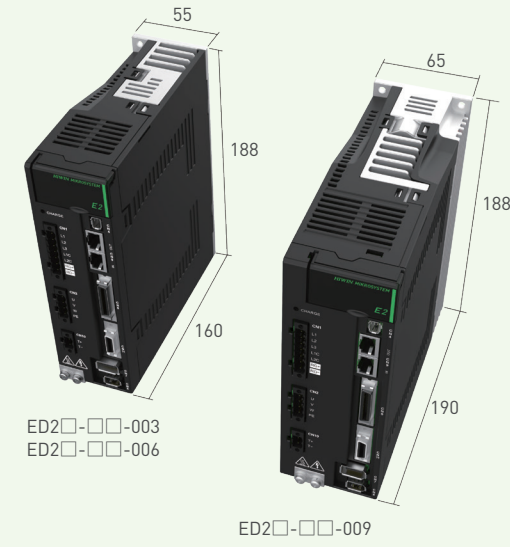


Features

- 3.2 kHz speed response
- Tuneless function
- Advanced auto-tuning
- Ripple compensation
- Unique gantry control function
- Network with common industrial communication devices
- Drive-level 2D error compensation (GT Model)
- Supports various motor types
- Built-in STO function
- Supports various types of encoders such as Digital, Analog, Absolute: Tamagawa, EnDat, and BiSS-C

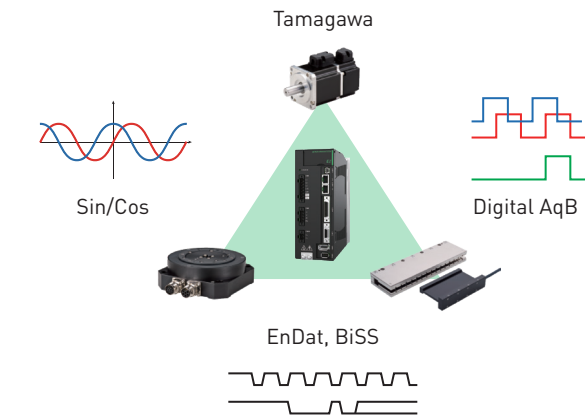
Applications

Industries related to Display, Semiconductor, 3D printing, CNC machining, medical, Automation, Laser cutting, and PCB.



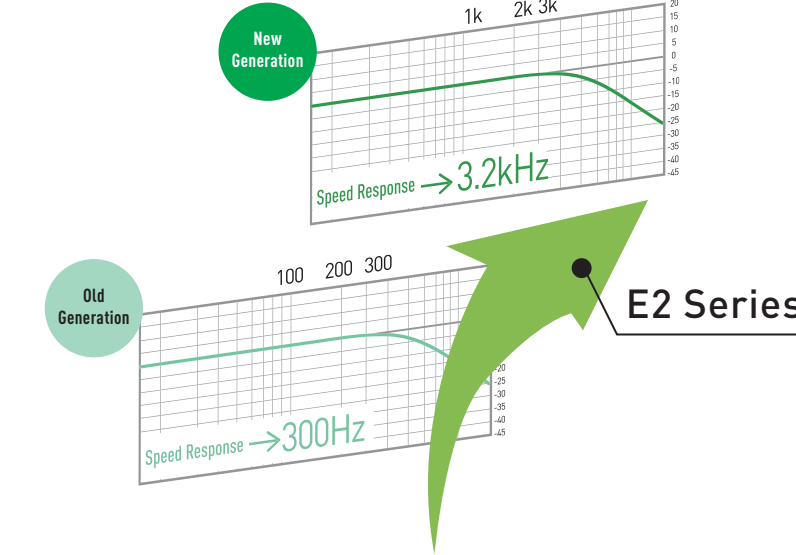
1 Supports Various Encoder / Motor Types

Support AC Servo Motors, Direct Drive Motors, Linear Motors, and various encoder formats.



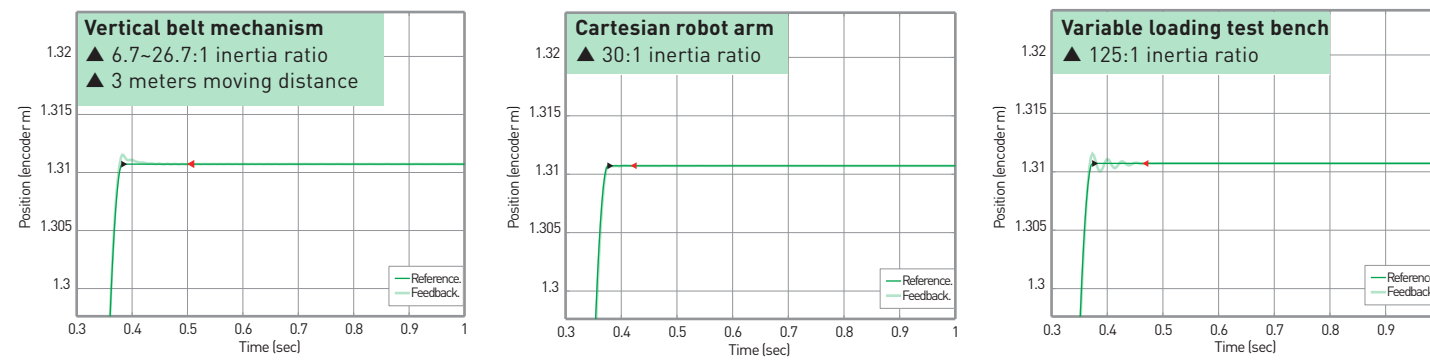
2 3.2 kHz Speed Response

Higher speed response provides faster settling time and better productivity.



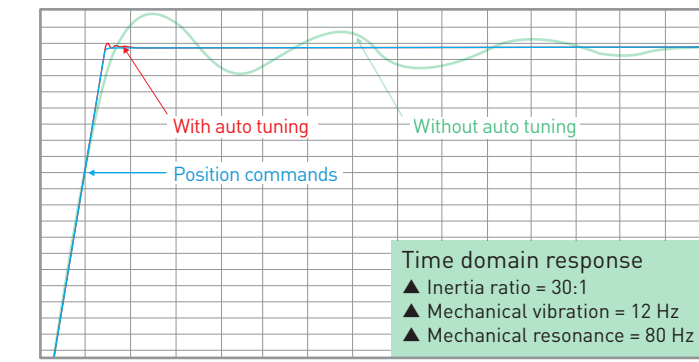
3 Tuneless Function

Maintain good performance and stable movement of the motor with inertia ratio up to 250:1. Auto gain tuning to be adapted to load changes.



4 Advanced Auto-Tuning

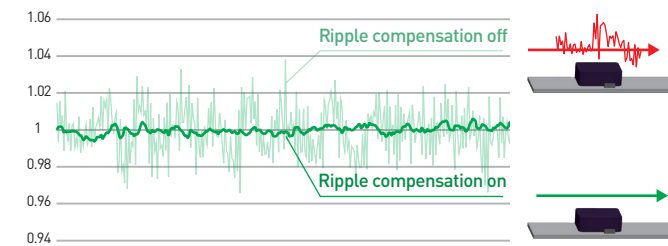
Auto-Tuning with gain/timing/filter parameters can advance machine performance by suppressing vibration and resonance.



Time domain response
 ▲ Inertia ratio = 30:1
 ▲ Mechanical vibration = 12 Hz
 ▲ Mechanical resonance = 80 Hz

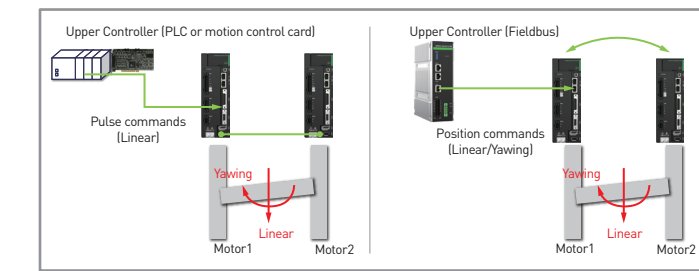
5 Ripple Compensation

Effectively suppress the speed ripple caused by cogging in ironcore motor and achieve smooth motion in detection and scanning applications.



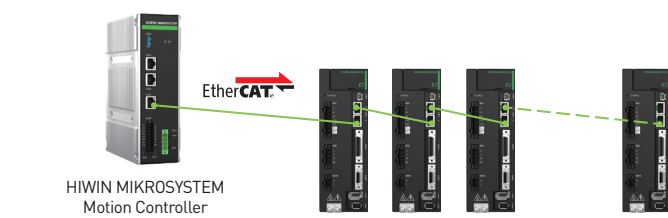
6 Unique Gantry Control Function

With the connection of two E2 servo drives, the linear and yawing movement of a gantry can be easily controlled.



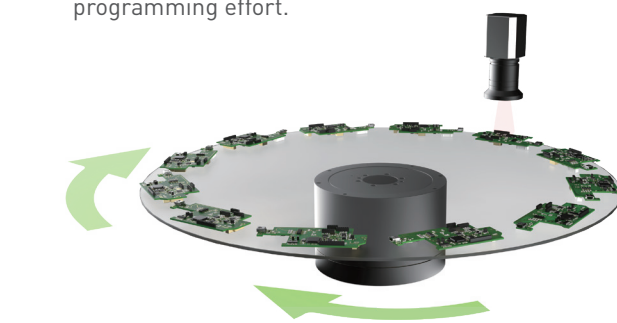
7 Network with Industrial Communication

Support EtherCAT® and HIWIN Mega-ulink controllers.



8 Built-in Multi-Motion Function

Preset typical motions with pull-down menus to save programming effort.



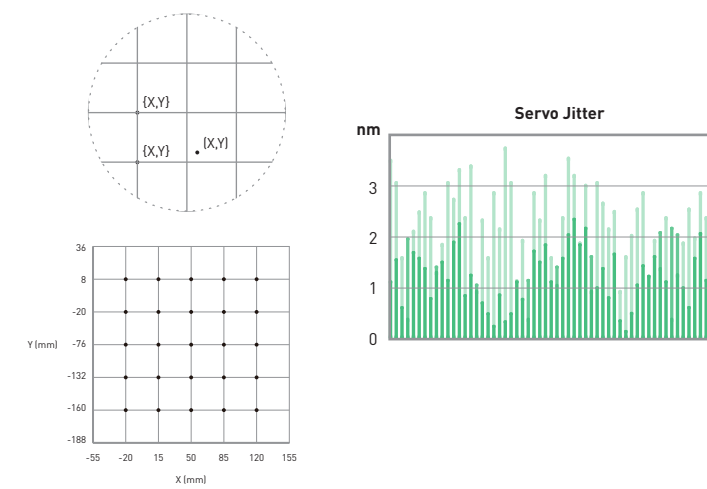
10 Built-in STO Function

When STO* is engaged on E2 servo drives, the motor will come to a dead stop, protecting equipment and personnel.

*Note: Safe Torque Off circuit guards personnel and equipment from accidental movement.

9 High Accuracy in Nano-Positioning

GT model supports nano-positioning for semiconductor equipment with high accuracy and drive-level 2D error compensation without a controller.



Model Explanation

E D 2 S - V 0 - 0 0 3 - 1 - C - 0 0

Type

S : Standard
F : Fieldbus

Control Interface

V0 : Voltage command and Pulse
E0 : EtherCAT (CoE)
H3 : HIWIN Motion Controller Mega-ulink over EtherCAT (MoE)

Rated Output

003 : 3 Arms (500 W)
006 : 6.3 Arms (1 kW)
009 : 9.4 Arms (1.2 kW)

Reserved

Function Model

A : AC
B : Basic
C : Advanced
T : GT

AC Power Input

1 : Single/Three-phase 100-240 Vac (Rated 003, 006, 009)
2 : Three-phase 200-240 Vac (Not supported yet)
3 : Three-phase 380-480 Vac (Not supported yet)

Function Model	AC	Basic	Advanced	GT
Supported Motor	AC Servo Motor	Linear Motor, Direct Drive Motor	AC Servo Motor, Linear Motor, Direct Drive Motor	AC Servo Motor, Linear Motor, Direct Drive Motor
Speed Response Bandwidth	3.2 kHz	0.3 kHz	3.2 kHz	3.2 kHz
Supported Function	<ul style="list-style-type: none"> Tuneless function of AC motor Gantry control function Position trigger 	N/A	<ul style="list-style-type: none"> Tuneless function of AC motor Gantry control function Position trigger 	<ul style="list-style-type: none"> Tuneless function of AC motor Gantry control function Position trigger 2D error map Nano-positioning

HIWIN MIKROSYSTEM

HIWIN MIKROSYSTEM New Generation Servo Drives



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E2

E2 Series Servo Drive

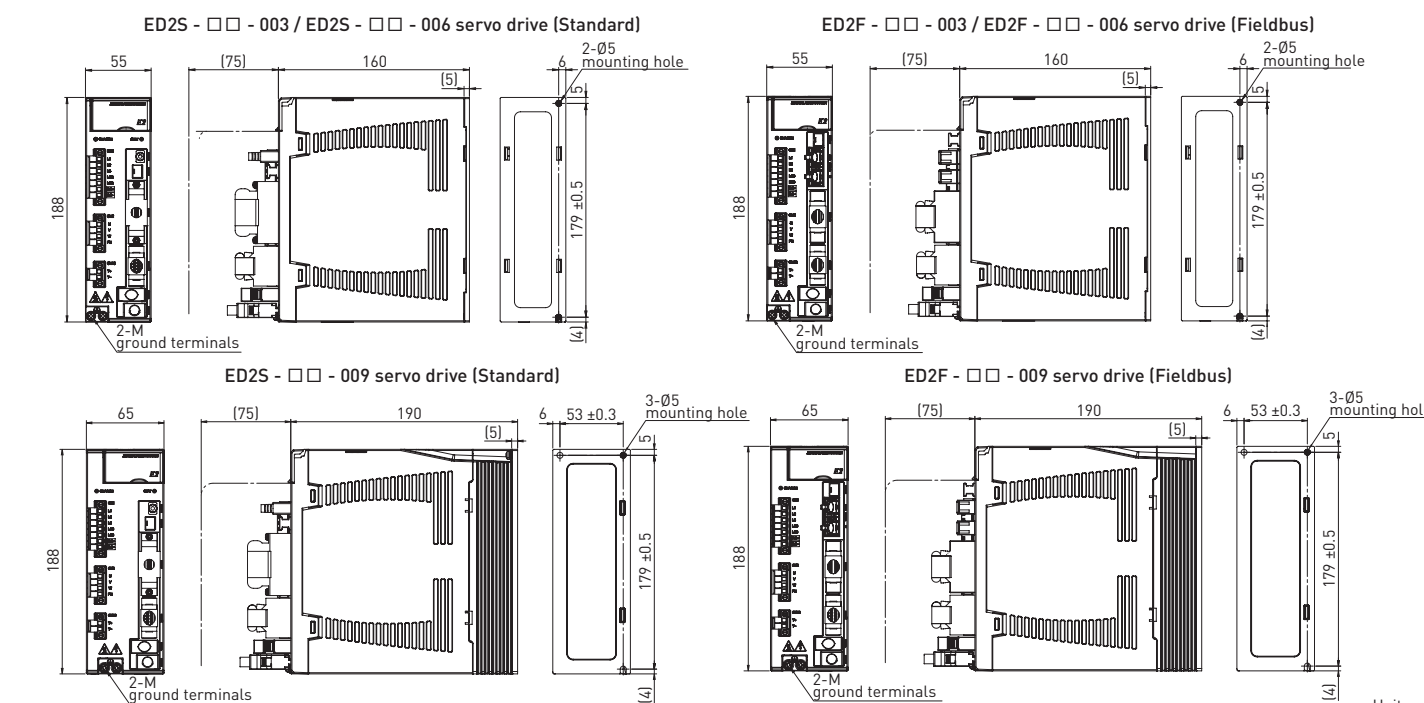
Drive Specification

Servo Drive Model		ED2□-□□-003	ED2□-□□-006	ED2□-□□-009
Input Power	Single Phase Main Power	Rated Voltage (Line to Line)	AC 100 ~ 120 Vrms, 50 ~ 60 Hz AC 200 ~ 240 Vrms, 50 ~ 60 Hz	
		Rated Current (Arms)	5.8	9.0
	Three Phase Main Power	Rated Voltage (Line to Line)	AC 200 ~ 240 Vrms, 50 ~ 60 Hz	
		Rated Current (Arms)	2.5	5.0
	Control Power	1 Ø / AC 100 ~ 120 Vrms, 50 ~ 60 Hz 1 Ø / AC 200 ~ 240 Vrms, 50 ~ 60 Hz		
Output Power	Inrush Current of Main Power (Apk)	14.2	14.2	23.4
	Inrush Current of Control Power (Apk)	17.7	17.7	17.7
	Phase Voltage	3 Ø / AC 240 Vrms max		
	Max Rated Power (W)	500	1000	1200
Power Loss Data (W)	Peak Current (Arms)	12	18	28.3
	Rated Current (Arms)	3	6.3	9.4
		< 40	< 60	< 80
PWM Modulation Frequency	16 kHz			
Dynamic Brake	<ul style="list-style-type: none"> Built-in dynamic brake circuit ED2 □ - □ □ - 003 / ED2 □ - □ □ - 006: no built-in dynamic brake resistor Delay time of relay: 20ms 			
Built-in Resistor for Dynamic Brake	-	-	10.2 Ω / 7 W	
Regenerative Energy Protection	Regenerative Resistor	Connect to external regenerative resistor if needed		
	Built-in Regenerative Resistor	-	-	-
	Capacitance [uF]	780	780	1410
	Protection of Regenerative Resistor Enabled	+HV > 370 Vdc		
	Protection of Regenerative Resistor Disabled	+HV < 360 Vdc		
Environment	Overvoltage Protection	390 Vdc		
Fan cooling	Operating Temperature	0 ~ 45°C		
	Weight (kg)	No	Yes	Yes
		Fieldbus: 1.20Kg, Standard 1.18Kg	Fieldbus: 1.20Kg, Standard 1.22Kg	Fieldbus: 1.72Kg, Standard 1.76Kg

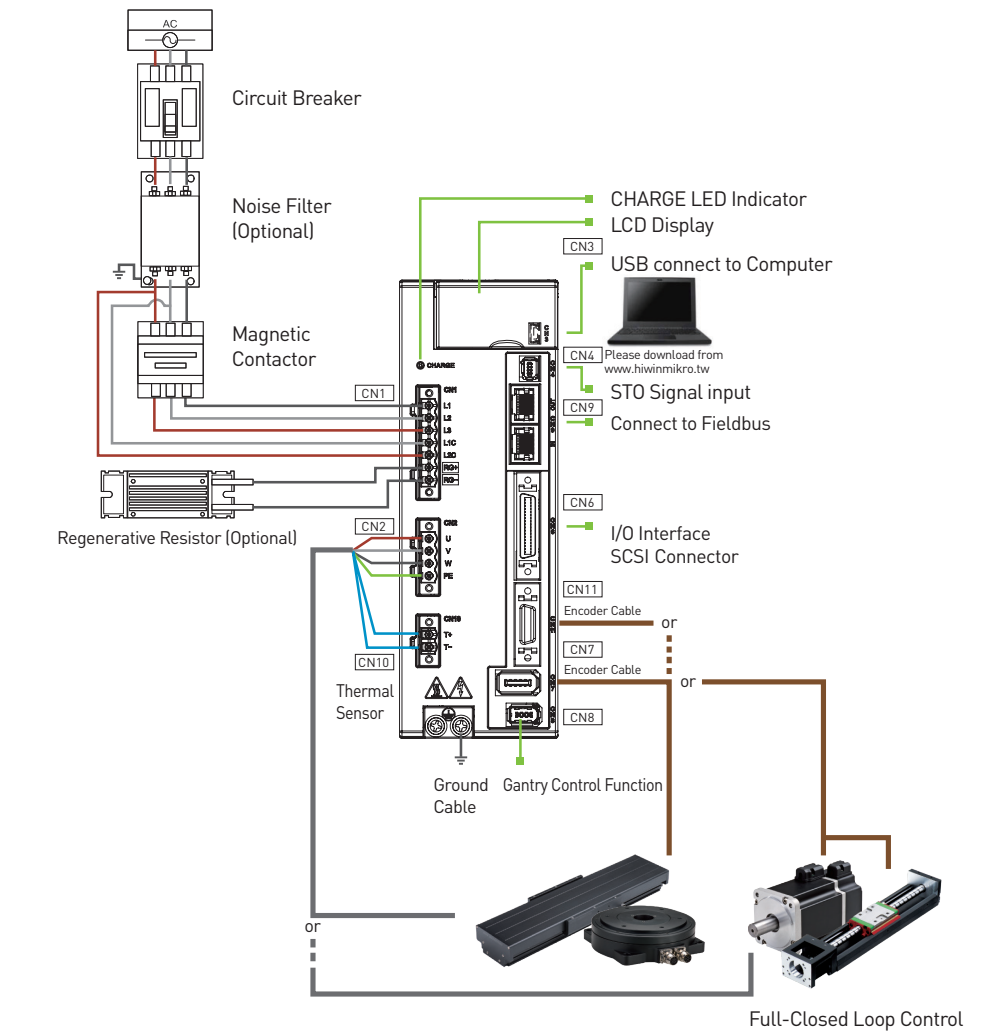
Category		Servo drive specification		
Control Method		IGBT PWM space vector control		
Applicable Motor		AC Servo Motor, Direct Drive Motor, Linear Motor		
STAT LED Indicator		<ul style="list-style-type: none"> Blinking red: Error Blinking green: Ready Green: Enabled There is no STAT LED indicator on Fieldbus servo drive 		
CHARGE LED Indicator		<ul style="list-style-type: none"> Red: The main power is supplied No light: The main power is not supplied 		
Analog Output		<ul style="list-style-type: none"> Channel: 2 Resolution: 12 bits Output voltage range: ±10 V Accuracy: ±2% Maximum output current: ±10 mA 		
Control Function	Position Mode	Command Source	Pulse command from controller	
		Signal Type	<ul style="list-style-type: none"> Pulse / Direction CW / CCW AqB 	
		Isolated Circuit	High-speed optical coupler	
		Input Signal	<ul style="list-style-type: none"> Differential input (2.8 Vdc ≤ potential difference ≤ 3.7 Vdc) Single-ended input (12~24 Vdc) Differential: 5 Mpps Single-ended: 200 kpps 	
	Electronic Gear	Gear ratio: pulses / counts		
		Pulses: 1~1,073,741,824		
	Velocity Mode	Command Source	DC voltage command from controller	
		Analog Input	Impedance	14 kΩ
			Signal Format	±10 Vdc
	Maximum Input Bandwidth		100 Hz	
Specification	16 bit A/D input (V-REF±)			
Torque Mode	Analog Input	Command Source	DC voltage command from controller	
		Impedance	14 kΩ	
		Signal Format	±10 Vdc	
		Maximum Input Bandwidth	100 Hz	
Specification	16 bit A/D input (T-REF±)			
Control Mode	<ol style="list-style-type: none"> Position mode Velocity mode Torque mode Full-closed loop mode (Dual loop mode) 			
	Connect the servo drive with your computer to set parameters, monitor physical quantities and execute trial operation via Thunder			
Computer Communication	Standard USB2.0 (Mini USB type)			
Encoder	Power Supply	+5.1 Vdc ±5 %, 2000 mA		
		Serial signal	TAMAGAWA	<ul style="list-style-type: none"> Resolution: 23 bits Bandwidth: 5 MHz
			BiSS-C	<ul style="list-style-type: none"> Maximum Data Length: 64 bits Bandwidth: 5 MHz
	Incremental signal	EnDAT	<ul style="list-style-type: none"> Maximum Data Length: 64 bits Bandwidth: 4 MHz 	
		Digital	<ul style="list-style-type: none"> AqB and Z-phase signals Quadruple frequency: 50 Mcounts/s 	
		Analog	<ul style="list-style-type: none"> SIN/COS signal (differential signal) The maximum input bandwidth is 1 MHz Input signal is 0.3~1.2 Vpp 	

Category		Servo drive specification	
Encoder	Safety Function	<ul style="list-style-type: none"> Encoder power malfunction detection Encoder alarm protection (digital differential signal) Main power overvoltage and undervoltage protection 	
	Maximum Position Counting Range	~2,147,483,648 ~ 2,147,483,647 (32 bit)	
Encoder Output	Emulated Encoder Output	Z Phase (Fieldbus servo drive does not support)	<ul style="list-style-type: none"> Serial encoder and incremental encoder (AqB, sin/cos) are supported The width of output signal can be adjusted by parameter Digital differential signal output Z-phase open collector output is supported Two output methods can be selected <ul style="list-style-type: none"> Only outputs one Z-phase signal for total travel distance Outputs one Z-phase signal per one revolution
		A / B Phase	<ul style="list-style-type: none"> Serial encoder and digital encoder (AqB) are supported Differential signal output The maximum output bandwidth is 18 Mcount/s The scaling of output can be adjusted. For instance, ten encoder counts = one emulated encoder count
	Buffered Encoder Output	Z Phase	<ul style="list-style-type: none"> Only supports digital encoder (AqB) Differential signal output Supports Z phase open-collector output
		A / B Phase	<ul style="list-style-type: none"> Only supports digital encoders (AqB) Differential signal output, maximum output bandwidth 20 Mcount/s
General-purpose I/O	Input	<ul style="list-style-type: none"> The functions of general-purpose inputs (Optical couplers) can be defined by users E2 series servo drive provides ten general-purpose inputs (I1 to I10) Fieldbus servo drive only provides eight general-purpose inputs (I1 to I8) 5~24 Vdc/5 mA (Each input pin) 	
		Output	<ul style="list-style-type: none"> The functions of general-purpose outputs (Optical couplers) can be defined by users E2 series servo drive provides five general-purpose outputs (O1 to O5) 24 Vdc/0.1 A (Each output pin)
	Position Trigger (PT) *	<ul style="list-style-type: none"> The pins for position trigger (PT) output function are CN6-46 and 47 (Differential signal) Differential signal, maximum current 20 mA, maximum output bandwidth 1MHz 	
Other Function		<ul style="list-style-type: none"> Gantry synchronization control function * Motor over temperature protection (PTC) 	
Environment	Storage Temperature	-20°C ~ 65°C	
	Humidity	Operating and storage temperature: 20 to 85% RH (Non-condensing)	
	Altitude	Altitude 3,000 M or lower above sea level	
	Vibration	Less than 0.5 G, Frequency 10 to 500 Hz (No continuous use under resonance frequency)	
	IP Rating	IP20	

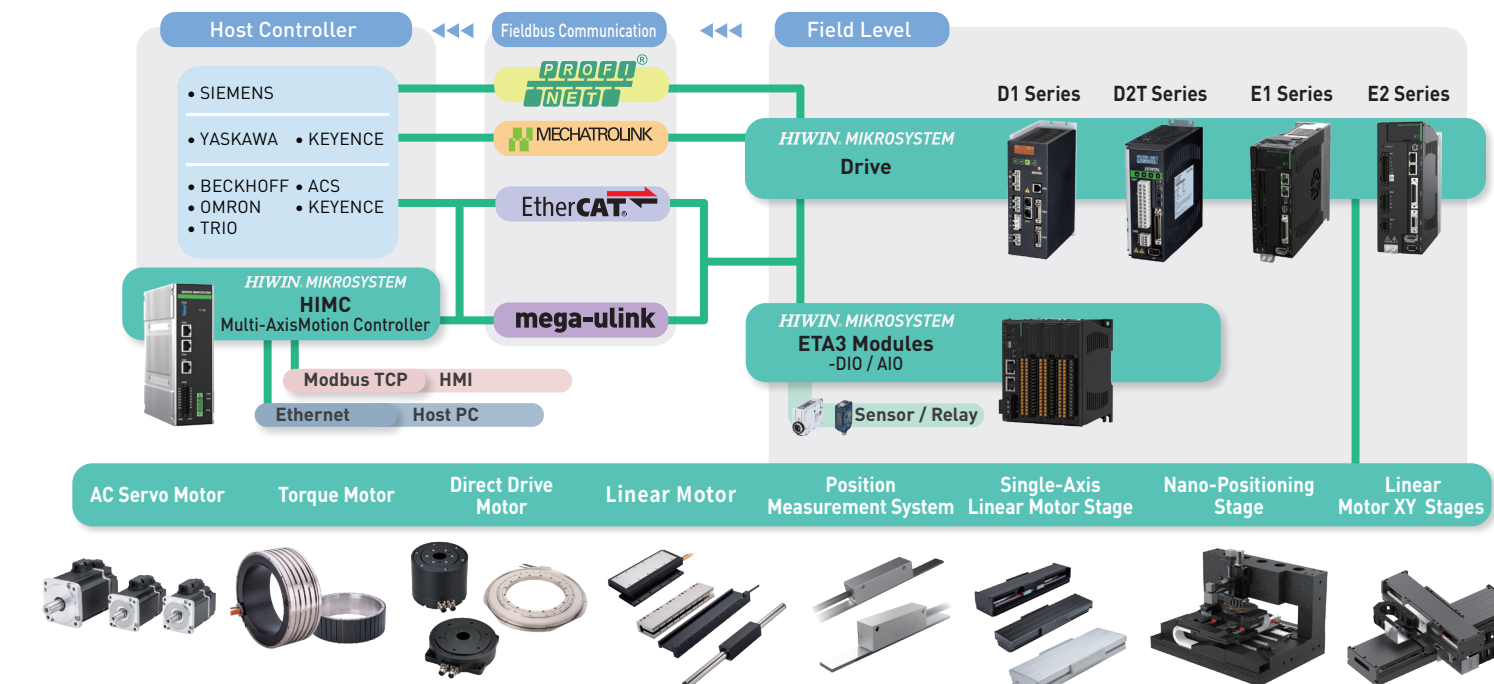
* Note: means basic type not support.



Hardware Interface



Product Architectural Diagram



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