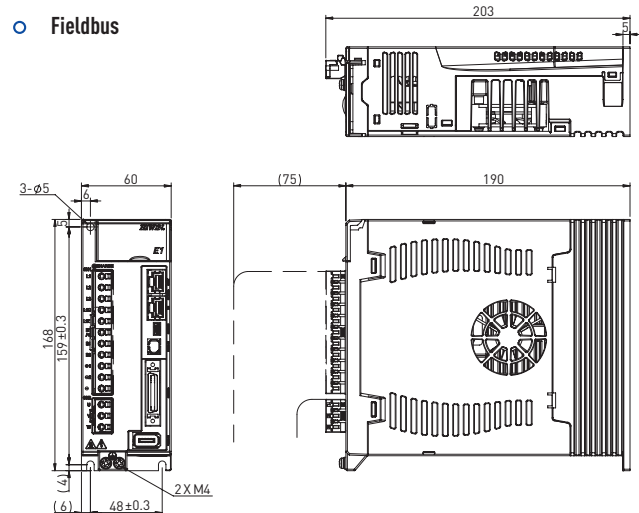


1 kW

Standard

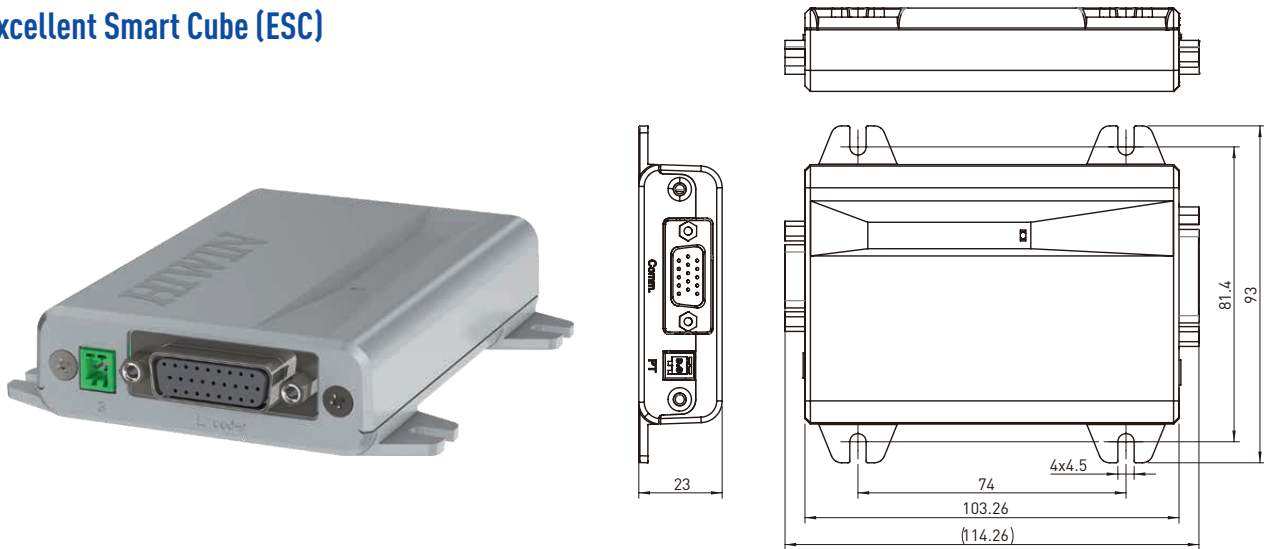


Fieldbus



Unit: mm

Excellent Smart Cube (ESC)



Technical data ESC

Power supply voltage	+5 VDC ±5 %					
Max. input current	1000 mA					
Max. output current	650 mA					
	Digital halls	Incremental		Absolute		
Encoder type	Hall U / V / W	SIN / COS / reference	A / B / index	BiSS-C	EnDat	Tamagawa
Signal frequency	2 kHz	1 MHz	4 MHz	5 MHz	4 MHz	5 MHz
Signal resolution	–	The multiplier factor is 4096	–	32 bits (ST+MT)		
Input signal format	5 VDC CMOS / TTL	Differential (RS422)		Differential (RS485)		
Motor thermal protection	PTC					
Operating temperature	0°C to + 45 °C					
Storage temperature	-20°C to + 65 °C					
IP level	IP20					

We live motion.



Linear Guideways



Ballscrews



Linear Axes



Linear Axis Systems



Torque Motors



Robots



Linear Motor Components



Rotary Tables



Drives & Servo Motors

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