



Simphoenix

SERVO DRIVE | VFD | PMSM | PLC | HMI



CD300 Series EtherCAT Servo Drive

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Enterprise Mission

Crear value for customers



Enterprise Spirit

Innovation and enterprising



Core Value

Integrity, win-win,
pragmatic, dedication



Business Philosophy

People oriented and
common progress

5 Regions

15 Overseas sales network

35+ Offices

Established in 2004, Shenzhen Simphoenix Electric Technology Co., Ltd. is committed to becoming an outstanding provider of automation products and solutions. The company specializes in the development, production, sales and service of industrial automation products, the main products are servo drive, inverter, permanent magnet synchronous motor, PLC, HMI and so on. In addition, Huizhou Simphoenix Electric Co., Ltd., a wholly-owned subsidiary of Simphoenix Electric, focuses on the field of automation and works together with its parent company to provide customers with first-class products and solutions.

After more than 20 years of development, Simphoenix has become a well-known brand with complete product structure and strong r&d strength among domestic industrial automation brands.



CD300 Series EtherCAT Servo Drive

The CD300 series high-performance AC servo drive covers a power range from 200W to 30kW. It supports the EtherCAT communication protocol. Over Ethernet communication interfaces, it can work with the host controller for implementing a networked operation of multiple servo drives. The CD300 supports adaptive stiffness level setting, 1 second inertia auto-tuning, online load measurement, and vibration suppression for easy use. The drive aims to achieve quick and accurate position control, speed control, and torque control through high performance solutions for automation equipment in such industries as packaging, food production, CNC cutting, textiles, machine tools, woodworking carving, etc.



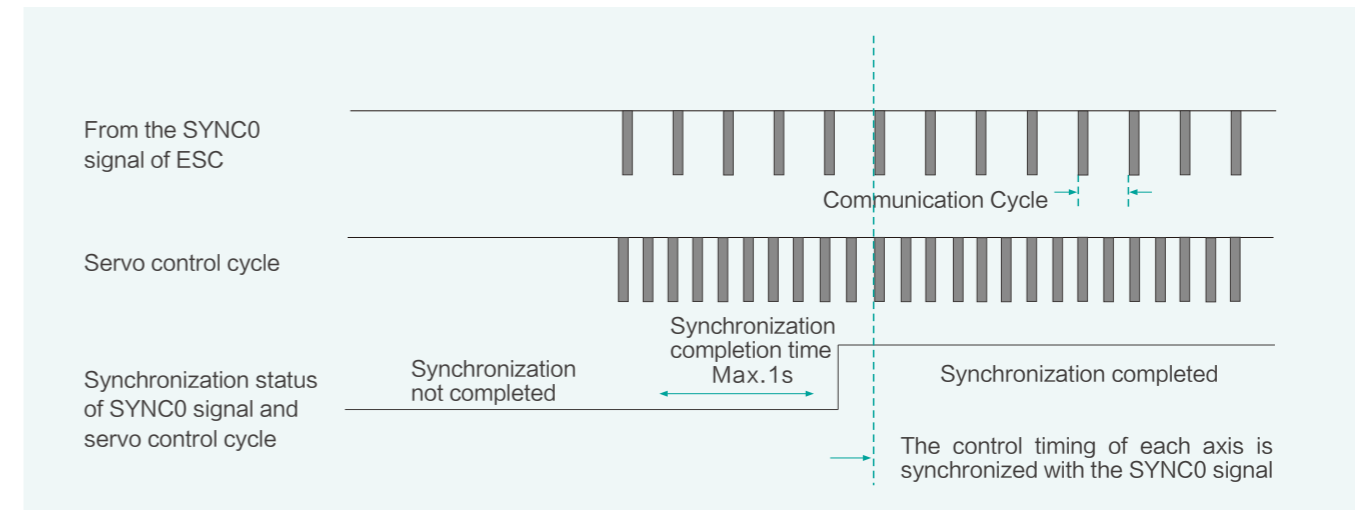
Industry Application

Packaging, food production, CNC cutting, textile, machine tools, woodworking carving, etc

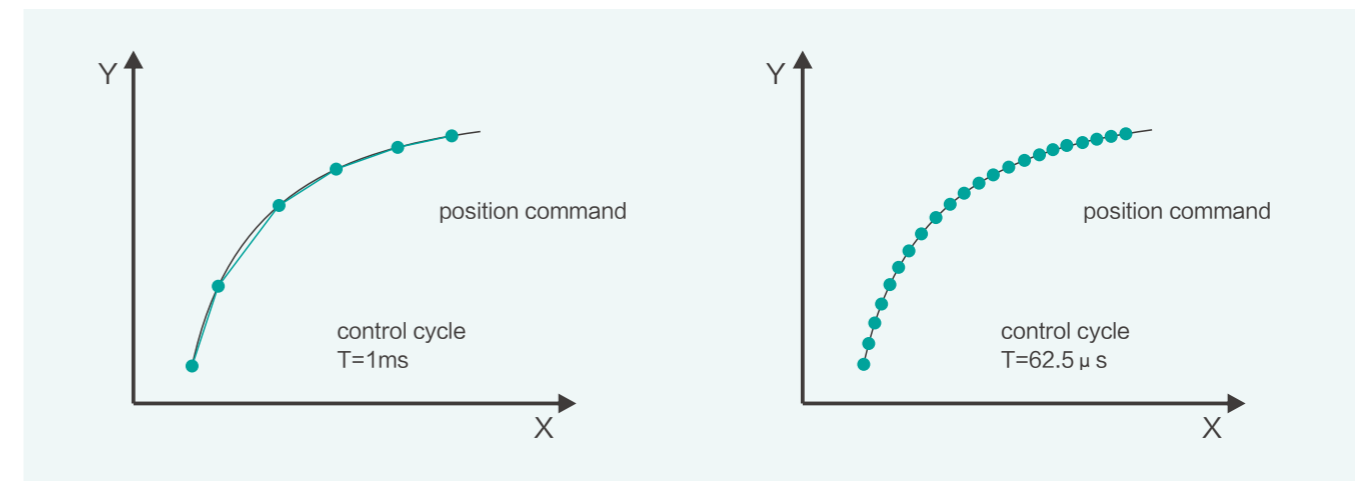


Superior Performance

- ◆ Optimization of multi axis control loop synchronization function, which can automatically adjust the internal clock of each axis based on EtherCAT bus time base, assisting high-precision synchronization control.



- ◆ The position control frequency can reach up to 16kHz, achieving higher dynamic response.

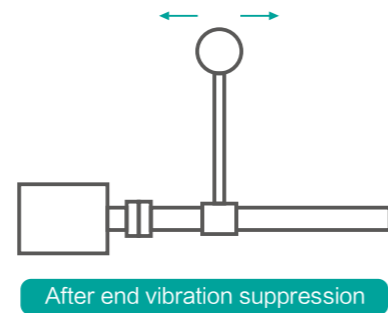
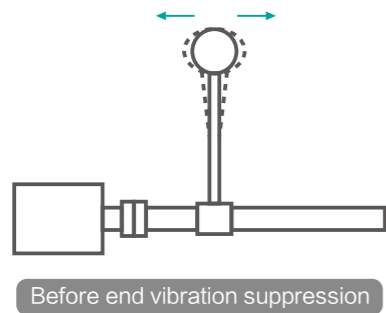
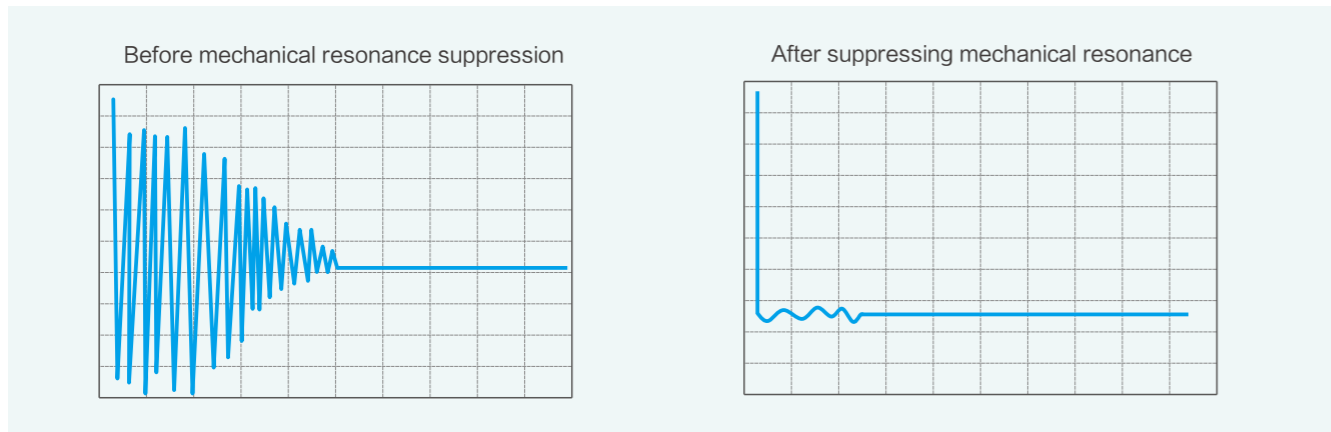


- ◆ Compatible with multiple resolution encoders, supporting up to 26 bit high-resolution encoders; Automatically read internal data of the motor and intelligently match the motor.

17-26 bit encoder optional

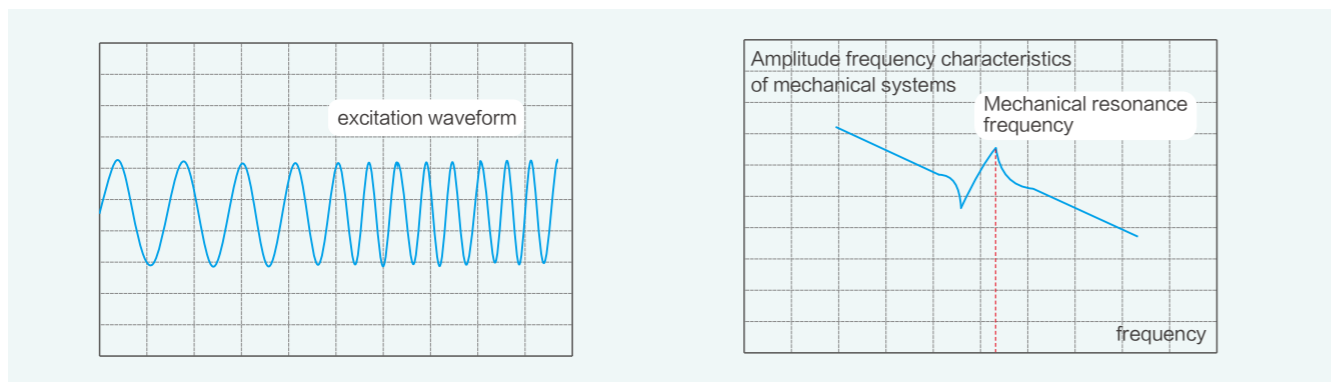
- Maximum system overload capacity **300%**
- Maximum speed **6000_{rpm}**
- Rapid start-stop response
- Driving efficiency gains

- ◆ Advanced operation compensation, resonance and end vibration suppression algorithms effectively shorten the setting time and ensure smooth, high-speed and high-precision positioning of equipment.

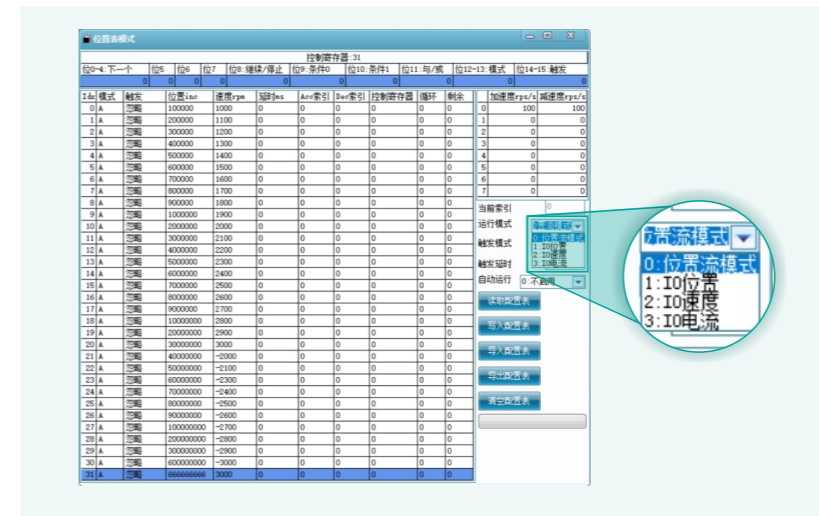
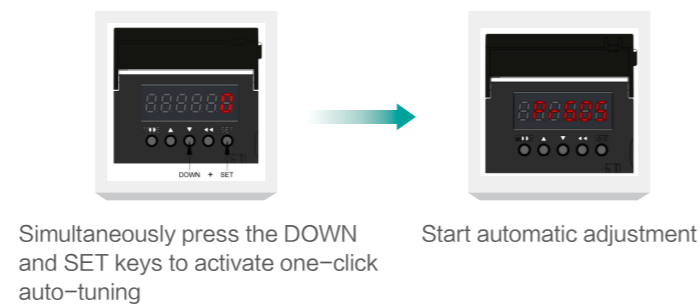


Extended Functionality

- ◆ Leading mechanical frequency characteristic scanning and control loop simulation function, assisting in the analysis of equipment mechanical performance.



- ◆ Multi-inertia identification technology accommodates diverse application needs for rapid positioning and smooth operation. With one-click adjustment, it effortlessly achieves inertia identification and parameter auto-tuning, significantly reducing commissioning complexity and shortening commissioning period.



- ◆ 32 built-in programmable motion profiles enable flexible constant-speed and positioning control, reducing dependency on external motion controllers in specific applications.

Effortless to Use and Engineered to Protect

- ◆ Supports standard EtherCAT protocol, ensuring enhanced compatibility with mainstream EtherCAT masters and more stable communication performance.

EtherCAT

- Compact size, optimized structure
- Standard RJ45 Industrial Ethernet Interface
- Support multiple fault protections
- Adequate component reliability testing to ensure the overall quality of the driver
- Low temperature power boosting devices, Ensure a long service life
- Optimized design of independent heat dissipation channels

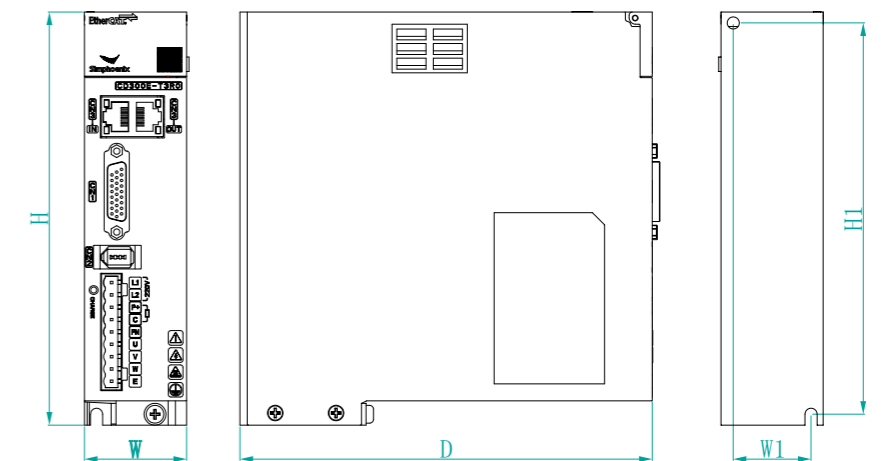
Technical Specifications

Specification	Main power supply	single-phase 220 ~ 240VAC, -15% ~ +10% (50/60Hz) three-phase 380 ~ 415VAC, -15% ~ +10% (50/60Hz)		
	Control mode	FOC+SVPWM		
	Encoder	Serial communication encoder: 17 bit to 26 bit optional		
	Protection	Overcurrent, overload, voltage abnormality, input/output phase loss, motor stalling, overspeed, driver overheating, encoder abnormality, EtherCAT communication abnormality, etc		
	Digital input	6DI (Support NPN and PNP)		
	Digital output	3DO (50mA load capacity with 5-28V operating voltage range)		
	Conditions of Use	temperature	Operating temperature: 0°C~+45°C (45°C~50°C, please reduce the rated use. For every 1°C increase, the current will decrease by 2%) Storage temperature: -20°C~+60°C	
		humidity	Relative humidity below 90% RH (non condensing)	
		vibrate	0.5g (4.9m/s ²)	
		protection	IP20	
altitude		1000m以下 (>1000m, Please reduce the usage amount)		
other		1: No static interference, strong electric field, strong magnetic field, radiation, etc 2: No corrosive gases, flammable gases, water, oil, or drug splashes 3: In an environment with less dust, dirt, salt, and metal powder		
EtherCAT communication	Standards	IEC 61800-7 CiA402 Drive Profile、IEC 61158 Type12		
	Transport protocol	100BASE-TX (IEEE802.3)		
	Interface	RJ45 × 2 (IN、OUT)		
	Synchronous mode	DC distributed clock (DC synchronization period: 125 μ s~10ms) Free Run (Asynchronous)		
	Topology	Circular, linear		
	Number of stations	The maximum number of slave stations is 65535, but the actual usage is less than 100		
	Transmission medium	Shielded Category 5e or Category 6 or above Ethernet cables with electrical performance specifications		
	Distance	Less than 100M between two nodes (good environment, excellent cables)		
	EtherCAT frame length	44 bytes~1498 bytes		
	FMMU unit	FMMU0: Mapping to Process Data Slave RxPDO Area FMMU1: Mapping to the TxPDO area of the process data slave station FMMU2: Mapping to mailbox status		
	Sync manager	Sync Manager 0: Assign to mailbox output Sync Manager 1: Assign to Email Input Sync Manager 2: Assign to process data output Sync Manager 3: Assign to Process Data Input		
	PDO data	Dynamic PDO Mapping		
	MailBox(CoE)	SDO request, SDO response, emergency event		
	Control model	PP (Profile Position mode) PV (Profile Velocity mode) PT (Profile Torque mode) HM (Homing mode) CSP (Cyclic Synchronization Position mode) CSV (Cyclic Synchronization Velocity mode) CST (Cyclic Synchronization Torque mode)		
		Probe	2-channel rising edge/falling edge	
		Internal functions	Vibration suppression	Two vibration suppression notch filters: adjustable vibration suppression frequency and intensity Two notch filters: can set notch frequency, width, and depth
			Overtravel prevention	Positive limit, negative limit, software limit
Virtual braking			In some cases, electric motors can be used for virtual regenerative braking, replacing braking resistors	
Led display	Main power supply CHARGE, 6-digit LED display			
Other	Gain adjustment, inertia identification, mechanical frequency analysis, alarm recording, JOG operation, etc			

Model List

Voltage Class	Drive Model	Rated Current (A)	Maximum Adaptive Motor Power (kW)
Single-phase AC220V	CD300E-T1R8	1.8	0.20
	CD300E-T3R0	3.0	0.75
Single-phase/ three-phase AC220V	CD300E-T4R5	4.5	1.0
	CD300E-T5R5	5.5	1.3
	CD300E-T7R5	7.5	2.0
Three-phase AC380V	CD300E-F4R0	4.0	1.5
	CD300E-F6R5	6.5	2.3
	CD300E-F8R5	8.5	3.0
	CD300E-F12R	12.0	4.5
	CD300E-F17R	17.0	4.4 (5-pole pair)
	CD300E-F22R	22.0	5.5
	CD300E-F27R	27.0	7.5
	CD300E-F38R	38.0	15
	CD300E-F52R	52.0	22
	CD300E-F62R	62.0	30

Installation Dimensions



Drive Model	W1 (mm)	W (mm)	H1 (mm)	H (mm)	D (mm)	Screw diameter	Weight (KG)
T1R8/T3R0	32	42	161	170	170	M4	1
T4R5/T5R5/T7R5	40	50	161	170	170	M4	1.3
F4R0/F6R5/F8R5/F12R	64	80	186	195	182	M4	2.1
F17R/F22R/F27R	70	95	263	276	227	M4	4.9
F38R/F52R/F62R	100	150	410	426	250	M6	12.7

CD300 Compatible with CM10 Servo Motor and Cable Selection Table

Motor Model	Motor Code	Adapted Driver	Power (kW)	Rated Current (A)	Rated Torque (Nm)	Rated Speed (rpm)	Flange	Encoder Cable	Power Cable	Brake Cable
CM10-B60TR6430C3□L2	2010	T1R8□	0.2	1.6	0.64	3000	60	SP-WD□□□07PAID-0□	SP-WM□□□05DAIB-0□	SP-WB□□□02DAIA-0□
CM10-B60T01330C3□L2	2020	T3R0□	0.4	2.6	1.27	3000	60	SP-WD□□□07PAID-0□	SP-WM□□□05DAIB-0□	SP-WB□□□02DAIA-0□
CM10-B80T02430C3□L2-3A	2021	T3R0□	0.75	3	2.40	3000	80	SP-WD□□□07PAID-0□	SP-WM□□□05DAIB-0□	SP-WB□□□02DAIA-0□
CM10-B80T03230C3□L2-4A	2042	T4R5□	1	4.5	3.20	3000	80	SP-WD□□□07PAID-0□	SP-WM□□□07DCIB-0□	SP-WB□□□02DABH-0□
CM10-B130T05430C3□M2	2050	T5R5□	1.7	5.5	5.40	3000	130	SP-WD□□□07PAHC-0□	SP-WM□□□07DCHA-1□	SP-WB□□□02DABH-0□
CM10-A130T07725C3□M3	1050	T7R5□	2	7.5	7.70	2500	130	SP-WD□□□07PAHC-0□	SP-WM□□□07DCHA-1□	SP-WB□□□02DABH-0□
CM10-A130T10015C3□M3	1054	T7R5□	1.5	6	10.00	1500	130	SP-WD□□□07PAHC-0□	SP-WM□□□07DCHA-1□	SP-WB□□□02DABH-0□
CM10-B130F05415C3□M2	2410	F4R0□	0.85	3.5	5.40	1500	130	SP-WD□□□07PAHC-0□	SP-WM□□□15DBHA-1□	SP-WB□□□02DABH-0□
CM10-A130F10015C3□M3	1415	F4R0□	1.5	4	10.00	1500	130	SP-WD□□□07PAHC-0□	SP-WM□□□15DBHA-1□	SP-WB□□□02DABH-0□
CM10-B130F08415C3□M2	2411	F6R5□	1.3	5.1	8.40	1500	130	SP-WD□□□07PAHC-0□	SP-WM□□□15DBHA-1□	SP-WB□□□02DABH-0□
CM10-A130F15015C3□M3	1410	F6R5□	2.3	5	15.00	1500	130	SP-WD□□□07PAHC-0□	SP-WM□□□15DBHA-1□	SP-WB□□□02DABH-0□
CM10-B130F11515C3□M2	2420	F8R5□	1.8	7	11.50	1500	130	SP-WD□□□07PAHC-0□	SP-WM□□□15DBHA-1□	SP-WB□□□02DABH-0□
CM10-A180F19015R3□L3	1520	F8R5□	3	7.5	19.00	1500	180	SP-WD□□□07PAHC-0□	SP-WM□□□15DBHB-1□	SP-WB□□□02DABI-0□
CM10-A180F27010R3□L3	1524	F8R5□	2.9	7.5	27.00	1000	180	SP-WD□□□07PAHC-0□	SP-WM□□□15DBHB-1□	SP-WB□□□02DABI-0□
CM10-B180F18615R3□L2	2530	F12R□	2.9	11	18.60	1500	180	SP-WD□□□07PAHC-0□	SP-WM□□□15DBHB-1□	SP-WB□□□02DABI-0□
CM10-A180F21520R3□L3	1530	F12R□	4.5	9.5	21.50	2000	180	SP-WD□□□07PAHC-0□	SP-WM□□□15DBHB-1□	SP-WB□□□02DABI-0□
CM10-A180F27015R3□L3	1535	F12R□	4.3	10	27.00	1500	180	SP-WD□□□07PAHC-0□	SP-WM□□□15DBHB-1□	SP-WB□□□02DABI-0□
CM10-B180F28415R3□L2	2540	F17R□	4.5	17	28.40	1500	180	SP-WD□□□07PAHC-0□	SP-WM□□□40EAHB-1□	SP-WB□□□02DABI-0□
CM10-B180F35015R3□L2	2550	F22R□	5.5	21	35.00	1500	180	SP-WD□□□07PAHC-0□	SP-WM□□□40EAHB-1□	SP-WB□□□02DABI-0□
CM10-B180F48015R2□L2	2560	F27R□	7.5	26	48.00	1500	180	SP-WD□□□07PAHC-0□	SP-WM□□□40EAHB-1□	SP-WB□□□02DABI-0□
CM10-A200F70015R2□L2B	1561	F27R□	11	21	70.00	1500	200	SP-WD□□□07PAHC-0□	SP-WM□□□40EAHB-1□	SP-WB□□□02DABI-0□

The □ suffix of the motor: G=Without brake;
H=With brake

Encoder type(5th to last specification):
C=17 bit multi turn magnetic encoder,
R=23 bit multi turn optical encoder
Motor voltage: T=220V, F=380V

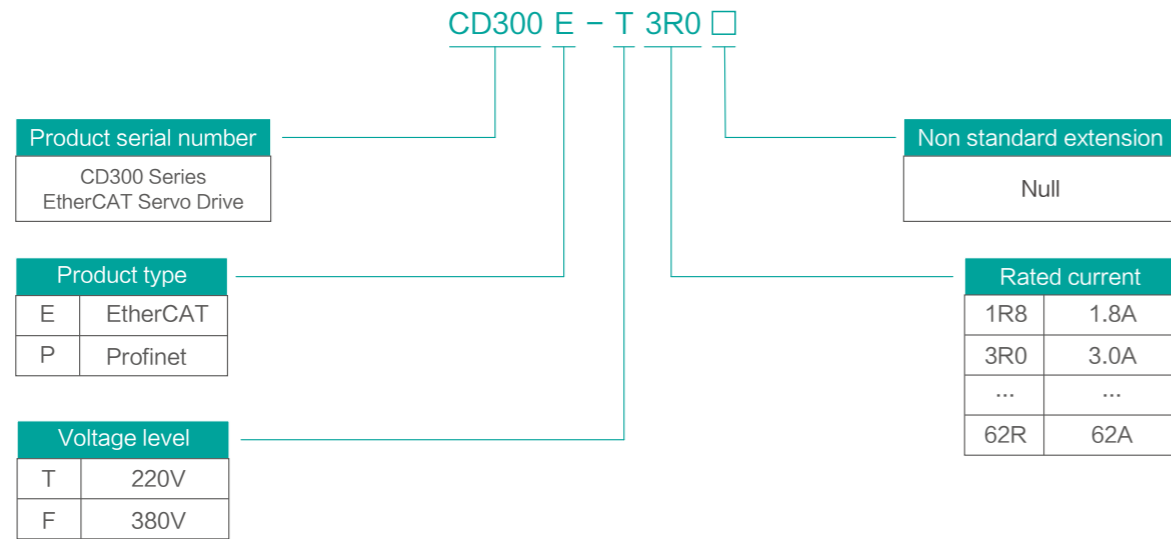
Driver suffix □
□=None, base model

Wiring selection for multi turn encoders
05=Single coil encoder wiring
07=Multi turn encoder wiring

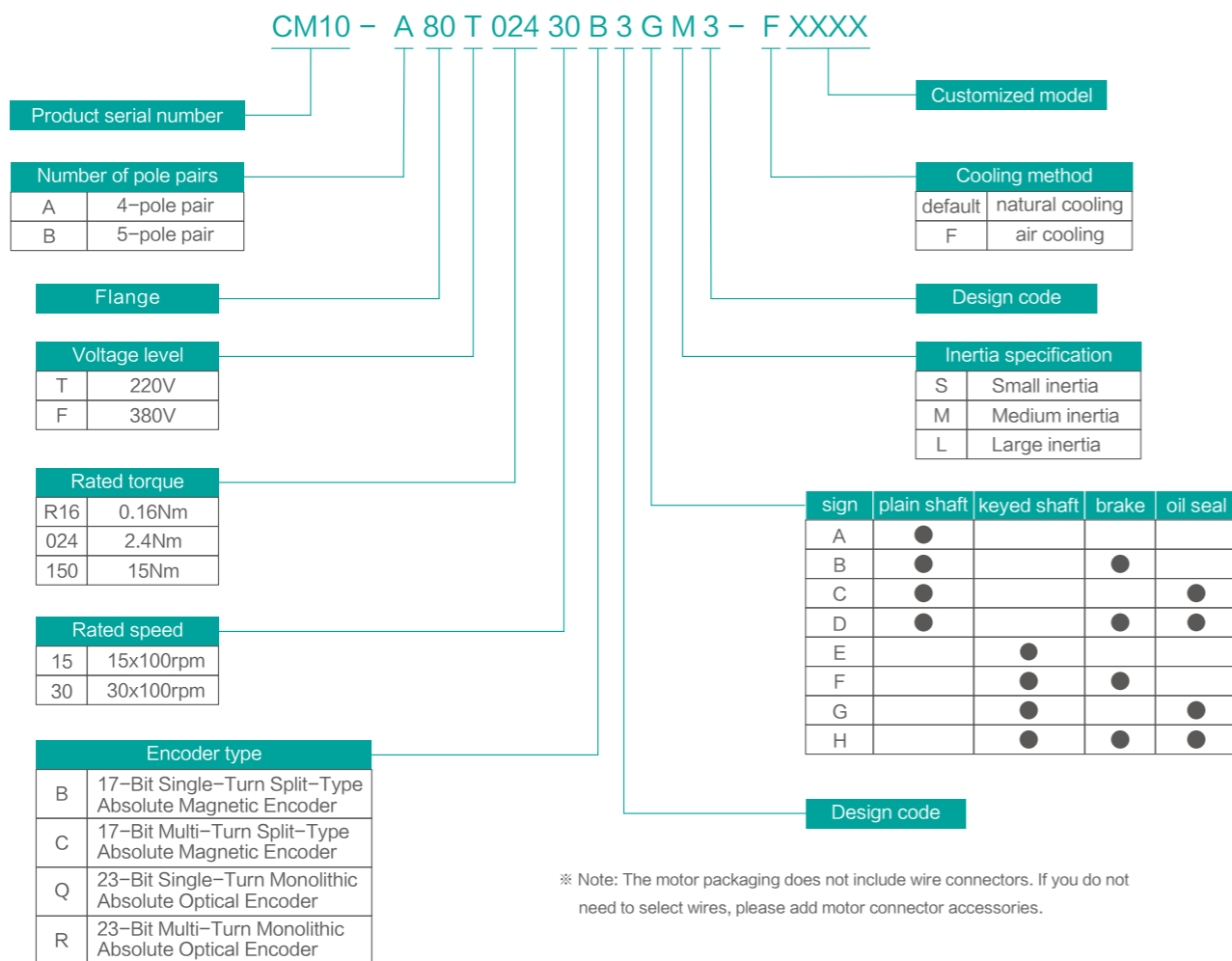
Three □ in the middle of the wire harness specification
□□□=030, 3 meters
□□□=050, 5 meters
□□□=100, 10 meters

The last □ of the wiring harness suffix
□=1, Ordinary line
□=2, high flexibility line

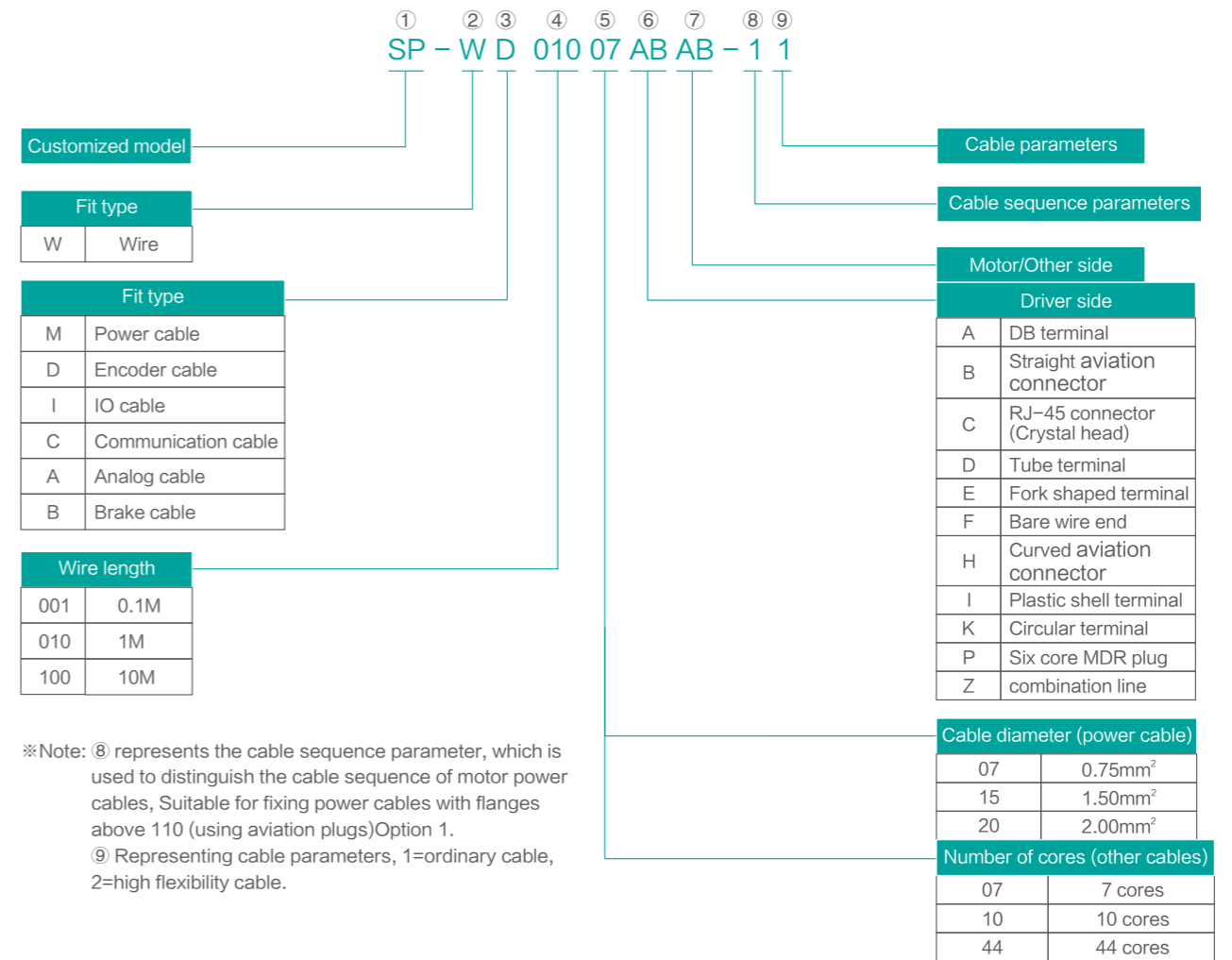
Naming Convention for Servo Drive



Naming Rules for Servo Motor



Naming Rules for Cable



Motor Technical Parameters

Motor Specifications	Power (kW)	Rated Current (A)	Rated Torque (Nm)	Rated Speed (rpm)	Flange	Maximum Torque (Nm)	Maximum Speed (rpm)	Inertia (Kg · m ² × 10 ⁻⁴)	Torque Constant (Nm/A)	Back Electromotive Force (V/1krpm)	Cable Resistance (Ω)	Cable Inductance (mH)	Number of Pole Pairs	Frame Length
CM10-B60TR6430C3□L2	0.2	1.6	0.64	3000	60	1.92	6000	0.28(0.28)	0.40	25	5.8	10	5	76(105)
CM10-B60T01330C3□L2	0.4	2.6	1.27	3000	60	3.81	6000	0.52(0.52)	0.49	31	4.3	7	5	94.5(123.5)
CM10-B80T02430C3□L2-3A	0.75	3	2.40	3000	80	7.2	3500	1.48(1.48)	0.80	53	3.4	11	5	102(140)
CM10-B80T03230C3□L2-4A	1	4.5	3.20	3000	80	9.6	3500	1.93(1.93)	0.71	50	1.85	20	5	114(152)
CM10-B130T05430C3□M2	1.7	5.5	5.40	3000	130	16.2	3300	7.3(8.4)	0.98	60	1.1	11	5	149(207)
CM10-A130T07725C3□M3	2	7.5	7.70	2500	130	19.2	3000	14.1 (14.45)	1.03	68	1.2	6	4	192(229)
CM10-A130T10015C3□M3	1.5	6	10.00	1500	130	25	2000	18.8 (22.08)	1.67	108	1.85	10	4	209(265)
CM10-B130F05415C3□M2	0.85	3.5	5.40	1500	130	16.2	3000	7.3(8.4)	1.54	101	3.3	37	5	149(207)
CM10-A130F10015C3□M3	1.5	4	10.00	1500	130	25	2000	18.8 (22.08)	2.50	178	4.2	25	4	209(265)
CM10-B130F08415C3□M2	1.3	5.1	8.40	1500	130	25.2	3000	10.4(11.5)	1.65	105	1.9	22	5	165(224)
CM10-A130F15015C3□M3	2.3	5	15.00	1500	130	30	2000	25.5 (26.98)	3.00	180	3.2	19	4	231(282)
CM10-B130F11515C3□M2	1.8	7	11.50	1500	130	34.5	3000	12.8(13.9)	1.64	106	1.3	17	5	180(239)
CM10-A180F19015R3□L3	3	7.5	19.00	1500	180	57	1800	63.5 (69.5)	2.53	166	1.33	14	4	205(252)
CM10-A180F27010R3□L3	2.9	7.5	27.00	1000	180	81	1250	88.5 (94.5)	3.60	241	1.67	18	4	232(279)
CM10-B180F18615R3□L2	2.9	11	18.60	1500	180	55.8	3000	47.9(49)	1.69	114	0.87	4	5	196.5(234)
CM10-A180F21520R3□L3	4.5	9.5	21.50	2000	180	64.5	2150	72.7 (78.7)	2.26	140	0.84	8	4	215(262)
CM10-A180F27015R3□L3	4.3	10	27.00	1500	180	81	1750	88.5 (94.5)	2.70	172	1	10	4	232(279)
CM10-B180F28415R3□L2	4.5	17	28.40	1500	180	85.2	3000	71.5(72.6)	1.67	112	0.38	4	5	221.5(259)
CM10-B180F35015R3□L2	5.5	21	35.00	1500	180	87.5	3000	118.1(124.1)	1.67	113	0.2	3	5	257.5(295)
CM10-B180F48015R2□L2	7.5	26	48.00	1500	180	120	3000	149.6(150.7)	1.85	115	0.14	2	5	303.5(341)
CM10-A200F70015R2□L2B	11	21	70.00	1500	200	175	1800	97.7	3.33	220	0.95	10.3	4	438(538)

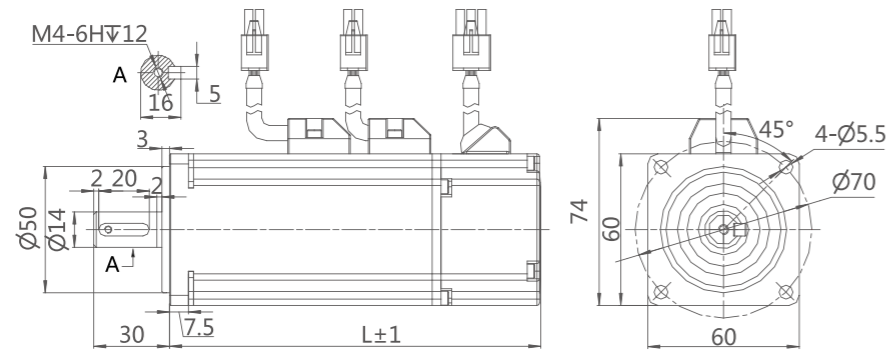
The □ suffix of the motor: G=No holding brake;
 H=With brake
 Encoder type(5th to last specification):
 C=17 bit multi turn magnetic encoder,
 R=23 bit multi turn optical encoder
 Motor voltage: T=220V, F=380V

The inertia with brake in parentheses

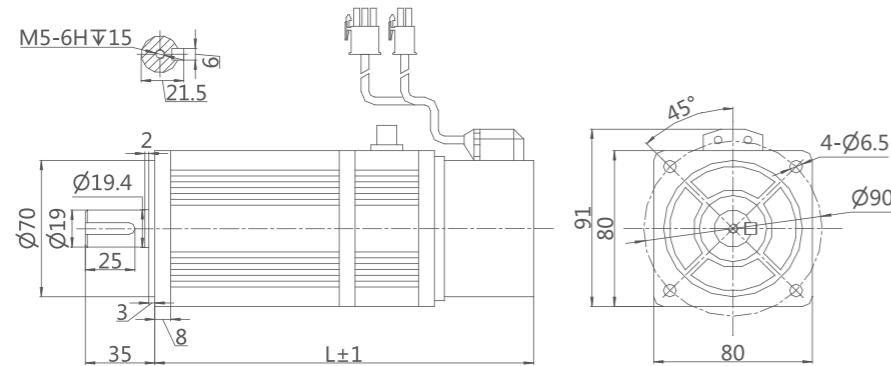
Excluding shaft length and end cover thickness, the bracket indicate the length of the frame with a brake.

Size Diagram of Servo Motor (unit: mm)

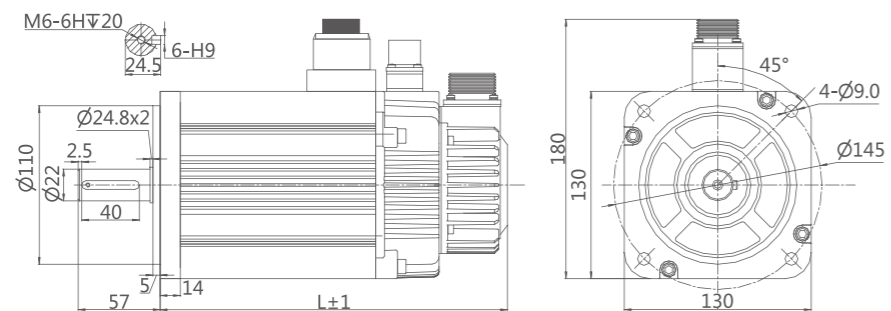
60 flange



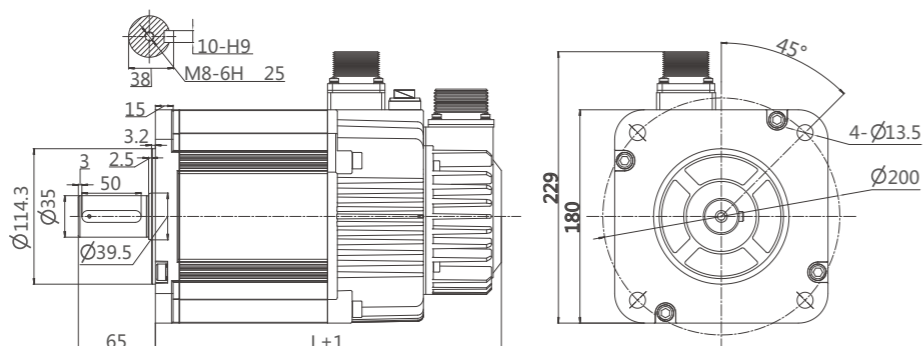
80 flange



130 flange



180 flange



Cable Harness Specification and Model Diagram

Encoder Cable

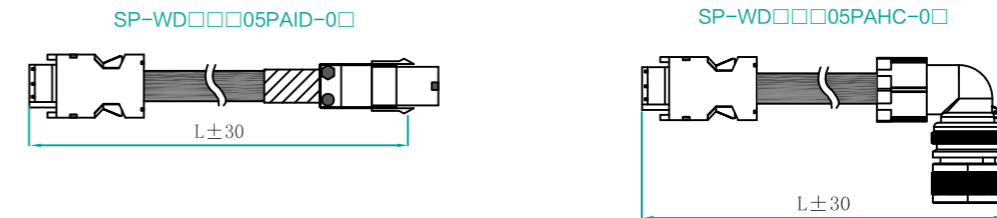


Figure 1: Definition of Encoder Cable Terminal

Motor terminal cable sequence				Driver side		
Motor flange type	Terminal view	Terminal number	Pin	Definition	Pin	Motor flange type
40/60/80 Using AMP connector			1	PE	PE	
			2	5V	4	
			3	0V	3	
			4	SD+	1	
			5	SD-	2	
			6	E+	NC	
			7	E-	NC	
			8	NC	NC	
			9	NC	NC	
80 (Using small-sized aviation connector)			1	PE	NC	
			2	E-	NC	
			3	E+	NC	
			4	SD-	2	
			5	0V	3	
			6	SD+	1	
			7	5V	4	
130/180 Using aviation connector			1	PE	NC	
			2	E-	NC	
			3	E+	NC	
			4	SD-	2	
			5	0V	3	
			6	SD+	1	
			7	5V	4	

Power Cable

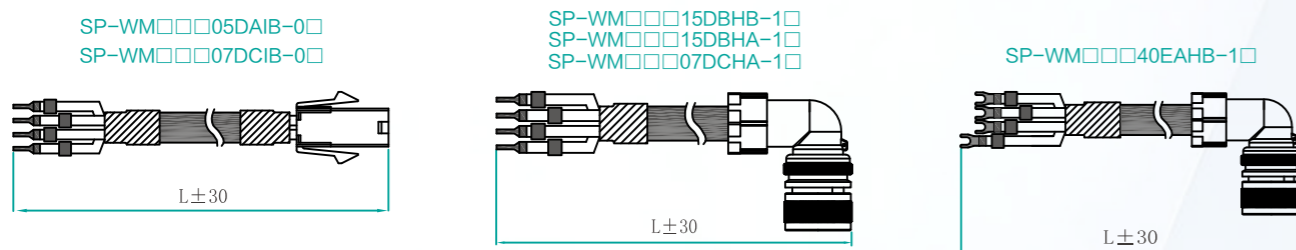


Figure 2: Motor Power Cable Terminal

Motor terminal wire sequence					Driver side
Motor flange type	Terminal view	Terminal number	Pin	Definition	Motor flange type
40/60/80 Using AMP connector			1	PE	
			2	U	
			3	V	
			4	W	
The following 80 flange will be replaced with small-sized aviation connector instead of AMP connector, mainly for motor applications that may experience reciprocating motion, high temperature, high humidity and other harsh environmental conditions.					
80(Using small-sized aviation connector) 130/180 Using aviation connector			1	PE	
			2	U	
			3	V	
			4	W	

Brake Cable

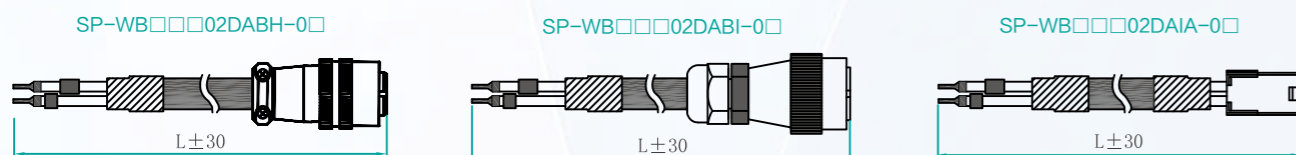


Figure 3: Holding brake terminal

Motor flange type	Brake terminal model	Motor side terminal	Pin	Definition
40/60	172233-1		1	24V
			2	0V
80/130	XS12K3P		1	24V
			2	0V
			3	NC
180	XS16K4TM		1	24V
			2	0V
			3	NC
			4	NC

Selection of Regenerative Braking Resistor

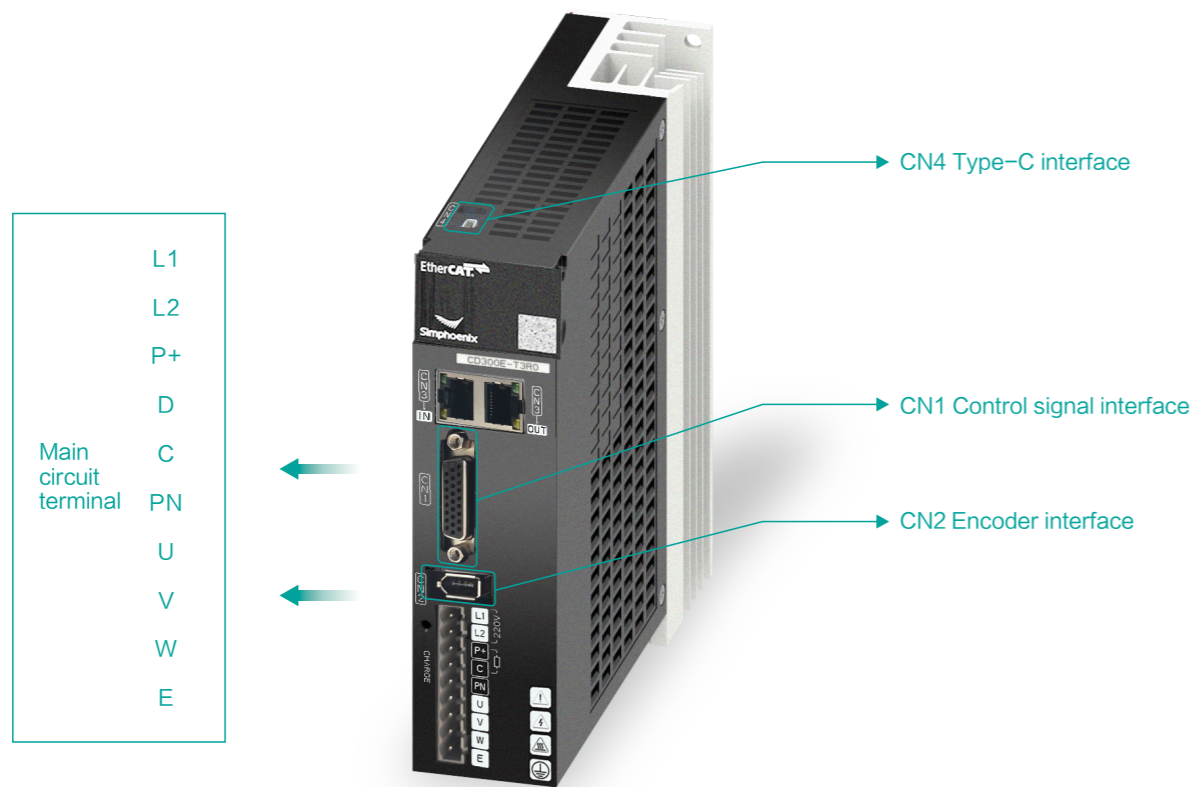
When the motor's output torque opposes its operating speed direction, the motor enters a regenerative state. This feedback energy elevates the bus voltage, with the energy magnitude determined by the combined inertia of the motor rotor and load. For systems with low inertia, the driver's internal bus capacitors can sufficiently absorb the regenerative energy. However, in high-inertia systems, the braking resistor must dissipate the excess energy as the bus capacitors reach capacity. Uncontrolled bus voltage rise may trigger overvoltage protection (causing emergency stops) or potentially damage the drive system.

Selection Table for Regenerative Braking Resistor

Drive model		Specification of built-in regenerative braking resistor		Allow minimum external resistance value (Ω)	Capacitor can absorb maximum braking energy EC (J)
		Resistance value (Ω)	Capacity (W)		
Single-phase AC220V	CD300E-T1R8	null	null	50	11
	CD300E-T3R0	null	null	50	16
Single-phase/ three-phase AC220V	CD300E-T4R5	50 (optional)	40	50	19
	CD300E-T5R5	50 (optional)	40	25	29
	CD300E-T7R5	25 (optional)	100	25	34
Three-phase AC380V	CD300E-F4R0	100 (optional)	100	80	33
	CD300E-F6R5	100 (optional)	100	60	33
	CD300E-F8R5	50 (optional)	100	40	33
	CD300E-F12R	50 (optional)	100	40	48
	CD300E-F17R	40 (optional)	150	40	60
	CD300E-F22R	30 (optional)	150	20	80
	CD300E-F27R	30 (optional)	150	20	96
	CD300E-F38R	null	null	10	144
	CD300E-F52R	null	null	10	192
	CD300E-F62R	null	null	10	240

- When utilizing an external braking resistor:
Connection Requirements: Must be wired between P+ and C terminals, P+ to D circuit must remain open (no connection);
- Resistor Specifications: Minimum resistance must exceed values in Table, Non-compliance risks drive unit damage.

Annotation Diagram Of Peripheral Terminals



Name and Function of Main Circuit Terminal

Terminal Number	Terminal Name	Drive Model (CD300E-)	Terminal Function
L1, L2, L3	power input	T1R8/T3R0	Single-phase AC220V power input (without L3 terminal)
		T4R5~T7R5	Single-phase/three-phase AC220V power input
		F4R0~F62R	Three-phase 380V power input
P+, D, C	braking resistor	T1R8/T3R0	Internal brake: not equipped External brake: connect between P+ and C terminals
		T4R5~T7R5 F4R0~F27R	Internal Braking (Optional) Resistor connection: Short-circuit between P+ and D; External Braking Resistor connection: Between P+ and C terminals and maintain open circuit between P+ and D.
		F27R~F62R	Internal brake: not equipped; External Braking Resistor connection: Between P+ and C terminals and maintain open circuit between P+ and D.
U, V, W	motor		The power line connection terminals of the servo motor are respectively connected to the U/V/W of the motor.
P+, PN	common DC bus terminal		The common DC bus terminal of the servo drive can share the same bus when multiple machines are connected in parallel.
N1, N2	external reactor terminal		By default, a short-circuit terminal is connected between PN1 and PN2. When it is necessary to suppress high-order harmonics of the power supply, the short-circuit terminal is removed between N1 and N2, and an external DC reactor is connected.
PE	ground terminal		Connect to the grounding terminal of the power supply and the grounding terminal of the motor.

Peripheral Devices

