

# SDV3- E Series servo system

## Quick manual



## 1. Safety precautions



### DANGER

- Never connect wires while power on. Do not check components or signal for circuit board During operation.
- Do not dismantle or change servo motor drive wire, circuit or components.
- Make sure grounding terminals are correctly grounded.



### CAUTION

- Do not perform a withstand voltage test for components of servo motor drive, it can cause semi-conductor components to be damaged by high voltage.
- Never connect the output terminals U, V, W to AC power.
- CMOS IC on control circuit of the servo motor drive shall be damaged by electrostatic influence. Do not touch main circuit board.
- Connect the output terminals U、V、W with wiring terminals U、V、W respectively, otherwise, it may cause damage to the equipment due to the racing of the servo motor and injuries.

## 2. Products receiving

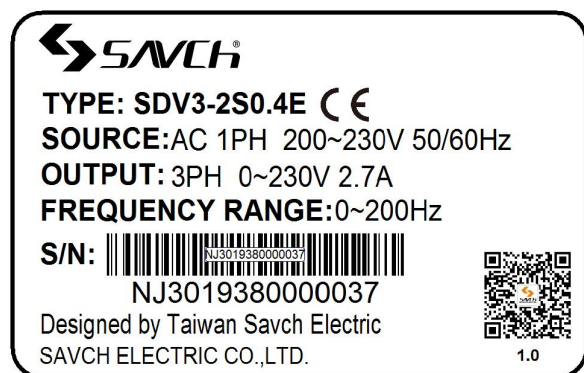
All products have been performed with strict test and inspection. After receiving the servo motor drive, the following checks shall be performed.

- To check that SAVCH servo motor drive, an instruction manual is inside of the package.
- To check whether model number correspond with model and capacity your purchase order.
- To check whether there are damaged parts during transportation and deliver. If there are, do not connect with power.

If any of the above checkpoints are not satisfactory, contact your SAVCH ELECTRIC representative for a quick resolution.

## 3. Model description

### Servo drive nameplate



### Servo drive model

**SDV3 - 2S 0.4 E**

Product series

Input voltage(V):  
2S: AC220V Single phase  
4S: AC380V Three phase

With EtherCAT

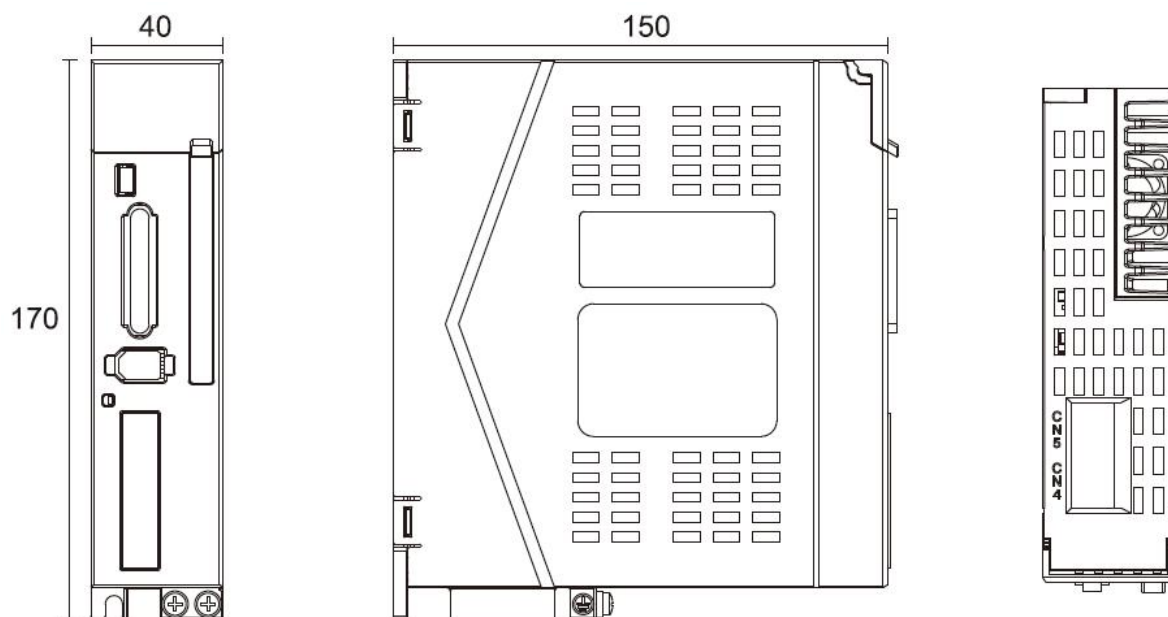
No. Power(kW)  
0.4: 0.4kW  
0.75: 0.75kW  
1.0: 1.0kW  
1.5: 1.5kW  
2.0: 2.0kW

## 4. Servo drive dimension

### Size1

Unit:mm

SDV3-2S0.4E~2S0.75E

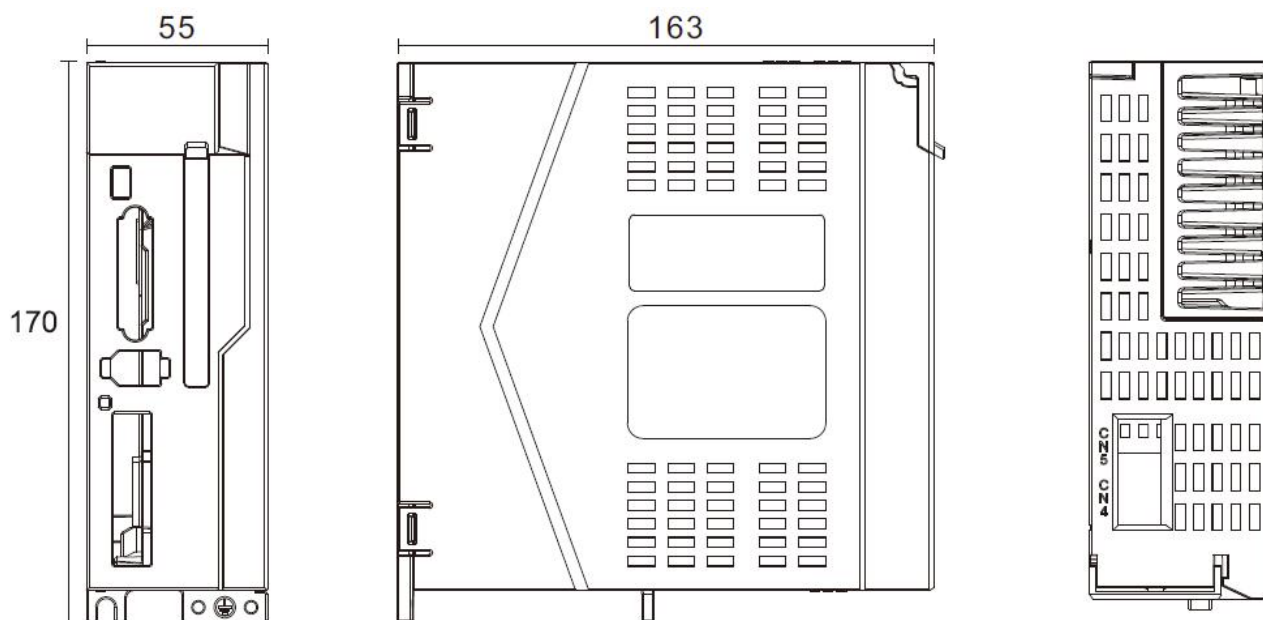


### Size2

Unit:mm

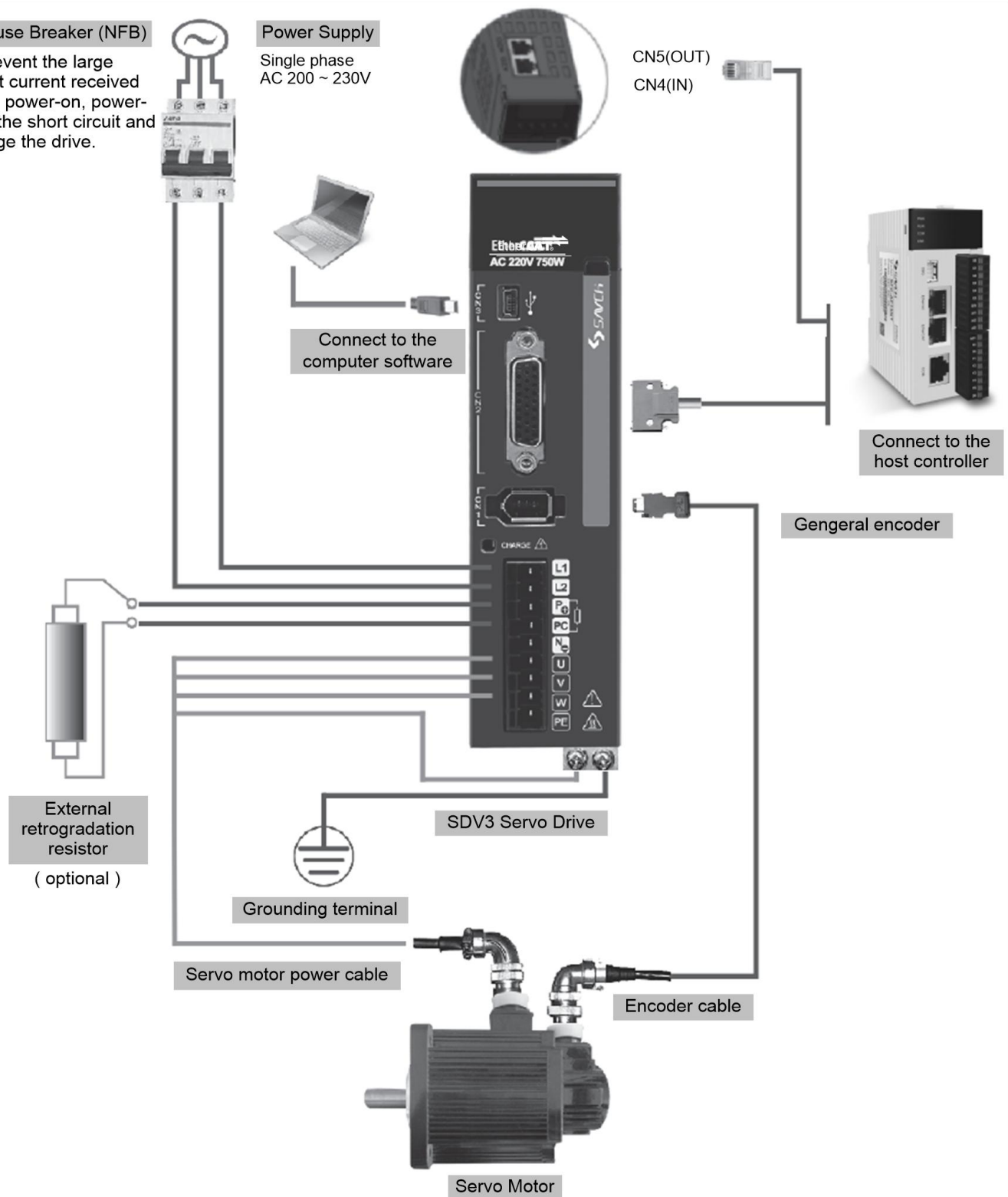
SDV3-2S1.0E~2S1.5E

SDV3-4T0.75E~4T2.0E



## 5. Basic wiring diagram

### SDV3-2S0.4E~2S0.75E



#### Installation Notes:

1. Check the L1, L2 power and connecting wire.
2. Check the servo motor output U, V, W terminal phase wires (Unable to run when the connection is wrong).
3. External connected regeneration resistor is the selective spare, adopt according to the actual needs.
4. CHARGE indicator is on means that the power is on. When the Power is turned off, there is still left with electric in the main-circuit, so the cable should be removed only when all the indicators are off.

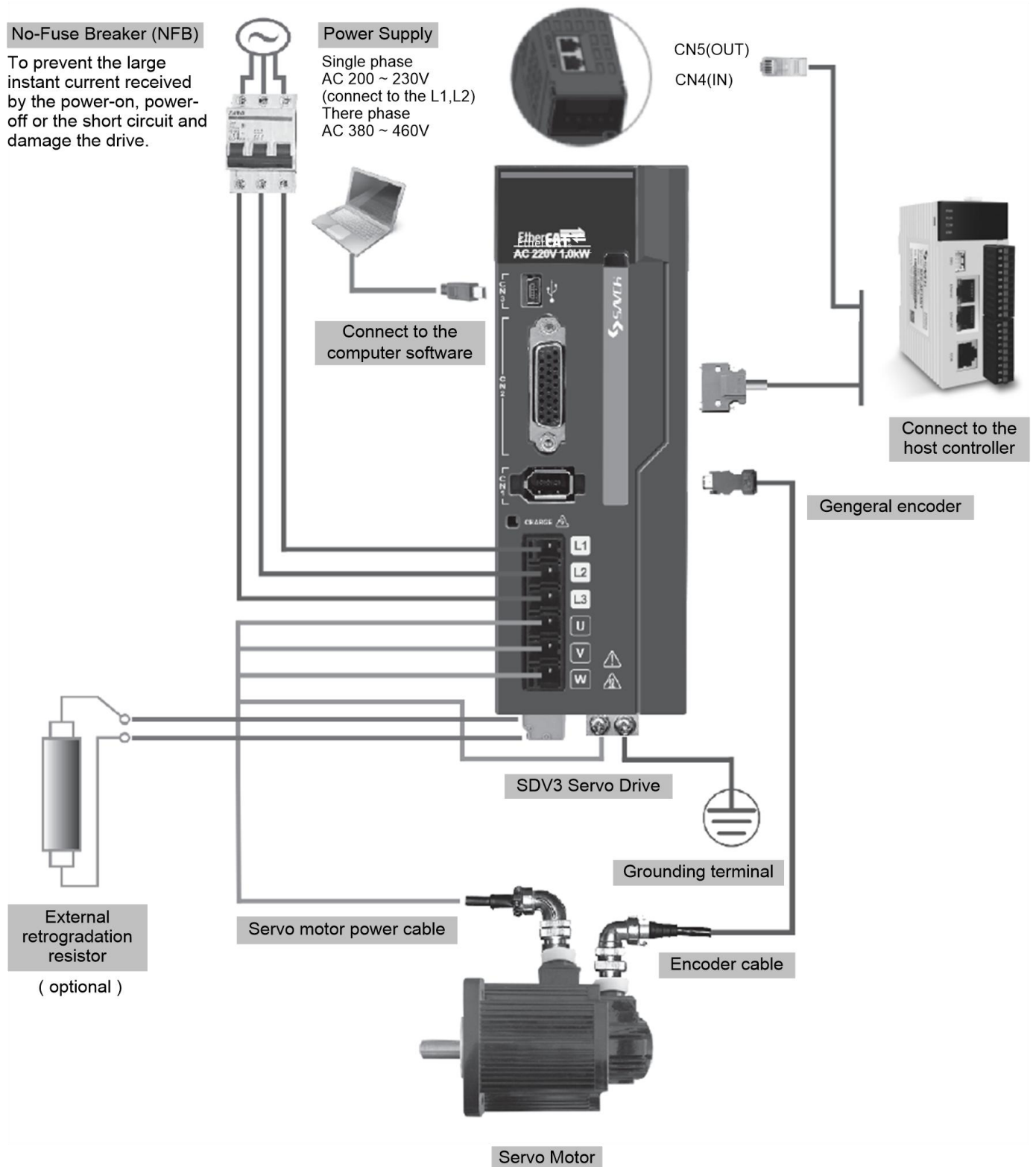
## SDV3-2S1.0E~1.5E/4T0.75E~2.0E

### No-Fuse Breaker (NFB)

To prevent the large instant current received by the power-on, power-off or the short circuit and damage the drive.

### Power Supply

Single phase  
AC 200 ~ 230V  
(connect to the L1,L2)  
Three phase  
AC 380 ~ 460V



### Installation Notes:

1. Check the L1, L2, L3 power and connecting wire.
2. Check the servo motor output U, V, W terminal phase wires (Unable to run when the connection is wrong).
3. External connected regeneration resistor is the selective spare, adopt according to the actual needs.
4. CHARGE indicator is on means that the power is on. When the Power is turned off, there is still left with electric in the main-circuit, so the cable should be removed only when all the indicators are off.

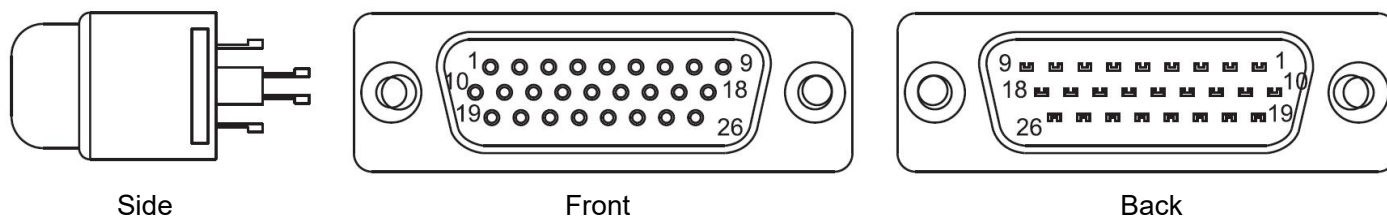
## 6. Interfaces

### 6.1 SDV3 Series TE terminal

Terminal mark	Name of signal	Function
L1	Main circuit power supply	Connect to external AC power. Single phase AC220V -15%~+10% 50/60Hz (connect to L1,L2) Three phase AC380V -15%~+10% 50/60Hz
L2		
L3		
P+	DC bus positive terminal	When using an external regenerative resistor, a regenerative resistor is added between the Pc and P+ terminals.
Pc	Regenerative resistor terminal	
N-	DC bus negative terminal	For common DC bus applications, connect P+ and N- terminals.
U	Servo motor output	Connect with servo motor U、V、W.
V		
W		
PE	System protection grounding	Grounding terminal

### 6.2 Input/output terminal CN2

In addition to EtherCAT communication, the SDV3 servo drive also provides IO terminals to connect with other devices, IO terminals connecting through a 26PIN connector, the layout of the plug is as follows:

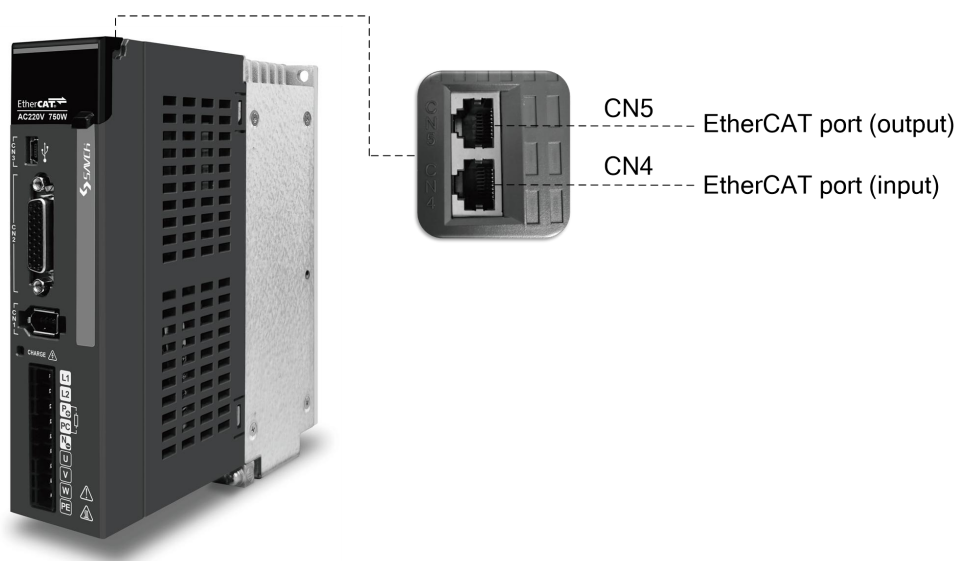


The specific functions of the signals are shown in the following table:

Name of signal			Pin.No	Function
Digital input	EI1	Input terminal 1	24	EI input terminal (corresponding sink/source signal) input command signal terminal to servo motor drive. DC12 [V]~24 [V]/8 [mA](each point) Optocoupler Insulated
	EI2	Input terminal 2	6	
	EI3	Input terminal 3	15	
	EI4	Input terminal 4	14	
	EI5	Input terminal 5	4	
	COM	Input common port	5	
Digital output	EOUT1	Output terminal1	21	EOUT output terminal (corresponding sink /source signal) from the signal output terminal of servo motor drive. Max DC24 [V]/50 [mA]. Optocoupler Insulated
	EOUT2	Output terminal2	22	
	EOUT3	Output terminal3	23	
	OCM	Output common port	7	
Power	IP24	Internal isolation power+24V	10	Internal isolation power +24V output
	IG24	Internal isolation power 0V	19	Internal isolation power +24V grounding

## 6.3 EtherCAT port

The dual RJ45 terminal of the SDV3 E series servo drive is located at CN4 and CN5. CN4 is the EtherCAT network input port, and CN5 is the network output port.



## 7. EtherCAT

### 7.1 Communication specification

Item	Specification		
Physical layer	100BASE-TX		
Connector	RJ45×2(input: CN4; output: CN5)		
Baud rate	2x100Mbps(full duplex)		
Frame data length	Maximum 1484 bytes		
Sync manager	SM0:Mailbox output SM2:Process data output	SM1:Mailbox input SM3:Process data input	
FMMU	FMMU0:Process data output	FMMU1:Process data input	FMMU2:Mailbox state
Distributed clock	64 bits		
Sync mode	DC Synchronization(DC SYNC0)	Free Run	
Communication object	SDO, PDO, EMCY		
App layer protocol	CoE:CANopen over EtherCAT		

### 7.2 Parameter list

SDV3 EtherCAT related parameter settings are shown in the table below:

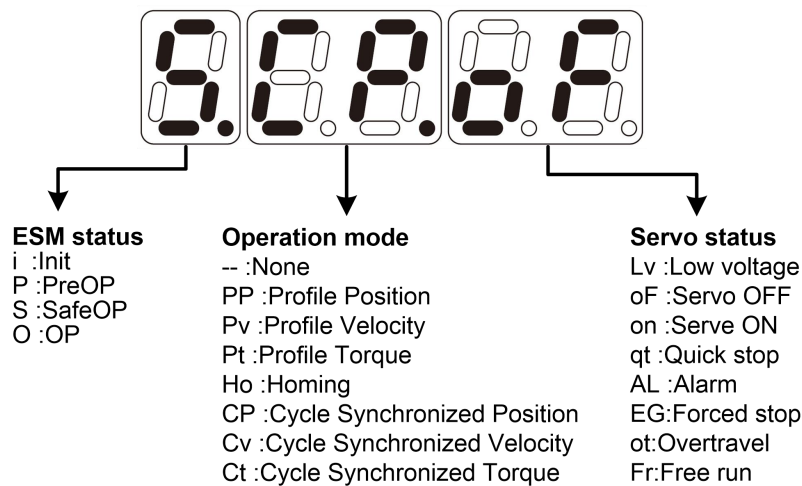
Para No.	Para name	Setting range	Default value	Description
P1.01	Servo mode	0~9	9	EtherCAT mode
P2.25	Position command format	0: Normal PTP 1: Infinite length	0	The servo motor position is limited by the object 0x607D
P4.01	ECAT node ID	1~65535	1	Set node ID
P4.02	ECAT node ID setting	0: Node ID is the value in the EEPROM 1: Node ID is the value of P4.01	0	Set the source of the node ID



Para No.	Para name	Setting range	Default value	Description
P4.03	Data synchronization Detection setting	0: no detection 1~99: Data loss alarm occurs when the setting data is lost continuously	0	Synchronized data detection setting under the Cycle Synchronized Mode
P4.04	Data Loss Processing Settings	0: no processing 1: Update the position command with the last interpolation data increment value	1	Processing settings when position data is lost in the cycle sync position mode
P4.09	Input shift time setting	0~160 Input shift time = The parameter value*62500	0	Adjust input shift time
P4.17	Object monitoring	The top 4 bytes are object indexes The lower 2 bytes are the sub index of the object	604100h	Set the objects to be monitored on dp-12

### 7.3 Operation panel indication

The E series servo drive will display the EtherCAT related status after power-on. The displayed status is divided into three types, including ESM status, operation mode and operation status. The specific meaning is as shown below:



ESI files and more information about SDV3-E series servo drivers and servo motors can be downloaded from the Savch website ([www.savch.net](http://www.savch.net)) or obtained by scanning the QR code below.



Thanks for choosing SAVCH servo system, if you have any questions about our products or services, please let us know!

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