



JSDL2 Series User Manual





Driving & Connecting Globally



Préface

- ◆ Le produit est un lecteur conçu pour commander un moteur à induction triphasé. lire attentivement ce manuel pour garantir le bon fonctionnement, la sécurité et pour se familiariser avec les fonctions d'entraînement.
- ◆ Le lecteur est un appareil électrique / électronique et doit être installé et géré par un personnel qualifié
- ◆ Une mauvaise manipulation peut entraîner un fonctionnement incorrect, cycle de vie plus court, ou l'échec de ce produit ainsi que le moteur.
- ◆ Tous les documents sont sujets à changement sans préavis. Soyez sûr d'obtenir les dernières éditions de l'utilisation ou visitez notre site Web
- ◆ Lire le manuel d'instructions avant de procéder à l'installation, les connexions (câblage), le fonctionnement ou l'entretien et l'inspection.
- ◆ Vérifiez que vous avez une bonne connaissance de l'entraînement et de vous familiariser avec les consignes de sécurité et les précautions avant de procéder à fonctionner le lecteur.
- ◆ prêter attention aux consignes de sécurité indiquées par l'avertissement  et symbole Attention .

 Avertissement	ignorer les informations indiquées par le symbole d'avertissement peut entraîner la mort ou des blessures graves.
 Attention	ignorer les informations indiquées par le symbole de mise en garde peut entraîner des blessures mineures ou modérées et / ou des dommages matériels importants.

Chapitre 1 Consignes de sécurité

1.1 avant d'alimenter le disque dur



Avertissement

- Le circuit principal doit être correctement câblée. Pour les terminaux monophasés d'approvisionnement de l'utilisation des intrants (R/L1, T/L3) et de trois bornes d'entrée de l'utilisation de l'offre de phase (R/L1, S/L2, T/L3). U/T1, V/T2, W/T3 ne doivent être utilisés pour connecter le moteur. Raccordement de l'alimentation d'entrée à l'un des U/T1, V/T2 W/T3 ou bornes risque d'endommager le lecteur.



Attention

- Pour éviter que le couvercle ne se désengage ou de tout autre dommage physique, ne portez pas le lecteur par son couvercle. Soutenir le groupe par son dissipateur de chaleur lors du transport. Une mauvaise manipulation peut endommager le lecteur ou blesser le personnel, et doit être évitée.
- Pour éviter que les risques d'incendie, ne pas installer le lecteur sur ou à proximité d'objets inflammables. Installer sur des objets ininflammables comme les surfaces métalliques.
- Si plusieurs disques sont placés dans le même panneau de contrôle, fournir une ventilation adéquate pour maintenir la température en dessous de 40 ° C/104 ° F (50 ° C/122 ° F sans housse de protection) pour éviter la surchauffe ou incendie.
- Lors d'un retrait ou d'installation de l'opérateur numérique, éteignez-le d'abord, puis de suivre les instructions de ce manuel pour éviter les erreurs de l'opérateur ou de la perte de l'affichage causé par des connexions défectueuses.



Avertissement

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1.2 Câblage



Avertissement

- Coupez toujours l'alimentation électrique avant de procéder à l'installation d'entraînement et le câblage des terminaux utilisateurs.
- Le câblage doit être effectué par un personnel qualifié / électricien certifié.
- Assurez-vous que le lecteur est correctement mis à la terre. (220V Classe: impédance de mise à la terre doit être inférieure à 100Ω Classe 440V: Impédance de mise à la terre doit être inférieure à 10Ω.)
- vérifier et tester mes circuits d'arrêt d'urgence après le câblage. (L'Installateur est responsable du câblage.)

- Ne touchez jamais de l'entrée ou de lignes électriques de sortie permettant directement ou toute entrée ou de lignes de puissance de sortie à venir en contact avec le boîtier d'entraînement.
- Ne pas effectuer un test de tenue en tension diélectrique (mégohmmètre) sur le disque dur ou cela va entraîner des dommages de lecture pour les composants semi-conducteurs.



Attention

- La tension d'alimentation appliquée doit se conformer à la tension d'entrée spécifiée par le lecteur. (Voir la section signalétique du produit)
- Raccorder la résistance de freinage et de l'unité de freinage sur les bornes assignées.
- Ne pas brancher une résistance de freinage directement sur les bornes CC P (+) et N (-), sinon risque d'incendie.
- Utilisez des recommandations de la jauge de fil et les spécifications de couple. (Voir Wire Gauge et la section de spécification de couple)。
- Ne jamais brancher l'alimentation d'entrée aux bornes onduleur de sortie U/T1, V/T2, W/T3.
- Ne pas brancher un contacteur ou interrupteur en série avec le variateur et le moteur.
- Ne branchez pas un facteur condensateur de correction de puissance ou supprimeur de tension à la sortie du variateur。
- S'assurer que l'interférence générée par l'entraînement et le moteur n'a pas d'incidence sur les périphériques.

1.3 Avant l'opération



Avertissement

- Assurez-vous que la capacité du disque correspond aux paramètres de notation avant d'alimenter.
- Réduire le paramètre de la fréquence porteuse si le câble du variateur au moteur est supérieure à 80 pi (25 m). Un courant de haute fréquence peut être générée par la capacité parasite entre les câbles et entraîner un déclenchement de surintensité du variateur, une augmentation du courant ou d'une lecture actuelle inexactes.
- Veillez à installer tous les couvercles avant de l'allumer. Ne retirez pas les capots pendant que l'alimentation du lecteur est allumé, un choc électrique peut se produire autrement.
- Ne pas actionner d'interrupteurs avec les mains mouillées, un choc électrique pourrait survenir autrement.
- Ne touchez pas les bornes d'entraînement lorsqu'il est alimenté, même si le lecteur est arrêté, un choc électrique pourrait survenir autrement.

1.4 Configuration Paramètre



Attention

- Ne branchez pas une charge pour le moteur tout en effectuant un auto-tune.
- Assurez-vous que le moteur peut fonctionner librement et il y a suffisamment d'espace autour du moteur lors de l'exécution d'un auto-tune rotation.

1.5 Opération




Avertissement

- Veillez à installer tous les couvercles avant de l'allumer. Ne retirez pas les capots pendant que l'alimentation du lecteur est allumé, un choc électrique peut se produire autrement.
- Ne pas brancher ou débrancher le moteur pendant le fonctionnement. Le variateur pourrait se déclencher et ainsi endommager le lecteur.
- Les opérations peuvent commencer soudainement si une alarme ou un défaut est réarmé avec un ordre de marche active. Assurez-vous qu'un ordre de marche est actif lors de la réinitialisation de l'alarme ou de défaut, autrement des accidents peuvent se produire.
- Ne pas actionner d'interrupteurs avec les mains mouillées, un choc électrique pourrait survenir .
- Un interrupteur d'urgence externe indépendant est fourni, qui s'arrête en urgence vers le bas la sortie de l'onduleur en cas de danger.
- Si le redémarrage automatique après une récupération d'énergie est activée, le variateur démarrera automatiquement après le rétablissement du courant.
- Assurez-vous qu'il est sûr de faire fonctionner le variateur et le moteur avant d'effectuer un auto-tune rotation.
- Ne touchez pas les bornes d'entraînement lorsqu'il est alimenté même si l'onduleur s'est arrêté, un choc électrique pourrait survenir .
- Ne pas contrôler les signaux sur les circuits pendant que le lecteur est en marche.
- Après la mise hors tension, le ventilateur de refroidissement peut continuer à fonctionner pendant un certain temps.



Attention

- Ne touchez pas les composants générant de la chaleur tels que radiateurs et des résistances de freinage. 
- Vérifiez soigneusement la performance du moteur ou de la machine avant d'utiliser à grande vitesse, sous peine de blessure.
- Notez les réglages des paramètres liés à l'unité de freinage lorsque applicable.
- Ne pas utiliser la fonction de freinage d'entraînement pour un maintien mécanique, sous peine de blessure.
- Ne pas contrôler les signaux sur les circuits pendant que le lecteur est en marche.

1.6 Entretien, Inspection et remplacement



Avertissement

- Attendre un minimum de 5 minutes après que l'alimentation a été débranchée avant de commencer une inspection. Vérifiez également que le voyant de charge est éteint et que la tension du bus cc a chuté au-dessous de 25Vdc.
- Ne jamais toucher les bornes à haute tension dans le lecteur.
- Assurez-vous que l'alimentation du lecteur est débranché avant de démonter le lecteur.
- Seul le personnel autorisé peuvent faire l'entretien, l'inspection et les opérations de remplacement. (Enlevez les bijoux en métal tels que les montres et les bagues et utiliser des outils isolés.)



Attention

- Le variateur peut être utilisé dans un environnement avec une gamme de température allant de 14 ° -104 ° F (10-40 ° C) et l'humidité relative de 95% sans condensation.
- Le variateur doit être utilisé dans un environnement sans poussière, gaz, vapeur et humidité.

1.7 Mise au rebut du variateur



Attention

- jeter cet appareil avec soin comme un déchet industriel et selon les réglementations locales nécessaires.
- Les condensateurs du circuit principal d'entraînement et circuits imprimés sont considérés comme des déchets dangereux et ne doivent pas être brûlés.
- The Plastic enclosure and parts of the drive such as the top cover board will release harmful gases if burned.

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Chap 1 Product inspection and installation

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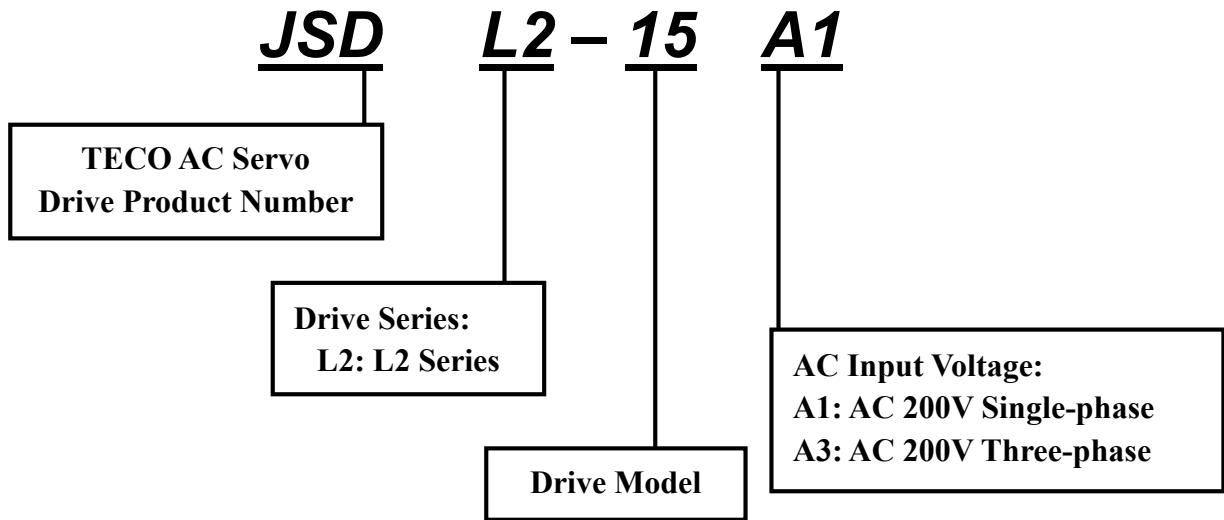
1-1 Product Inspection

This servo product has been completely functional tested before shipping off the factory, to prevent the product from non-conforming caused by negligence during delivery process, please check the following items in detail after unpacking:

- Check the model numbers of servo drive and servo motor are the same as the model ordered.
(Please refer to the following chapters for model number description)
- Check whether or not the appearance of servo drive and servo motor are damaged or scratched.
(Do not wire or connect to power when there is damage during shipping!)
- Check whether or not there is any poor assembly; loose parts and components in the servo drive and servo motor.
- Check with the hand whether or not the servo motor rotor shaft can rotate smoothly.
(Servo motor attached with mechanical brake cannot be rotated directly!)

If there is any failure or abnormal indication mentioned above, please contact TECO Electric & Machinery sales representatives or local distributors immediately from whom you have purchased this product.

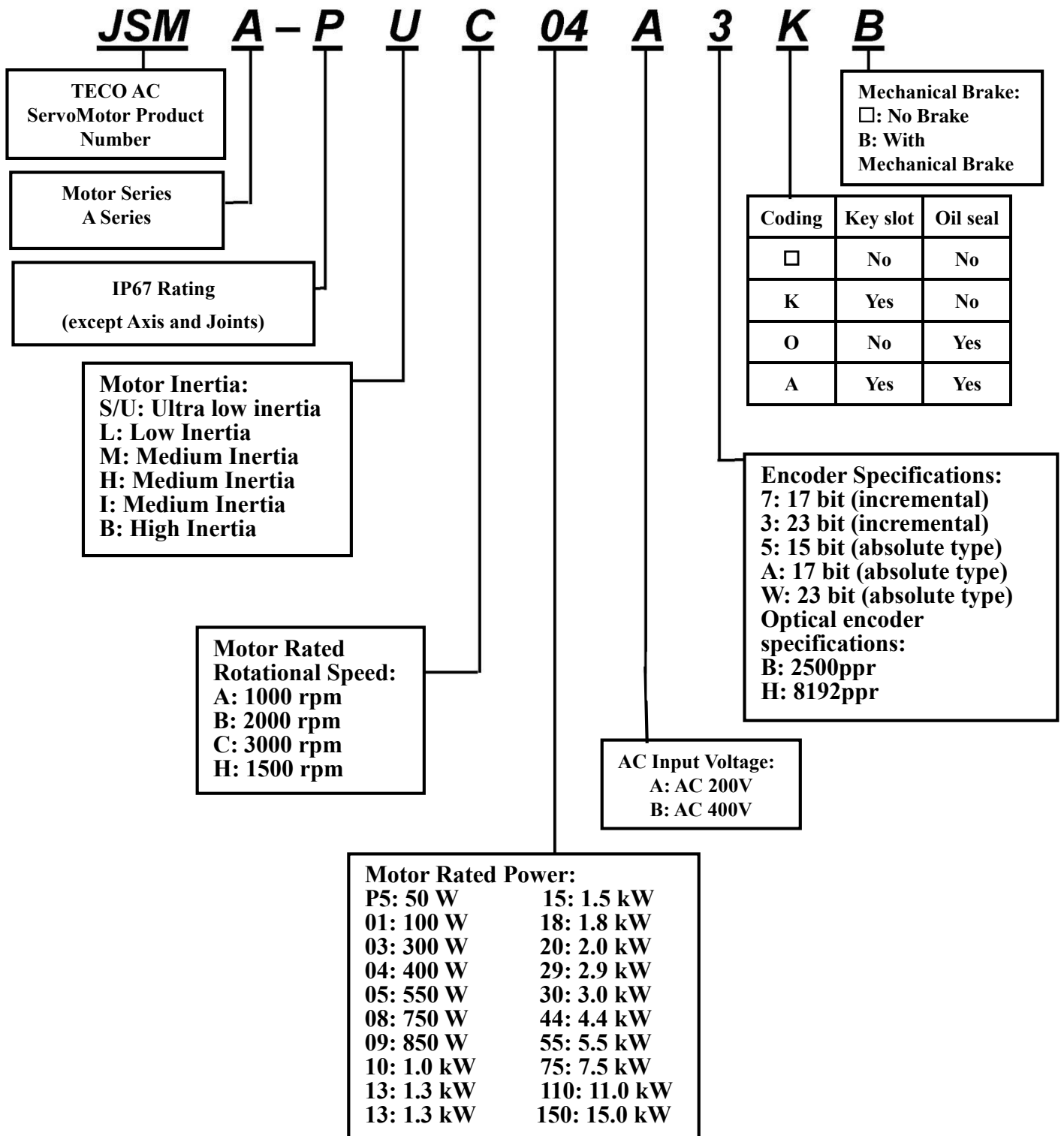
1-1-1 Servo Drive Model Verification



Output Power List by Servo Model

200V 级	
10A: 100W	30A: 1.0kW
15A: 400W	50A3: 2.0kW
20A: 750W	75A3: 3.0kW

1-1-2 Servo Motor Model Verification



1-1-3 Servo Drive and Servo Motor Matching Comparison Table



- Before the machine starts to operate, make sure to confirm the parameter Cn030: serial model settings, and select the correct Drive and Motor matching combination! Confirm the parameter Cn001 control mode selection.

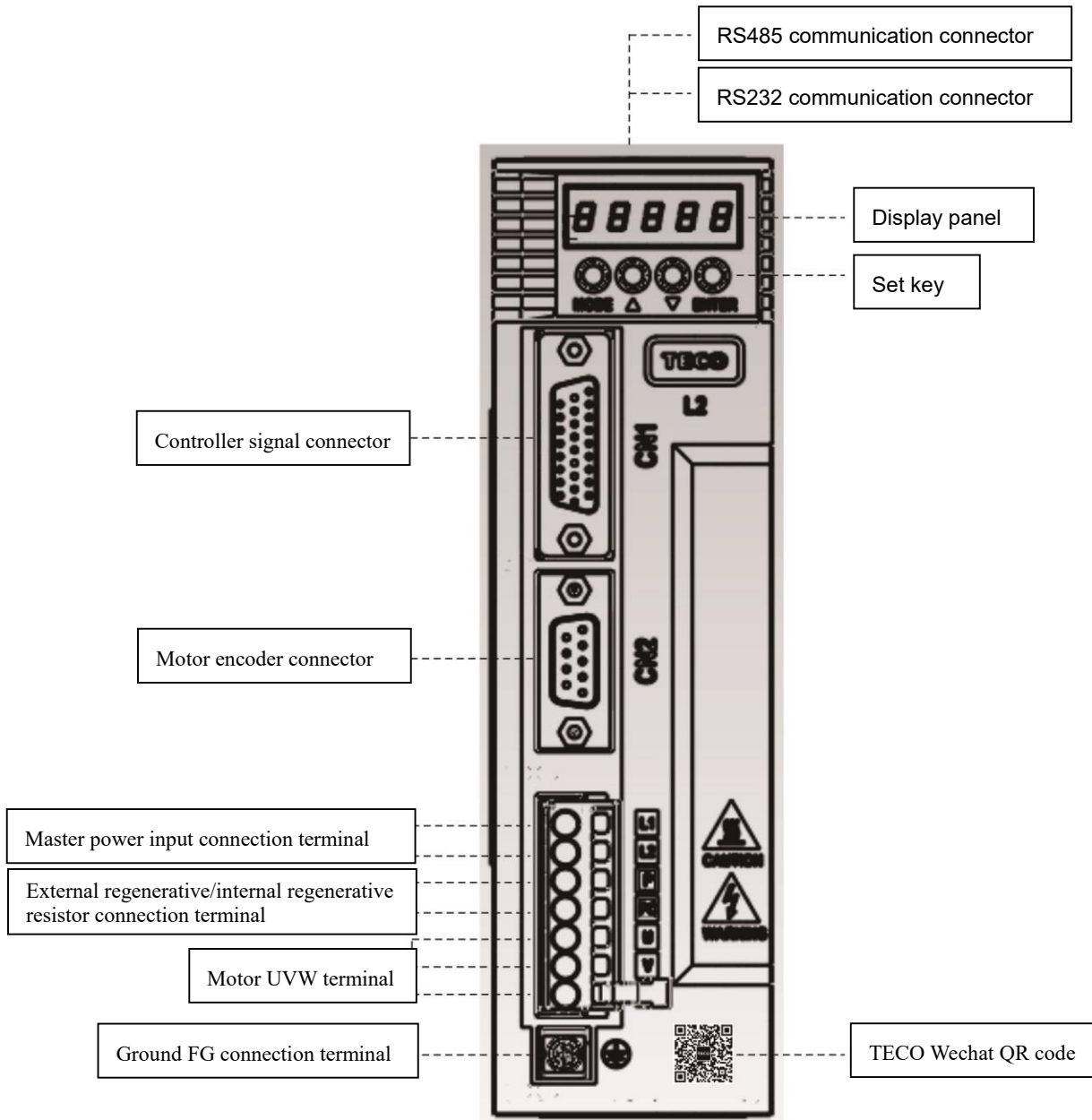
Users can use **dn-08** to check the drive/motor combination set in the drive currently. If the displayed combination differs from actual condition, please reset parameter **Cn030** (Serial model setting) according to the following table and set **Cn029** (Parameter reset) as 1 to stop power supply to reset drive parameter; users may also consult their local distributors.

JSDL2 Matching Motor		Motor Specifications		dn-08 Displayed Value / Cn030 Setting Value
Matching Capacity	Motor Model (The last code represents the difference of encoder specifications) Incremental type: 7(17bit) Absolute type: A (17bit)	Power (kW)	Speed (rpm)	Encoder Specifications (The last code represents the difference of encoder specifications) Incremental type: 7(17bit) Absolute type: A (17bit)
10A	JSMA-PSCP5A□	0.05	3000	H101□
	JSMA-PUCP5A□	0.05	3000	H105□
	JSMA-PSC01A□	0.1	3000	H102□
	JSMA-PUC01A□	0.1	3000	H106□
	JSMA-PBC01A□	0.1	3000	H107□
	JSMA-PUC02A□	0.2	3000	H108□
	JSMA-PBC02A□	0.2	3000	H109□
15A	JSMA-PSC01A□	0.1	3000	H111□
	JSMA-PSC02A□	0.2	3000	H113□
	JSMA-PUC02A□	0.2	3000	H119□
	JSMA-PBC02A□	0.2	3000	H11A□
	JSMA-PLC03A□	0.3	3000	H112□
	JSMA-SC04A□	0.4	3000	H114□
	JSMA-PSC04A□	0.4	3000	H115□
	JSMA-PUC04A□	0.4	3000	H11D□
	JSMA-PBC04A□	0.4	3000	H11E□
20A	JSMA-SC04A□	0.4	3000	H122□
	JSMA-PSC04A□	0.4	3000	H126□
	JSMA-PBH05A□	0.45	3000	H12F□
	JSMA-PMA05A□	0.55	1000	H124□
	JSMA-PMH05A□	0.55	1500	H125□

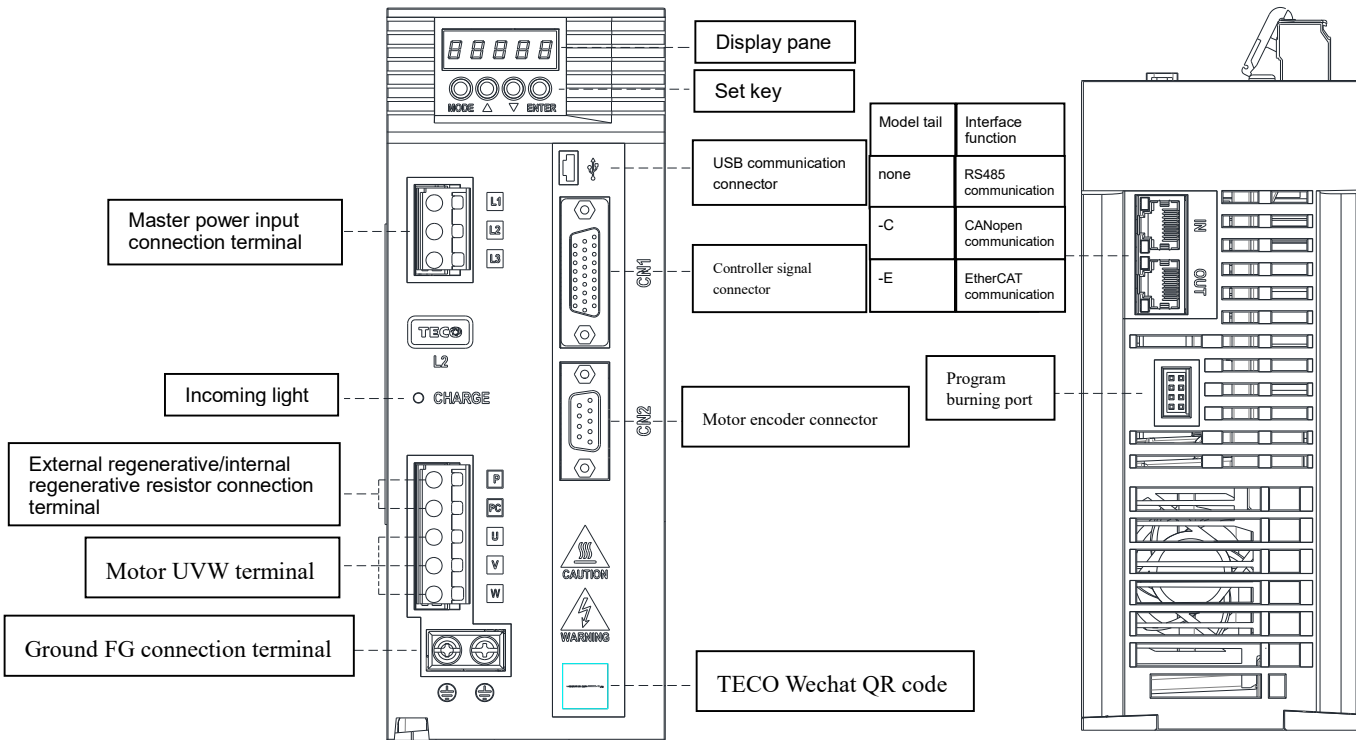
JSDL2 Matching Motor		Motor Specifications		dn-08 Displayed Value / Cn030 Setting Value
Matching Capacity	Motor Model (The last code represents the difference of encoder specifications) Incremental type: 7(17bit) Absolute type: A (17bit)	Power (kW)	Speed (rpm)	Encoder Specifications (The last code represents the difference of encoder specifications) Incremental type: 7(17bit) Absolute type: A (17bit)
	JSMA-PLC08A□	0.75	3000	H121□
	JSMA-PSC08A□	0.75	3000	H123□
	JSMA-PUC08A□	0.75	3000	H12D□
	JSMA-PBC08A□	0.75	3000	H12E□
30A	JSMA-PSC08A□	0.75	3000	H131□
	JSMA-PUC08A□	0.75	3000	H13B□
	JSMA-PBC08A□	0.75	3000	H13C□
	JSMA-PBH09A□	0.85	1500	H13E□
	JSMA-PMA10A□	1.0	1000	H132□
	JSMA-PMB10A□	1.0	2000	H133□
	JSMA-PMH10A□	1.0	1500	H134□
	JSMA-PMC10A□	1.0	3000	H135□
	JSMA-PUC10A□	1.0	3000	H13F□
	JSMA-PLC10A□	1.0	3000	H531□
	JSMA-PBC12A□	1.2	3000	H532□
JSMA-PMB15A□	1.5	2000	H13A□	
50A3	JSMA-PBH09A□	0.85	1500	H15B□
	JSMA-PUC10A□	1.0	3000	H15D□
	JSMA-PLC10A□	1.0	3000	H551□
	JSMA-PBH13A□	1.3	1500	H15C□
	JSMA-PMA15A□	1.5	1000	H151□
	JSMA-PMB15A□	1.5	2000	H152□
	JSMA-PMC15A□	1.5	3000	H153□
	JSMA-PLC15A□	1.5	3000	H15E□
	JSMA-PMB20A□	2.0	2000	H154□
	JSMA-PMC20A□	2.0	3000	H155□
	JSMA-PLC20A□	2.0	3000	H552□
75A3	JSMA-PBH13A□	1.3	1500	H174□
	JSMA-PBH18A□	1.8	1500	H175□
	JSMA-PBH18-18A□	1.8	1500	H176□
	JSMA-PLC20A□	2.0	3000	H571□
	JSMA-PMB30A□	3.0	2000	H171□
	JSMA-PMC30A□	3.0	3000	H172□
	JSMA-PMH30A□	3.0	1500	H173□
	JSMA-PIH30A□	3.0	1500	H177□

1-2 Servo Drive Appearance and Components

JSDL2- 10A1 / 15A1 / 20A1 / 30A1



JSDL2- 50A3 / 75A3



1-3 Servo Drive Operation Mode Introduction

This Drive provides several operating modes that can be selected by the user, the detailed modes are as follows:

Mode Name		Mode Code	Description
Single Mode	Position Mode (External Pulse Command)	Pe	The drive is a position loop and performs positioning control, the external pulse command input mode is to receive the pulse command output by the Supervisory Controller to achieve the positioning function. The position command is input by the CN1 Terminal.
	Position Mode (Internal Position Command)	Pi	The drive is a position loop running positioning control. The internal position command mode offers users the function of setting position command value to 32 sets command register and plan the digital input connect to switching corresponding position command.
Mixed Mode		Pe-Pi	Pe and Pi can be switched via digital input pin.

1-4 Servo Drive Installation Environment Conditions and Methods

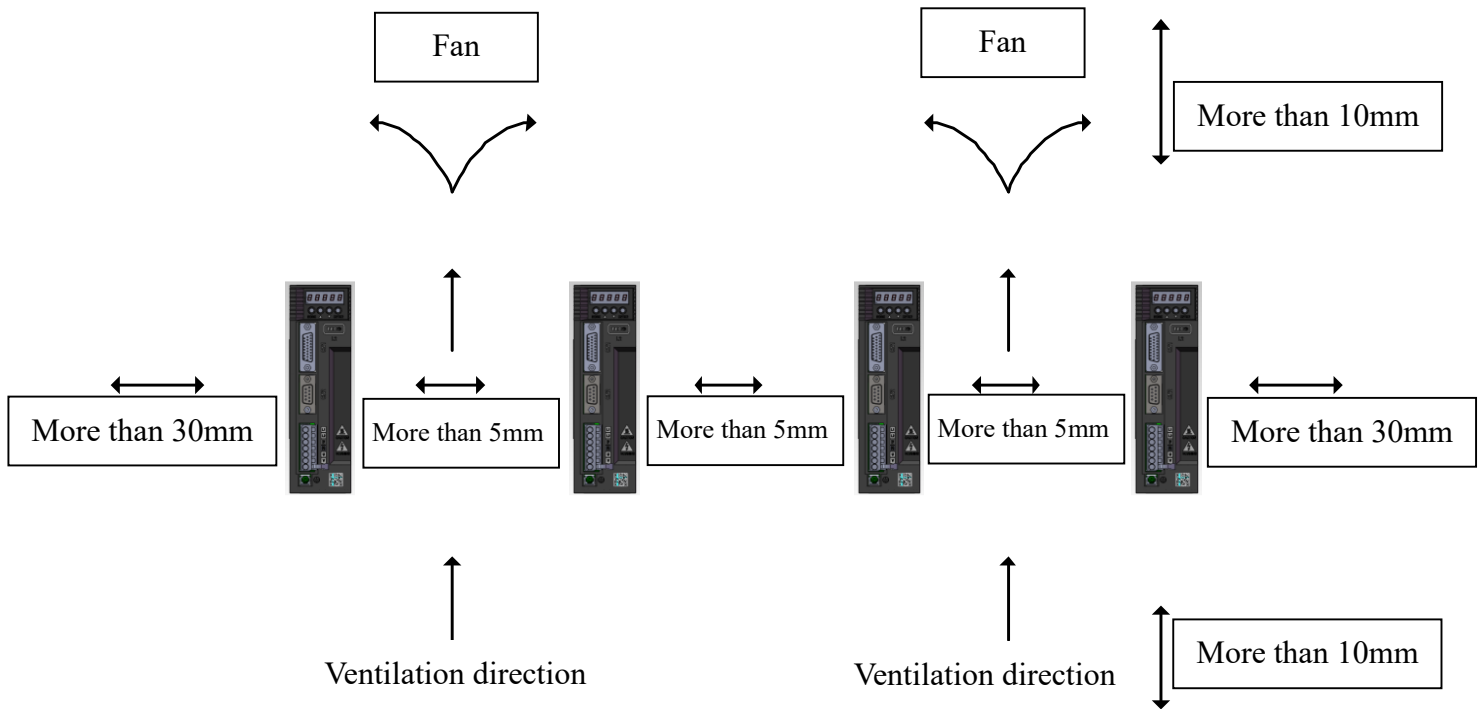
1-4-1 Installation Environment Conditions

The environment where the servo drive is installed has a direct impact on the normal function of the drive and its service life, therefore, the installation environment of the drive must conform to the following conditions:

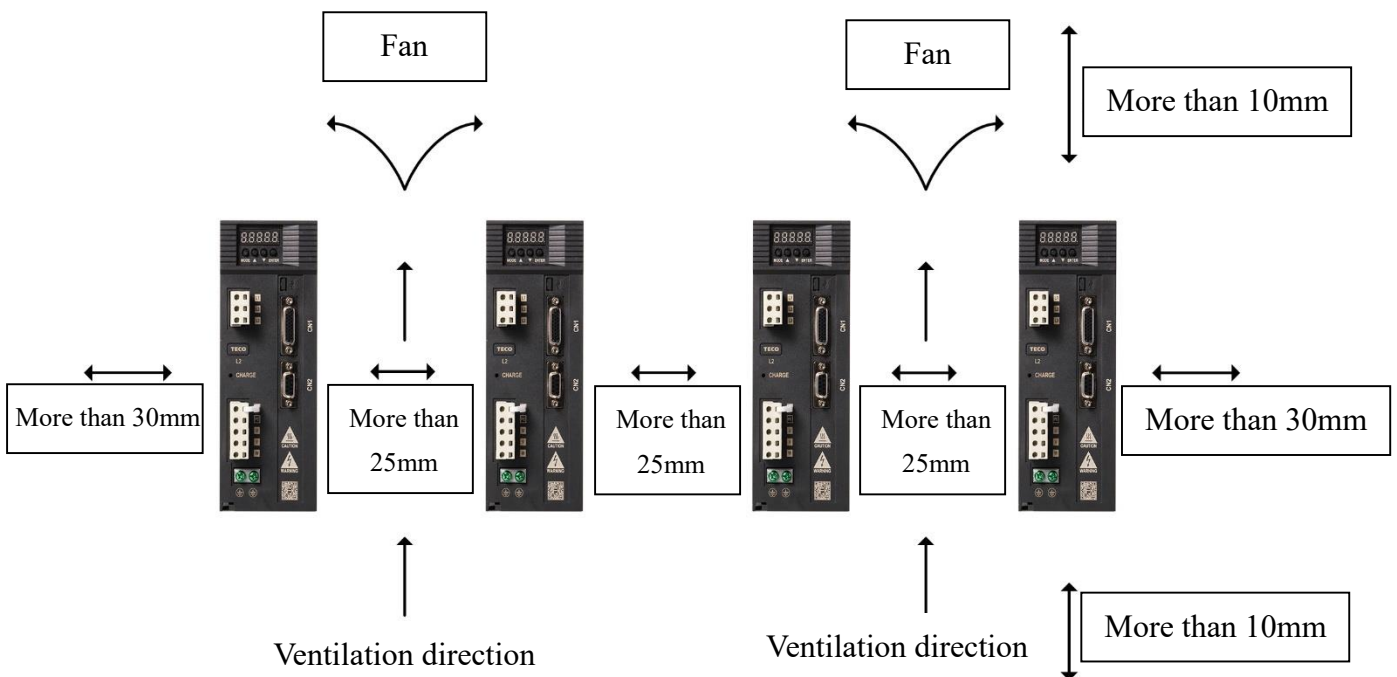
- Ambient temperature: 0 ~ + 50 °C; ambient humidity: under 90% RH (without condensation conditions).
- Storage Temperature: - 20 ~ + 65 °C; Storage Humidity: 90% RH or less (without condensation conditions).
- Vibration: 2G or less.
- Prevent rain dripping or humid environment.
- Avoid direct sunlight.
- Prevent oil mist and salt erosion.
- Prevent corrosive liquids, gas.
- Prevent the intrusion of powder dust, cotton wool or fine metal chips.
- Keep away from radioactive materials and combustibles.
- When installing several servos in the control panel, please leave sufficient space between each device to ensure enough air for heat dissipation. Meanwhile, please add heat dissipation fan to keep ambient temperature of servos under 50 degrees Celsius.
- When installing, please mount the drive in the way of vertically standing, with the front facing forward and the top facing up to facilitate cooling.
- When assembling, pay attention to avoid drilling debris and other foreign objects falling into the drive.
- When installing, make sure to fix with M5 screws.
- When there is a vibration source nearby (punching machine), please use a vibration absorber or install a vibration-proof rubber gasket if the vibration cannot be avoided.
- When there are large magnetic switch, fusion splicer and other noise interference sources near the drive that is easy to cause error operations for the drive due to external interference, at this time, a noise filter needs to be installed. However, the noise filter will increase the leakage of the current, therefore, it is necessary to install an insulation Transformer at the input end of the drive.

1-4-2 Installation Direction and Spacing

◆ JSDL2-10A1 / 15A1 / 20A1 / 30A1



◆ JSDL2- 50A3/75A3



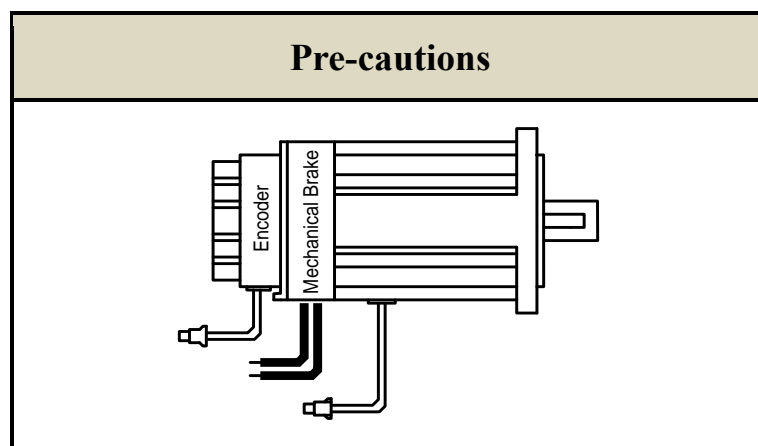
1-5 Servo Motor Installation Environment Conditions and Methods

1-5-1 Installation Environment Conditions

- Ambient Temperature: 0 ~ + 40 °C; Ambient Humidity: 90% RH or less (without condensation conditions).
- Storage Temperature: - 20 ~ + 60 °C; Storage Humidity: 90% RH or less (without frosting conditions).
- Vibration: 2.5G or less.
- Places in the area of good ventilation, low moisture and dust.
- Environment without corrosive, pyrophoric gas, oil vapor, cutting fluid, cutting powder, iron powder, etc.
- Area without water vapor and direct sunlight.

1-5-2 Installation Methods

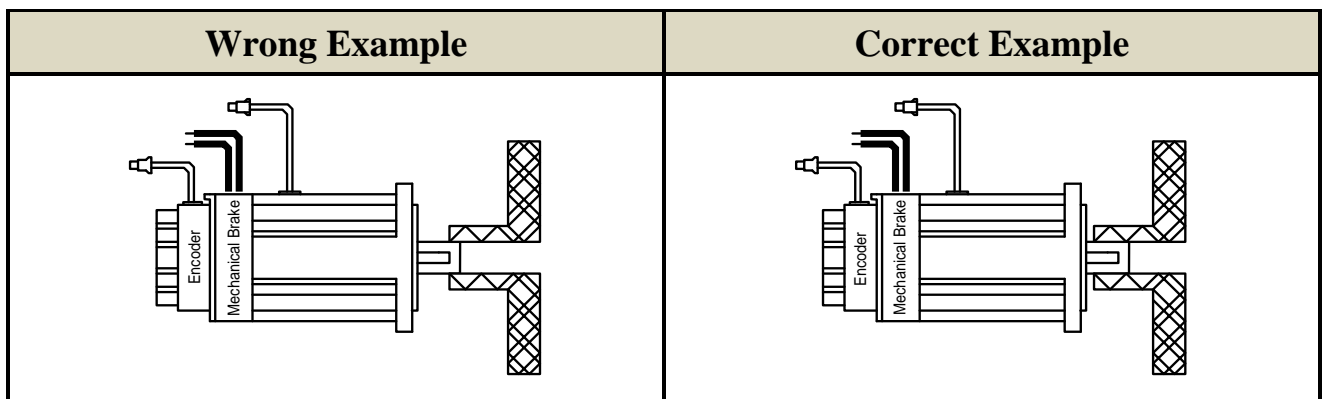
1. Horizontal installation: To prevent water, oil and other liquids from flowing into the motor from the motor outlet wire end; please place under the cable outlet.



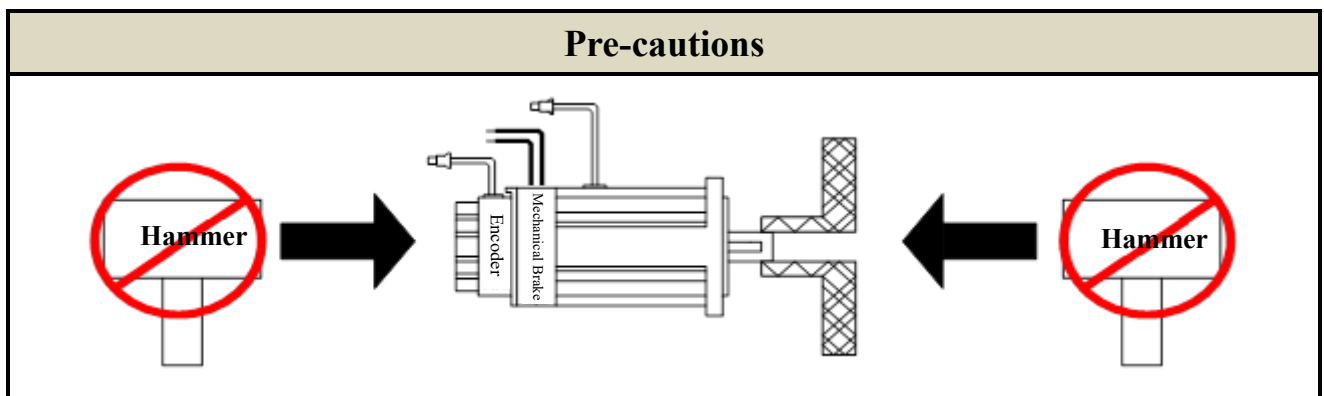
2. Vertical installation: If the motor shaft is installed upwards with the reducer attached, care must be taken to prevent the grease inside the reducer from passing through the motor shaft and into the inside of the motor.

1-5-3 Other Pre-cautions

1. In order to prevent the oil in the reducer from penetrating the inside of the motor through the motor shaft, please use a motor with an oil seal.
2. The connection cable needs to be kept dry.
3. In order to prevent the cable from falling off or breaking due to mechanical movement, the connection cable shall be securely fixed.
4. The shaft extension space must be sufficient, it is easy to cause vibration when the motor moves if the extension space is insufficient.



5. When installing and removing the motor, please do not hit the motor with a hammer, otherwise it may cause damage to the motor shaft and the rear encoder.



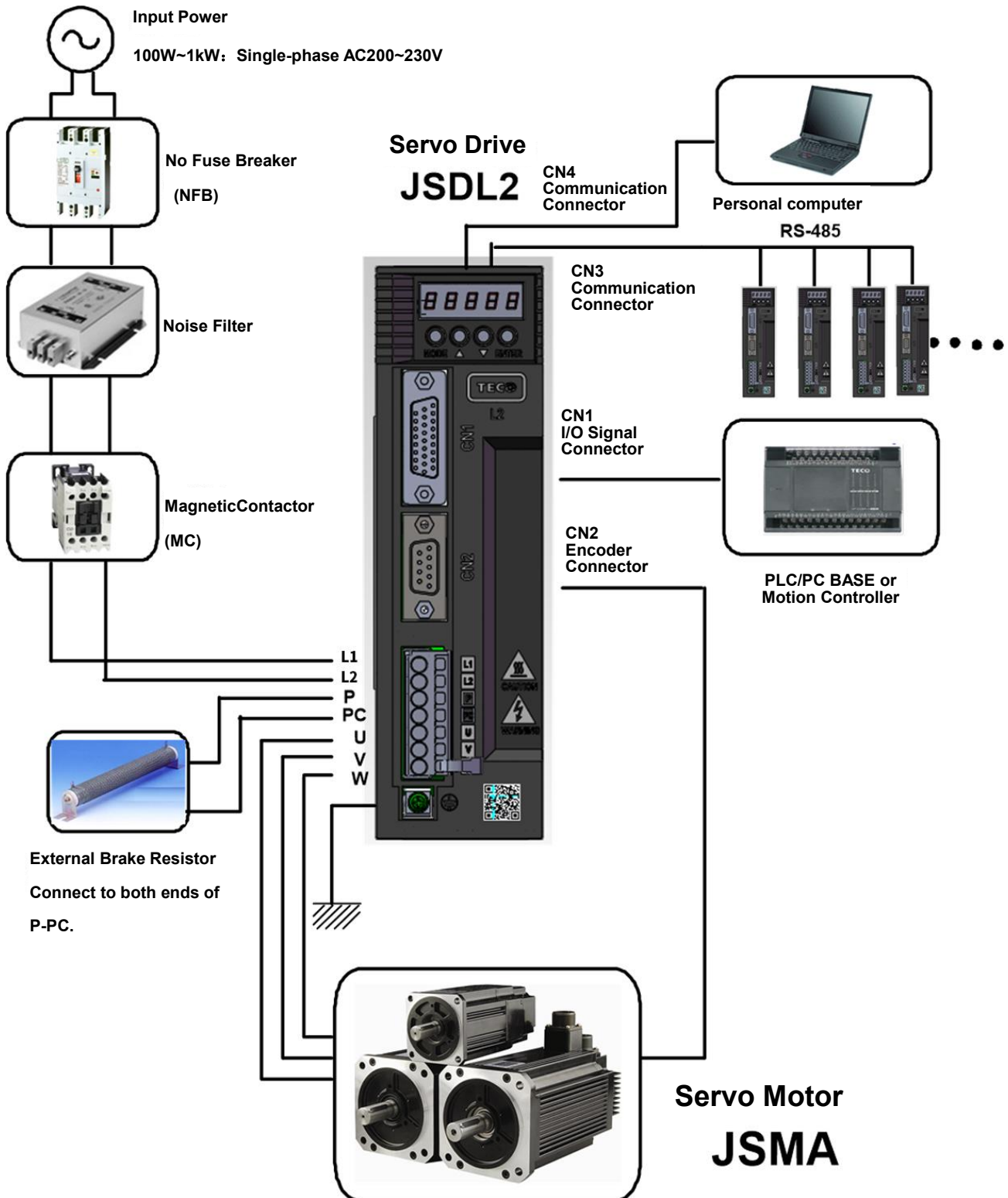
Chap 2 Wiring

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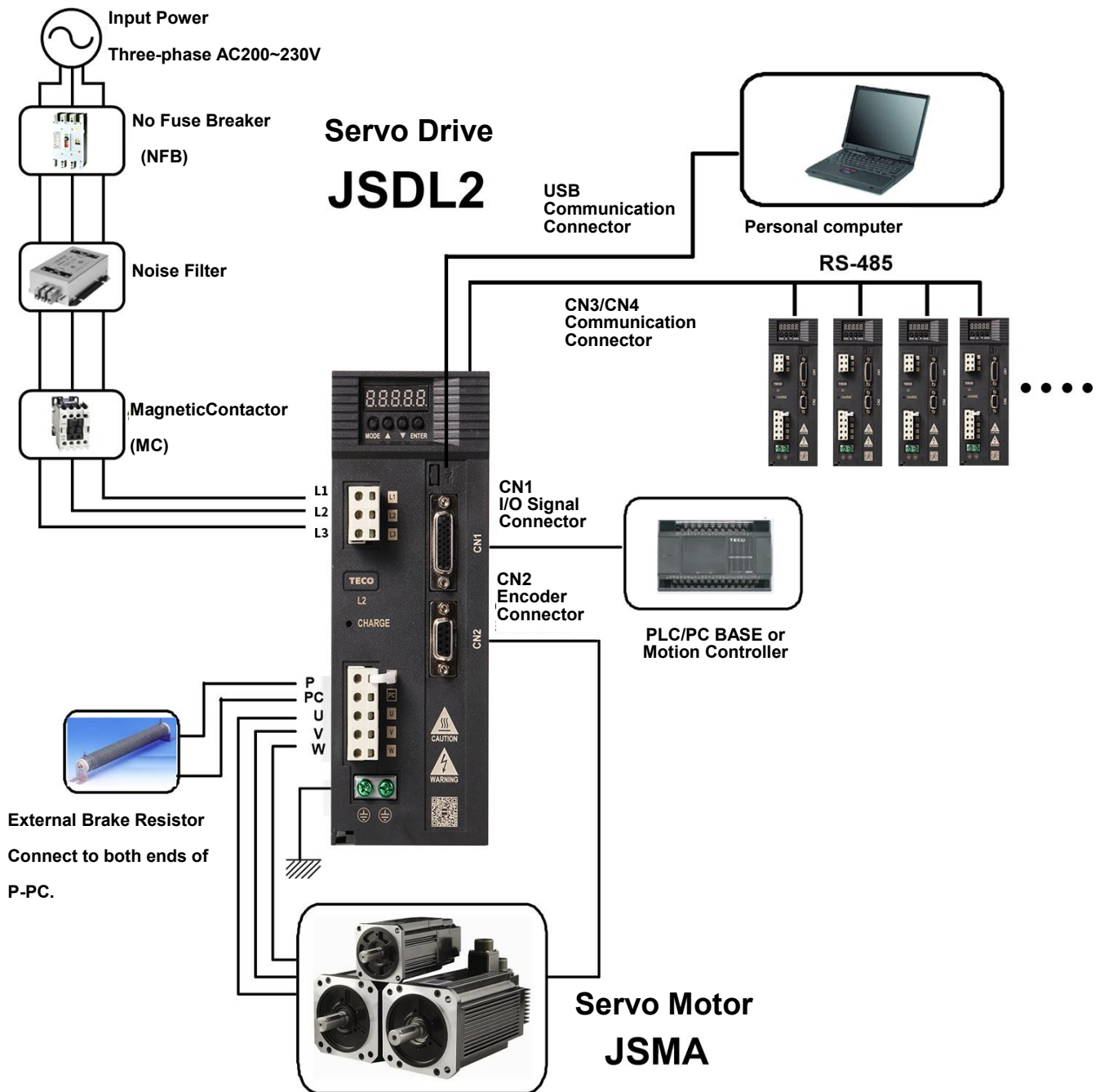
2-1 System Wiring

2-1-1 Wiring diagram of Servo Drive Power Supply and Peripheral Devices

◆ JSDL2-10A1 / 15A1 / 20A1 / 30A1



◆ **JSDL2-50A3/75A3**



2-1-2 Servo Drive Wiring Instructions

- The wiring materials shall be used in accordance with the "Wire Specifications."
- Wiring Length: Within 3 meters of the Command Input Wire.
Within 20 meters of the Encoder Input Wire.
Please connect with the shortest distance when wiring.
- Wiring in accordance with the Standard Wiring Diagram, do not connect to the unused signals.
- Please make sure to install IEC-standard or UL-certified circuit breakers and fuses between the input power supply terminal and the servo drive.
- The maximum short-circuit current capacity at the maximum input voltage must be 5000 Arms or less, if there is any doubt for the power short-circuit current exceeds the specifications, please install a current limiting device (circuit breaker, fuse, transformer) to limit the short-circuit current.
- The servo drive output terminal (U, V, W motor terminals) must be connected properly. Otherwise, the servo motor will not operate normally.
- The isolation wire must be connected to the FG terminal.
- Please use the third type of grounding (grounding resistance of 100Ω or less) for grounding and must be **single point grounding**. Please ground the motor if between the motor and the machine is to be in insulated state.
- Do not install capacitors or overvoltage (surge) absorbers and noise filters at the servo drive output terminal.
- For the relay installed in the control output signal, the direction of the diode used for its overvoltage (surge) absorption must be correctly connected; otherwise, it will cause a failure to output the signal and may also affect the protection circuit of emergency stop.
- In order to prevent erroneous operation due to noise, please use the following measures:
 - Please add an insulation transformer and noise filter devices on the power supply.
 - Please wire the power lines (strong electric circuit such as power cables, motor wire, etc.,) more than 30 cm away from the signal wires and do not place them in the same wiring conduit.
- In order to prevent incorrect operations, an "Emergency Stop Switch" shall be installed to ensure safety.

- After completing the wiring, check the connection status of each connector (such as cold soldering of solder joints, short circuit of solder joints, improper pin sequence, etc.), press the connector to make sure whether or not it is properly connected with the drive and whether or not the screws are tightly fastened, and cannot have any conditions of cable damage, pulling or heavy pressure, etc.
 - ※ In particular, pay special attention to the polarity of the servo motor connection cable and the encoder connection cable.
- Under normal conditions, it is not necessary to add external regenerative resistors, if there is a need or doubt, please contact the dealer or manufacturer.

2-1-3 Electric Wire Specifications

Connection terminal			Drive Specifications and Used Wire Specifications mm ² (AWG)					
Connection terminal	Mark (Symbol)	Connection terminal Name	10A	15A	20A	30A	50A3	75A3
TB Terminal Base	L1、L2、L3	Main Power Supply Terminal	1.25 (16)			2.0 (14)		
	U、V、W	Motor Connection Terminal	1.25 (16)			2.0 (14)	3.5 (12)	
	P、Pc	External Regenerative Resistor Terminal	1.25 (16)			2.0 (14)		
	FG \perp	Ground Wire	2.0(14) or Higher					

Connection terminal			Used Wire Specifications
Connection terminal	Pin Number	Pin Name	
CN1 Control Signal Connector	2~4, 12~14, 21,22	Digital input 1~8 (DI1~8)	0.2mm ² or 0.3mm ² and double twisted pair wire of I/O grounding wire (with isolation wire)
	15,16,23,24	Digital output 1~4 (DO1~4)	
	5	Digital input (DICOM)	
	7	24V power supply (IP24)	
	6	24V ground terminal (IG24)	
	1,11,10,19	Pulse position command input (Pulse、Sign、/Pulse、/Sign)	

Connection terminal			Used Wire Specifications
Connection terminal	Pin Number	Pin Name	
	17, 9, 26, 18 25, 8	Encoder Signal Dividing Output (PA、 /PA、 PB、 /PB、 PZ、 /PZ)	
	20	Open collector pulse command input power (OPC)	
CN2 Motor Encoder Connector	5	5V power output (Vcc)	0.2mm ² or 0.3mm ² double twisted pair wire (with isolation wire)
	4	Power Supply Output Grounding (GND)	
	1	Serial data output SD	
	9	Serial data output /SD	
	----	----	
	----	----	
CN3 RS485 Communication connector	7	D-	8 Pins PG Connector
	5	D+	
	3	GND	
CN4 Computer communication interface / RS485 Communication connector	1	RX	8 Pins PG Connector
	4	TX	
	3	GND	
	7	D-	
	5	D+	
CN3/ CN4 RS485 Communication connector	3	GND	8 Pins RJ45 Connector
	4	D+	
	5	D-	
	7	GND	
	1, 2, 6, 8	-	

Note: 1. When using multiple drives, please pay attention to the capacity of non-fuse switch and power filter.

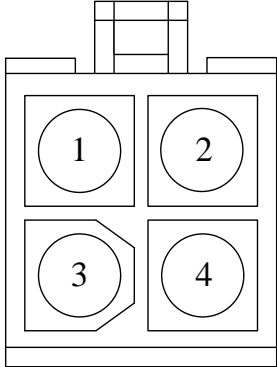
2. CN3/CN4 is 8 Pins PG Connector or 8 Pins RJ45 Connector.

2-1-4 Motor Terminal Wiring

- Motor Power Outlet Wire Table

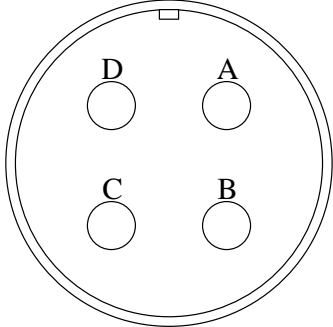
(1) General Connector:

Terminal Symbol	Wire Color	Signal
1	Red	U
2	White	V
3	Black	W
4	Yellow/Green	FG
Mechanical Brake Control Wire	Thin White 1	0V
	Thin White 2	DC +24V



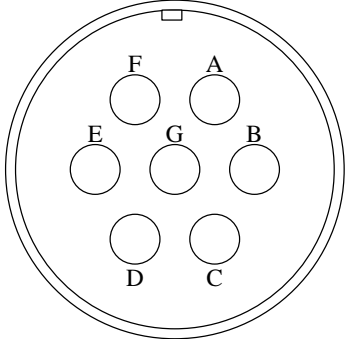
(2) Military Specifications Connector (without Mechanical Brake):

Terminal Symbol	Wire Color	Signal
A	Red	U
B	White	V
C	Black	W
D	Green	FG



(3) Military Specifications Connector (with Mechanical Brake):

Terminal Symbol	Wire Color	Signal	
B	Red	U	
G	White	V	
E	Black	W	
C	Green	FG	
A	Thin White 1	Mechanical Brake Control Wire	0V
F	Thin White 2		DC +24V

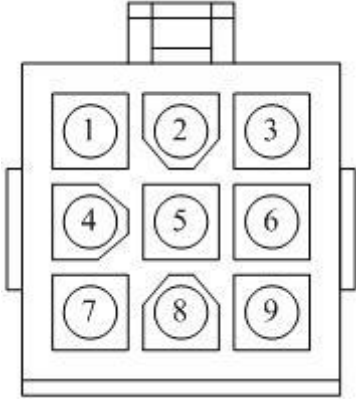


- Motor Encoder Outlet Wire Table

➤ **Communication Encoder:**

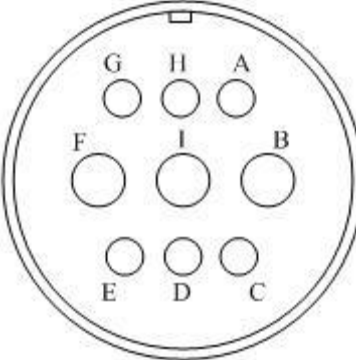
(1) General Connector:

Terminal Symbol	Wire Color		Signal	
	Absolute Value	Incremental	Absolute Value	Incremental
1	Red	White	+ 5V	VCC
2	Black		0V	GND
3	Brown	--	.	--
4	Brown/Black	--	VB -	--
5	Blue		SD	
6	Blue/Black	Purple	/SD	
7	--		--	
8	--		--	
9	Shield		FG	



(2) Military Specifications Connector:

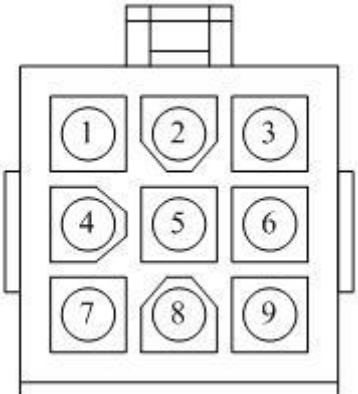
Terminal Symbol	Wire Color		Signal	
	Absolute Value	Incremental	Absolute Value	Incremental
B	Red	White	+ 5V	
I	Black		0V	
A	Brown	--	VB +	--
C	Brown/Black	--	VB -	--
H	Blue		SD	
D	Blue/Black	Purple	/SD	
G	--		--	
E	--		--	
F	Shield		FG	




➤ **Optical encoder:**

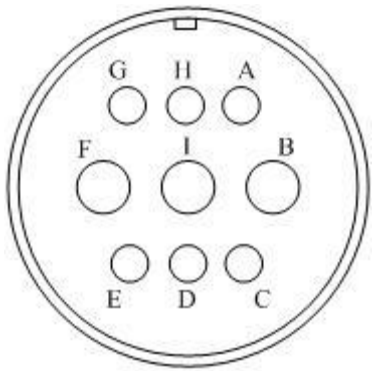
(1) General Connector:

Terminal Symbol	Wire Color	Signal
1	RED	+5V
2	Black	0V
3	Blue	A
4	Blue / Black	/A
5	Green	B
6	Green / Black	/B
7	Yellow	Z
8	Yellow / Black	/Z
9	Shield	FG



(2) Military Specifications Connector:

Terminal Symbol	Wire Color	Signal
B	RED	+5V
I	Black	0V
A	Blue	A
C	Blue / Black	/A
H	Green	B
D	Green / Black	/B
G	Yellow	Z
E	Yellow / Black	/Z
F	Shield	FG



2-1-5 TB Terminal Description

◆ JSDL2-10A1 / 15A1 / 20A1 / 30A1 / 50A3 / 75A3

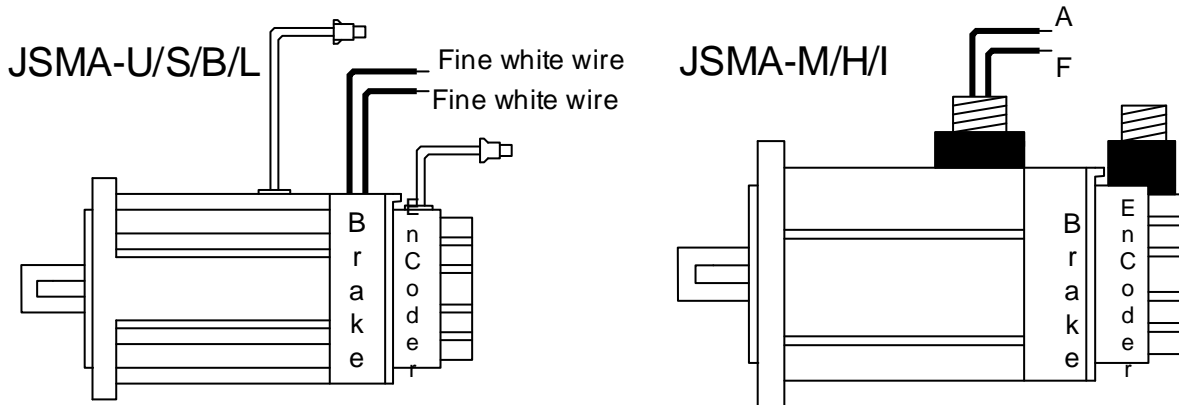
Name	Terminal Symbol	Detailed Description
Control Circuit Power Input terminal	L1	200V ➤ Connect External AC Power. ➤ Single-phase/ Three-phase 200~230VAC 50/60Hz ±5%
	L2	
	L3	
External Regenerative Resistor Terminal	P	When using the external regenerative resistor, the capacity can be increased according to requirement. Please refer to Cn012
Regenerative Terminal Common Point	PC	resistance to set up. ※ Add a regenerative resistor between PC and P.
Motor Power Output Terminal	U	Output to motor U phase power, motor terminal wire color is red .
	V	Output to motor V phase power, motor terminal wire color is white .
	W	Output to motor W phase power, motor terminal wire color is black .
Motor casing grounding terminal	FG	The motor casing ground wire contact, motor terminal wire color is green or yellow-green .

TB terminal maximum screw locking strength table

Servo Model Number	Maximum screw locking strength (kgf-cm / in-lbs)
	Main loop and other terminals
TB1 (L1/L2/L3/P/PC/U/V/W)	Shrapnel type pluggable terminal, using tubular (pin type) terminal wiring length 9~10mm
Ground connection	13.9

2-1-6 Motor with Mechanical Brake Wiring Instructions

If you wish to disable the mechanical brake, please connect the thin white wire of JSMA small motor series to DC +24V (**no polarity difference**). For JSMA medium and large capacity series, the output is from “A” & “F” pins of motor power connector and must be disabled to make the servo motor operate normally.



2-1-7 Recommend specification of circuit breaker/ fuse/noise filter

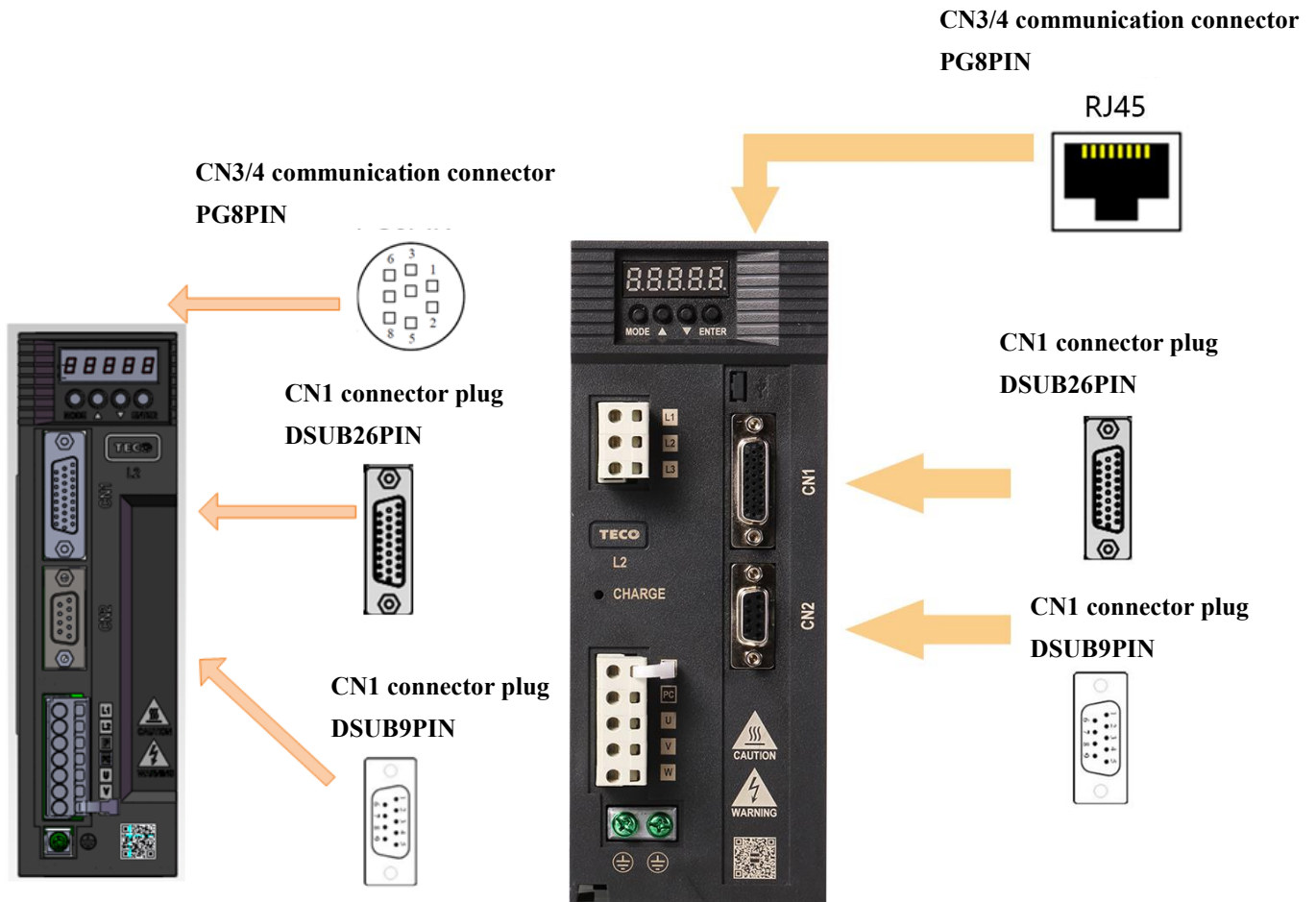
- Please make sure to install IEC-standard or UL-certified circuit breakers and fuses between the input power supply terminal and the servo drive.
- To avoid any environmental interference caused by servo drive operation, the combination of appropriate noise filter can effectively decrease EMI as well as eliminate environmental interference.

Recommend specification of circuit breaker/ fuse/noise filter

Servo Model Number	Circuit breaker	Fuse		Noise Filter
		Specification	Recommended model	Recommended model
JSDL2-10A1	10A	20A	Bussmann 20CT	Schaffner FN3258-16
JSDL2-15A1	10A	20A	Bussmann 20CT	Schaffner FN3258-16
JSDL2-20A1	15A	20A	Bussmann 20CT	Schaffner FN3258-16
JSDL2-30A1	15A	20A	Bussmann 20CT	Schaffner FN3258-16
JSDL2-50A3	30A	40A	Bussmann 40FE	Schaffner FN3258-16
JSDL2-75A3	30A	40A	Bussmann 40FE	Schaffner FN3258-16

2-2 I/O Signal terminal description

Servo drives provide five sets of connection terminals, including the CN1 control signal connection terminal, CN2 encoder connection terminal, CN3/ CN4 communication connection terminals . The figure below is a diagram of the pin positions of the various connection terminals.



2-2-1 CN1 Control Signal Terminal Description

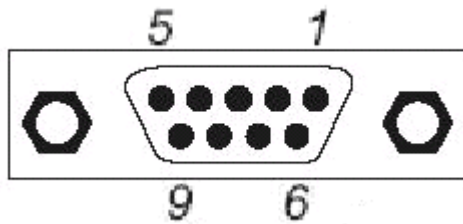
(1) CN1 terminal configuration diagram:

PIN	Name	Function						
1	Pulse	Position Pulse Command Input(+)	10	/Sign	Position Sign Command Input (-)	19	Sign	Position Sign Command Input (+)
2	DI-1	Digital input 1	11	/Pulse	Position Pulse Command Input(-)	20	OPC	Open collector position command power input
3	DI-6	Digital input 6	12	DI-2	Digital input 2	21	DI-3	Digital input 3
4	DI-8	Digital input 8	13	DI-5	Digital input 5	22	DI-4	Digital input 4
5	DICOM	DI Power Common End	14	DI-7	Digital input 7	23	DO-3	Digital output 3
6	IG24	+24V Power Ground End	15	DO-1	Digital output 1	24	DO-2	Digital output 2
7	IP24	+24V Power Ground End	16	DO-4	Digital output 4	25	PZ	Dividing Output Phase Z
8	/PZ	Dividing Output /Phase Z	17	PA	Dividing Output Phase A	26	PB	Dividing Output Phase B
9	/PA	Dividing Output /Phase A	18	/PB	Dividing Output /Phase B			

Note: 1. For the terminals not used, please do not connect or use as relay terminals.
2. The shielding wire of the I/O signal wire shall be connected with the connector casing.

2-2-2 CN2 Encoder Signal Terminal Description

(1) CN2 Terminal Configuration Diagram (communication type encoder configuration diagram):

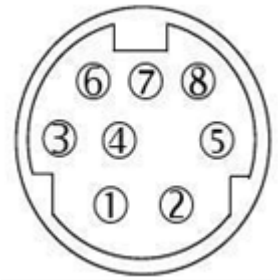


Pin No.	Pin Code	Function
1	SD	Serial Data Output Positive Polarity
2	—	—
3	—	—
4	GND	Power Ground End
5	VCC	Power Output End
6	—	—
7	—	—
8	—	—
9	/SD	Serial Data Output Negative Polarity
-	—	—

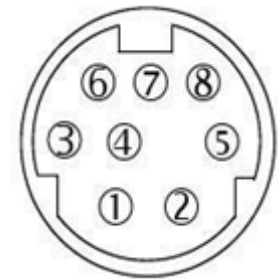
Note: Please do not connect to any wiring to unused terminals.

2-2-3 CN3/CN4 Communication Signal Terminal Description

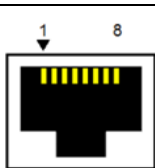

CN3 Terminal Configuration Diagram:

	Pin	Name
		3
	7	D-
	5	D+

CN4 Terminal Configuration Diagram: (RS-232 communication):

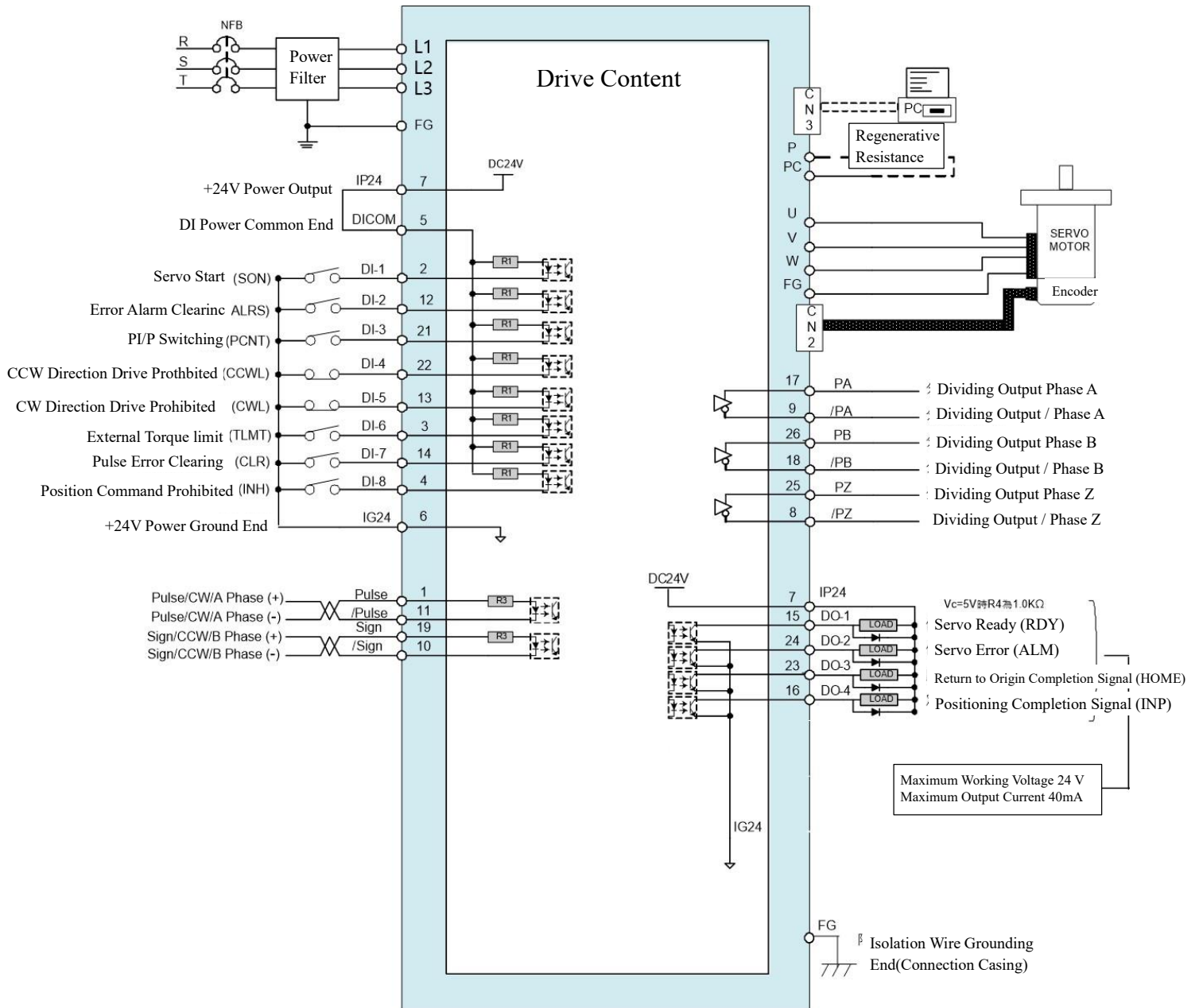
	Pin	Name
		3
	4	TX
	1	RX
	7	D-
	5	D+

CN3/CN4 Configuration diagram 2 (RS-485 communication):

Communication interface	Connecting end	Pin number	Pin name	Wire specification
	IN/OUT	3/7	GND	Standard cable
		4	D+	
		5	D-	
	USB	PC Link interface		USB 2.0A public - Mini 5P anti-jamming signal cable

2-3 Control Signal Wiring Diagram

2-3-1 Position Control (Pe Mode) Wiring Diagram (Line Drive)

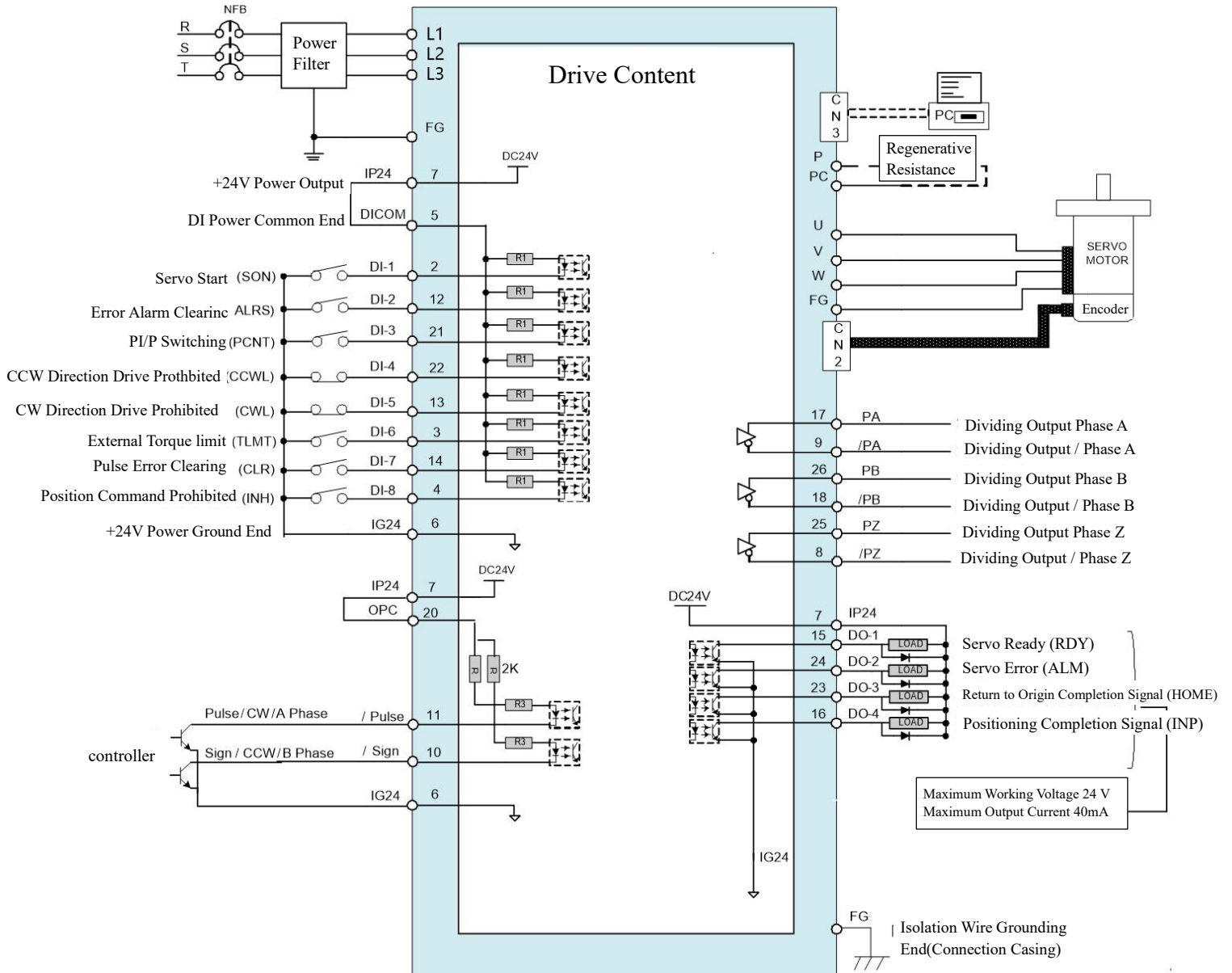


Note 1: Function of multifunction DI1~DI8 can be set by Hn601~Hn608.

Note 1: Function of multifunction DO1~DO4 can be set by Hn613~Hn616.

2-3-2 Position Control (Pe Mode) Wiring Diagram (Open Collector)

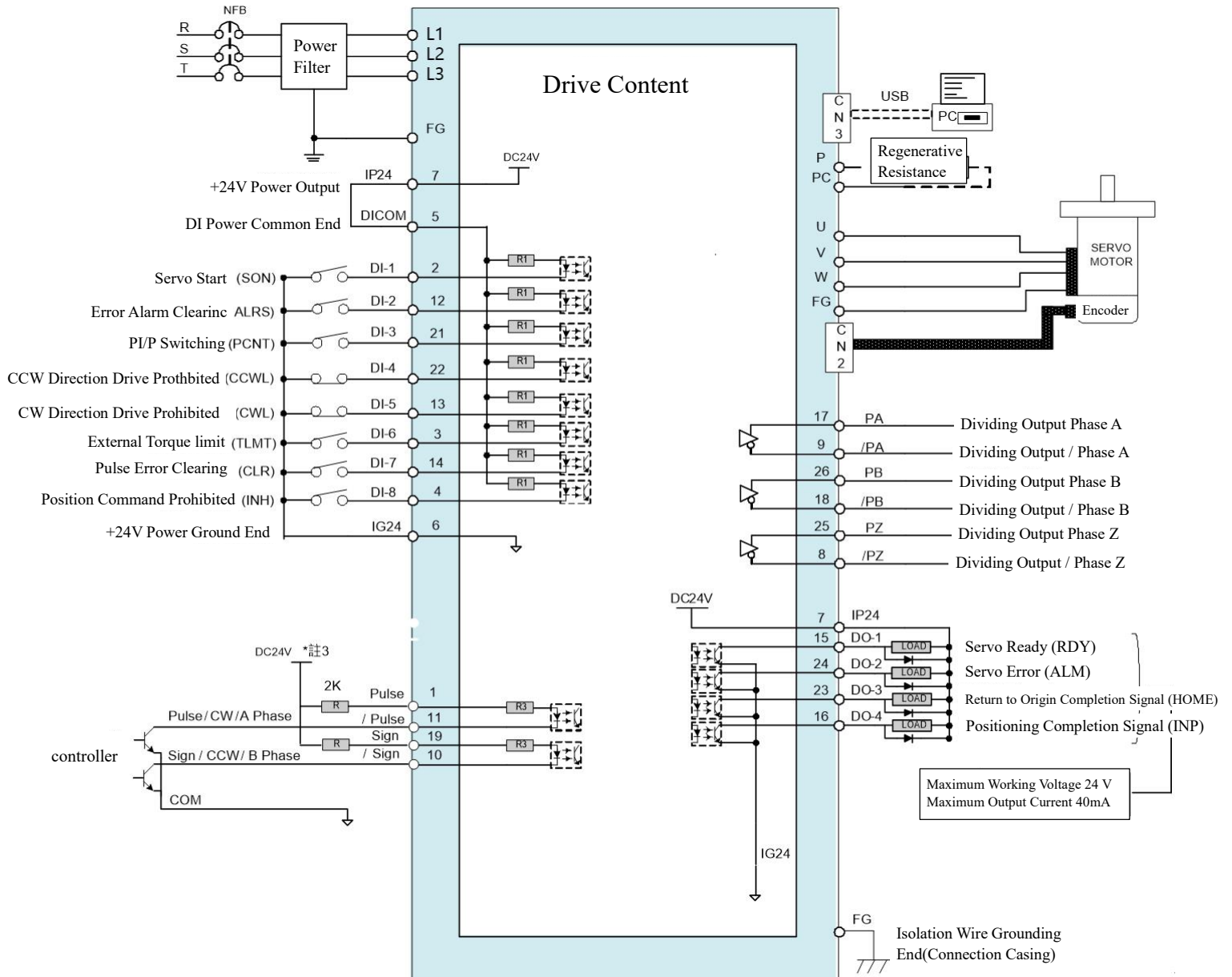
◆ Internal power



Note 1: Function of multifunction DI1~DI8 can be set by Hn601~Hn608.

Note 1: Function of multifunction DO1~DO4 can be set by Hn613~Hn616.

External power

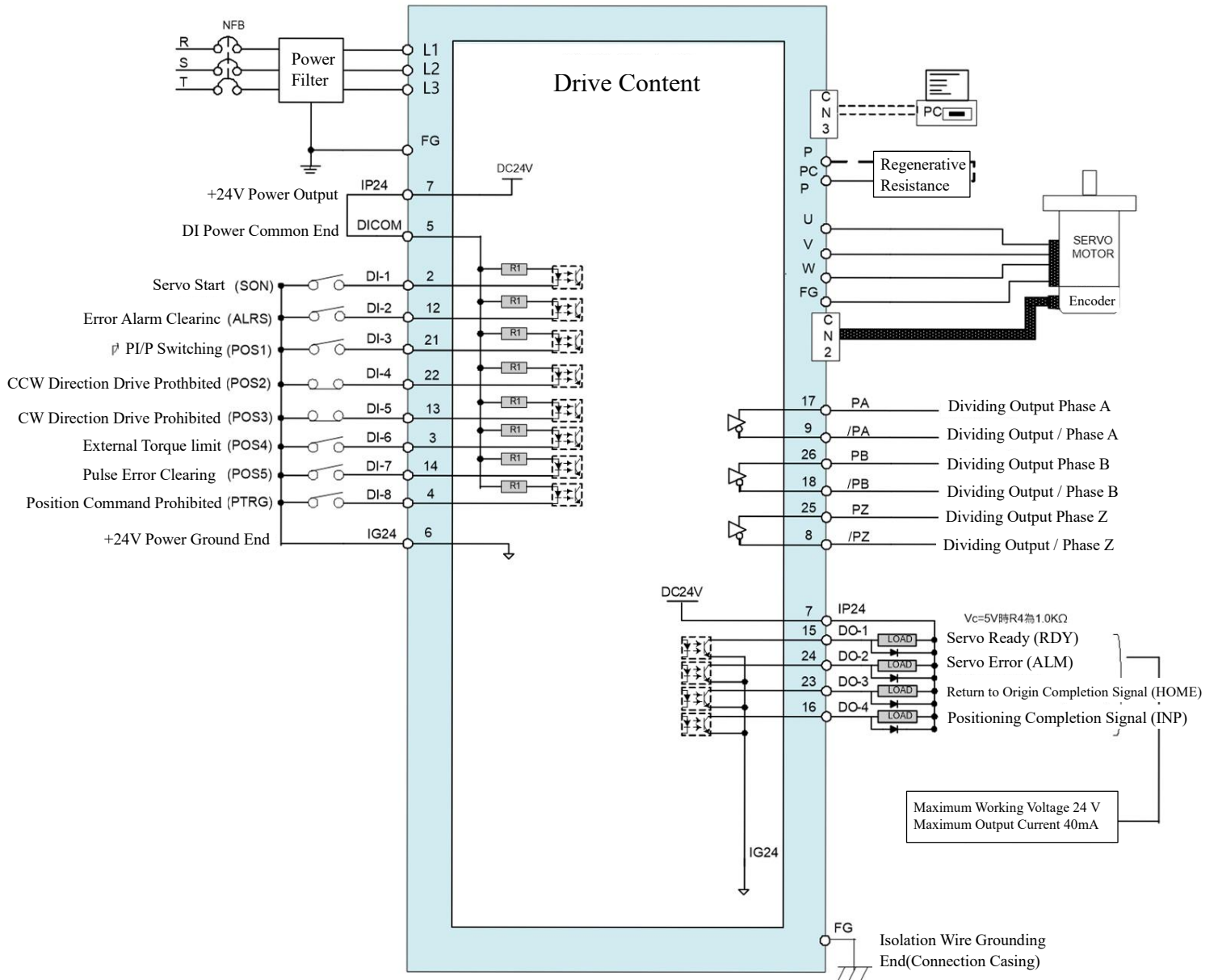


Note 1: Function of multifunction DI1~DI8 can be set by Hn601~Hn608.

Note 2: Function of multifunction DO1~DO4 can be set by Hn613~Hn616.

***Note 3:** If the external voltage is not DC 24V, please refer to "2-2-1 Description on the CN1 control signal terminal" for the wiring.

2-3-3 Position Control (Pi Mode) Wiring Diagram



Note 1: Function of multifunction DI1~DI8 can be set by Hn601~Hn608.

Note 2: Function of multifunction DO1~DO4 can be set by Hn613~Hn616.

Chap 3 Panel operation instructions







3-1 Drive Panel Operating Instructions	3-2
3-1-1 The Name and function of the Panel	3-2
3-2 Monitoring Parameters(Un-□□) Function Description.....	3-3
3-3 Diagnostic Function Description(dn-□□)	3-5
3-4 Alarm Monitoring Description(AL-□□)	3-6

3-1 Drive Panel Operating Instructions

3-1-1 The Name and function of the Panel

This Device contains five LED seven-segment displays, four operating keys, as shown in the following Figure.

Note: The maximum thrust of the operation key is 500gf to ensure the life of the operation key.

Key Symbol	Key Name	Key Function Description
	Mode Selection Key (MODE Key)	<ol style="list-style-type: none"> 1. Select from 12 parameters offered by this device. The parameter will rotate by each press. 2. When setting the data screen, click to jump back to the parameter selection screen.
	Number Up Key (UP Key)	<ol style="list-style-type: none"> 1. Select each parameter item. 2. Change the number data. 3. Press the  and  keys at the same time to clear the Error Alarm State.
	Down Key (DOWN Key)	
	Data Setting Key (ENTER) Key	<ol style="list-style-type: none"> 1. Data Confirmation; Parameter Item Confirmation. 2. Move left to adjust the number of digits. 3. End the setting data.

3-2 Monitoring Parameters(Un-□□) Function Description

The user can use the Status Display Parameter to know all information of the current drive and motor operations:

Parameter Code	Display Content	Unit	Description	RS-485 Address
Un-01	Actual Motor Speed	rpm	For example: The display of 120 indicates that the current Motor Speed is 120 rpm.	0601H
Un-02	Actual Motor Torque	%	Expressed by the percentage of Rated Torque. For example: The display of 20 indicates that the Motor Torque Output is now 20% of the Rated Torque.	0602H
Un-03	Regenerative Load Rate	%	The average percentage of Regenerative Power Output.	0603H
Un-04	Effective Load rate	%	The average percentage of Power Output.	0604H
Un-05	Maximum Load Rate	%	The maximum value of Effective Load Rate has ever appeared.	0605H
Un-06	Speed Command	rpm	For example: The display of 120 indicates that the current Speed Command is 120 rpm.	0606H
Un-07	Position Error ※ The Range is more than 5 digits	pulse	Difference between Position Command and Position Feedback.	0607H 0608H
Un-10	Main Circuit (Vdc Bus) Voltage	V	For example: The display of 310 indicates that the Main Circuit Voltage is 310V.	060CH
Un-14	Motor Feedback - Number of Pulses in one Rotation ※ The Range is more than 5 digits	pulse	When the power is on, the value will return to zero; display the number of pulses in one motor rotation. ※ When conducting the Servo internal Return to Origin operation will clear to 0	0610H 0611H
Un-16	Motor Feedback - Number of Rotations ※ The Range is more than 5 digits	rev	When the power is on, the value will return to zero; display the cycles of motor rotation. ※ When conducting the Servo internal Return to Origin operation will clear to 0	0613H 0614H
Un-18	Pulse Command - Number of pulses in one rotation ※ The Range is more than 5 digits	pulse	After power is on, count the number of pulses in 1 rotation of pulse command input under Servo ON condition. (After the power is on, the value is 0)	0616H 0617H
Un-20	Pulse Command - Number of Rotations ※ The Range is more than 5 digits	rev	After the power is on, count and display cycle number of pulse command input under Servo ON condition. (After the power is on, the value is 0)	0619H 061AH
Un-24	Multi-revolution Position Information of the Communication Encoder Feedback	rev	Multi-revolution Absolute Position of the Communication Encoder Motor ※ Absolute type: Absolute Number of Revolutions Data ※ Incremental: 0	061FH
Un-25	Communication type encoder feedback Position information in single rotation ※ The Range is more than 5 digits	pulse	Single Revolution Absolute Position of the Communication Encoder Motor	0620H 0621H
Un-27	Communication Encoder Message	—	Feedback communication type encoder status	0623H
Un-29	Load Inertia Ratio	0.1	Displays the current default Load Inertia Ratio of Cn025.	0625H
Un-30	Digital Output Contact Status (DO)	—	Displays the Status of Digital Output Contact (DO) in Hexadecimal	0626H


Parameter Code	Display Content	Unit	Description	RS-485 Address
			For example: H00XX (0000 0000 DO-8/7/6/5 DO-4/3/2/1)	
Un-31	Digital Input Contact Status (D1)	—	Displays the Status of Digital Input Contact (DI) in Hexadecimal For example: HXXXX (0000 DI-12/11/10/9 DI-8/7/6/5 DI-4/3/2/1)	0627H
Un-43	Motor Electrical Angle	deg	Motor Current Electrical Angle Position	0633H
Un-44	Motor model read by communication encoder	—	For example: The display of H1267 indicates that the Motor Cn030 Number is H1267	0634H
Un-45	OnLine_AutoTuning Inertia Estimation	0.1	For example: The display of 100 indicates that the Load Inertia Ratio is 10 times.	0635H
Un-46	OFFLine_Tuning Status	—	OFFLine_Tuning Operating Status	0636H
Un-47	OFFLine_Tuning Error Code	—	bit.0: 1 is inertia estimation status, 2 is gain estimation status bit.2: 1 is load estimation fail, 2 is gain estimation fail	0637H
Un-49	Drive Temperature	deg	Drive Temperature	0639H
Un-53	Current Alarm Number	—	For example: The display of 01 indicates that the current alarm number is AL001	063FH
Un-55	System Multi-revolution Position	rev	System Multi-revolution Position ※ When conducting the Servo internal Return to Origin operation will clear to 0	0641H
Un-56	System Single Revolution Position ※ The Range is more than 5 digits	pulse	System Single Revolution Position ※ When conducting the Servo internal Return to Origin operation will clear to 0	0642H 0643H
Un-88	ServoOn total time	hour	ServoOn total time	0663H
Un-89	PowerOn total time	hour	PowerOn total time	0664H
Un-90	Effective load rate	%	Effective load rate	0665H

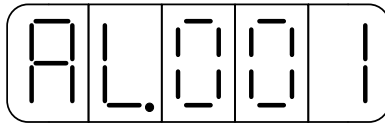
3-3 Diagnostic Function Description(dn-□□)

The user can use the Diagnostic Parameters to know the current system information, as described below:

Parameter Code	Name and Function	RS-485 Communication Address
dn-01	Current Control Mode Display	0F01H
dn-02	Digital Output Contact Signal Status	0F02H
dn-03	Digital Input Contact Signal Status	0F03H
dn-04	CPU Software Version Display	0F04H
dn-05	Jog Mode Operation	N/A
dn-06	Reserved	N/A
---	-----	N/A
dn-08	Display Serialized Models	0F08H
dn-09	ASIC Software Version Display	0F09H
dn-11	Automatic Detection of Magnetic Angle Position	0F0BH

3-4 Alarm Monitoring Description(AL-□□)

When the leftmost 2 LEDs display , it means the device cannot function normally. Users can run troubleshooting according to the solutions in “9-2 Countermeasures to Clear Error” and operate the device by normal procedures. If the error alarm still cannot be cleared, please contact the distributor or manufacturer for further countermeasures. When Error Alarm occurs, LED Display Status is shown as follows:



Error Alarm History Parameter Error Alarm Number

Please refer to “9-1 Error List” for the corresponding alarm of each error alarm number. For example, error alarm No.001 means low power voltage alarm is occurring now.

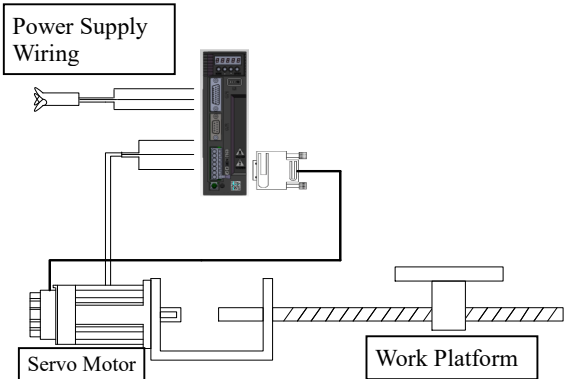
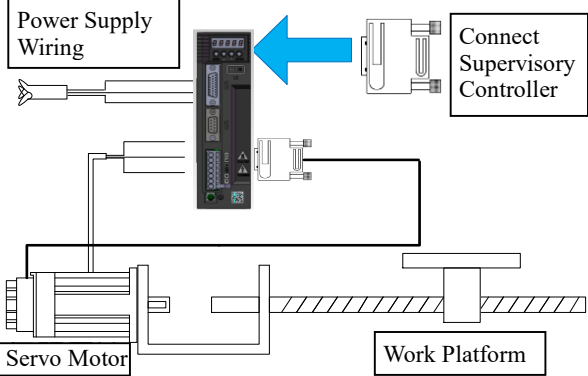
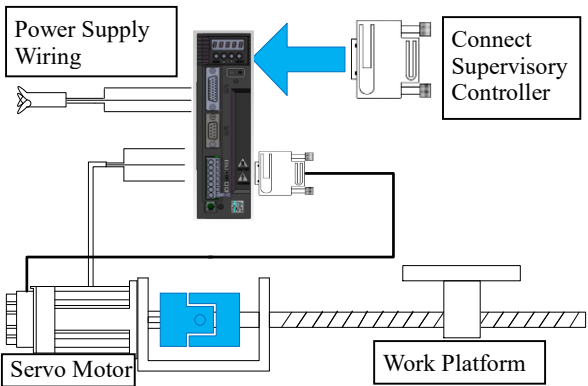
This Device also provides the user with inquiry of the past nine Error Alarms, as shown in the following:

Parameter Code	Name and Function	RS-485 Communication Address
AL.xxx	Current Alarm Message	063FH
A1.xxx	Past First Alarm Message	1201H
A2.xxx	Past Second Alarm Message	1202H
A3.xxx	Past Third Alarm Message	1203H
A4.xxx	Past Fourth Alarm Message	1204H
A5.xxx	Past Fifth Alarm Message	1205H
A6.xxx	Past Sixth Alarm Message	1206H
A7.xxx	Past Seventh Alarm Message	1207H
A8.xxx	Past Eighth Alarm Message	1208H
A9.xxx	Past Ninth Alarm Message	1209H

Chap 4 Operating instructions for test run

4-1 No-load Servo Motor Trial Run.....	4-3
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Please make sure all wiring are completed before trial run. The following describes the three-stage Trial Run Operations and Purpose in sequence, and will describe with the Speed Control Loop (Analog Voltage Command) and Position Control Loop (External Pulse Command) when working with the Supervisory Controller.

[No-load Servo Motor Trial Run]	
A. Servo Drive Wiring and Motor Installation	B. Purpose of Trial Run
	Confirm that the following items are correct: <ul style="list-style-type: none"> • Drive power supply wiring • Servo motor wiring • Encoder wiring • Servo motor operating direction and speed
[Non-load Servo Motor with Supervisory Controller Trial Run]	
A. Servo Drive Wiring and Motor Installation	B. Purpose of Trial Run
	Confirm that the following items are correct: <ul style="list-style-type: none"> • Control signal wiring between the supervisory controller and servo drive • Servo motor operating direction, speed and number of revolutions • Brake function, drive prohibit function and protection function
[Connect the Load Servo Motor with Supervisory Controller Trial Run]	
A. Servo Drive Wiring and Motor Installation	B. Purpose of trial run
	Confirm that the following items are correct: <ul style="list-style-type: none"> • Servo motor operating direction, speed and mechanism travel • Set related control parameters

4-1 No-load Servo Motor Trial Run

Attention

- During the Trial Run, make sure to separate the servo motor from the machine, such as couplers and belts.
- In order to avoid damage to the machine during a Trial Run, the Trial Run of the servo motor must be under no load conditions.

This stage of the Trial Run can confirm the drive wiring, if there is any incorrect wiring, it will cause an error to the servo motor during the Trial Run process.

1. Install Servo Motor:

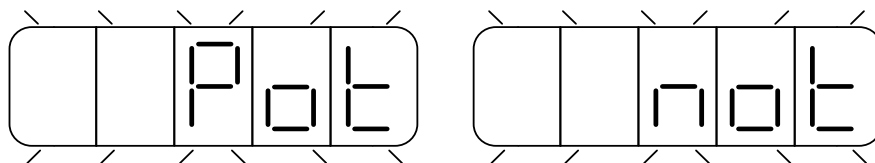
Fix the servo motor on the machine table, to prevent the servo motor from bounding or moving during the Trial Run.

2. Check the Wiring:

Check the servo drive power wiring, servo motor wiring and encoder wiring. At this stage of the Trial Run, no control signal line is used, please remove the control signal wire (CN1).

3. Turn on the Servo Drive Power:

Turn on the Servo Drive Power, if the Drive Panel displays as below:



This is because digital input contact **CCWL** & **CWL** are operating (please set according to “5-3-1 Digital input/output contact function planning” to determine the operation is under switch in conduction or open) When the above screen is displayed on drive panel, servo drive cannot function normally. Users need to turn off drive prohibit function temporarily during trial run by setting parameter **Cn002.1=1**. After first stage trial run is completed, please restore parameter **Cn002.1=0**.

Setting Operations Description is as follows:

Steps	Operation Key	LED Display Screen after Operation	Description
1	Turn on Power		When the power is turned on, Enter the Status Display Screen .
2	MODE		Press MODE Key 4 times to enter the System Parameters .
3			Press UP Key 1 time to select Cn002 Item.
4	ENTER		Press and hold the ENTER Key for 2 seconds to enter Cn002 Setting Screen.
5	ENTER		Press ENTER Key 1 time, move left to adjust the number of digits (flashing LED).
6			Press UP Key 1 time to adjust the tens digit to 1 and set as do not use digital input contact CCWL & CWL .
7	ENTER		Press and hold the ENTER Key for 2 seconds until -SET- appears, indicating the current set value has been saved and after the -SET- appears once, jumps back to the current parameter item selection screen immediately.

Please reboot after the setting is completed. If other error alarms occur, it means the drive still cannot function normally and users need to run troubleshooting according to “9-2 Countermeasures to Clear Error” and operate the drive again. If the error alarm message still occurs, please contact local distributor for further countermeasures.

1. Release Mechanical Brake:

When using the Servo Motor with Mechanical Brake, please first complete the + 24V wiring to release the mechanical brake. If the brake is not released properly, the Trial Run will be abnormal.

2. Servo Drive Panel Operations:

Use the Servo Drive panel to operate **JOG** operations to confirm whether or not the Servo Motor rotational speed and direction are correct. If the operating speed and direction are abnormal, please confirm whether or not the Speed Control Parameter **Sn201** (internal Speed Command 1) and System Parameter **Cn004** (Motor Rotation Direction Definition) are set correctly. **JOG** Operating Instructions are as follows:

⚠ Attention

- The JOG Speed operates in accordance with Sn201 (Internal Speed Command 1), therefore, set Sn201 before executing this function.
- No matter the motor is excited by using digital input contact SON or not, it will be excited immediately after entering JOG mode.

Steps	Operation Key	LED Display Screen after Operation	Description
1	Turn on Power		When the power is turned on, Enter the Status Display Screen .
2	MODE		Press MODE Key 2 times to enter Diagnostic Parameters .
3	 ▲		Press UP Key 4 times to select dn-05 Item.
4	 ENTER		Press and hold the ENTER Key for 2 seconds to enter JOG Mode , and the Motor is excited immediately.
5	 ▲		Press and hold the UP Key, the Motor rotates in the currently defined positive direction.
6	 ▼		Press and hold the DOWN Key, the Motor rotates in the currently defined negative direction.
7	MODE		Press the MODE Key 1 time, to jump back to the Parameter Selection Screen, and the Motor will release excitation immediately. .

Chap 5 Parameter function

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5-1 Parameter Group Description

■ Parameter Group

Code	Description	Code	Description
Un-xx	Status Display Parameter	dn-xx	Diagnostic Parameter
AL0xx	Error Alarm History Parameter	Cn0xx	System parameter (including CANopen parameter)
Tn1xx	Torque Control Parameter	Sn2xx	Speed Control Parameter
Pn3xx	Position Control Parameter	Pn4xx	Point to Point Position Control Parameter
qn5xx	Shortcut Parameter	Hn6xx	Multifunction Contact Planning Parameter
tn8xx	Tuning Parameter		

■ Control Mode

Code	Description	Code	Description
ALL	All Types of Control		
Pi	Position Control (Internal Position Command)		
Pe	Position Control (External Pulse Command)		

■ Parameter Effective Method

Code	Description
★	Must turn on power supply again, the setting value can be effective.
◆	Pressing the Enter Key is not required, effective immediately after the setting value is set.
▲	Parameter can be effective after Servo Off
○	It is necessary to set Cn029 parameter=1; function becomes effective after rebooting.
--	Press Enter Key to make the changed setting value become effective immediately.

■ Cn029 (parameter reset) effect

Code	Description
●	This parameter is not subject to Cn029 factory reset (value does not change).
--	Return the value to factory default by Cn029 factory reset.

5-2 Parameter Function List

■ System Parameter (Cn0□□)

	Parameter Code	Name and Function	Unit	RS485
★●	Cn001	Control Mode Selection	-	0001H
★	Cn002.0	Auxiliary function—Digitalinput contact SON function selection	-	0002H
★	Cn002.1	Auxiliary function—Digitalinput contact CCWL & CWL function selection		
★	Cn002.3	EMC Re-set Mode Selection		
--	Cn003	Mechanical Brake Signal Output Time	ms	0003H
★	Cn004.0	Motor Rotation Direction Definition (from the Motor Load End)	-	0004H
★	Cn005	Encoder Signal Dividing Output	pulse	0005H/0006H
--	Cn007	Speed Reached Determined Value	rpm	0008H
--	Cn008.0	Brake Mode	-	0009H
★	Cn009.0	CW/CCW Drive Prohibited Method	-	000AH
--	Cn009.1	Drive prohibition abnormal protection (AL.014) setting		
--	Cn009.2	Alignment setting when power is connected to the linear motor for the first time		
--	Cn009.3	Analog voltage over-temperature protection function settings		
--	Cn010	CCW Direction Torque Command Limit Value	%	000BH
--	Cn011	CW Direction Torque Command Limit Value	%	000CH
--	Cn012	External Regenerative Resistor Power Setting	W	000DH
--	Cn013	First Set Notch Filter Frequency	Hz	000EH
--	Cn014	First Set Notch Filter Quality Factor	-	000FH
--	Cn015.0	Switching Determination Type Selection of PI/P Mode	-	0010H
--	Cn015.1	Switching Determination Type Selection of Two Stage Gain Mode		
--	Cn016	Switching Condition of PI/P Mode (Torque Command)	%	0011H
--	Cn017	Switching Condition of PI/P Mode (Speed Command)	rpm	0012H

	Parameter Code	Name and Function	Unit	RS485
--	Cn018	Switching Condition of PI/P Mode (Acceleration Command)	rps/s	0013H
--	Cn019	Switching Condition of PI/P Mode (Position Error Command)	pulse	0014H/0015H
--	Cn020	Switching Delay Time 2 of Two Stage Gain Mode	0.2ms	0016H
--	Cn021	Switching Condition of Two Stage Gain Mode (Torque Command)	%	0017H
--	Cn022	Switching Condition of Two Stage Gain Mode (Speed Command)	rpm	0018H
--	Cn023	Switching Condition of Two Stage Gain Mode (Acceleration Command)	rps/s	0019H
--	Cn024	Two Stage Gain Mode Switching Condition (Position Error)	pulse	001AH/001BH
--	Cn025	Load Inertia Ratio	0.1	001CH
--	Cn026	Rigidity Setting	-	001DH
★	Cn029	Parameter Reset	-	0020H
★●	Cn030	Serialized Model Setting	-	0021H
--	Cn031.0	Fan Operation Setting (only applicable to models equipped with fan)		0022H
--	Cn031.1	Low-voltage Protection (AL001) Automatic Reset Selection	-	
★	Cn031.2	Absolute Value Encoder Battery Error Alarm Output		
○●	Cn031.3	Motor series selection		
--	Cn032	Speed Feedback Smoothing Filter	Hz	0023H
--	Cn033	Speed Forward Feed Smoothing Filter	Hz	0024H
--	Cn034	Torque Command Smoothing Filter	Hz	0025H
--	Cn035	Panel Status Display Content Selection	-	0026H
★	Cn036	RS-485 ID Setting	-	0027H
★	Cn037.0	RS-485 Communication Transmission Rate	-	0028H
★	Cn037.2	RS-485 Communication Write Selection		
★	Cn038.0	RS-485 Communication Protocol	-	0029H

	Parameter Code	Name and Function	Unit	RS485
★	Cn039	RS-485 Communication Timeout Setting	sec	002AH
★	Cn040	RS-485 Communication Response Delay Time	0.5ms	002BH
--	Cn041.0	Absolute Type Encoder Multiple Number of Revolution Clearing Function	-	002CH
--	Cn048	Switching Delay Time 1 of Two Stage Gain Mode	0.2ms	0033H
--	Cn049	Switching Time 1 of Two Stage Gain Mode	0.2ms	0034H
--	Cn050	Switching Time 2 of Two Stage Gain Mode	0.2ms	0035H
--	Cn051	Low Voltage Protection Level	V	0036H
--	Cn052	Low Voltage Protection Alarm Delay Time	250ms	0037H
--	Cn053.0	Current Offset Automatic Correction (can be used only in Servo Off)	-	0038H
--	Cn054	Drive alarm setting (AL001~AL016)	-	0039H
--	Cn055	Drive Warning Delay Trigger Alarm Time	10ms	003AH
--	Cn056	Second Stage CCW Direction Torque Command Limit Value	%	003BH
--	Cn057	Second Stage CW Direction Torque Command Limit Value	%	003CH
--	Cn058	Delay Time of Switch Stage 1 Torque Limit to Stage 2 Torque Limit	4ms	003DH
--	Cn059.0	AutoTuning Enabling Selection	-	003EH
--	Cn060	OFFLine-tuning Operation Command Number of Revolutions Setting	0.1rev	003FH
--	Cn061	OFFLine-tuning Operation Maximum Speed	rpm	0040H
--	Cn063.0	Automatic Mechanical Vibration Suppression Enablement Selection	-	0042H
--	Cn064	Mechanical Vibration Detection Level	-	0043H
--	Cn065	First Set Notch Filter Depth	-	0044H
--	Cn066	Second Set Notch Filter Frequency	Hz	0045H
--	Cn067	Second Set Notch Filter Quality Factor	-	0046H
--	Cn068	Second Set Notch Filter Depth	-	0047H
--	Cn069	Third Set Notch Filter Frequency	Hz	0048H

	Parameter Code	Name and Function	Unit	RS485
--	Cn070	Third Set Notch Filter Quality Factor	-	0049H
--	Cn071	Third Set Notch Filter Depth	-	004AH
--	Cn072	Fourth Set Notch Filter Frequency	Hz	004BH
--	Cn073	Fourth Set Notch Filter Quality Factor	-	004CH
--	Cn074	Fourth Set Notch Filter Depth	-	004DH
--	Cn075	Fifth Set Notch Filter Frequency	Hz	004EH
--	Cn076	Fifth Set Notch Filter Quality Factor	-	004FH
--	Cn077	Fifth Set Notch Filter Depth	-	0050H
--	Cn084.3	Automatically detect communication type encoder model selection	-	0057H
--	Cn085	Magnetic pole angle position automatically detects the alignment duty	%	0058H
--	Cn086	Analog voltage over-temperature protection function	0.01V	0059H
--	Cn087	EMC stop speed linear deceleration constant	ms	005AH
--	Cn089	Regenerative Resistor Resistance Setting	0.1 ohm	005CH
★●	Cn090.3	No detection of linear motor encoder Z phase disconnection function	-	005DH
--	Cn097.0	Motor disconnection protection flag	-	0064H
--	Cn097.1	EMC stop function selection		
★	Cn097.2	Pulse encoder signal input phase sequence		
--	Cn097.3	Linear motor pitch detection		
--	Cn098	Motor cable disconnection detection time	ms	0065H
--	Cn099	Overload limit value	%	0066H

■ Torque Control Parameter (Tn1□□)

	Parameter Code	Name and Function	Unit	RS485
--	Tn108	Torque Reached Determined Value	%	0108H
--	Tn114	Forward Rotational Speed Limit Value	rpm	010EH
--	Tn115	Reverse Rotational Speed Limit Value	rpm	010FH
--	Tn116	Analog torque command filter	Hz	0110H

■ Speed Control Parameter (Sn2□□)

	Parameter Code	Name and Function	Unit	RS485
--	Sn204.0	Operation of Zero Speed Determination Established	-	0204H
--	Sn211	Speed Loop Gain 1	Hz	020BH
--	Sn212	Speed Loop Integration Time Constant 1	0.01ms	020CH
--	Sn213	Speed Loop Gain 2	Hz	020DH
--	Sn214	Speed Loop Integration Time Constant 2	0.01ms	020EH
--	Sn215	Zero Speed Determined Value	rpm	020FH
--	Sn218	Analog Speed Command Limit	rpm	0212H

■ Position Control Parameter (Pn3□□)

	Parameter Code	Name and Function	Unit	RS485
★	Pn301.0	Position Pulse Command pattern Selection	-	0301H
★	Pn301.1	Position Pulse Command Logic Selection		
★	Pn301.2	Drive Prohibited Command Receiving Selection		
★	Pn301.3	Position Pulse Command Filter Width Selection		
--	Pn302	Electronic Gear Ratio Numerator 1	-	0302H/0303H
--	Pn303	Electronic Gear Ratio Numerator 2	-	0304H/0305H
--	Pn304	Electronic Gear Ratio Numerator 3	-	0306H/0307H
--	Pn305	Electronic Gear Ratio Numerator 4	-	0308H/0309H
★	Pn306	Electronic Gear Ratio Denominator	-	030AH/030BH
--	Pn307	Positioning Completion Determined Value	pulse	030CH/030DH
--	Pn308	Positive Maximum Position Error Determined Value	0.001rev	030EH

	Parameter Code	Name and Function	Unit	RS485
--	Pn309	Negative Maximum Position Error Determined Value	0.001rev	030FH
--	Pn310	Position Loop Gain 1	rad/s	0310H
--	Pn311	Position Loop Gain 2	rad/s	0311H
--	Pn312	Position Loop Feed Forward Gain	%	0312H
★	Pn313	Internal / External Position Command One time Smoothing Acceleration / Deceleration Time Constant	ms	0313H
★	Pn314.0	Position Command Direction Definition (from the Motor Load End)	-	0314H
--	Pn315.0	Pulse Error Clearing Mode	-	0315H
--	Pn315.1	Origin return offset mode setting		
--	Pn315.2	Turret & Tool Magazine Zero Return Method Selection		
★	Pn316.0	Internal Position Command Mode	-	0316H
★	Pn316.1	Internal Position Command Hold (PHOLD) Procedure Selection		
★	Pn316.2	Encoder Signal Dividing Output Phase Sequence		
★	Pn316.3	Encoder Signal Dividing Output Frequency Elimination		
--	Pn317.0	After activated Return to Origin, the Origin Search Direction and Select Origin Reference Point Setting	-	0317H
--	Pn317.1	After Found Origin Reference Point, the Moving Method of Search Mechanical Origin Setting		
--	Pn317.2	Return to Origin Activation Mode Setting		
--	Pn317.3	Stop Mode after Found Mechanical Origin Setting		
--	Pn318	Return to Origin First Stage High Speed	rpm	0318H
--	Pn319	Return to Origin Second Stage Low Speed	rpm	0319H
--	Pn320	Return to Origin Offset Number of Revolutions	rev	031AH
--	Pn321	Return to Origin Offset Number of Pulses	pulse	031BH/031CH
--	Pn322	Internal Position Command S-type Acceleration / Deceleration Smoothing Constant (TSL)	0.4ms	031DH
--	Pn323	Internal Position Command S-type Acceleration /	0.4ms	031EH

	Parameter Code	Name and Function	Unit	RS485
		Deceleration Constant (TACC)		
--	Pn324	CNC Tool Magazine Quantity Setting	-	031FH
--	Pn325	CNC Tool Tray Return to Zero Position	pulse	0320H/0321H
--	Pn326	CNC Tool Tray Reduction Ratio	-	0322H
--	Pn327	Tool Change Rotational Speed 1	rpm	0323H
★	Pn329	Pulse Command Smoothing Filter	2ms	0325H
--	Pn330	Pulse Command Moving Filter	0.4ms	0326H
--	Pn331	Turret Magazine Backlash Compensation Parameters	pulse	0327H/0328H
--	Pn332.0	Internal/External Position Command Acceleration / Deceleration Method	-	0329H
--	Pn332.3			
--	Pn333	Internal Position Command S-type Deceleration Constant (TDEC)	0.4ms	032AH
--	Pn334	PTRG Trigger Delay Time Parameter	4ms	032BH
--	Pn335	Tool Change Rotational Speed 2	rpm	032CH
--	Pn336.0	Automatic Low Frequency Vibration Suppression Enablement Selection	-	032DH
--	Pn337	Automatic Low Frequency Vibration Suppression	1ms	032EH
--	Pn338	Low Frequency Swinging Detection Level	0.1%	032FH
--	Pn339	First Set Low Frequency Vibration Suppression Frequency	0.1Hz	0330H
--	Pn340	First Set Low Frequency Vibration Suppression Parameter	-	0331H
--	Pn341	Second Set Low Frequency Vibration Suppression Frequency	0.1Hz	0332H
--	Pn342	Second Set Low Frequency Vibration Suppression Parameter	-	0333H
--	Pn343	Third Set Low Frequency Vibration Suppression Frequency	0.1Hz	0334H
--	Pn344	Third Set Low Frequency Vibration Suppression Parameter	-	0335H
★	Pn354	Single Revolution Pulse Command Function	pulse	0342H/0343H

	Parameter Code	Name and Function	Unit	RS485
--	Pn355	Return to Origin function operating mode	-	0344H
--	Pn356	Pulse Response Filter	Hz	0345H

■ Multi-position Stage Position Control Parameters (Pn4□□)

	Parameter Code	Name and Function	Unit	RS485
--	Pn401	Internal position command 1-Number of revolutions	rev	0701H
--	Pn402	Internal Position Command 1-Number of Pulses	pulse	0702H/0703H
--	Pn403	Internal Position Command 1-Moving Speed	rpm	0704H
--	Pn404	Internal position command 2-Number of revolutions	rev	0705H
--	Pn405	Internal position command 2-Number of pulses	pulse	0706H/0707H
--	Pn406	Internal Position Command 2-Moving Speed	rpm	0708H
--	Pn407	Internal position command 3-Number of revolutions	rev	0709H
--	Pn408	Internal position command 3-Number of pulses	pulse	070AH/070BH
--	Pn409	Internal Position Command 3-Moving Speed	rpm	070CH
--	Pn410	Internal position command 4-Number of revolutions	rev	070DH
--	Pn411	Internal position command 4-Number of pulses	pulse	070EH/070FH
--	Pn412	Internal Position Command 4-Moving Speed	rpm	0710H
--	Pn413	Internal position command 5-Number of revolutions	rev	0711H
--	Pn414	Internal position command 5-Number of pulses	pulse	0712H/0713H
--	Pn415	Internal Position Command 5-Moving Speed	rpm	0714H
--	Pn416	Internal position command 6-Number of revolutions	rev	0715H
--	Pn417	Internal position command 6-Number of pulses	pulse	0716H/0717H
--	Pn418	Internal Position Command 6-Moving Speed	rpm	0718H
--	Pn419	Internal position command 7-Number of revolutions	rev	0719H
--	Pn420	Internal position command 7-Number of pulses	pulse	071AH/071BH
--	Pn421	Internal Position Command 7-Moving Speed	rpm	071CH
--	Pn422	Internal position command 8-Number of revolutions	rev	071DH
--	Pn423	Internal position command 8-Number of pulses	pulse	071EH/071FH
--	Pn424	Internal Position Command 8-Moving Speed	rpm	0720H
--	Pn425	Internal position command 9-Number of revolutions	rev	0721H
--	Pn426	Internal position command 9-Number of pulses	pulse	0722H/0723H
--	Pn427	Internal Position Command 9-Moving Speed	rpm	0724H
--	Pn428	Internal position command 10-Number of	rev	0725H

	Parameter Code	Name and Function	Unit	RS485
		revolutions		
--	Pn429	Internal position command 10-Number of pulses	pulse	0726H/0727H
--	Pn430	Internal Position Command 10-Moving Speed	rpm	0728H
--	Pn431	Internal position command 11-Number of revolutions	rev	0729H
--	Pn432	Internal position command 11-Number of pulses	pulse	072AH/072BH
--	Pn433	Internal Position Command 11-Moving Speed	rpm	072CH
--	Pn434	Internal position command 12-Number of revolutions	rev	072DH
--	Pn435	Internal position command 12-Number of pulses	pulse	072EH/072FH
--	Pn436	Internal Position Command 12-Moving Speed	rpm	0730H
--	Pn437	Internal position command 13-Number of revolutions	rev	0731H
--	Pn438	Internal position command 13-Number of pulses	pulse	0732H/0733H
--	Pn439	Internal Position Command 13-Moving Speed	rpm	0734H
--	Pn440	Internal position command 14-Number of revolutions	rev	0735H
--	Pn441	Internal position command 14-Number of pulses	pulse	0736H/0737H
--	Pn442	Internal Position Command 14-Moving Speed	rpm	0738H
--	Pn443	Internal position command 15-Number of revolutions	rev	0739H
--	Pn444	Internal position command 15-Number of pulses	pulse	073AH/073BH
--	Pn445	Internal Position Command 15-Moving Speed	rpm	073CH
--	Pn446	Internal position command 16-Number of revolutions	rev	073DH
--	Pn447	Internal position command 16-Number of pulses	pulse	073EH/073FH
--	Pn448	Internal Position Command 16-Moving Speed	rpm	0740H
--	Pn449	Internal position command 17-Number of revolutions	rev	0741H
--	Pn450	Internal position command 17-Number of pulses	pulse	0742H/0743H
--	Pn451	Internal Position Command 17-Moving Speed	rpm	0744H

	Parameter Code	Name and Function	Unit	RS485
--	Pn452	Internal position command 18-Number of revolutions	rev	0745H
--	Pn453	Internal position command 18-Number of pulses	pulse	0746H/0747H
--	Pn454	Internal Position Command 18-Moving Speed	rpm	0748H
--	Pn455	Internal position command 19-Number of revolutions	rev	0749H
--	Pn456	Internal position command 19-Number of pulses	pulse	074AH/074BH
--	Pn457	Internal Position Command 19-Moving Speed	rpm	074CH
--	Pn458	Internal position command 20-Number of revolutions	rev	074DH
--	Pn459	Internal position command 20-Number of pulses	pulse	074EH/074FH
--	Pn460	Internal Position Command 20-Moving Speed	rpm	0750H
--	Pn461	Internal position command 21-Number of revolutions	rev	0751H
--	Pn462	Internal position command 21-Number of pulses	pulse	0752H/0753H
--	Pn463	Internal Position Command 21-Moving Speed	rpm	0754H
--	Pn464	Internal position command 22-Number of revolutions	rev	0755H
--	Pn465	Internal position command 22-Number of pulses	pulse	0756H/0757H
--	Pn466	Internal Position Command 22-Moving Speed	rpm	0758H
--	Pn467	Internal position command 23-Number of revolutions	rev	0759H
--	Pn468	Internal position command 23-Number of pulses	pulse	075AH/075BH
--	Pn469	Internal Position Command 23-Moving Speed	rpm	075CH
--	Pn470	Internal position command 24-Number of revolutions	rev	075DH
--	Pn471	Internal position command 24-Number of pulses	pulse	075EH/075FH
--	Pn472	Internal Position Command 24-Moving Speed	rpm	0760H
--	Pn473	Internal position command 25-Number of revolutions	rev	0761H
--	Pn474	Internal position command 25-Number of pulses	pulse	0762H/0763H

	Parameter Code	Name and Function	Unit	RS485
--	Pn475	Internal Position Command 25-Moving Speed	rpm	0764H
--	Pn476	Internal position command 26-Number of revolutions	rev	0765H
--	Pn477	Internal position command 26-Number of pulses	pulse	0766H/0767H
--	Pn478	Internal Position Command 26-Moving Speed	rpm	0768H
--	Pn479	Internal position command 27-Number of revolutions	rev	0769H
--	Pn480	Internal position command 27-Number of pulses	pulse	076AH/076BH
--	Pn481	Internal Position Command 27-Moving Speed	rpm	076CH
--	Pn482	Internal position command 28-Number of revolutions	rev	076DH
--	Pn483	Internal position command 28-Number of pulses	pulse	076EH/076FH
--	Pn484	Internal Position Command 28-Moving Speed	rpm	0770H
--	Pn485	Internal position command 29-Number of revolutions	rev	0771H
--	Pn486	Internal position command 29-Number of pulses	pulse	0772H/0773H
--	Pn487	Internal Position Command 29-Moving Speed	rpm	0774H
--	Pn488	Internal position command 30-Number of revolutions	rev	0775H
--	Pn489	Internal position command 30-Number of pulses	pulse	0776H/0777H
--	Pn490	Internal Position Command 30-Moving Speed	rpm	0778H
--	Pn491	Internal position command 31-Number of revolutions	rev	0779H
--	Pn492	Internal position command 31-Number of pulses	pulse	077AH/077BH
--	Pn493	Internal Position Command 31-Moving Speed	rpm	077CH
--	Pn494	Internal position command 32-Number of revolutions	rev	077DH
--	Pn495	Internal position command 32-Number of pulses	pulse	077EH/077FH
--	Pn496	Internal Position Command 32-Moving Speed	rpm	0780H

■ ■ Shortcut Parameters (qn5□□)

	Parameter Code	Name and Function	Unit	RS485
◆	qn501	Speed Loop Gain 1	Hz	0401H
◆	qn502	Speed Loop Integration Time Constant 1	0.01ms	0402H
◆	qn503	Speed Loop Gain 2	Hz	0403H
◆	qn504	Speed Loop Integration Time Constant 2	0.01ms	0404H
◆	qn505	Position Loop Gain 1	rad/s	0405H
◆	qn506	Position Loop Gain 2	rad/s	0406H
◆	qn507	Position Loop Feed Forward Gain	%	0407H

■ Multifunction Contact Planning Parameters (Hn6□□)

	Parameter Code	Name and Function	Unit	RS485
★	Hn601	DI-1 Pin Function Planning	-	0501H
★	Hn602	DI-2 Pin Function Planning	-	0502H
★	Hn603	DI-3 Pin Function Planning	-	0503H
★	Hn604	DI-4 Pin Function Planning	-	0504H
★	Hn605	DI-5 Pin Function Planning	-	0505H
★	Hn606	DI-6 Pin Function Planning	-	0506H
★	Hn607	DI-7 Pin Function Planning	-	0507H
★	Hn608	DI-8 Pin Function Planning	-	0508H
★	Hn613	DO-1 Pin Function Planning	-	050DH
★	Hn614	DO-2 Pin Function Planning	-	050EH
★	Hn615	DO-3 Pin Function Planning	-	050FH
★	Hn616	DO-4 Pin Function Planning	-	0510H
--	Hn617	Digital Input Contact Control Method Selection	-	0511H
--	Hn618	Communication Control Digital Input Contact Status	-	0512H

■ Tuning parameters (tn8□□)

	Parameter code	Name and function	Unit	RS485
--	tn826.0	AutoTuning enabling selection	-	131AH
--	tn827	OFFLine-tuning operation command lap setting	0.1rev	131BH
--	tn828	OFFLine-tuning operation maximum rotation speed	rpm	131CH
--	tn829	OFFLine-tuning stop time	100ms	131DH

	Parameter code	Name and function	Unit	RS485
--	tn830.0	OFFLine-tuning load gain selection	-	131EH
--	tn830.2	OFFLine-tuning model tracking control function	-	
--	tn830.3	OFFLine-tuning load gain selection mode rigidity difference	-	
--	tn831.0	OFFLine-tuning inertia ratio selection	-	131FH
--	tn832.0	Program Jog stroke operation flag	-	1320H
--	tn832.1	Program Jog execution direction selection	-	
--	tn833	Program Jog stroke stop time	0.4ms	1321H
--	tn834	Program Jog stroke acceleration/deceleration time	0.4ms	1322H
--	tn835	Program Jog stroke movement maximum speed	rpm	1323H
--	tn836	Program Jog stroke movement distance	0.1rev	1324H
--	tn837.0	On-line tuning flag	-	1325H
--	tn837.1	On-line tuning load convergence selection	-	
--	tn837.2	On-line tuning system rigidity selection	-	
--	tn838.0	Speed observer	-	1326H
--	tn839.0	Speed model reference control flag	-	1327H
--	tn840	Speed model reference control gain	%	1328H
--	tn841.0	Friction compensation control flag	-	1329H
--	tn842	Friction compensation control limit value	%	132AH
--	tn843	Friction compensation control gain	%	132BH
--	tn844	Position circuit feedforward gain	%	132CH
--	tn845.2	Disturbance observer speed feedback selection	-	132DH
--	tn846	Disturbance observer filter constant	-	132EH
--	tn847	Disturbance observer limit value	%	132FH
--	tn848	Speed feedforward smooth filter	Hz	1330H
--	tn849	Speed feedforward differential gain	-	1331H
--	tn850.0	Model tracking control switch	-	1332H
--	tn851	Model tracking control gain	rad/s	1333H
--	tn852	Model tracking forward direction torque feedforward gain	%	1334H
--	tn853	Model tracking reverse direction torque feedforward gain	%	1335H
--	tn854	Torque feedforward smooth filter	Hz	1336H
--	tn855	Load inertia ratio	0.1	1337H
--	tn856	Speed feedback smooth filter	Hz	1338H
--	tn857	Torque command smooth filter	Hz	1339H
--	tn858	Speed circuit gain 1	Hz	133AH

	Parameter code	Name and function	Unit	RS485
--	tn859	Speed circuit integral time constant 1	0.01ms	133BH
--	tn860	Speed circuit gain 2	Hz	133CH
--	tn861	Speed circuit integral time constant 2	0.01ms	133DH
--	tn862	Position circuit gain 1	rad/s	133EH
--	tn863	Position circuit gain 2	rad/s	133FH

■ Monitoring Parameters (Un-□□)

	Parameter Code	Name and Function	Unit	RS485
--	Un-01	Actual Motor Speed	rpm	0601H
--	Un-02	Actual Motor Torque	%	0602H
--	Un-03	Regenerative Load Rate	%	0603H
--	Un-04	Effective Load rate	%	0604H
--	Un-05	Maximum Load Rate	%	0605H
--	Un-06	Speed Command	rpm	0606H
--	Un-07	Position Error	pulse	0607H/0608H
--				
--	Un-10	Main Circuit (Vdc Bus) Voltage	V	060CH
--				
--	Un-12	External CCW Direction Torque Limit Command Value	%	060EH
--	Un-13	External CW Direction Torque Limit Command Value	%	060FH
--	Un-14	Motor Feedback - Number of Pulses in one Rotation	pulse	0610H/0611H
--	Un-16	Motor Feedback - Number of Rotations	rev	0613H/0614H
--	Un-18	Pulse Command - Number of pulses in one rotation	pulse	0616H/0617H
--	Un-20	Pulse Command - Number of Rotations	rev	0619H/061AH
--	Un-24	Multi-revolution Position Information of the Communication Encoder Feedback	rev	061FH
--	Un-25	Single Revolution Position Information of the Communication Encoder Feedback	pulse	0620H/0621H
--	Un-27	Communication Encoder Message	-	0623H
--				
--	Un-29	Load Inertia Ratio	0.1	0625H
--	Un-30	Digital Output Contact Status (DO)	-	0626H
--	Un-31	Digital Input Contact Status (DI)	-	0627H

	Parameter Code	Name and Function	Unit	RS485
--	Un-43	Motor Electrical Angle	deg	0633H
--	Un-44	Motor Model Number Read by the Communication Encoder	-	0634H
--	Un-45	OnLine_AutoTuning Inertia Estimation	0.1	0635H
--	Un-46	OFFLine_Tuning Status	-	0636H
--	Un-47	Error Code of OFFLine_Tuning	-	0637H
--	Un-49	Drive Temperature	度	0639H
--	Un-53	Current Alarm Number	-	063FH
--	Un-55	System Multi-revolution Position	rev	0641H
--	Un-56	System Single Revolution Position	pulse	0642H/0643H
--	Un-88	ServoOn total time	hour	0663H
--	Un-89	PowerOn total time	hour	0664H
--	Un-90	Effective load rate	%	0665H

■ Diagnostic Parameters (dn-□□)

	Parameter Code	Name and Function	Unit	RS485
--	dn-01	Current Control Mode Display	-	0F01H
--	dn-02	Output Contact Signal Status	-	0F02H
--	dn-03	Input Contact Signal Status	-	0F03H
--	dn-04	CPU Software Version Display	-	0F04H
--	dn-05	Jog Mode Operation	-	N/A
--	dn-06	Reserved	-	N/A
--	dn-08	Display Serialized Models	-	0F08H
--	dn-09	ASIC Software Version Display	-	0F09H
--	dn-11	Automatic Detection of Magnetic Angle Position	-	0F0BH

5-3 Parameter Function Detail description

5-3-1 System Parameters (Cn0□□)

Cn001 Control Mode Selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
2	--	0 ~ A	★	●

RS-485	Pi	Pe	Pt	S	T
0001H	○	○	○	○	○

Setting Description:

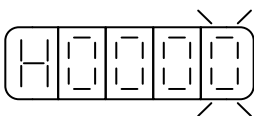
Setting	Description	Setting	Description
2	External Position Control (External Pulse Command)	6	Internal Position Control (Internal Position Command)
		A	Internal / External Position Switching

Cn002.0 Contact Auxiliary Function - Digital Input Contact SON Function Selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
0002H	○	○	○	○	○

Setting Description:.....



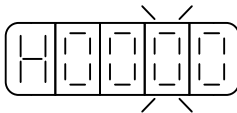
Setting	Description
0	Control Servo Activation by Digital Input Contact SON.
1	Do not control Servo Activation by Digital Input Contact SON; activate Servo immediately when the Power is ON.

Cn002.1 Contact Auxiliary Functions--Digital Input Contact CCWL and CWL Function Selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
0002H	0	0	0	0	0

Setting Description:.....



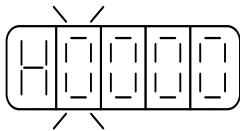
Setting	Description
0	Control CCW and CW Drive Prohibit by Digital Input Contacts CCWL and CWL.
1	Do not control CCW and CW Drive Prohibit by Digital Input Contacts CCWL and CWL; ignore CCW and CW Drive Prohibit Functions.

Cn002.3 EMC Return Mode Selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
0002H	0	0	0	0	0

Setting Description:.....



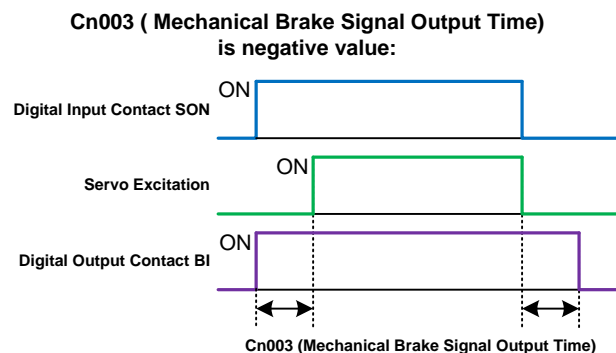
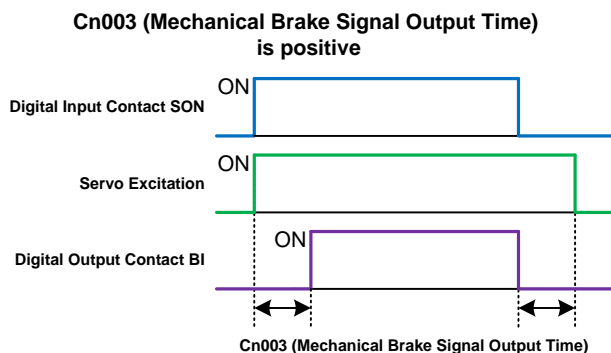
Setting	Description
0	After emergency stop status is cleared, the AL009 Display can only be cleared with digital input contact ALRS in Servo Off State. (Note) Cannot be cleared in Servo On State.
1	After emergency stop status is cleared, the AL009 Display can be automatically cleared no matter in Servo On or Servo off state. ! Attention: In Servo On state, before the alarm clears and returns to normal operation, whether the Controller still issues command to the Drive must be confirmed to avoid causing sudden unintended acceleration of the Motor!

Cn003 Mechanical Brake Signal Output Time

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	ms	-3000 ~ 3000	--	--

RS-485	Pi	Pe	Pt	S	T
0003H	0	0	0	0	0

Setting Description: The Time Sequence Diagram is as follows



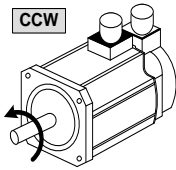
Note) Before using this function, it is necessary to plan one mechanical brake signal (BI) digital output pin. Cn008.0 (brake mode) must be set as 1.

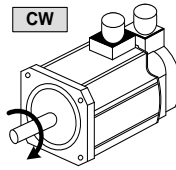
Cn004.0 Motor Rotation Direction Definition (from Motor Load End)

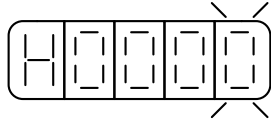
Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
0004H	-	-	-	O	O

Setting Description: When the Torque or Speed Command is positive, the Rotation Direction Setting from the Motor Load End is as follows







Setting	Description
0	Clockwise Rotation (CW)
1	Counterclockwise Rotation (CCW)

Cn005 Encoder Signal Dividing Output

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
Determined by the Encoder 2500:2500ppr 8192:15bit 32768:17bit, 23bit	pulse	16 ~ 2097152	★	--

RS-485	Pi	Pe	Pt	S	T
0005H/0006H	O	O	O	O	O

Setting Description: Dividing Process means the number of pulse signals generated with one revolution of Motor Encoder that are converted into number of pulse signals preset by **Cn005**.

Example: The Motor Encoder is a 131072 pulse output with one revolution; to obtain a 1000 pulse dividing output, please set **Cn005**=1000 directly.

Note) Dividing output is related to rotation speed at a certain level.

<Setting Limit> **Attention! The Setting Range cannot exceed the Number of Pulses in One Revolution of Motor Encoder.**

Cn007 Speed Reached Determined Value

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
Rated speed*1/3	rpm	0 ~ 1.5*Rated Speed	--	--

RS-485	Pi	Pe	Pt	S	T
0008H	--	--	--	O	O

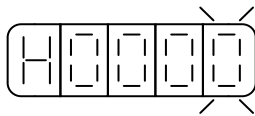
Setting Description: When the Forward or Reverse Speed exceeds the speed set by Cn007 (Speed Reached Determined Value), Digital Output Contact INS activates

Cn008.0 Brake Mode

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
2	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
0009H	O	O	O	O	O

Setting Description: The Brake Combination of Servo off, Emergency Stop (EMC), and when CCW/CW Drive is Prohibited.



Setting	Description	
	Dynamic Brake	Dynamic Brake
0	No	No
1	No	Yes

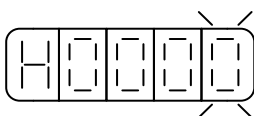
Attention! When CCW/CW generates drive prohibition, the setting of if use dynamic brake Cn009 is prior to Cn008, i.e. if Cn008 is set as 0 or 1 (without dynamic brake) and Cn009 is set as 1 (with dynamic brake), the dynamic brake will be implemented eventually.

Cn009.0 CW/CCW Drive Prohibited Method

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0, 2	★	--

RS-485	Pi	Pe	Pt	S	T
000AH	O	O	O	O	O

Setting Description:



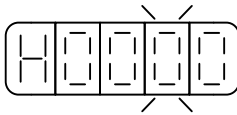
Setting	Description
0	Use the pre-set Torque Limit (Cn010, Cn011) to decelerate, and in Zero Speed Clamping State after stopped.
2	Use $\pm 300\%$ Torque Limit to decelerate, and in Zero Speed Clamping State after stopped.

Cn009.1 Drive prohibition abnormal protection (AL.014) setting

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	--	0 ~ 1	--	--

RS-485	CANopen	EtherCAT	Pi	Pe	Pt	S	T
000AH	2009H	2009H	○	○	○	○	○

Setting Description:



Setting	Description
0	Drive prohibition abnormal protection (AL.014) setting disable
1	Drive prohibition abnormal protection (AL.014) setting enable

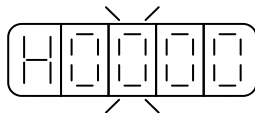
Ex: When Cn009.1=1, when the servo motor is running in the positive direction, if it encounters a negative limit alarm, AL.014 alarm will be generated.

Cn009.2 Alignment setting when power is connected to the linear motor for the first time

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 4	--	--

RS-485	CANopen	EtherCAT	Pi	Pe	Pt	S	T
000AH	2009H	2009H	○	○	○	○	○

Setting instructions:



Setting	Description
0	Set dn-11 manually to complete alignment.
1	Automatic alignment after excitation
2	Automatic alignment after power on
3	Use the DI pin to input Hall signal, and use Hall signal alignment and reset to zero <i>Note: The U-phase Hall signal should be aligned at the zero of the opposite U-potential</i>
4	<i>Use Hall signal alignment, do not use Hall signal zero</i>

Cn009.3 Analog voltage over-temperature protection function settings

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 2	--	--

RS-485	CANopen	EtherCAT	Pi	Pe	Pt	S	T
000AH	2009H	2009H	○	○	○	○	○

Setting instructions:



Setting	Description
0	Not used
1	The TIC function switch is an over-temperature protection signal
2	The SIC function switch is an over-temperature protection signal

Cn010 CCW Direction Torque Command Limit Value

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
200 ~ 300 Note)	%	0 ~ 300	--	--

RS-485	Pi	Pe	Pt	S	T
000BH	O	O	O	O	O

Setting Description: To limit the Torque Command of CCW direction with doubled Rated Torque, set Cn010=200.

Cn011 CW direction torque command limit value

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
-300 ~ -200 Note)	%	-300 ~ 0	--	--

RS-485	Pi	Pe	Pt	S	T
000CH	O	O	O	O	O

Setting Description: To limit the Torque Command of CW direction with two times the Rated Torque, set Cn011=-200.

Note) Default and setting range of parameter Cn010/Cn011 vary by drive model.

JSDL2 Matching Capacity	Matching Motor Model	Cn030 setting value	Torque command limit value	
			Cn010(%)	Cn011(%)
10A	JSMA-PSCP5A□	H101□	300	-300
	JSMA-PUCP5A□	H105□	300	-300
	JSMA-PSC01A□	H102□	300	-300
	JSMA-PUC01A□	H106□	300	-300
	JSMA-PBC01A□	H107□	300	-300
	JSMA-PUC02A□	H108□	240	-240
	JSMA-PBC02A□	H109□	240	-240
15A	JSMA-PSC01A□	H111□	300	-300
	JSMA-PSC02A□	H113□	300	-300
	JSMA-PUC02A□	H119□	300	-300
	JSMA-PBC02A□	H11A□	300	-300
	JSMA-PLC03A□	H112□	300	-300
	JSMA-SC04A□	H114□	240	-240
	JSMA-PSC04A□	H115□	300	-300
	JSMA-PUC04A□	H11D□	300	-300
	JSMA-PBC04A□	H11E□	300	-300
20A	JSMA-SC04A□	H122□	300	-300
	JSMA-PSC04A□	H126□	300	-300
	JSMA-PBH05A□	H12F□	340	-340
	JSMA-PMA05A□	H124□	300	-300
	JSMA-PMH05A□	H125□	300	-300

Matching Capacity	Matching Motor Motor Model	Cn030 setting value	Torque command limit value	
			Cn010(%)	Cn011(%)
	JSMA-PLC08A□	H121□	300	-300
	JSMA-PSC08A□	H123□	260	-260
	JSMA-PUC08A□	H12D□	260	-260
	JSMA-PBC08A□	H12E□	260	-260
30A	JSMA-PSC08A□	H131□	300	-300
	JSMA-PUC08A□	H13B□	300	-300
	JSMA-PBC08A□	H13C□	300	-300
	JSMA-PBH09A□	H13E□	230	-230
	JSMA-PMA10A□	H132□	300	-300
	JSMA-PMB10A□	H133□	300	-300
	JSMA-PMH10A□	H134□	300	-300
	JSMA-PMC10A□	H135□	300	-300
	JSMA-PUC10A□	H13F□	250	-250
	JSMA-PLC10A□	H531□	260	-260
JSMA-PBC12A□	H532□	270	-270	
50A3	JSMA-PBH09A□	H15B□	260	-260
	JSMA-PUC10A□	H15D□	300	-300
	JSMA-PLC10A□	H551□	330	-330
	JSMA-PBH13A□	H15C□	240	-240
	JSMA-PMA15A□	H151□	300	-300
	JSMA-PMB15A□	H152□	300	-300
	JSMA-PMC15A□	H153□	300	-300
	JSMA-PLC15A□	H15E□	320	-320
	JSMA-PMB20A□	H154□	300	-300
	JSMA-PMC20A□	H155□	300	-300
JSMA-PLC20A□	H552□	250	-250	
75A3	JSMA-PBH13A□	H174□	300	-300
	JSMA-PBH18A□	H175□	260	-260
	JSMA-PBH18-18A□	H176□	240	-240
	JSMA-PLC20A□	H571□	320	-320
	JSMA-PMB30A□	H171□	300	-300
	JSMA-PMC30A□	H172□	300	-300
	JSMA-PMH30A□	H173□	260	-260
JSMA-PIH30A□	H177□	250	-250	

Cn012 External regenerative resistor power setting

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
Varies by model	W	0 ~ 10000	--	--

RS-485	CANopen	EtherCAT	Pi	Pe	Pt	S	T
000DH	200CH	200CH	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Setting Description: Please set the selected external resistor power value correctly in Cn012.

Model	Initial Value
10A / 15A / 20A / 30A / 50A3 / 75A3	60

Cn013 Notch filter frequency (first set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	Hz	0 ~ 2000	--	--

RS-485	Pi	Pe	Pt	S	T
000EH	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-

Setting Description: Please input the frequency when vibration occurs in Cn013 to eliminate vibrations or noises caused by resonance, etc.

Cn014 Notch filter quality factor (first set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
7	--	1 ~ 100	--	--

RS-485	Pi	Pe	Pt	S	T
000FH	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-

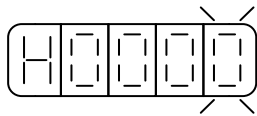
Setting Description: Used to adjust the frequency range to be suppressed, the smaller the Cn014 value is, the wider the frequency range of suppression is, and the user can adjust according to actual conditions.

Cn015.0 PI/P Switching Determination Type Selection of PI/P Mode → **【6-7-1】**

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
4	--	0 ~ 4	--	--

RS-485	Pi	Pe	Pt	S	T
0010H	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	--

Setting instructions:



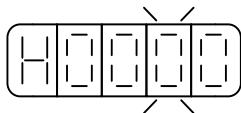
Setting	Description
0	Determine if the Torque Command is greater than Cn016
1	Determine if the Speed Command is greater than Cn017
2	Determine if the Acceleration Command is greater than Cn018
3	Determine if the Position Error is greater than Cn019
4	Use digital input contact PCNT to switch

Cn015.1 Switching Determination Type Selection of Two Stage Gain Mode

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
4	--	0 ~ 4	--	--

RS-485	Pi	Pe	Pt	S	T
0010H	O	O	O	O	--

Setting instructions:



Setting	Description
0	Determine if the Torque Command is greater than Cn021
1	Determine if the Speed Command is greater than Cn022
2	Determine if the Acceleration Command is greater than Cn023
3	Determine if the Position Error is greater than Cn024
4	Use digital input contact G-SEL to switch

Cn016 Switch condition of PI/P mode (torque command)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
200	%	0 ~ 399	--	--

RS-485	Pi	Pe	Pt	S	T
0011H	O	O	O	O	--

Setting Description: First set Cn015.0=0, When the Torque Command is smaller than the Cn016 Switching Condition, it is PI control; when the Torque Command is greater than the Cn016 Switching Condition, then switch to only P Control.

Cn017 PI/P Switch condition of PI/P mode (speed command)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	rpm	0 ~ 1.5*Rated Speed	--	--

RS-485	Pi	Pe	Pt	S	T
0012H	O	O	O	O	--

Setting Description: First set Cn015.0=1, When the Speed Command is smaller than the Cn017 Switching Condition, it is PI control; when the Speed Command is greater than the Cn017 Switching Condition, then switch to only P Control.

Cn018 PI/P Mode Switching Condition (Acceleration Command)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	rps/s	0 ~ 18750	--	--

RS-485	Pi	Pe	Pt	S	T
0013H	O	O	O	O	--

Setting Description: First set Cn015.0=2, When the Acceleration Command is smaller than the Cn018 Switching Condition, it is PI control; when the Acceleration Command is greater than the Cn018 Switching Condition, then switch to only P Control.

Cn019 PI/P Mode Switching Condition (Position Error)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	pulse	0 ~ 41943040	--	--

RS-485	Pi	Pe	Pt	S	T
0014H/0015H	O	O	O	O	--

Setting Description: First set Cn015.0=3, When the Position Error is smaller than the Cn019 Switching Condition, it is PI control; when the Position Error is greater than the Cn019 Switching Condition, then switch to only P Control.

Cn020 Switch delay time 2 of two stage gain mode

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	0.2ms	0 ~ 10000	--	--

RS-485	Pi	Pe	Pt	S	T
0016H	O	O	O	O	--

Setting Description: When using the Two Stage Gain Mode, the Delay Time from the Second Stage Gain to the First Stage Gain can be set.

Cn021 Switch condition of two stage gain mode (torque command)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
200	%	0 ~ 399	--	--

RS-485	Pi	Pe	Pt	S	T
0017H	O	O	O	O	--

Setting Description: Set Cn015.1=0 first, when the Torque Command is less than the Cn021 switching condition, use the first stage gain control; when the Torque Command is greater than the Cn021 switching condition, then switch to the second stage gain control. If the Torque Command is less than the Cn021 switching condition again, it will switch to the first stage gain control in accordance with Cn020 Switching Delay Time.

Cn022 Switch condition of two stage gain mode (speed command)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	rpm	0 ~ 1.5*额定转速	--	--

RS-485	Pi	Pe	Pt	S	T
0018H	O	O	O	O	--

Setting Description: Set Cn015.1=1 first, when the Speed Command is less than the Cn022 switching condition, use the first stage gain control; when the Speed Command is greater than the Cn022 switching condition, then switch to the second stage gain control. If the Speed Command is less than the Cn022 switching condition again, it will switch to the first stage gain control in accordance with Cn020 Switching Delay Time.

Cn023 Switch condition of two stage gain mode (acceleration command)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	rps/s	0 ~ 18750	--	--

RS-485	Pi	Pe	Pt	S	T
0019H	O	O	O	O	--

Setting Description: Set Cn015.1=2 first, when the Acceleration Command is less than the Cn023 switching condition, use the first stage gain control; when the Acceleration Command is greater than the Cn023 switching condition, then switch to the second stage gain control. If the Acceleration Command is less than the Cn023 switching condition again, it will switch to the first stage gain control in accordance with Cn020 Switching Delay Time.

Cn024 Switch condition of two stage gain mode (position error)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	pulse	0 ~ 41943040	--	--

RS-485	Pi	Pe	Pt	S	T
001AH/001BH	O	O	O	O	--

Setting Description: Set Cn015.1=3 first, when the Position Error is less than the Cn024 switching condition, use the first stage gain control; when the Position Error is greater than the Cn024 switching condition, then switch to the second stage gain control. If the Position Error is less than the Cn024 switching condition again, it will switch to the first stage gain control in accordance with Cn020 Switching Delay Time.

Cn025 Load Inertia Ratio

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
10	0.1	0 ~ 2000	--	--

RS-485	Pi	Pe	Pt	S	T
001CH	O	O	O	O	--

Setting Description:

$$\text{Load Inertia Ratio} = \frac{\text{Convert to the Load Inertia of the Motor Shaft (J}_L\text{)}}{\text{Servo Motor Rotor Inertia(J}_M\text{)}} \times 100\%$$

Cn026 Rigidity Setting

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
9	--	1 ~ 21	--	--

RS-485	Pi	Pe	Pt	S	T
001DH	O	O	O	O	O

Setting Description:

When the rigid setting value is changed, the three parameter values of Pn310, Sn211 and Sn212 are changed at the same time.

Description							
Setting	Position Loop Gain Pn310 [1/s]	Speed Loop Gain Sn211 [Hz]	Speed Loop Integration Time Constant Sn212 [0.01ms]	Setting	Position Loop Gain Pn310 [1/s]	Speed Loop Gain Sn211 [Hz]	Speed Loop Integration Time Constant Sn212 [0.01ms]
1	2	2	28000	12	70	70	1000
2	3	3	19000	13	85	85	1000
3	6	6	9000	14	100	100	800
4	9	9	6000	15	120	120	800
5	12	12	6000	16	140	140	600
6	15	15	6000	17	160	160	600
7	20	20	4500	18	180	180	500
8	30	30	3000	19	200	200	500
9	40	40	2000	20	225	225	400
10	50	50	1600	21	250	250	400
11	60	60	1500	-	-	-	-

Cn029 Parameter Reset

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
0020H	O	O	O	O	O

Setting Description:

Setting	Description
0	Not Functioning
1	All Parameters returned to Factory Default Value

Cn030 Serialized Model Setting

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
Factory Setting	--	--	★	●

RS-485	Pi	Pe	Pt	S	T
0021H	○	○	○	○	○

Setting Description: The setting value of this parameter is the same as the dn-08 display value, please refer to “1-1-3 Servo Drive and Servo Motor Matching Comparison Table” for the detailed setting method.

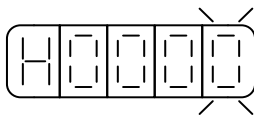
! Attention: Before the machine starts to operate, make sure to confirm the parameter setting value is the correct Drive and Motor matching combination! When differing from actual combination, please reset or contact local distributor!

Cn031.0 Fan operation setting (only applicable to models with a fan)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 3	--	--

RS-485	Pi	Pe	Pt	S	T
0022H	○	○	○	○	○

Setting Description:



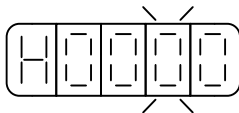
Setting	Description
0	Temperature Sensing Automatic Operation
1	Operates when Servo starts
2	Continuous Operation
3	Stop Operation

Cn031.1 Low voltage protection (AL.001) automatic return selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
0022H	O	O	O	O	O

Setting Description: This parameter can set low voltage protection (AL001) return method



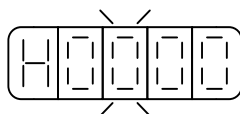
Setting	Description
0	When the SON status displays run, AL.001 Low Voltage Error Alarm is immediately displayed when a low voltage is detected; after the error is cleared, must clear AL.001 display by digital input contact ALRS under Soff status.
1	When the SON status displays run, BB status is immediately displayed when a low voltage is detected; and automatically resets to SON status and displays “run” after the Error is resolved.

Cn031.2 Absolute value encoder battery error alarm output

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0: ABS Encoder 1: INC Encoder	--	0 ~ 3	★	--

RS-485	Pi	Pe	Pt	S	T
0022H	O	O	O	O	O

Setting Description:



Setting	Description
0	When the battery is abnormal after power is turned ON, the panel displays AL.016 and the digital output contact outputs ALM; the device cannot operate normally at this time. *Un24, 25 and Un55, 56 display the same value.
1	When the battery is abnormal after power is turned ON, the panel displays no abnormality and the digital output contact does not output ALM and the Motor can still operate normally, but the multi-revolution address cannot be memorized after the power is turned OFF.
2	When the battery is abnormal after power is turned ON, the panel displays AL-16 and DO abnormal contact outputs. *Store the offset value in motor and drive side after returning to origin. The drive uses the offset value of motor side to run absolute position control. When the power is on, AL.050 alarm will occur when offset values of motor and drive side vary; offset value can be cleared through Cn041.0 = 2
3	When the battery is abnormal after power is turned ON, the panel displays AL.016 and DO abnormal contact outputs. *Store the offset value in motor and drive side after returning to origin. The drive uses the offset value of motor side to run absolute position control; offset value can be cleared through Cn041.0 = 2.

Cn032 Speed feedback smoothing filter

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
500	Hz	0 ~ 2500	--	--

RS-485	Pi	Pe	Pt	S	T
0023H	O	O	O	O	--

Setting Description: When the system generates a sharp vibration noise, this parameter can be adjusted to suppress the vibration noise, adding this filter will also delay the response speed of the servo system.

Cn033 Speed Feed Forward Smoothing Filter

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
500	Hz	0 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
0024H	O	O	O	--	--

Setting Description: Smooth the Speed Feed Forward Command.

Cn034 Torque command smoothing filter

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	Hz	0 ~ 5000	--	--

RS-485	Pi	Pe	Pt	S	T
0025H	O	O	O	O	O

Setting Description: When the system generates a sharp vibration noise, this parameter can be adjusted to suppress the vibration noise, adding this filter will also delay the response speed of the servo system.

Cn035 Panel status display content selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ Un parameter maximum	--	--

RS-485	Pi	Pe	Pt	S	T
0026H	O	O	O	O	O

Setting Description:

Setting	Description
This parameter can set panel status display content after the power is ON.	
0	Display bit data and status code, please refer to "3-1 Drive Panel Operation Instructions"
1 ~ Maximum	Display Un Status Display parameter content, Please refer to "7-3-9 Monitoring Parameters". Example: When set Cn035=1, the panel will display actual Motor Speed (Un-01 content) after power is turned on.

Cn036 ID Setting

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	--	1 ~ 254	★	--

RS-485	Pi	Pe	Pt	S	T
0027H	O	O	O	O	O

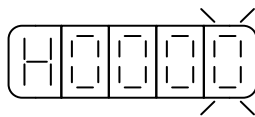
Setting Description: When using the Modbus Communication Interface, each set of Drives needs to set different IDs in this parameter in advance; if the IDs are set repeatedly, it will result in communication not being operated normally.

Cn037.0 Modbus RS-485 Communication Transmission Rate

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	--	0 ~ 5	★	--

RS-485	Pi	Pe	Pt	S	T
0028H	O	O	O	O	O

Setting Description:



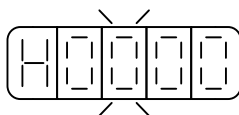
Setting	Description	Setting	Description
0	4800 bps	3	38400 bps
1	9600 bps	4	57600 bps
2	19200 bps	5	115200 bps

Cn037.2 RS-485 Communication Write Selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
0028H	O	O	O	O	O

Setting Description:



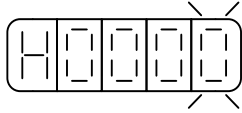
Setting	Description
0	RS-485 Communication Write to EEPROM
1	RS-485 Communication Write to SRAM

Cn038.0 Protocol

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 8	★	--

RS-485	Pi	Pe	Pt	S	T
0029H	O	O	O	O	O

Setting Description:



Setting	Description	Setting	Description
0	7, N, 2 (Modbus , ASCII)	5	8, O, 1 (Modbus , ASCII)
1	7, E, 1 (Modbus , ASCII)	6	8, N, 2 (Modbus , RTU)
2	7, O, 1 (Modbus , ASCII)	7	8, E, 1 (Modbus , RTU)
3	8, N, 2 (Modbus , ASCII)	8	8, O, 1 (Modbus , RTU)
4	8, E, 1 (Modbus , ASCII)	-	

Cn039 Communication Timeout Setting

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	sec	0 ~ 20	★	--

RS-485	Pi	Pe	Pt	S	T
002AH	O	O	O	O	O

Setting Description: If the setting value is greater than 0, the Communication Timeout Function is turned on immediately and must conduct communication within the set time, otherwise, a communication error will appear. If the setting value is 0, then indicates this function is turned off.

Cn040 Communication response delay time

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	0.5ms	0 ~ 255	★	--

RS-485	Pi	Pe	Pt	S	T
002BH	O	O	O	O	O

Setting Description: Delay the communication time of Drive responding to Supervisory Control Unit.

Cn041.0 Absolute type encoder multi-revolution clearing function

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 2	--	--

RS-485	Pi	Pe	Pt	S	T
002CH	O	O	O	O	O

Setting Description:



Setting	Description
0	Not Functioning
1	Clear the Encoder Internal Status
2	Clear the Encoder Internal Status and Number of Revolutions

Cn048 Switch delay time 1 of two stage gain mode

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	0.2ms	0 ~ 10000	--	--

RS-485	Pi	Pe	Pt	S	T
0033H	O	O	O	O	--

Setting Description: When using the Two Stage Gain Mode, the Delay Time from the first stage gain to the second stage gain can be set.

Cn049 Switch time 1 of two stage gain mode

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	0.2ms	0 ~ 10000	--	--

RS-485	Pi	Pe	Pt	S	T
0034H	O	O	O	O	--

Setting Description: When using the Two Stage Gain Mode, the Conversion Time from the first stage gain to the second stage gain can be set.

Cn050 Switch time 2 of two Stage Gain Mode

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	0.2ms	0 ~ 10000	--	--

RS-485	Pi	Pe	Pt	S	T
0035H	O	O	O	O	--

Setting Description: When using the Two Stage Gain Mode, the Conversion Time from the second stage gain to the first stage gain can be set.

Cn051 Low voltage protection level

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
200V: 190 400V: 380	Volt	200V: 170 ~ 190 400V: 340 ~ 380	--	--

RS-485	Pi	Pe	Pt	S	T
0036H	O	O	O	O	O

Setting Description: When the Drive input power supply voltage is less than Cn051, after delaying the Cn052 setting time, trigger the Low Voltage Protection Alarm. But if the voltage is under 170V, the system will run low voltage protection directly, regardless of Cn052 setting time.

Cn052 Low voltage protection alarm delay time

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
4	250ms	0 ~ 100	--	--

RS-485	Pi	Pe	Pt	S	T
0037H	O	O	O	O	O

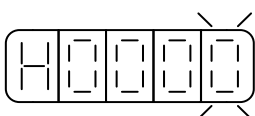
Setting Description: When the Drive input power supply voltage is less than Cn051, after delaying the Cn052 setting time, trigger the Low Voltage Protection Alarm. But if the voltage is under 170V, the system will run low voltage protection directly, regardless of Cn052 setting time.

Cn053.0 Current offset automatic correction (only usable under Servo Off)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
0038H	O	O	O	O	O

Setting Description: The Drive executes the Current Offset Correction after setting to 1, and clear the setting to 0 automatically after the completed correction.



Setting	Description
0	Does not execute Current Offset Correction
1	Execute Current Offset Correction

Cn054 Drive warning setting (AL001-AL016)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0000 ~ FFFF	--	--

RS-485	Pi	Pe	Pt	S	T
0039H	O	O	O	O	O

Setting Description: Cn054 is a 16-bit parameter, each bit represents each Alarm separately. Setting the corresponding bit of the Alarm to 1 is the Warning Mode. When the alarm occurs, the Drive issues a warning first, and triggers the Alarm after continuous operation for the time set by Cn055.

Cn055 Drive warning delay trigger alarm time

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	10ms	0 ~ 300	--	--

RS-485	Pi	Pe	Pt	S	T
003AH	O	O	O	O	O

Setting Description: Same as Cn054

Cn056 Second stage CCW direction torque command limit value

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
200 ~ 300	%	0 ~ 300	--	--

RS-485	Pi	Pe	Pt	S	T
003BH	O	O	O	O	O

Setting Description: Description is the same as Cn010

Cn057 Second stage CW direction torque command limit value

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
-300 ~ -200	%	-300 ~ 0	--	--

RS-485	Pi	Pe	Pt	S	T
003CH	O	O	O	O	O

Setting Description: Description is the same as Cn011

Cn058 Delay time when switching from first stage to second stage torque limit

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	4ms	0 ~ 32767	--	--

RS-485	Pi	Pe	Pt	S	T
003DH	O	--	O	--	--

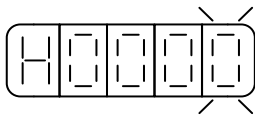
Setting Description: After the digital output contact INP delays according to the time set by Cn058, the torque limit switch from (Cn010, Cn011) to (Cn056, Cn057) and from (Cn056, Cn057) to (Cn010, Cn011) after PTRG operates.

Cn059.0 AutoTuning enablement selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 2	--	--

RS-485	Pi	Pe	Pt	S	T
003EH	0	0	0	--	--

Setting Description:



Setting	Description
0	Disable AutoTuning
1	Enable OFFLine-AutoTuning
2	Enable OnLine-AutoTuning (Inertia Only Displays)

Cn060 OFFLine-tuning Operation Command Number of Revolutions Setting

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
30	0.1rev	5 ~ 2000	--	--

RS-485	Pi	Pe	Pt	S	T
003FH	0	0	0	0	--

Setting Description: Set to 30 represents that the process command of tuning command will be within 3 revolutions

Cn061 OFFLine-tuning Operation Maximum Rotational Speed

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
2/3*Rated Rotational Speed	rpm	300 ~ 2/3 * rated rotational speed	--	--

RS-485	Pi	Pe	Pt	S	T
0040H	0	0	0	0	--

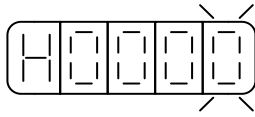
Setting Description: OFFLine_Tuning Maximum Operation speed

Cn063.0 Automatic mechanical suppression enablement selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 5	--	--

RS-485	Pi	Pe	Pt	S	T
0042H	0	0	0	0	--

Setting Description: OFFLine_Tuning Maximum Operation speed



Setting	Description
0	Disable Automatic Detection of Mechanical Vibration Frequency
1	Enable Automatic Detection of First Set Mechanical Vibration Frequency
2	Enable Automatic Detection of Second Set Mechanical Vibration Frequency
3	Enable Automatic Detection of Third Set Mechanical Vibration Frequency
4	Enable Automatic Detection of Fourth Set Mechanical Vibration Frequency
5	Enable Automatic Detection of Firth Set Mechanical Vibration Frequency

Cn064 Mechanical vibration detection level

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
50	--	1 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
0043H	0	0	0	0	-

Setting Description: The automatic detection level when executing Automatic Mechanical Vibration Suppression (Cn063=1), the lower the value is, the more likely the noise is determined incorrectly, the recommended setting is 50 or higher.

Cn065 Notch filter depth (first set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
0044H	0	0	0	0	-

Setting Description: Used to adjust the frequency depth to be suppressed, the smaller the Cn065 value is, the deeper the frequency depth to be suppressed. Users can adjust according to actual conditions.

Cn066 Notch filter frequency

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	Hz	0 ~ 2000	--	--

RS-485	Pi	Pe	Pt	S	T
0045H	0	0	0	0	-

Setting Description: When to eliminate the vibration or noise caused by resonance, etc., please input the frequency when vibration occurs in Cn066.

Cn067 Notch filter quality factor (second set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
7	--	1 ~ 100	--	--

RS-485	Pi	Pe	Pt	S	T
0046H	O	O	O	O	-

Setting Description: Used to adjust the frequency range to be suppressed, smaller the Cn067 value is, wider the frequency range of suppression, and can be adjusted according to actual conditions.

Cn068 Notch filter depth (second set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	1 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
0047H	O	O	O	O	-

Setting Description: Used to adjust the frequency depth to be suppressed, the smaller the Cn068 value is, the deeper the frequency depth to be suppressed, and the User can adjust according to the actual conditions.

Cn069 Notch filter frequency (third set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	Hz	0 ~ 2000	--	--

RS-485	Pi	Pe	Pt	S	T
0048H	O	O	O	O	-

Setting Description: When vibration or noise is caused by eliminating resonance, please input the frequency when vibration occurs in Cn069.

Cn070 Notch filter quality factor (third set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
7	--	1 ~ 100	--	--

RS-485	Pi	Pe	Pt	S	T
0049H	O	O	O	O	-

Setting Description: Used to adjust the frequency range to be suppressed, the smaller the Cn070 value is, the wider the frequency range of suppression, and the User can adjust according to the actual conditions.

Cn071 Notch filter depth (third set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	1 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
004AH	O	O	O	O	-

Setting Description: Used to adjust the frequency depth to be suppressed, the smaller the Cn071 value is, the deeper the frequency depth to be suppressed, and the User can adjust according to the actual conditions.

Cn072 Notch filter frequency (fourth set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	Hz	0 ~ 2000	--	--

RS-485	Pi	Pe	Pt	S	T
004BH	O	O	O	O	-

Setting Description: When to eliminate the vibration or noise caused by resonance, etc., please input the frequency when vibration occurs in Cn072.

Cn073 Notch filter quality factor (fourth set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
7	---	1 ~ 100	--	--

RS-485	Pi	Pe	Pt	S	T
004CH	O	O	O	O	-

Setting Description: Used to adjust the frequency range to be suppressed, the smaller the Cn073 value is, the wider the frequency range of suppression, and the User can adjust according to actual conditions.

Cn074 Notch filter quality depth (fourth set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	---	0 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
004DH	O	O	O	O	-

Setting Description: Used to adjust the frequency depth to be suppressed, the smaller the Cn074 value is, the deeper the frequency depth to be suppressed, and the User can adjust according to actual conditions.

Cn075 Notch filter quality frequency (fifth set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	Hz	0 ~ 2000	--	--

RS-485	Pi	Pe	Pt	S	T
004EH	O	O	O	O	-

Setting Description: When to eliminate the vibration or noise caused by resonance, etc., please input the frequency when vibration occurs in Cn075.

Cn076 Notch filter quality factor (fifth set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
7	--	1 ~ 100	--	--

RS-485	Pi	Pe	Pt	S	T
004FH	O	O	O	O	-

Setting Description: Used to adjust the frequency range to be suppressed, the smaller the Cn076 value is, the wider the frequency range of suppression, and the User can adjust according to the actual conditions.

Cn077 Notch filter quality depth (fifth set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
0050H	O	O	O	O	-

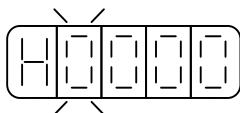
Setting Description: Used to adjust the frequency depth to be suppressed, the smaller the Cn074 value is, the deeper the frequency depth to be suppressed, and the User can adjust according to actual conditions.

Cn084.3 Automatically detect communication type encoder model selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
0057H	O	O	O	O	O

Setting Description:



Setting	Description
0	Automatically detect communication type encoder model selection disable.
1	Automatically detect communication type encoder model selection enable.

Cn085 Magnetic pole angle position automatically detects the alignment DUTY

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
System setting	%	0 ~ 100	--	--

RS-485	Pi	Pe	Pt	S	T
0058H	O	O	O	O	O

Setting Description: Used for alignment of the motor magnetic poles, to adjust the current during alignment, and the adjustment range is the percentage of the VDC voltage.

Cn087 EMC stop speed Linear deceleration constant

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	ms	0 ~ 50000	--	--

RS-485	Pi	Pe	Pt	S	T
005AH	O	O	O	O	O

Setting description: Set Cn097.1=1 to enable the EMC stop speed command deceleration function.

The definition of the speed command linear deceleration constant is the time for the rated rotation speed to decelerate linearly to zero.

Cn097.0 Motor disconnection protection flag

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
0064H	O	O	O	O	O

Setting Description:

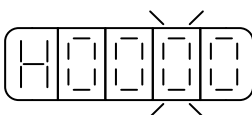
Setting	Description
0	Disable motor cable disconnection protection
1	Enable motor cable disconnection protection. Note: When speed command is 0, it is determined by position error. Maximum and minimum can be set by Pn308 & Pn309.

Cn097.1 EMC stop function selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
0064H	O	O	O	O	O

Setting Description:



Setting	Description
0	AL.009 will be generated immediately when the EMC function is received.

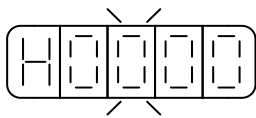
1	<p>After the EMC function is received, it will decelerate to zero speed according to the Cn087 setting and generate AL.009.</p> <p>Note) If mechanical brake sequence is used, AL.009 will only be generated after the sequence is satisfied</p>
---	--

Cn097.2 Pulse encoder signal input phase sequence

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
0064H	O	O	O	O	O

Setting Description:



Setting	Description
0	Pulse input A phase is ahead of B phase
1	Pulse input A phase is behind B phase

Cn098 Motor cable disconnection detection time

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
3000	ms	1000 ~ 10000	--	--

RS-485	Pi	Pe	Pt	S	T
0065H	O	O	O	O	O

Setting Description: Motor cable disconnection detection time; continuous detection and AL.020 will occur when time is up.

Cn099 Overload limit value

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
120	%	0 ~ 120	--	--

RS-485	Pi	Pe	Pt	S	T
0066H	O	O	O	O	O

Setting Description: When the effective load rate exceeds this limit value, AL.051 will be triggered.

5-3-2 Torque control parameters (Tn1□□)

Tn108 Torque Reached Determined Value

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	%	0 ~ 300	--	--

RS-485	Pi	Pe	Pt	S	T
0108H	O	O	O	O	O

Setting Description: When the Forward or Reverse Torque exceeds the set level, the Digital Output Contact INT operates.

Tn116 Analog torque command filter

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	Hz	0 ~ 5000	--	--

RS-485	Pi	Pe	Pt	S	T
0110H	O	O	O	O	O

Setting Description: Set TIC analog torque command stop frequency, if set 2500, it means 2500Hz.

5-3-3 Speed Control Parameters (Sn2□□)

Sn201 Internal Speed Command 1

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
100	rpm	-1.5*Rated Rotational Speed ~ 1.5*Rated Rotational Speed	--	--

RS-485	Pi	Pe	Pt	S	T
0201H	-	-	-	O	-

Setting Description: In Speed Control, the DigitalInput Contact SPD1, SPD2 can be used to switch 3 sets of Internal Speed Limit. When using Internal Speed Limit 1, the DigitalInput Contact SPD1, SPD2 states are as the following combination:

Digital Input Contact SPD2	Digital Input Contact SPD1
0	1

Sn202 Internal Speed Command 2

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
200	rpm	-1.5*Rated Rotational Speed ~ 1.5*Rated Rotational Speed	--	--

RS-485	Pi	Pe	Pt	S	T
0202H	-	-	-	O	-

Setting Description: In Speed Control, the DigitalInput Contact SPD1, SPD2 can be used to switch 3 sets of Internal Speed Limit. When using Internal Speed Limit 2, the DigitalInput Contact SPD1, SPD2 states are as the following combination:

Digital Input Contact SPD2	Digital Input Contact SPD1
1	0

Sn203 Internal Speed Command 3

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
300	rpm	-1.5*Rated Rotational Speed ~ 1.5*Rated Rotational Speed	--	--

RS-485	Pi	Pe	Pt	S	T
0203H	-	-	-	O	-

Setting Description: In Speed Control, the DigitalInput Contact SPD1, SPD2 can be used to switch 3 sets of Internal Speed Limit. When using Internal Speed Limit 3, the DigitalInput Contact SPD1, SPD2 states are as the following combination:

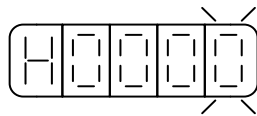
Digital Input Contact SPD2	Digital Input Contact SPD1
1	1

Sn204.0 Zero Speed Determined Operation

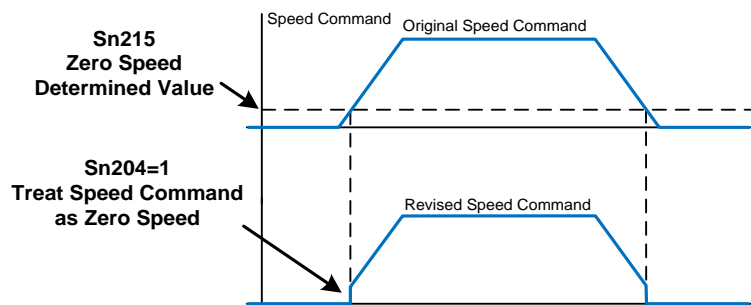
Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
0204H	O	O	O	O	O

Setting Description:



Setting	Description
0	Does not operate
1	Treat Speed Command as Zero Speed



Sn211 Speed Loop Gain 1

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
40	Hz	2 ~ 1500	--	--

RS-485	Pi	Pe	Pt	S	T
020BH	O	O	O	O	-

Setting Description: The Speed Loop Gain directly determines the Response Bandwidth of the Speed Control Loop. Under the premise of the mechanical system does not generate vibration or noise, increasing the Speed Loop Gain value will speed up the Speed Response. If Cn025 (Load Inertia Ratio) is set correctly, the Speed Loop Bandwidth equals the Speed Loop Gain.

Sn212 Speed Loop Integration Time Constant 1

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
2000	0.01ms	40 ~ 50000	--	--

RS-485	Pi	Pe	Pt	S	T
020CH	O	O	O	O	-

Setting Description: Adding integration components to the Speed Control Loop can effectively eliminate the speed steady-state error and quickly respond to subtle speed changes. In general, under the premise that the mechanical system does not generate vibration or noise, the speed loop integration time constant is reduced to increase the system rigidity. Please use the following formula to calculate Speed Loop Integration Time Constant:

Integration Time Constant:

$$\text{Speed Loop Integration Time Constant} \geq 5 \times \frac{1}{2\pi \times \text{Speed Loop Gain}}$$

Sn213 Speed Loop Gain 2

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
40	Hz	2 ~ 1500	--	--

RS-485	Pi	Pe	Pt	S	T
020DH	O	O	O	O	-

Setting Description: Please refer to Sn211 Description for Setting Method

Sn214 Speed Loop Integration Time Constant 2

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
2000	0.01ms	40 ~ 50000	--	--

RS-485	Pi	Pe	Pt	S	T
020EH	O	O	O	O	-

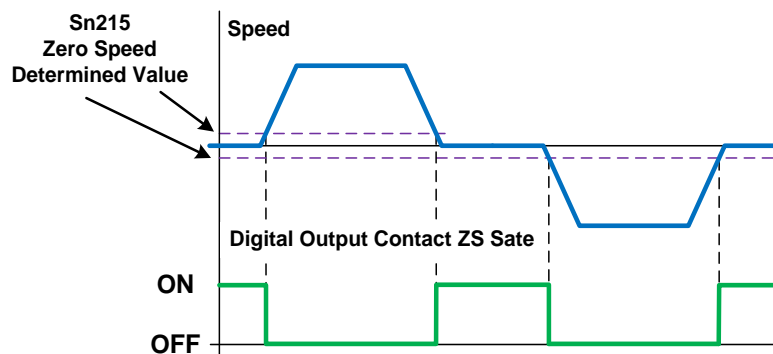
Setting Description: Please refer to Sn212 Description for Setting Method

Sn215 Zero Speed Determined Value

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
50	rpm	0 ~ 1.5*Rated Speed	--	--

RS-485	Pi	Pe	Pt	S	T
020FH	O	O	O	O	O

Setting Description: When speed is lower than the speed set by Sn215 (zero speed determined value), digital output contact ZS activates.



Sn218 Analog speed command limit

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1.02* Rated	rpm	100 ~ 1.5*Rated Rotational Speed	--	--

RS-485	Pi	Pe	Pt	S	T
0212H	--	--	--	O	--

Setting Description: The user can set Sn218 to limit the Maximum Speed of the Analog Input.

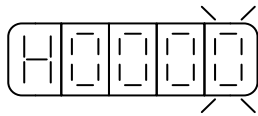
5-3-4 Position control parameter (Pn3□□)

Pn301.0 Position Pulse /command Pattern Selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 3	★	--

RS-485	Pi	Pe	Pt	S	T
0301H	--	0	--	--	--

Setting Description:



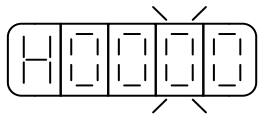
Setting	Description
0	Pulse+Sign
1	CCW+CW Pulse
2	A phase+ B phase pulse * 2
3	A phase+ B phase pulse * 4

Pn301.1 Position Pulse Command Logic Selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
0301H	--	0	--	--	--

Setting Description:



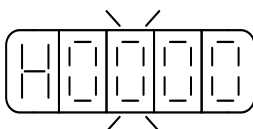
Setting	Description
0	Positive Logic
1	Negative Logic

Pn301.2 Drive inhibits Command Receiving Selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
0301H	0	0	--	--	--

Setting Description:



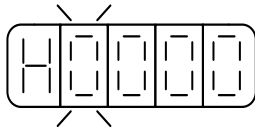
Setting	Description
0	After the Drive Prohibition occurs, continue recording the Position Command Input Quantity.
1	After the Drive Prohibition occurs, ignore Position Command Input Quantity.

Pn301.3 Position Pulse Command Filter Width Selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	--	0 ~ 7	★	--

RS-485	Pi	Pe	Pt	S	T
0301H	--	O	--	--	--

Setting Description:



Setting	Description	Setting	Description
0	4500KHz	4	370KHz
1	2500KHz	5	190KHz
2	1200KHz	6	90KHz
3	750KHz	7	40KHz

Pn302 Electronic Gear Ratio Numerator 1

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	--	1 ~ 536870912	--	--

RS-485	Pi	Pe	Pt	S	T
0302H/0303H	O	O	--	--	--

Setting Description: Please check if Pn354 = 0~63 is set when using functions of Pn302~Pn306. DigitalInput Contact GN1, GN2 can be used to switch four sets of Electronic Gear Ratio Numerators. When using Electronic Gear Ratio Numerator 1, the DigitalInput Contact GN1, GN2 states are as the following combination:

Digital input contact GN2	Digital input contact GN1
0	0

Pn303 Electronic Gear Ratio Numerator 2

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	--	1 ~ 536870912	--	--

RS-485	Pi	Pe	Pt	S	T
0304H/0305H	O	O	--	--	--

Setting Description: Please check if Pn354 = 0~63 is set when using functions of Pn302~Pn306. DigitalInput Contact GN1, GN2 can be used to switch four sets of Electronic Gear Ratio Numerators. When using Electronic Gear Ratio Numerator 1, the DigitalInput Contact GN1, GN2 states are as the following combination:

Digital input contactGN2	Digital input contactGN1
0	1

Pn304 Electronic Gear Ratio Numerator 3

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	--	1 ~ 536870912	--	--

RS-485	Pi	Pe	Pt	S	T
0306H/0307H	O	O	--	--	--

Setting Description: Please check if Pn354 = 0~63 is set when using functions of Pn302~Pn306. DigitalInput Contact GN1, GN2 can be used to switch four sets of Electronic Gear Ratio Numerators. When using Electronic Gear Ratio Numerator 1, the DigitalInput Contact GN1, GN2 states are as the following combination:

Digital input contact GN2	Digital input contact GN1
1	0

Pn305 Electronic Gear Ratio Numerator 4

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	--	1 ~ 536870912	--	--

RS-485	Pi	Pe	Pt	S	T
0308H/0309H	O	O	--	--	--

Setting Description: Please check if Pn354 = 0~63 is set when using functions of Pn302~Pn306. DigitalInput Contact GN1, GN2 can be used to switch four sets of Electronic Gear Ratio Numerators. When using Electronic Gear Ratio Numerator 1, the DigitalInput Contact GN1, GN2 states are as the following combination:

Digital input contact GN2	Digital input contact GN1
1	1

Pn306 Electronic gear ratio denominator /CNC cutter head denominator minus ratio

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	--	1 ~ 536870912	★	--

RS-485	Pi	Pe	Pt	S	T
030AH/030BH	O	O	--	--	--

Setting Description: Please check if Pn354 = 0~63 is set when using functions of Pn302~Pn306. Set Pn306 (Electronic Gear Ratio Denominator) and match the Electronic Gear Ratio Numerator selected by Digital Input Contact GN1, GN2. The obtained Electronic Gear Ratio must conform to the following conditions, otherwise this Device cannot operate normally.

$$\frac{1}{1000} \leq \text{Electronic Gear Ratio} \leq 32000$$

Pn307 Positioning Completed Determined Value

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
One thousandth of a Revolution	pulse	0 ~ 41943040	--	--

RS-485	Pi	Pe	Pt	S	T
030CH/030DH	O	O	O	--	--

Setting Description: When Position Error is lower than the pulse number set by Pn307 (Positioning Completed Determined Value), Digital Output Contact INP operates.

Pn308 Positive Maximum Position Error Determined Value

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
5000	0.001rev	0 ~ 50000	--	--

RS-485	Pi	Pe	Pt	S	T
030EH	O	O	O	--	--

Setting Description: When Position Error is higher than the pulse number set by Pn308 (Positive Maximum Position Error Determined Value), this device generates AL011 (Excessive Position Error Alarm).

Pn309 Negative Maximum Position Error Determined Value

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
5000	0.001rev	0 ~ 50000	--	--

RS-485	Pi	Pe	Pt	S	T
030FH	O	O	O	--	--

Setting Description: When position error is higher than the pulse number set by Pn309 (negative maximum position error determined value), this device generates AL.011 (excessive position error alarm).

Pn310 Position Loop Gain 1

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
40	rad/s	1 ~ 2000	--	--

RS-485	Pi	Pe	Pt	S	T
0310H	O	O	O	--	--

Setting Description: Under the premise that the mechanical system does not generate vibration or noise, increasing the Position Loop Gain value will speed up the Speed Response, shorten the Position Time. In general, the Position Loop Bandwidth cannot be higher than the Speed Loop Bandwidth. The recommended formula is as follows:

$$\text{Position Loop Gain} \leq 2\pi \times \frac{\text{Speed Loop Gain}}{5}$$

Pn311 Position Loop Gain 2

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
40	rad/s	1 ~ 2000	--	--

RS-485	Pi	Pe	Pt	S	T
0311H	O	O	O	--	--

Setting Description: Please refer to Pn310 Description for the Setting Method

Pn312 Position Loop Feed Forward Gain

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	%	0 ~ 100	--	--

RS-485	Pi	Pe	Pt	S	T
0312H	O	O	O	--	--

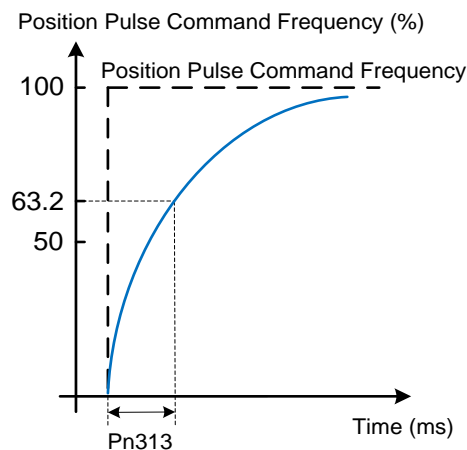
Setting Description: It can reduce the tracking error of position control and speed up reaction. If the feed forward gain is too large, speed overshoot and repeatedly turn on/off of output contact INP (positioning completion signal) may occur.

Pn313 Internal / External Position Command One time Smoothing Acceleration / Deceleration Time Constant

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	ms	0 ~ 10000	★	--

RS-485	Pi	Pe	Pt	S	T
0313H	O	O	O	--	--

Setting Description: Will smooth the Position Pulse Command of originally fixed frequency. The definition of External Position Command One Time Smoothing Acceleration / Deceleration Time Constant is the time of the Position Command Frequency starts one time delay rise from zero to 63.2% of the External Position Pulse Command Frequency, the schematic diagram is as follows:

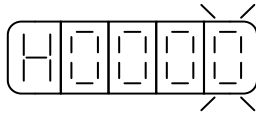


Pn314.0 Position Command Direction Definition (from Motor Load End)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
0314H	O	O	--	--	--

Setting Description:



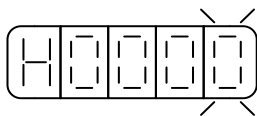
Setting	Description
0	Clockwise Rotation (CW)
1	Counterclockwise Rotation (CCW)

Pn315.0 Pulse Error Clearing Mode

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 2	--	--

RS-485	Pi	Pe	Pt	S	T
0315H	Determined by the Setting				

Setting Description:



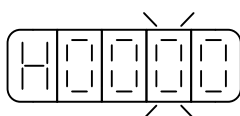
Setting	Description
0	When the Input Contact CLR operates, clear the Pulse Error.
1	When Digital Input Contact CLR triggers, cancel Position Command to interrupt the Motor operation, re-set Mechanical Origin, and clear Pulse Error.
2	When Digital Input Contact CLR triggers, cancel Position Command to interrupt Motor operation and clear Pulse Error.

Pn315.1 Origin reset offset method setting

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
0314H	O	O	O	--	--

Setting Description:



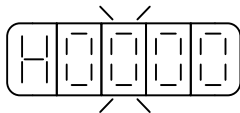
Setting	Description
0	Move according to the origin offset (Pn320 & Pn321) as the new mechanical origin; after return to origin has been completed, the motor feedback information will be reset to zero. <ul style="list-style-type: none"> ● Un-14 (motor feedback-number of pulses within one rotation) is 0 ● Un-16 (motor feedback-number of rotations) is 0
1	Motor does not move; after return to origin has been completed, the feedback information is the offset of the origin. <ul style="list-style-type: none"> ● Un-14 (motor feedback-number of pulses within one rotation) is Pn321 (number of origin reset offset pulses) ● Un-16 (motor feedback-number of rotations) is Pn320 (number of origin reset offset laps)

Pn315.2 Turret & Tool Magazine Zero Return Method Selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
0315H	--	--	O	--	--

Setting Description:



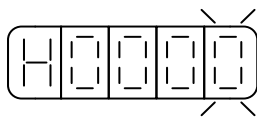
Setting	Description
0	The current position is set to zero after triggering
1	Perform the origin return function after triggering, and set the position to zero after completion Note: This function is invalid under Soff.

Pn316.0 Internal position command mode

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
0316H	O	--	--	--	--

Setting Description:



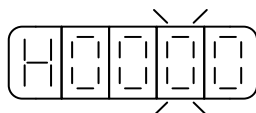
Setting	Description
0	Absolute Type Positioning
1	Relative Type Positioning

Pn316.1 Internal Position Command Hold (PHOLD) Procedure Selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
0316H	O	--	--	--	--

Setting Description:



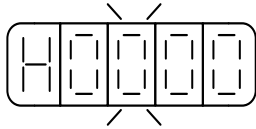
Setting	Description
0	After Digital Input Contact PHOLD operates, when PTRG is triggered again, Motor will continue to complete the Internal Position Command before PHOLD is triggered.
1	After Digital Input Contact PHOLD operates, when PTRG is triggered again, Motor will operate according to current selected Internal Position Command immediately.

Pn316.2 Encoder Signal Dividing Output Phase

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
0316H	O	O	O	O	O

Setting Description:



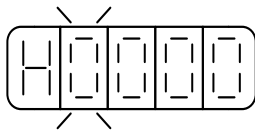
Setting	Description
0	Dividing Output Phase A leading Phase B
1	Dividing Output Phase A behind Phase B

Pn316.3 Encoder Signal Dividing Output Frequency Elimination

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
0316H	O	O	O	O	O

Setting Description:

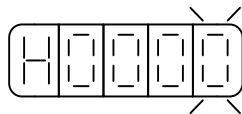


Setting	Description
0	Output according to Cn005 setting value
1	Output according to Cn005 Setting Value divided by 4

Pn317.0 After activated the Returns to Origin, the Origin Search Direction and Select Origin Reference Point Setting

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 5	--	--

RS-485	Pi	Pe	Pt	S	T
0317H	O	O	O	--	--



Setting Description:

Setting	Description
0	After Return to Origin is activated, Motor searches for Origin with first stage Speed in Forward Direction, and uses Digital Input Contact Point CCWL or CWL as Origin Reference Point. After Return to Origin and positioning are completed, Digital Input Contact CWL or CCWL becomes the Limit Function again. When using this Function, Pn317.1 cannot be set to 1 or 2. Attention! Cn002.1 (Contact Auxiliary Function - Digital Input Contact CCWL and CWL Function Selection) must be set to 0.
1	After Return to Origin is activated, Motor searches for Origin with first stage Speed in Reverse Direction, and uses Digital Input Contact Point CCWL or CWL as Origin Reference Point. After Return to Origin and positioning are completed, Digital Input Contact CWL or CCWL becomes the Limit Function again. When using this Function, Pn317.1 cannot be set to 1 or 2. Attention! Cn002.1 (Contact Auxiliary Function - Digital Input Contact CCWL and CWL Function Selection) must be set to 0.
2	After Return to Origin is activated, Motor searches the Origin with first stage Speed in Forward Direction and uses Digital Input Contact ORG (External Detector Input Point) as Origin Reference Point. If Pn317.1=2, then Origin Reference Point is not required and searches for the top edge closest to Digital Input Contact Point ORG as Machine Origin and stops according to the method set in Pn317.3.

3	After Return to Origin is activated, Motor searches the Origin with first stage Speed in Reverse Direction and uses Digital Input Contact ORG (External Detector Input Point) as Origin Reference Point. If Pn317.1=2, then Origin Reference Point is not required and searches for the top edge closest to Input Contact Point ORG as Machine Origin and stops according to the method set in Pn317.3.
4	After Return to origin is activated, motor searches for the origin with first stage speed in forward direction. Origin reference point is not required and searches for the closest to phase Z pulse origin. When using this function, must set Pn317.1=2 (stop by the method set by Pn317.3 after finding phase Z pulse as the mechanical origin).
5	After Return to Origin is activated, Motor searches for the Origin with first stage Speed in Reverse Direction, the Origin Reference Point is not required and searches for the closest Phase Z Pulse Origin. When using this function, must set Pn317.1=2 (stop by the method set by Pn317.3 after finding phase Z pulse as the mechanical origin).

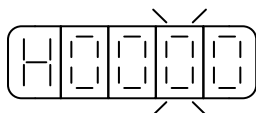
Note: Use ABS type encoder to execute return to zero. Set Cn031.2 function according to requirements.

Pn317.1 After Found Origin Reference Point, the Moving Method Setting for Searching Mechanical Origin

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 2	--	--

RS-485	Pi	Pe	Pt	S	T
0317H	O	O	O	--	--

Setting Description:



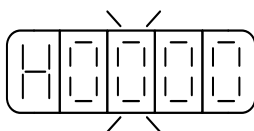
Setting	Description
0	After founding the Reference Origin, the Motor will return with a second stage speed to search the closest Phase Z Pulse as the Mechanical Origin and stops according to the method set in Pn317.3.
1	After the Reference Origin is found, the Motor will continue forward with the second stage speed to search the closest Phase Z Pulse as the Mechanical Origin and stops according to the method set in Pn317.3.
2	When Pn317.0=2 or 3, after the top edge of Digital Input Contact ORG is found as the Mechanical Origin and stops according to the method set in Pn317.3; when Pn317.0=4 or 5, after stops according to the method set in Pn317.3 after phase Z pulse is found as the mechanical origin.

Pn317.2 Return to Origin Activation Mode Setting

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 2	--	--

RS-485	Pi	Pe	Pt	S	T
0317H	O	O	O	--	--

Setting Description:



Setting	Description
0	Turn Off Return to Origin Function.
1	After the power is on, only first Servo ON will automatically execute return to origin function. When the Servo System does not have to repeat executing Return to Origin Function during operations, this Mode can be used to omit an Digital Input Contact used to execute Return to Origin Function.

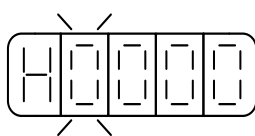
2	Trigger Return to Origin Function by Digital input contact SHOME; the digital input contact SHOME can be triggered at any time to execute Return to Origin Function.
---	--

Pn317.3 Mode Setting after the Mechanical Origin is Found

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
0317H	O	O	O	--	--

Setting Description:



Setting	Description
0	After the Mechanical Origin Signal is found, record this position as the Mechanical Origin (both Un-14 Encoder Feedback Number of Revolutions, Un-15 Encoder Feedback Number of Pulse are all zero), the Motor decelerates to stop, and after the Motor stopped, return moving to the Mechanical Origin Position with second stage speed.
1	After the Mechanical Origin Signal is found, record this position as the Mechanical Origin (both Un-14 Encoder Feedback Number of Revolutions, Un-15 Encoder Feedback Number of Pulse are all zero), the Motor decelerates to stop.

Pn318 Return to origin first stage high speed

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
100	rpm	1 ~ rated rotational speed	--	--

RS-485	Pi	Pe	Pt	S	T
0318H	O	O	O	--	--

Setting Description: Set the Moving Speed of Return to Origin First Stage High Speed

Pn319 Return to origin second stage low speed

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
50	rpm	1 ~ rated rotational speed	--	--

RS-485	Pi	Pe	Pt	S	T
0319H	O	O	O	--	--

Setting Description: Set the Moving Speed of Return to Origin Second Stage High Speed

Pn320 Return to Origin Offset Number of Revolutions

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	rev	-30000 ~ 30000	--	--

RS-485	Pi	Pe	Pt	S	T
031AH	O	O	O	--	--

Setting Description: After the Motor has found the Mechanical Origin in accordance with Pn317(Return to Origin Mode), it will position in accordance with Pn320 (Return to Origin Offset Number of Revolutions) and Pn321 (Return to Origin Offset Number of Pulses) as the New Mechanical Origin

Pn321 Number of Pulse of Return to Origin Offset

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	pulse	Depends on the encoder -9999~9999 : 2500ppr encoder -32767~32767 : 15bit encoder -131071~131071 : 17bit encoder -8388607~8388607 : 23bit encoder	--	--

RS-485	Pi	Pe	Pt	S	T
031BH/031CH	O	O	O	--	--

Setting Description: Return to Origin Offset Position = Pn320 (Number of Revolutions) x Number of Pulses in One Revolution of Encoder + Pn321(Number of Pulses)

Pn322 Internal Position Command S-type Acceleration / Deceleration Smoothing Constant (TSL)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	0.4ms	0 ~ 5000	--	--

RS-485	Pi	Pe	Pt	S	T
031DH	O	--	O	--	--

Setting Description: The Position S-type Smoother is suitable for the Control Mode of the Internal Position Command Input, and provides the smoothing process of the motion command. The generated speed and acceleration are continuous, and the jerkiness of the acceleration is smaller, which can improve the characteristics of acceleration / deceleration of the Motor, and more smooth in mechanical structure operations.

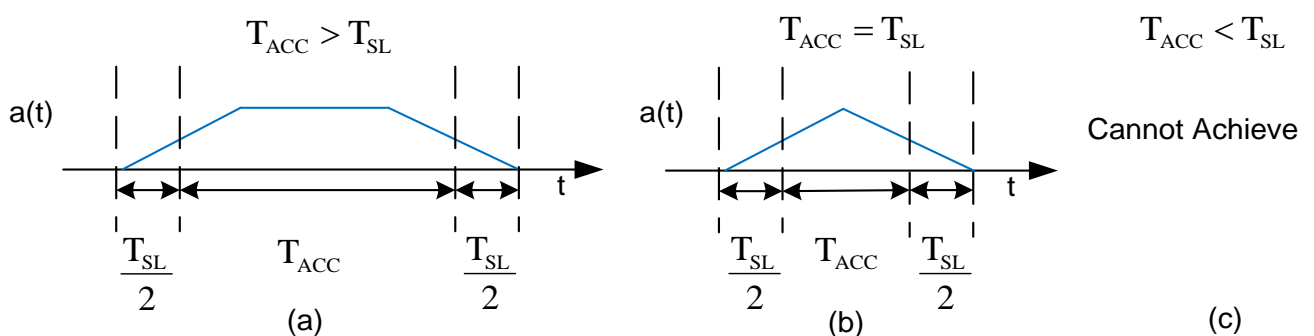


Figure: Definition of Travel Time for S-type Curve.

Pn323 Internal Position Command S-type Acceleration / Deceleration Constant (TACC)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	0.4ms	1 ~ 5000	--	--

RS-485	Pi	Pe	Pt	S	T
031EH	O	--	O	--	--

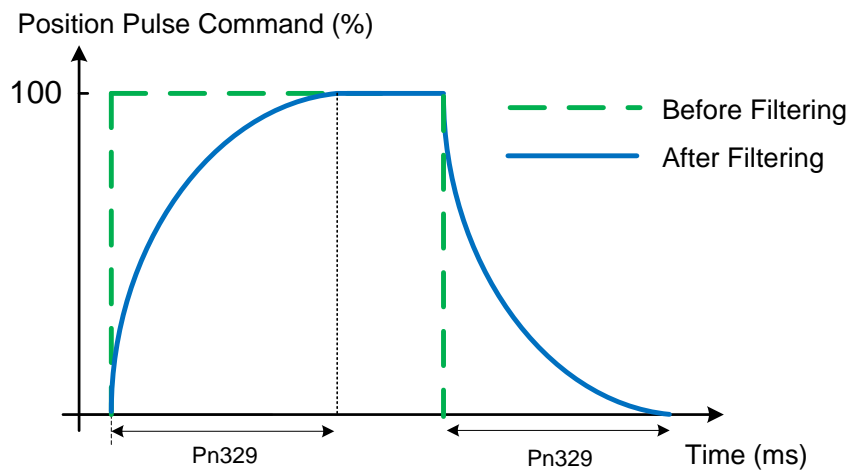
Setting Description: Please refer to Pn322 description.

Pn329 Pulse Command Smoothing Filter

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	2ms	0 ~ 2500	★	--

RS-485	Pi	Pe	Pt	S	T
0325H	O	O	O	--	--

Setting Description: Can select Filter Smoothing Time.

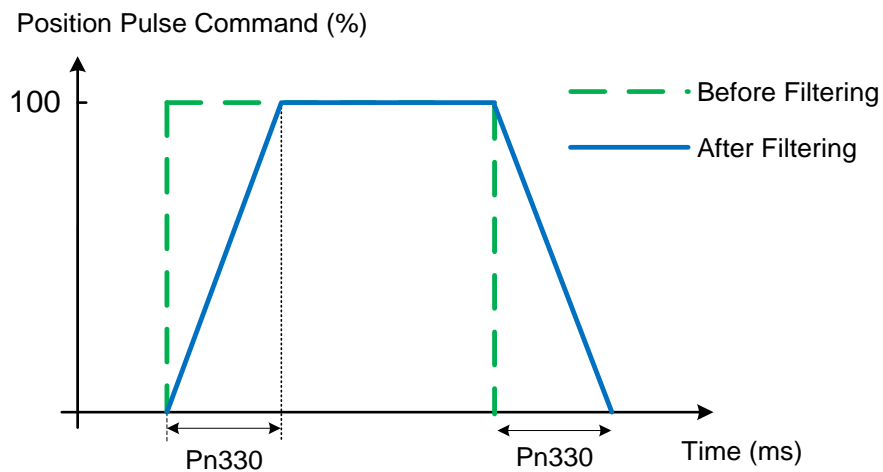


Pn330 Pulse Command Moving Filter

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	0.4ms	0 ~ 250	--	--

RS-485	Pi	Pe	Pt	S	T
0326H	O	O	O	--	--

Setting Description: Pulse Command Moving Filter

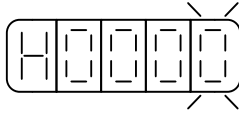


Pn332.0 Internal Position Command Acceleration / Deceleration Method

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 2	--	--

RS-485	Pi	Pe	Pt	S	T
0329H	O	--	O	--	--

Setting Description:



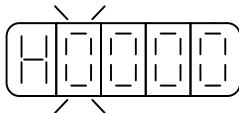
Setting	Description
0	Use Position Command One Time Smoothing Acceleration / Deceleration
1	Use Internal Position Command S-type Acceleration / Deceleration (external position command does not have this function)
2	Use Internal Position Command S-type Acceleration / Deceleration Separation (external position command does not have this function)

Pn332.3 Pulse response filter flag

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
0329H	O	--	O	--	--

Setting Description:



Setting	Description
0	Disable pulse response filter.
1	Enable pulse response filter, and operate according to the setting value of Pn356.

Pn333 Internal Position Command S-type Deceleration Constant (TDEC)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1	0.4ms	1 ~ 5000	--	--

RS-485	Pi	Pe	Pt	S	T
032AH	O	--	O	--	--

Setting Description: Please refer to PN322 description

Pn334 PTRG Trigger Delay Time Parameter

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	4ms	0 ~ 2500	--	--

RS-485	Pi	Pe	Pt	S	T
032BH	O	--	O	--	--

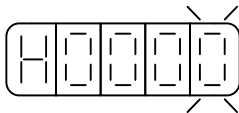
Setting Description: After PTRG is triggered and delay by the set time, PTRG function becomes effective officially.

Pn336.0 Automatic Low Frequency Vibration Suppression Enablement Selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 3	--	--

RS-485	Pi	Pe	Pt	S	T
032DH	O	O	O	-	-

Setting Description:



Setting	Description
0	Disable Automatic Detection of Low Frequency Vibration Frequency
1	Enable Automatic Detection of Low Frequency Vibration Frequency 1
2	Enable Automatic Detection of Low Frequency Vibration Frequency 2
3	Enable Automatic Detection of Low Frequency Vibration Frequency 3

Pn337 Automatic Low Frequency Vibration Suppression Delay

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
100	1ms	0 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
032EH	O	O	O	-	-

Setting Description: Automatically detects the delay time of low frequency vibration frequency

Pn338 Low Frequency Swinging Detection Level

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
100	0.1 %	1 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
032FH	O	O	O	-	-

Setting Description: The detection level when executing automatic low frequency vibration suppression (Pn336=1~3), this value setting method is used to set the percentage of the positioning completion determined value (Pn307), adjusting the low frequency swinging detection level (Pn338) can adjust the detection sensitivity, and the lower the setting the easier for the noise to be determined incorrectly.

Pn339 Low frequency suppression frequency (first set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1000	0.1 Hz	10 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
0330H	O	O	O	-	-

Setting Description: Used to eliminate the Low Frequency Vibration generated by insufficient mechanism rigidity.

Pn340 Low frequency suppression parameter (first set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 30	--	--

RS-485	Pi	Pe	Pt	S	T
0331H	O	O	O	-	-

Setting Description: Used to adjust the frequency range to be suppressed, greater the value, wider the frequency range of suppression is, the recommended setting is 10.

Pn341 Low frequency suppression frequency (second set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1000	0.1Hz	10 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
0332H	O	O	O	-	-

Setting Description: Used to eliminate the Low Frequency Vibration generated by insufficient mechanism rigidity.

Pn342 Low frequency suppression parameter (second set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 30	--	--

RS-485	Pi	Pe	Pt	S	T
0333H	O	O	O	-	-

Setting Description: Used to adjust the frequency range to be suppressed, greater the value, wider the frequency range of suppression is, the recommended setting is 10.

Pn343 Low frequency suppression frequency (third set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
1000	0.1Hz	10 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
0334H	O	O	O	-	-

Setting Description: Used to eliminate the Low Frequency Vibration generated by insufficient mechanism rigidity.

Pn344 Low frequency suppression parameter (third set)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 30	--	--

RS-485	Pi	Pe	Pt	S	T
0335H	O	O	O	-	-

Setting Description: Used to adjust the frequency range to be suppressed, greater the value, wider the frequency range of suppression is, the recommended setting is 10.

Pn354 Single Rotation Pulse Command Function / Internal position command multiplier

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	pulse	Depends on the encoder 0 ~ 10000 : 2500ppr encoder 0 ~ 32768 : 15bit encoder 0 ~ 131072 : 17bit encoder 0 ~ 8388608 : 23bit encoder Note: 0~63 means not used	★	--

RS-485	Pi	Pe	Pt	S	T
0342H/0343H	O	O	--	--	--

Setting Description: The pulse command required by one motor revolution. When set as a value ≥ 64 , single pulse command function activates and Pn302~Pn306 E-Cam ratio function becomes invalid.

Internal Position mode: The magnification of the internal position command movement. When set as a value ≥ 64 , internal position command magnification activates and Pn302~Pn306 E-Cam ratio function becomes invalid.

Pn355 Return to Origin function operating mode

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 37	--	--

RS-485	Pi	Pe	Pt	S	T
0344H	O	O	O	--	--

Setting Description: Set to 0 according to Pn317.0, Pn317.1, Pn317.3, set from 1 to 37 according to CiA402 standard

Pn356 Pulse Response Filter

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
40	Hz	1 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
0344H	--	O	--	--	--

Setting Description: Adjust the pulse command response, the larger the value, the faster the response.

※The recommended value is 2 times the position loop gain.

5-3-5 Control Parameter for Multi-position Control (Pn4□□)

Internal Position Command 1~32-Number of Revolutions

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	rev	-16000 ~ 16000	--	--

RS-485	Pi	Pe	Pt	S	T
According to Parameters	0	--	--	--	--

Setting Description: Set Number of Rotations of Internal Position Command Use digital input contact POS1~POS5 to select the use of position command. Please refer to “5-2-2 Internal command position mode”. The following is the related parameter list.

Parameter Code	Parameter Name	RS-485	Parameter Code	Parameter Name	RS-485
Pn401	Internal position command 1-Number of revolutions	0701H	Pn449	Internal position command 17-Number of revolutions	0741H
Pn404	Internal position command 2-Number of revolutions	0705H	Pn452	Internal position command 18-Number of revolutions	0745H
Pn407	Internal position command 3-Number of revolutions	0709H	Pn455	Internal position command 19-Number of revolutions	0749H
Pn410	Internal position command 4-Number of revolutions	070DH	Pn458	Internal position command 20-Number of revolutions	074DH
Pn413	Internal position command 5-Number of revolutions	0711H	Pn461	Internal position command 21-Number of revolutions	0751H
Pn416	Internal position command 6-Number of revolutions	0715H	Pn464	Internal position command 22-Number of revolutions	0755H
Pn419	Internal position command 7-Number of revolutions	0719H	Pn467	Internal position command 23-Number of revolutions	0759H
Pn422	Internal position command 8-Number of revolutions	071DH	Pn470	Internal position command 24-Number of revolutions	075DH
Pn425	Internal position command 9-Number of revolutions	0721H	Pn473	Internal position command 25-Number of revolutions	0761H
Pn428	Internal position command 10-Number of revolutions	0725H	Pn476	Internal position command 26-Number of revolutions	0765H
Pn431	Internal position command 11-Number of revolutions	0729H	Pn479	Internal position command 27-Number of revolutions	0769H
Pn434	Internal position command 12-Number of revolutions	072DH	Pn482	Internal position command 28-Number of revolutions	076DH
Pn437	Internal position command 13-Number of revolutions	0731H	Pn485	Internal position command 29-Number of revolutions	0771H
Pn440	Internal position command 14-Number of revolutions	0735H	Pn488	Internal position command 30-Number of revolutions	0775H
Pn443	Internal position command 15-Number of revolutions	0739H	Pn491	Internal position command 31-Number of revolutions	0779H
Pn446	Internal position command 16-Number of revolutions	073DH	Pn494	Internal position command 32-Number of revolutions	077DH

Internal Position Command 1~32 - Number of Pulses

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	pulse	-8388608 ~ 8388608	--	--

RS-485	Pi	Pe	Pt	S	T
According to Parameters	O	--	--	--	--

Setting Description: Set the Number of Rotation Pulse for the Internal Position Command, the following is the relevant parameter list.

Internal Position Command 1 = Pn401 (Number of Revolutions) x Number of Pulses in One Revolution of Encoder+
Pn402 (Number of Pulses).

Parameter Code	Parameter Name	RS-485 Communication Position
Pn402	Internal Position Command 1-Number of Pulses	0702H/0703H
Pn405	Internal position command 2-Number of pulses	0706H/0707H
Pn408	Internal position command 3-Number of pulses	070AH/070BH
Pn411	Internal position command 4-Number of pulses	070EH/070FH
Pn414	Internal position command 5-Number of pulses	0712H/0713H
Pn417	Internal position command 6-Number of pulses	0716H/0717H
Pn420	Internal position command 7-Number of pulses	071AH/071BH
Pn423	Internal position command 8-Number of pulses	071EH/071FH
Pn426	Internal position command 9-Number of pulses	0722H/0723H
Pn429	Internal position command 10-Number of pulses	0726H/0727H
Pn432	Internal position command 11-Number of pulses	072AH/072BH
Pn435	Internal position command 12-Number of pulses	072EH/072FH
Pn438	Internal position command 13-Number of pulses	0732H/0733H
Pn441	Internal position command 14-Number of pulses	0736H/0737H
Pn444	Internal position command 15-Number of pulses	073AH/073BH
Pn447	Internal position command 16-Number of pulses	073EH/073FH
Pn450	Internal position command 17-Number of pulses	0742H/0743H
Pn453	Internal position command 18-Number of pulses	0746H/0747H
Pn456	Internal position command 19-Number of pulses	074AH/074BH
Pn459	Internal position command 20-Number of pulses	074EH/074FH
Pn462	Internal position command 21-Number of pulses	0752H/0753H
Pn465	Internal position command 22-Number of pulses	0756H/0757H
Pn468	Internal position command 23-Number of pulses	075AH/075BH
Pn471	Internal position command 24-Number of pulses	075EH/075FH
Pn474	Internal position command 25-Number of pulses	0762H/0763H
Pn477	Internal position command 26-Number of pulses	0766H/0767H
Pn480	Internal position command 27-Number of pulses	076AH/076BH
Pn483	Internal position command 28-Number of pulses	076EH/076FH
Pn486	Internal position command 29-Number of pulses	0772H/0773H
Pn489	Internal position command 30-Number of pulses	0776H/0777H
Pn492	Internal position command 31-Number of pulses	077AH/077BH
Pn495	Internal position command 32-Number of pulses	077EH/077FH

Internal Position Command 1~32 - Moving Speed

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	rpm	0 ~ 2*rated rational speed	--	--

RS-485	Pi	Pe	Pt	S	T
According to Parameters	0	--	--	--	--

Setting Description: Set the Moving Speed of the Internal Position Command

Parameter Code	Parameter Name	RS-485	Parameter Code	Parameter Name	RS-485
Pn403	Internal Position Command 1-Moving Speed	0704H	Pn451	Internal Position Command 17-Moving Speed	0744H
Pn406	Internal Position Command 2-Moving Speed	0708H	Pn454	Internal Position Command 18-Moving Speed	0748H
Pn409	Internal Position Command 3-Moving Speed	070CH	Pn457	Internal Position Command 19-Moving Speed	074CH
Pn412	Internal Position Command 4-Moving Speed	0710H	Pn460	Internal Position Command 20-Moving Speed	0750H
Pn415	Internal Position Command 5-Moving Speed	0714H	Pn463	Internal Position Command 21-Moving Speed	0754H
Pn418	Internal Position Command 6-Moving Speed	0718H	Pn466	Internal Position Command 22-Moving Speed	0758H
Pn421	Internal Position Command 7-Moving Speed	071CH	Pn469	Internal Position Command 23-Moving Speed	075CH
Pn424	Internal Position Command 8-Moving Speed	0720H	Pn472	Internal Position Command 24-Moving Speed	0760H
Pn427	Internal Position Command 9-Moving Speed	0724H	Pn475	Internal Position Command 25-Moving Speed	0764H
Pn430	Internal Position Command 10-Moving Speed	0728H	Pn478	Internal Position Command 26-Moving Speed	0768H
Pn433	Internal Position Command 11-Moving Speed	072CH	Pn481	Internal Position Command 27-Moving Speed	076CH
Pn436	Internal Position Command 12-Moving Speed	0730H	Pn484	Internal Position Command 28-Moving Speed	0770H
Pn439	Internal Position Command 13-Moving Speed	0734H	Pn487	Internal Position Command 29-Moving Speed	0774H
Pn442	Internal Position Command 14-Moving Speed	0738H	Pn490	Internal Position Command 30-Moving Speed	0778H
Pn445	Internal Position Command 15-Moving Speed	073CH	Pn493	Internal Position Command 31-Moving Speed	077CH
Pn448	Internal Position Command 16-Moving Speed	0740H	Pn496	Internal Position Command 32-Moving Speed	0780H

5-3-6 Shortcut Parameters (qn5□□)

qn501 Speed loop gain 1

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
40	Hz	2 ~ 1500	◆	--

RS-485	Pi	Pe	Pt	S	T
0401H	O	O	O	O	--

Setting Description: Same as Sn211

qn502 Speed Loop Integration Time Constant 1

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
2000	0.01ms	40 ~ 50000	◆	--

RS-485	Pi	Pe	Pt	S	T
0402H	O	O	O	O	--

Setting Description: Same as Sn212.

qn503 Speed Loop Gain 2

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
40	Hz	2 ~ 1500	◆	--

RS-485	Pi	Pe	Pt	S	T
0403H	O	O	O	O	--

Setting Description: Same as Sn213.

qn504 Speed Loop Integration Time Constant 2

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
2000	0.01ms	40 ~ 50000	◆	--

RS-485	Pi	Pe	Pt	S	T
0404H	O	O	O	O	--

Setting Description: Same as Sn214.

qn505 Position Loop Gain 1

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
40	rad/s	1 ~ 2000	◆	--

RS-485	Pi	Pe	Pt	S	T
0405H	O	O	O	--	--

Setting Description: Same as Pn310.

qn506 Position loop gain 2

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
40	rad/s	1 ~ 2000	◆	--

RS-485	Pi	Pe	Pt	S	T
0406H	O	O	O	--	--

Setting Description: Same as Pn311.

qn507 Position Loop Feed Forward Gain

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	%	0 ~ 100	◆	--

RS-485	Pi	Pe	Pt	S	T
0407H	O	O	O	--	--

Setting Description: Same as Pn312.

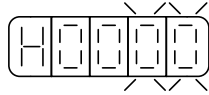
5-3-7 Multifunction Contact Planning Parameters (Hn6□□)

Hn601.0/Hn601.1 DI-1 Pin Function

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
Change with Mode	--	00 ~ 2A	★	--

RS-485	Pi	Pe	Pt	S	T
0501H	O	O	O	O	O

Setting Description:



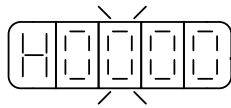
Setting	Description		Setting	Description	
	Code	Contact Operation		Code	Contact Operation Function
00	NULL	Not Used	14	SHOME	Start to Return to Origin
01	SON	Servo Start	15	ORG	External Reference Origin
02	ALRS	Error Alarm Clearing	16	POS1	Internal Position Command Selection 1
03	PCNT	PI/P Switching	17	POS2	Internal Position Command Selection 2
04	CCWL	CCW Direction Drive	18	POS3	Internal Position Command Selection 3
05	CWL	CW Direction Drive	19	POS4	Internal Position Command Selection 4
06	TLMT	External Torque Limit	1A	----	
07	CLR	Pulse Error Clearing	1B	----	
08	LOK	Servo Lock	1C	----	
09	EMC	Emergency Stop	1D	----	
0A	---		1E	POS5	Internal Position Command Selection 5
0B	----		1F	-----	
0C	MDC1	Control Mode	20	VDI	Virtual Point Digital Input
0D	INH	Position Command	22	----	
0E	----		23	----	
0F	G-SEL	Gain Switching	24	----	
10	GN1	Electronic Gear Ratio	27	----	
11	GN2	Electronic Gear Ratio	28	----	
12	PTRG	Internal Position	29	JOG1	JOG function selection 1
13	PHOLD	Internal Position	2A	JOG2	JOG function selection 2

Hn601.2 DI-1 Pin Function Operation Electric Potential

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
0501H	○	○	○	○	○

Setting Description:



Setting	Description
0	When the pin is in conduction, the function activates.
1	When the pin is open, the function activates.

Hn602-Hn608 DI Pin Function Operation Potential (DI-2~DI-8)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
Change with Mode	--	H0000 ~ H0120	★	--

RS-485	Pi	Pe	Pt	S	T
Please refer to the Table below	○	○	○	○	○

Setting Description: Please refer to Hn601 Description for the Setting Method.

Parameter Code	Parameter Name	RS-485 Communication position
Hn602	DI-2 Pin Function Planning	0502H
Hn603	DI-3 Pin Function Planning	0503H
Hn604	DI-4 Pin Function Planning	0504H
Hn605	DI-5 Pin Function Planning	0505H
Hn606	DI-6 Pin Function Planning	0506H
Hn607	DI-7 Pin Function Planning	0507H
Hn608	DI-8 Pin Function Planning	0508H

Hn613.0/Hn613.1 DO-1 Pin Function

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
Change with Mode	--	00 ~ 19	★	--

RS-485	Pi	Pe	Pt	S	T
050DH	O	O	O	O	O

Setting Description:

Setting	Description	
	Code	Contact Operation Function
00	NON	Not Used
01	RDY	Servo Ready
02	ALM	Servo Error
03	ZS	Zero Speed Signal
04	BI	Mechanical Brake Signal
05	INS	Speed Reached Signal
06	INP	Positioning Completion Signal
07	HOME	Return to Origin Completion
08	INT	Torque Reached Signal
09		
0A		
0B		

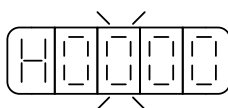
Setting	Description	
	Code	Contact Operation Function
0C		
0D		
0E		
0F	OV	Motor Overload Signal
10	BAT	Encoder Battery Abnormality Signal
11	LIT	Left and Right Limit Signal
12	VDO	Virtual Point Digital Output
15	LM	During Torque speed limit
16	PC	During P control
17	SOFF	Servo Soff signal
18		
19	ABSHOME	ABS encoder origin return complete signal

Hn613.2 DO-1 Pin Function Operation Electric Potential

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 1	★	--

RS-485	Pi	Pe	Pt	S	T
050DH	O	O	O	O	O

Setting Description: Please refer to Hn601 Description for the Setting Method.



Setting	Description
0	When the function activates, the output pin is short-circuited.
1	When the function activates, the output pin is open.

Hn614-Hn616 DO Pin Function Operation Potential (DO-2~DO-4)

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
Change with Mode	--	H0000 ~ H0118	★	--

RS-485	Pi	Pe	Pt	S	T
Please refer to the Table below	O	O	O	O	O

Setting Description: Please refer to Hn613 Description for the Setting Method.

Parameter Code	Parameter Name	RS-485 Communication position
Hn614	DO-2 Pin Function Planning	050EH
Hn615	DO-3 Pin Function Planning	050FH
Hn616	DO-4 Pin Function Planning	0510H

Hn617 Digital Input Contact Control Method Selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
H0F00	--	H0000 ~ H0FFF	--	--

RS-485	Pi	Pe	Pt	S	T
0511H	O	O	O	O	O

Setting Description: Determine the 12-bit Digital Input Contact controlled by external terminal or communication through Bit setting method; correspond Digital Input Contacts DI-1 ~ DI-12 to the binary 0th ~ 11th bits individually first, then convert the binary bits completed planning into hexadecimal for setting.
Binary Bit Representation: 0: Digital Input Contact is controlled by an External terminal.

1: Digital Input Contacts is controlled by communications.

Hn618 Communication Control Digital Input Contact Status

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
H0000	--	H0000 ~ H0FFF (Hexadecimal)	--	--

RS-485	Pi	Pe	Pt	S	T
0512H	O	O	O	O	O

Setting Description: Determine the Contact State when the 12-bit Digital Input Contact uses communication control by the Bit Setting Method; please refer to Hn617 Description for Bit Setting Method.

Binary bit representation: 0: Digital Input Contact OFF

1: Digital Input Contact ON

Hn 601~Hn 622 Corresponding to the Factory Setting Value of Different Model

Cn001 Parameter Code			2 Pe				6 Pi				A Pi Pe
Hn 601			0001				0001				0001
Hn 602			0002				0002				0002
Hn 603			0003				0016				0003
Hn 604			0104				0017				0104
Hn 605			0105				0018				0105
Hn 606			0006				0019				0006
Hn 607			0007				001E				0007
Hn 608			000D				0012				000D
Hn 609			0009				0009				0009
Hn 610			0014				0014				0014
Hn 611			0015				0015				0015
Hn 612			000C				0013				000C
Hn 613			0001				0001				0001
Hn 614			0002				0002				0002
Hn 615			0007				0007				0007
Hn 616			0006				0006				0006
Hn 619			0015				0015				0015
Hn 620			0016				0016				0016
Hn 621			0011				0011				0011
Hn 622			0017				0017				0017

Hn623 Digital output contact control mode selection

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
H0000	--	H0000 ~ H00FF	--	--

RS-485	Pi	Pe	Pt	S	T
0517H	O	O	O	O	O

Setting Description: The output state of the digital output contact is determined by the bit setting method, and the bit setting adopts the binary conversion hexadecimal method. Firstly, DO-01 ~ DO-08 correspond to the 1st ~ 8th bits of the binary, and then complete the planning binary bit is converted to hexadecimal and then set.

Binary bit representation: 0: DO ON or OFF is determined by the function setting

1: DO ON or OFF is determined by the communication setting

Hn624 Communication control digital output contact status

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
H0000	--	H0000 ~ H00FF (Hexadecimal)	--	--

RS-485	Pi	Pe	Pt	S	T
0518H	0	0	0	0	0

Setting Description: The bit setting method is used to determine the contact status when the communication control digital output contact adopts communication control; please refer to the description of Hn623 for the bit setting method.

Binary bit representation: 0: Digital output contact OFF

1: Digital output contact ON

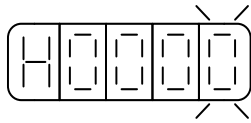
5-3-8 Tuning parameters (tn8□□)

tn826.0 AutoTuning enable option

Initial Value	Unit	Setting Range	Effective	Cn029 Reset
0	--	0 ~ 2	--	--

RS-485	Pi	Pe	Pt	S	T
131AH	0	0	0	0	--

Setting description: Same as Cn059.0



Setting	Description
0	Disable AutoTuning
1	Enable OFFLine-AutoTuning (Inertia, gain and resonance*2)
2	Enable OnLine-AutoTuning (Inertia only display)

tn827 OFFLine-tuning run command lap setting

Initial value	Unit	Setting range	Effective	Cn029 reset
30	0.1rev	5 ~ 2000	--	--

RS-485	Pi	Pe	Pt	S	T
131BH	0	0	0	0	--

Setting description: Same as Cn060, setting it as 30 means that the command will be within 3 revolutions during the tuning process

tn828 Maximum rotation speed for running OFFLine-tuning

Initial value	Unit	Setting range	Effective	Cn029 reset
2/3* rated rotation speed	rpm	300 ~ 2/3* rated rotation speed	--	--

RS-485	Pi	Pe	Pt	S	T
131CH	0	0	0	0	--

Setting description: Same as Cn061, maximum rotation speed for running OFFLine_Tuning

tn829 OFFLine-tuning stop time

Initial value	Unit	Setting range	Effective	Cn029 reset
15	100ms	15~50	--	--

RS-485	Pi	Pe	Pt	S	T
131DH	0	0	0	0	--

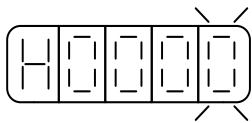
Setting description: OFFLine_Tuning forward (reverse) rotation to position and stop, time to wait for reverse (forward) rotation to stop

tn830.0 OFFLine-tuning load gain selection

Initial value	Unit	Setting range	Effective	Cn029 reset
2	--	1 ~ 3	--	--

RS-485	Pi	Pe	Pt	S	T
131EH	0	0	0	0	--

Setting description:



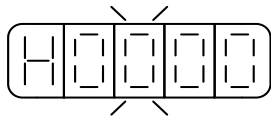
Setting	Description
1	Enable load inertia ratio gain judgement (low response mode)
2	Enable load inertia ratio gain judgement (standard response mode)
3	Enable load inertia ratio gain judgement (high response mode)

tn830.2 OFFLine-tuning model tracking control function

Initial value	Unit	Setting range	Effective	Cn029 reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
131EH	0	0	0	0	--

Setting description:



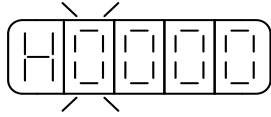
Setting	Description
0	Disable automatic tuning model tracking function
1	Enable automatic tuning model tracking function (when enabled, the friction compensation function will also be tuned; otherwise, it will not be tuned)

tn830.3 OFFLine-tuning load gain selection model rigidity difference

Initial value	Unit	Setting range	Effective	Cn029 reset
2	--	1 ~ 5	--	--

RS-485	Pi	Pe	Pt	S	T
131EH	0	0	0	0	--

Setting description: When load gain selection is enabled, the rigidity difference of the different modes can be adjusted through this parameter. The greater the rigidity difference value is set, the greater the difference between different modes.



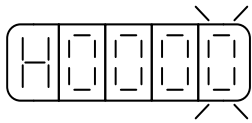
Setting	Description
1	Rigidity difference value 1
2	Rigidity difference value 2
3	Rigidity difference value 3
4	Rigidity difference value 4
5	Rigidity difference value 5

tn831.0 OFFLine-tuning inertia ratio selection

Initial value	Unit	Setting range	Effective	Cn029 reset
1	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
131FH	0	0	0	0	--

Setting description:



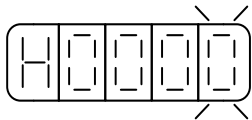
Setting	Description
0	Do not tune the load inertia ratio automatically
1	Tune the load inertia ratio automatically

tn832.0 Program Jog stroke running flag

Initial value	Unit	Setting range	Effective	Cn029 reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
1320H	0	0	0	--	--

Setting description:



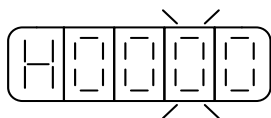
Setting	Description
0	Disable stroke operation
1	Enable stroke operation

tn832.1 Program Jog execution direction selection

Initial value	Unit	Setting range	Effective	Cn029 reset
0	--	0 ~ 3	--	--

RS-485	Pi	Pe	Pt	S	T
1320H	0	0	0	--	--

Setting description:



Setting	Description
0	Forward=>Reverse
1	Reverse=>Forward
2	Forward=>Forward
3	Reverse=>Reverse

tn833 Program Jog stroke stop time

Initial value	Unit	Setting range	Effective	Cn029 reset
2500	0.4ms	5 ~ 25000	--	--

RS-485	Pi	Pe	Pt	S	T
1321H	0	0	0	--	--

Setting description: Program Jog stroke stop time

tn834 Program Jog stroke acceleration/deceleration time

Initial value	Unit	Setting range	Effective	Cn029 reset
250	0.4ms	5 ~ 25000	--	--

RS-485	Pi	Pe	Pt	S	T
1322H	0	0	0	--	--

Setting description: Program Jog stroke acceleration/deceleration time

tn835 Program Jog stroke movement maximum speed

Initial value	Unit	Setting range	Effective	Cn029 reset
100	rpm	0 ~ 1.5 x rated rotation speed	--	--

RS-485	CANopen	EtherCAT	Pi	Pe	Pt	S	T
1323H	2D23H	2D23H	0	0	0	--	--

Setting description: Program Jog stroke movement maximum speed

tn836 Program Jog stroke moving distance

Initial value	Unit	Setting range	Effective	Cn029 reset
30	0.1rev	1 ~ 2000	--	--

RS-485	CANopen	EtherCAT	Pi	Pe	Pt	S	T
1324H	2D24H	2D24H	0	0	0	--	--

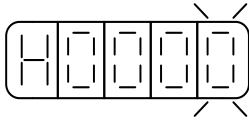
Setting description: Program Jog stroke moving distance

tn837.0 On-line tuning flag

Initial value	Unit	Setting range	Effective	Cn029 reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
1325H	0	0	0	0	--

Setting description:



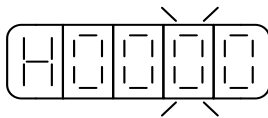
Setting	Description
0	Disable the on-line tuning function
1	Enable stroke operation to enable on-line tuning function

tn837.1 On-line tuning load convergence selection

Initial value	Unit	Setting range	Effective	Cn029 reset
1	--	0 ~ 2	--	--

RS-485	Pi	Pe	Pt	S	T
1325H	0	0	0	0	--

Setting description:



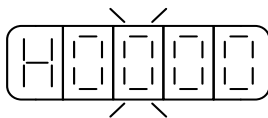
Setting	Description
0	Slow load convergence
1	Medium load convergence
2	Fast load convergence

tn837.2 On-line tuning system rigidity selection

Initial value	Unit	Setting range	Effective	Cn029 reset
4	--	0 ~ 7	--	--

RS-485	Pi	Pe	Pt	S	T
1325H	0	0	0	0	--

Setting description:



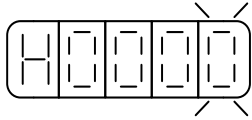
Setting	Description
0	Rigidity 0 (small rigidity)
1	Rigidity 1
2	Rigidity 2
3	Rigidity 3
4	Rigidity 4
5	Rigidity 5
6	Rigidity 6
7	Rigidity 7 (great rigidity)

tn838.0 Speed observer

Initial value	Unit	Setting range	Effective	Cn029 reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
1326H	0	0	0	0	0

Setting description:



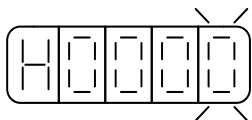
Setting	Description
0	Not used
1	Speed observer

tn839.0 Speed model reference control flag

Initial value	Unit	Setting range	Effective	Cn029 reset
1	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
1327H	0	0	0	0	0

Setting description:



Setting	Description
0	Disable speed model reference control
1	Enable speed model reference control

tn840 Speed model reference control gain

Initial value	Unit	Setting range	Effective	Cn029 reset
100	%	10~1000	--	--

RS-485	Pi	Pe	Pt	S	T
1328H	0	0	0	0	0

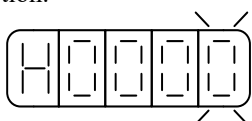
Setting description: Speed model reference control gain

tn841.0 Friction compensation control flag

Initial value	Unit	Setting range	Effective	Cn029 reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
1329H	0	0	0	0	0

Setting description:



Setting	Description
0	Disable friction compensation control
1	Enable friction compensation control

tn842 Friction compensation control limit value

Initial value	Unit	Setting range	Effective	Cn029 reset
50	%	0 ~ 100	--	--

RS-485	Pi	Pe	Pt	S	T
132AH	0	0	0	0	0

Setting description: Limits the maximum output of friction compensation control; if set as 100, then the restriction value is the rated current value.

tn843 Friction compensation control gain

Initial value	Unit	Setting range	Effective	Cn029 reset
100	%	0 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
132BH	0	0	0	0	0

Setting description: Limits the friction compensation control gain; if set as 100, then the gain is 1.

tn844 Position circuit feedforward gain

Initial value	Unit	Setting range	Effective	Cn029 reset
0	%	0 ~ 100	--	--

RS-485	Pi	Pe	Pt	S	T
132CH	0	0	0	--	--

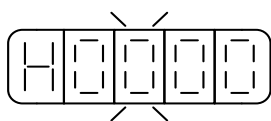
Setting description: Same as Pn312, it can reduce the following error for position control and increase response speed. If the feedforward gain is too big, it may cause speed overshoot and output contact INP (positioning complete signal) to turn on and off repeatedly.

tn845.2 Disturbance observer speed feedback selection

Initial value	Unit	Setting range	Effective	Cn029 reset
0	--	0 ~ 3	--	--

RS-485	Pi	Pe	Pt	S	T
132DH	0	0	--	0	--

Setting description:



Setting	Description
0	No sampling and calculation
1	5kHz sampling and calculation
2	2.5kHz sampling and calculation
3	1.25kHz sampling and calculation

tn846 Disturbance observer filter constant

Initial value	Unit	Setting range	Effective	Cn029 reset
30	--	0 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
132EH	0	0	--	0	--

Setting description: Disturbance observer filter constant

tn847 Disturbance observer limit value

Initial value	Unit	Setting range	Effective	Cn029 reset
0	%	0 ~ 100	--	--

RS-485	Pi	Pe	Pt	S	T
132FH	0	0	--	0	--

Setting description: Disturbance observer compensation limit value

tn848 Speed feedforward smooth filter

Initial value	Unit	Setting range	Effective	Cn029 reset
500	Hz	0 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
1330H	0	0	0	--	--

Setting description: Same as CN033, processes the speed feedforward command smoothly.

tn849 Speed feedforward differential gain

Initial value	Unit	Setting range	Effective	Cn029 reset
100	--	0 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
1331H	0	0	0	--	--

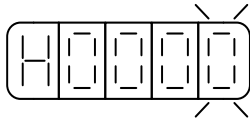
Setting description: The estimated compensation value of speed feedforward; it can improve system response. It is recommended to set it to the default value.

tn850.0 Model tracking control switch

Initial value	Unit	Setting range	Effective	Cn029 reset
0	--	0 ~ 1	--	--

RS-485	Pi	Pe	Pt	S	T
1332H	0	0	0	--	--

Setting description:



Setting	Description
0	Disable model tracking control
1	Enable model tracking control Note: It cannot be used if the encoder resolution is less than 17bit (not including 17bit)

tn851 Model tracking control gain

Initial value	Unit	Setting range	Effective	Cn029 reset
50	rad/s	0 ~ 2000	--	--

RS-485	Pi	Pe	Pt	S	T
1333H	0	0	0	--	--

Setting description: Adjusting this parameter can reduce system following error and shorten positioning time when model tracking control is enabled.

tn852 Model tracking control forward direction torque feedforward gain

Initial value	Unit	Setting range	Effective	Cn029 reset
100	%	0 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
1334H	0	0	0	--	--

Setting description: When model tracking control is enabled, it can reduce the following error of forward speed control, and improve response speed.

tn853 Model tracking control reverse direction torque feedforward gain

Initial value	Unit	Setting range	Effective	Cn029 reset
100	%	0 ~ 1000	--	--

RS-485	Pi	Pe	Pt	S	T
1335H	0	0	0	--	--

Setting description: When model tracking control is enabled, it can reduce the following error of reverse speed control, and improve the response speed.

tn854 Torque feedforward smooth filter

Initial value	Unit	Setting range	Effective	Cn029 reset
500	Hz	0~2500	--	--

RS-485	Pi	Pe	Pt	S	T
1336H	0	0	0	--	--

Setting description: Processes the torque feedforward command smoothly.

tn855 Load inertia ratio

Initial value	Unit	Setting range	Effective	Cn029 reset
10	0.1	0~2000	--	--

RS-485	Pi	Pe	Pt	S	T
1337H	0	0	0	0	--

Setting description: Same as Cn025

$$\text{load inertia ratio} = \frac{\text{load inertia which convert to motor axis } (J_L)}{\text{Servo motor moment of inertia } (J_M)} \times 100\%$$

tn856 Speed feedback smooth filter

Initial value	Unit	Setting range	Effective	Cn029 reset
500	Hz	0~2500	--	--

RS-485	Pi	Pe	Pt	S	T
1338H	0	0	0	0	--

Setting description: Same as Cn032, when the system generates sharp, vibrating noises, this parameter can be adjusted to suppress the vibrating noises; adding this filter will also delay the response speed of the servo system.

tn857 Torque command smooth filter

Initial value	Unit	Setting range	Effective	Cn029 reset
0	Hz	0~ 5000	--	--

RS-485	Pi	Pe	Pt	S	T
1339H	0	0	0	0	0

Setting description: Same as Cn034, when the system generates sharp, vibrating noises, this parameter can be adjusted to suppress the vibrating noises; adding this filter will also delay the response speed of the servo system.

tn858 Speed circuit gain 1

Initial value	Unit	Setting range	Effective	Cn029 reset
40	Hz	2 ~ 1500	--	--

RS-485	Pi	Pe	Pt	S	T
133AH	0	0	0	0	--

Setting description: Same as Sn211, the speed circuit gain determines the respond bandwidth of the speed control circuit directly; under the premise when the machine system does not generate vibration or noise, increasing the speed circuit gain value will accelerate the speed response.If the setting of Cn025 (load inertia ratio) is correct, then the speed circuit bandwidth is as same as the speed circuit gain.

tn859 Speed circuit integral time constant 1

Initial value	Unit	Setting range	Effective	Cn029 reset
2000	0.01ms	40~ 50000	--	--

RS-485	Pi	Pe	Pt	S	T
133BH	0	0	0	0	--

Setting description: Same as Sn212, adding the integral component to the speed control circuit can effectively eliminate steady speed state error, and quickly respond to subtle speed changes.Generally speaking, under the premise of machine systems not generating vibration or noise, reduce the speed circuit integral time constant to increase system rigidity.Please use the following formula to obtain the speed circuit integral time constant:

$$\text{Speed circuit integral time constant} \geq 5 \times \frac{1}{2\pi \times \text{Speed circuit gain}}$$

tn860 Speed circuit gain 2

Initial value	Unit	Setting range	Effective	Cn029 reset
40	Hz	2 ~ 1500	--	--

RS-485	Pi	Pe	Pt	S	T
133CH	0	0	0	0	--

Setting description: Same as Sn213, please refer to the description of tn858 for the setting method.

tn861 Speed circuit integral time constant 2

Initial value	Unit	Setting range	Effective	Cn029 reset
2000	0.01ms	40~ 50000	--	--

RS-485	Pi	Pe	Pt	S	T
133DH	0	0	0	0	--

Setting description: Same as Sn214, please refer to the description of tn859 for the setting method.

tn862 Position circuit gain 1

Initial value	Unit	Setting range	Effective	Cn029 reset
40	rad/s	1 ~ 2000	--	--

RS-485	Pi	Pe	Pt	S	T
133EH	0	0	0	--	--

Setting description: Same as Pn310, under the premise of the machine system which is not generating vibration or noise, increase the position circuit gain value to increase response speed and shorten positioning time. Generally speaking, the position circuit bandwidth must not be higher than the speed circuit bandwidth; the recommended formula is as follows:

$$\text{Position circuit gain} \leq 2\pi \times \frac{\text{Speed circuit gain}}{5}$$

tn863 Position circuit gain 2

Initial value	Unit	Setting range	Effective	Cn029 reset
40	rad/s	1 ~ 2000	--	--

RS-485	Pi	Pe	Pt	S	T
133FH	0	0	0	--	--

Setting description: Please refer to the description of tn863 for the setting method.

5-3-9 Monitoring Parameters (Un-□□)

Un-01 Actual motor speed

Unit	Communication position	Parameters description
rpm	RS-485	For example: The display of 120 indicates that the current Motor Speed is 120 rpm.
	0601H	

Un-02 Actual motor torque

Unit	Communication position	Parameters description
%	RS-485	Expressed by the percentage of Rated Torque. For example: The display of 20 indicates that the Motor Torque Output is now 20% of the Rated Torque.20%。
	0602H	

Un-03 Regenerative load rate

Unit	Communication position	Parameters description
%	RS-485	The average percentage of Regenerative Power Output.
	0603H	

Un-04 Effective load rate

Unit	Communication position	Parameters description
%	RS-485	The average percentage of Power Output.
	0604H	

Un-05 Maximum load rate

Unit	Communication position	Parameters description
%	RS-485	The maximum value of Effective Load Rate has ever appeared.
	0605H	

Un-07 Position error ※Range greater than 5-digit number

Unit	Communication position	Parameters description
pulse	RS-485	Difference between Position Command and Position Feedback.
	0607H / 0608H	

Un-10 Primary circuit (Vdc Bus) voltage

Unit	Communication position	Parameters description
V	RS-485	For example: The display of 310 indicates that the Main Circuit Voltage is 310V.
	060CH	

Un14 Motor feedback-pulse number within one revolution ※Range greater than 5-digit number

Unit	Communication position	Parameters description
pulse	RS-485	Display the pulse number within one motor revolution after the power is on. (After the power is on, the value is 0 and starts counting) (When the servo returns to the origin, the value will be cleared as 0 and start counting again)
	0610H / 0611H	

Un-16 Motor feedback-rotation number ※Range greater than 5-digit number

Unit	Communication position	Parameters description
rev	RS-485	After the power is turned on, display motor rotation number. (After the power is on, the value is 0 and starts counting) (When the servo returns to the origin, the value will be cleared as 0 and start counting again)
	0613H / 0614H	

Un-18 Pulse command-pulse number within one revolution ※Range greater than 5-digit number

Unit	Communication position	Parameters description
pulse	RS-485	After power is on, count the number of pulses in 1 rotation of pulse command input under Servo ON condition. (After the power is on, the value is 0)
	0616H / 0617H	

Un-20 Pulse command-rotation number ※Range greater than 5-digit number

Unit	Communication position	Parameters description
rev	RS-485	After the power is on, count and display cycle number of pulse command input under Servo ON condition. (After the power is on, the value is 0)
	0619H / 061AH	

Un-24 Multi-revolution position information of communication type encoder feedback

Unit	Communication position	Parameters description
rev	RS-485	Multi-revolution Absolute Position of the Communication Encoder Motor ※Absolute type: Absolute Number of Revolution Data ※Incremental type: always be 0
	061FH	

Un-25 Single revolution position information of communication type encoder feedback ※Range greater than 5-digit number

Unit	Communication position	Parameters description
pulse	RS-485	Single Revolution Absolute Position of the Communication Encoder Motor
	0620H / 0621H	

Un-27 Communication type encoder message

Unit	Communication position	Parameters description
---	RS-485	Feedback communication type encoder status
	0623H	

Un-29 Load inertia ratio

Unit	Communication position	Parameters description
0.1	RS-485	Displays the current default Load Inertia Ratio of Cn025.
	0625H	

Un-30 Digital output contact status (DO)

Unit	Communication position	Parameters description
---	RS-485	Displays the Status of Digital Output Contact (DO) individually in Hexadecimal For example: H00XX (0000 0000 DO-8/7/6/5 DO-4/3/2/1)/5 DO-4/3/2/1)
	0626H	

Un-31 Digital input contact status (DI)

Unit	Communication position	Parameters description
---	RS-485	Displays the Status of Digital Input Contact (DI) in Hexadecimal For example: H0XXX (0000 DI-12/11/10/9 DI-8/7/6/5 DI-4/3/2/1)
	0627H	

Un-43 Motor Electrical Angle

Unit	Communication position	Parameters description
deg	RS-485	Display Motor Current Electrical Angle Position
	0633H	

Un-44 Motor model number read by the communication encoder

Unit	Communication position	Parameters description
---	RS-485	For example: The display of H1267 indicates that the Motor Cn030 Number is H1267
	0634H	

Un-45 OnLine_AutoTuning inertia estimation

Unit	Communication position	Parameters description
---	RS-485	For example: The display of 100 indicates that the Load Inertia Ratio is 10 times.
	0635H	

Un-46 OFFLine_Tuning status

Unit	Communication position	Parameters description
---	RS-485	OFFLine_Tuning operation status
	0636H	

Un-47 OFFLine_Tuning error code

Unit	Communication position	Parameters description
---	RS-485	bit.0: 1 is inertia estimation status, 2 is gain estimation status
	0637H	bit.2: 1 is load estimation fail, 2 is gain estimation fail

Un-49 Drive temperature

Unit	Communication position	Parameters description
degree	RS-485	Drive Temperature
	0639H	

Un-53 Current alarm number

Unit	Communication position	Parameters description
---	RS-485	For example: The display of 01 indicates that the current alarm number is AL.001
	063FH	

Un-55 System multi-revolution position

Unit	Communication position	Parameters description
rev	RS-485	System Multi-revolution Position (When the servo returns to the origin, the value will be cleared as 0 and start counting again)
	0641H	

Un-56 System single revolution position ※Range greater than 5-digit number

Unit	Communication position	Parameters description
rev	RS-485	System Single Revolution Position (When the servo returns to the origin, the value will be cleared as 0 and start counting again)
	0642H / 0643H	

Un-88 ServoOn total time

Unit	Communication position	Parameters description
hour	RS-485	ServoOn total time
	0663H	

Un-89 PowerOn total time

Unit	Communication position	Parameters description
hour	RS-485	PowerOn total time
	0664H	

Un-90 Effective load rate

Unit	Communication position	Parameters description
%	RS-485	Effective load rate
	0665H	

5-3-10 Diagnostic Parameters (dn-□□)

Parameter Code	Name and Function	RS-485 Communication Address
dn-01	Current Control Mode Display	0F01H
dn-02	Digital Output Contact Signal Status	0F02H
dn-03	Digital Input Contact Signal Status	0F03H
dn-04	CPU Software Version Display	0F04H
dn-05	Jog Mode Operation	-
dn-06	Reserved	-
dn-08	Display Serialized Models	0F08H
dn-09	ASIC Software Version Display	0F09H
dn-11.0	Automatic Detection of Magnetic Angle Position	0F0BH
dn-11.1	Pulse encoder signal test	0F0BH

Note: For detailed function instructions, please refer to [3-3 Diagnosis Function Description]

Chap 6 Error Alarm Clearing

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6-1 Error Alarm List

Error Alarm Number	Error Alarm Description	Alarm Clearing Method
AL.000	No Alarm Currently	—
AL.001	Power Supply Voltage Too Low	Cn031.1
AL.002	Power Supply Voltage Too High	Switch Reset
AL.003	Motor Overload	Switch Reset
AL.004	Drive Over Current	Power Re-set
AL.005	Encoder Signal Error	Power Re-set
AL.006	Encoder UVW phase signal is abnormal	Power Re-set
AL.007	Multifunction Contact Planning Error	Power Re-set
AL.008	Parameter Data Read/Write Error	Switch Reset
AL.009	Emergency Stop	Cn002.3
AL.010	Absolute Type Encoder Battery Warning	Switch Reset
AL.011	Excessive Position Error	Switch Reset
AL.012	Motor Over Speed	Switch Reset
AL.013	Motor Model Number Error	Power Re-set
AL.014	Drive Prohibit Error	Switch Reset
AL.015	Drive Overheat	Switch Reset
AL.016	Absolute Type Encoder Number of Revolution Error	Switch Reset
AL.017	MCU Error 1	Power Re-set
AL.018	MCU Error 2	Power Re-set
AL.019	MCU Error 3	Power Re-set
AL.020	Motor Wire Disconnection Error	Power Re-set
AL.021	Communication type Encoder Error	Power Re-set

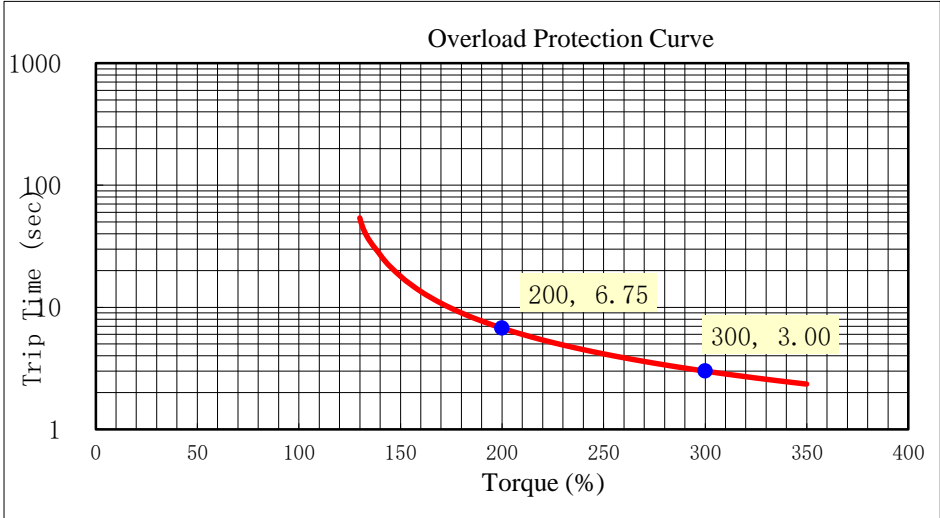
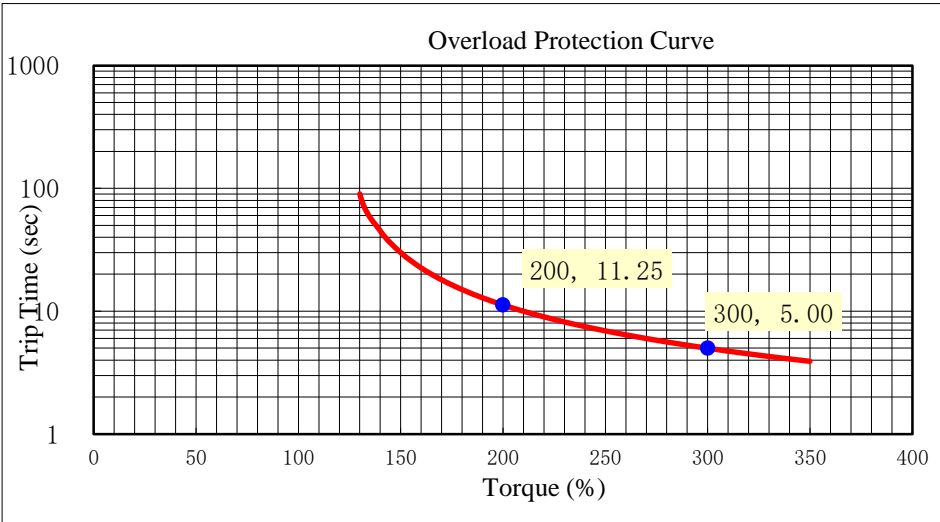
Error Alarm Number	Error Alarm Description	Alarm Clearing Method
AL.028	Self-build Motor Parameter Error	Power Re-set
AL.030	Modbus Communication Timeout Error	Switch Reset
AL.033	Drive Chip Error	Power Re-set
AL.034	Excessive Dividing Frequency	Switch Reset
AL.035	Auto tuning Error	Switch Reset
AL.037	Regenerative Error	Switch Reset
AL.038	Start Up Circuit Error	Power Re-set
AL.040	Turret Mode is prohibited to use non-absolute type encoder	Power Re-set
AL.042	Dividing Setting Error	Power Re-set
AL.044	Internal Position S Curve Setting Error	Switch Reset
AL.045	Communication Type Encoder Model Error	Power Re-set
AL.046	Encoder Feedback Value Error	Power Re-set
AL.050	Absolute Type Encoder Position Error	Power Re-set
AL.051	Motor overload	Switch reset
AL.052	External sensor over-temperature	Switch reset
AL.055	Pulse encoder UVW signal abnormal	<u>Switch reset</u>
AL.056	Pulse encoder ABZ signal abnormal	<u>Switch reset</u>
AL.057	Speed S curve setting error	<u>Switch reset</u>
AL.058	Electronic gear ratio setting error	<u>Switch reset</u>
AL.061	Regenerative parameter setting error	Switch reset
AL.062	Servo excitation instruction invalid	Switch reset
AL.063	Map parameter address (MAb group) parameter setting error	Reset Reset parameter
AL.064	Software limit setting error	Switch reset

(Note) X: No alarm code output function

6-2 Counter measures to Clear Error

AL.001	Power Supply Voltage Too Low
Alarm Cause	<p>Primary circuit input power voltage is smaller than the setting value of Cn051 (low voltage protection level) and exceeds the time of Cn052 (low voltage protection alarm delay time). ※ Input voltage of 200V drive is smaller than 170V and the one of 400 drive is smaller than 340V. Generate alarm directly without counting time.</p> <ol style="list-style-type: none"> 1. Primary circuit input voltage lower than specification; input power error; no primary circuit input power. 2. Sudden power outage occurs. 3. Power voltage decreases under operation. 4. Drive hardware failure.
Check and Handling	<ol style="list-style-type: none"> 1. Use an Electric Meter to measure the external power supply voltage and verify that the input voltage meets the specifications. Monitor if the voltage of Un-10 primary circuit (VDC Bus) is correct; if external input correct is correct ((AC 220/380V)) and Un-10 value too low (far lower than DC 310/620V), it could be the failure of drive internal component. 2. When the external power is comparatively unstable, users can adjust Cn051 & Cn052 to improve. 3. When power voltage decreases under operation, please make sure the input power can offer stable power constantly. 4. Pleasesend the device back to the distributor or manufacturer for overhaul.
Alarm Clearing Method	According to Parameter Cn031.1 Low Voltage Protection (AL001) Automatic Reset Selection

AL.002	Power Supply Voltage Too High
Alarm Cause	<p>VDC Bus power voltage higher than DC 410/820V (based on drive voltage class 200/400V).</p> <ol style="list-style-type: none"> 1. Primary circuit input voltage over specification; primary circuit power input error. 2. Unstable power or effected by factors such as lightning. 3. Error occurs under operation conditions; acceleration/deceleration executed by the device is over spec. 4. Error occurs under operation conditions; the used regenerative resistance cannot meet operation conditions. 5. Drive hardware failure.
Check and Handling	<ol style="list-style-type: none"> 1. Use power meter to measure external power voltage and confirm if the input voltage is qualified. Please apply correct voltage source or connect voltage stabilizer serially when monitoring Un-10 primary circuit (VDC Bus) voltage exceeds DC 410/820V continuously. 2. Improve power status; reboot servo drive after devices like surge suppressor is installed. If the alarm still occurs, it may indicate the servo drive fail to work correctly. Replace the Servo Drive. 3. Extend the Acceleration / Deceleration Time or reduce the Load Inertia within the permitted range. 4. Review the regenerative resistance by considering operation condition and load and set Cn012 (external regenerative resistor power setting) correctly.

	5. Please send the device back to the distributor or manufacturer for overhaul.
Alarm Clearing Method	Switch Reset
AL.003	Motor Overload
Alarm Cause	<p>If continuing to use the Drive more than the Rated Load, this Error Alarm will be generated, please refer to the Overload Protection Curve.</p> <p>Overload Protection Curve under 1kW</p>  <p>Overload Protection Curve over 1kW</p>  <ol style="list-style-type: none"> 1. Incorrect wiring of motor and encoder. 2. Poor parameter setting of control system. 3. Acceleration/deceleration setting time too short or load inertia too large. 4. Cn030 Setting error. 5. Not able to drive the motor because of mechanical factors and results in excessive load during operation. 6. Drive hardware failure.
Check and Handling	<ol style="list-style-type: none"> 1. Check if the Motor Terminal wiring (U, V, W) and Encoder wiring is correct; please wire in accordance with Chapter 2 Servo Drive Power and Peripheral Wiring Diagram. 2. Adjust the Drive Gain since improper Gain Adjustment will cause Motor resonance and result in excessive current to cause Motor Overload.

	<ol style="list-style-type: none"> 3. In operation program, Un-04 monitors the average torque (%) keeps above 100% continuously and extends acceleration/deceleration time or reduce load inertia within permitted range. 4. Please confirm if Cn030 is the correct motor/drive matching; please refer to “Servo drive and servo motor matching comparison table” for Cn030 motor code. 5. Improve mechanical factors. 6. Drive error; please send the device back to the distributor or manufacturer to overhaul. <p>※ This message usually occurs during operation. If the Error Alarm occurs within when short period time of operation, please check item No. 1.</p>
Alarm Clearing Method	Switch Reset

AL.004	Drive Over Current
Alarm Cause	<p>The primary circuit current of the Drive exceeds the protection range, and results in Power Transistor generating Error Alarm directly.</p> <ol style="list-style-type: none"> 1. Incorrect primary circuit or encoder wiring or bad connection. 2. Internal short circuit of the servo drive, servo motor or primary circuit wires. 3. Incorrect regenerative resistor wiring or bad connection. 4. Cn030 Setting error. 5. Control Parameter Setting Error. 6. Malfunction caused by the noise. 7. Power Transistor Error. 8. Drive hardware failure.
Check and Handling	<ol style="list-style-type: none"> 1. Check if the Motor Terminal wiring (U, V, W) and Encoder wiring is correct; please wire in accordance with Chapter 2 Servo Drive Power and Peripheral Wiring Diagram. 2. Check if the servo unit and servo motor as well as connection terminal U, V, W & FG are short-circuited. 3. Check if the regenerative resistor wiring is correct. 4. Please confirm if Cn030 is the correct motor/drive matching; please refer to “Servo drive and servo motor matching comparison table” for Cn030 motor code. 5. Execute countermeasures of anti-noise, such as install FG wiring correctly. 6. Drive error; please send the device back to the distributor or manufacturer to overhaul.
Alarm Clearing Method	Power Re-set

AL.005	Encoder Signal Error
Alarm Cause	<p>Motor Encoder malfunction or poor connection of Encoder power line.</p> <ol style="list-style-type: none"> 1. Encoder damaged. 2. Encoder wire loose or damaged. 3. Encoder motor code Cn030 setting error. 4. Encoder signal acquisition error.
Check and Handling	<ol style="list-style-type: none"> 1. Please send the device back to the distributor or manufacturer for overhaul. 2. Check if the encoder wire is connected to the drive, short-circuited, cold-welded or falls out. 3. Please confirm if Cn030 is the correct motor/drive matching; please refer to “Servo drive and servo motor matching comparison table” for Cn030 motor code. 4. Check if motor grounding end is grounded correctly. If the encoder signal wire is separated from the power of the circuit with large current to avoid any generation of interferences source. If the encoder wire uses separation net.
Alarm Clearing Method	Power Re-set

AL006	Encoder UVW phase signal is abnormal
Alarm Cause	<ol style="list-style-type: none"> 1. Encoder is faulty or the wire connecting to the encoder is in poor contact. 2. Encoder is damaged. 3. The encoder cable is loose or damaged. 4. Motor code Cn030 is incorrectly set in servo drive. 5. Encoder signal acquisition error.
Check and Handling	<ol style="list-style-type: none"> 1. Please send the device back to the distributor or manufacturer for overhaul. 2. Check if the encoder wire is connected to the drive, short-circuited, cold-welded or falls out. 3. Please confirm if Cn030 is the correct motor/drive matching; please refer to “Servo drive and servo motor matching comparison table” for Cn030 motor code. 4. Check if motor grounding end is grounded correctly. If the encoder signal wire is separated from the power of the circuit with large current to avoid any generation of interferences source. If the encoder wire uses separation net.
Alarm Clearing Method	Power Re-set

AL.007	Multifunction Contact Planning Error
Alarm Cause	Digital input/output contact function planning error. 1. Several functions of the set digital input contact (DI-1~DI-12) are duplicate but contact potential is asynchronous. 2. Several functions are duplicate in the set digital output contact function (DO-1~DO-4).
Check and Handling	1. Check whether the Digital Input Contact Function Planning Parameters (Hn601~Hn612) are corrected: DI-1~DI-12 pin function can be repeated, but the pin action electrical potential of repeated function must be the same. 2. Check if output contact function parameter (Hn613~Hn616) planning is correct: DO-1~DO-4 pin function cannot be duplicate.
Alarm Clearing Method	Power Re-set

AL.008	Parameter Data Read/Write Error
Alarm Cause	An Error occurred when Writing the Parameter. 1. Parameter data write-in error. 2. The set parameter value exceeds reasonable range when using specific functions. 3. Drive hardware failure.
Check and Handling	1. Please rewrite new parameter value. 2. Please confirm the modified parameter value is within reasonable range. 3. If the alarm still occurs after all connectors removed, parameters (Cn029=1) reset and rebooting, please replace the drive.
Alarm Clearing Method	Switch Reset

AL.009	Emergency Stop
Alarm Cause	Digital input contact EMC (emergency stop) generates action. 1. Digital input contact EMC (emergency stop) activates. 2. Caused by the drive is interfered by the noise internally.
Check and Handling	1. Disable digital input contact EMC action. 2. Please follow the motor and power standard wiring diagram & control signal standard wiring diagram in Chapter 2 to connect external power and signal wires.
Alarm Clearing Method	Based on parameter Cn002.3 (EMC Return Mode Selection)

AL.010	Absolute Type Encoder Battery Warning
Alarm Cause	Battery module voltage under 2.75V (the drive can continue operating when this error alarm occurs).
Check and Handling	Please replace the battery.
Alarm Clearing Method	Switch Reset

AL.011	Excessive Position Error
Alarm Cause	<p>The difference between the Pulse Command and the Encoder Feedback Pulse exceeds the setting of Pn308 or Pn309.</p> <ol style="list-style-type: none"> 1. Position gain value (Pn310 & Pn311) and feed forward gain (Pn312) settings are too small. 2. Setting of maximum position error determined value (Pn308 & Pn309) is too small. 3. Torque limit too low. 4. Change of position input command is too serious. 5. Excessive external load. 6. Incorrect Motor Wiring (U, V, W). 7. Continue recording position command input quantity after drive prohibition occurs; excessive cumulative commands. Generate alarm when activated.
Check and Handling	<ol style="list-style-type: none"> 1. Increase the setting of Position Loop Gain (Pn310 & Pn311) and feed forward gain (Pn312) to speed up Motor Reaction Speed. 2. Increase the setting of Pn308 (position maximum position error determined value) and Pn309 (negative maximum position error determined value). 3. Adjust torque limit value correctly. 4. Extend acceleration/deceleration time within permitted range. 5. Decrease external load or re-evaluate motor capacity. 6. Check whether the Motor Wiring (U, V, W) is connected properly. 7. Set the correct Pn301.2 (Drive prohibits command receiving selection) .
Alarm Clearing Method	Switch Reset

AL.012	Motor Over Speed
Alarm Cause	The detected motor speed exceeds 1.75 times of the rated speed. 1. Change of speed input command is too serious. 2. Improper setting of E-Cam ratio. 3. Improper setting of speed loop gain (Sn211 & Sn213). 4. Encoder signal is interfered.
Check and Handling	1. Decrease the speed of input command or activate smoothing function. 2. Please confirm the setting related to E-Cam ratio. 3. Adjust the Speed Loop Gain (Sn211 and Sn213) appropriately to speed up the Motor Reaction Speed. 4. If motor grounding end is grounded correctly; if the encoder signal wire is separated from the power of the circuit with large current to avoid any generation of interferences source; if the encoder wire uses separation net.
Alarm Clearing Method	Switch Reset

AL.013	Motor Model Number Error
Alarm Cause	Incorrect setting of motor model or automatic verification function error 1. The drive does not match the servo motor 2. Encoder motor code Cn030 setting error.
Check and Handling	1. Please confirm if the drive matches the servo motor. 2. Please check Cn030 to confirm if motor model setting is correct; please refer to “Servo drive and servo motor matching comparison table” for Cn030 motor code.
Alarm Clearing Method	Power Re-set

AL.014	Drive Prohibit Error
Alarm Cause	This error alarm occurs when digital input contact CCWL & CWL activate simultaneously. 1. Incorrect movement logic setting of digital input contact CCWL & CWL. 2. Caused by the drive is interfered by the noise internally.
Check and Handling	1. Set Cn002.1 to clear digital input contact CCWL or CWL motion; or check if the movement logic of Hn601~Hn612 is correctly set. 2. Please follow the motor and power standard wiring diagram & control signal standard wiring diagram in Chapter 2 for wiring.
Alarm Clearing Method	Switch Reset

AL.015	Drive Overheat
Alarm Cause	<p>Detected the Power Transistor Temperature exceeded the Temperature Resistance of the Component.</p> <ol style="list-style-type: none"> 1. Continuous use with excessive motor rated load. 2. Ambient temperature too high. 3. The installation director of the servo unit and its spacing between other servo units are not reasonable. 4. Drive fan stops operation.
Check and Handling	<ol style="list-style-type: none"> 1. Increase motor capacity or decrease load. 2. Decrease ambient temperature. 3. Follow installation standard of the servo unit to install. 4. Remove any foreign object that jams the fan; replace the fan when it cannot function correctly.
Alarm Clearing Method	Switch Reset

AL.016	Absolute Type Encoder Number of Revolution Error
Alarm Cause	<p>Absolute Type Encoder Number of Revolution Data Error.</p> <ol style="list-style-type: none"> 1. Battery module is removed or battery error. 2. Replace the battery when the drive power is off.
Check and Handling	<ol style="list-style-type: none"> 1. Please check battery wiring and power. 2. After the battery is replaced, use Cn041=2 or digital input contact ALRS to clear the rotation number of the encoder.
Alarm Clearing Method	Switch Reset

AL.017	MCU Error 1
Alarm Cause	System Operating Error Self Checking Error during System Operations.
Check and Handling	Please contact Dealer or Manufacturer
Alarm Clearing Method	Power Re-set

AL.018	MCU Error 2
Alarm Cause	System Operating Error Self Checking Error during System Operations.
Check and Handling	Please contact Dealer or Manufacturer
Alarm Clearing Method	Power Re-set

AL.019	MCU Error 3
Alarm Cause	CPU Software and FPGA Software Version Compatibility Error
Check and Handling	Please contact Dealer or Manufacturer
Alarm Clearing Method	Power Re-set

AL.020	Motor Wire Disconnection Error
Alarm Cause	Motor UVW Power Line Disconnection Error
Check and Handling	Check if motor wiring (U, V, W) is normal. Please wire according to servo drive power and peripheral wiring diagram in Chapter 2.
Alarm Clearing Method	Power Re-set

AL.021	Communication type Encoder Error
Alarm Cause	Communication type encoder error (Count Error).
Check and Handling	Clear the internal circuit detection error of communication type encoder through Cn041=1. If the error occurs again after turning power off and on, it means the motor encoder fails and a replacement is required. (please contact Dealer or Manufacturer)
Alarm Clearing Method	Power Re-set

AL.028	Self-build Motor Parameter Error
Alarm Cause	Motor Model Number Setting Error.
Check and Handling	Please check one parameter groups one by one and set the self-defined motor parameters to appropriate values.
Alarm Clearing Method	Power Re-set

AL.030	Modbus Communication Timeout Error
Alarm Cause	The Modbus Communication Timeout exceeded the set value of Cn039. 1. The setting of Cn039 (communication timeout setting) is too small. 2. Poor Modbus communication quality. 3. Incorrect setting of Cn036 ~ Cn039 communication parameter
Check and Handling	1. Check if the setting time of Cn039 is too short.

	<p>2. Check if communication status is abnormal, wires are short-circuited or with empty connection and if the terminal resistor added to the last communication equipment.</p> <p>3. Check communication; settings related to ID Cn036, communication speed Cn037.0 and protocol Cn038</p>
Alarm Clearing Method	Switch Reset

AL.033	Drive Chip Error
Alarm Cause	Drive FPGA chip error
Check and Handling	The Alarm still occurs after power is re-connected, the Drive needs to be replaced. (please contact Dealer or Manufacturer)
Alarm Clearing Method	Power Re-set

AL.034	Excessive Dividing Frequency
Alarm Cause	<p>1. Diving output frequency exceeds 3.2MHz.</p> <p>2. Caused by the drive is interfered by the noise internally.</p>
Check and Handling	Check if Cn005 (Encoder signal dividing output) setting value and required operating speed are correct. Please refer to “5-3-11 Encoder signal dividing output” for details.
Alarm Clearing Method	Switch Reset

AL.035	Auto tuning Error
Alarm Cause	The abnormality caused by system cannot converge in the Auto tuning process.
Check and Handling	The System generates Vibration Resonance or Acoustic Resonance. Decrease Cn026 system rigidity until no vibration occurs or execute PC-link Mechanical Characteristics Analysis Function Observation to observe if the resonance occurs in the system and suppress it.
Alarm Clearing Method	Switch Reset

AL.037	Regenerative Error
Alarm Cause	<p>Excessive primary capacitor voltage (Un-03 regenerative load ratio exceeds 100) resulted from excessive regenerative energy.</p> <p>1. Error occurs under operation condition; acceleration/deceleration executed by the device is over spec.</p> <p>2. Error occurs under operation conditions; the used regenerative resistance is higher than the one needed for operation conditions.</p>

	3. Drive hardware failure.
Check and Handling	<ol style="list-style-type: none"> 1. Extend the Acceleration / Deceleration Time or reduce the Load Inertia within the permitted range. 2. Review the regenerative resistance by considering operation condition and load; set external regenerative resistor power setting (Cn012) correctly when connecting to external regenerative resistor. 3. Check if Un-03 regenerative load ratio is over 100; if it's under 100, then there may be a drive hardware error. Please send the device back to the distributor or manufacturer for overhaul.
Alarm Clearing Method	Switch Reset

AL.038	Start Up Circuit Error
Alarm Cause	Start Up Resistor Circuit Error
Check and Handling	This Alarm still generated after power is disconnected, please replace the Drive. (please contact Dealer or Manufacturer)
Alarm Clearing Method	Power Re-set

AL.042	Dividing Setting Error
Alarm Cause	Encoder signal dividing output (Cn005) setting error
Check and Handling	Please refer to the description in “5-6-12 Encoder signal dividing output” to set Cn005 within the reasonable range.
Alarm Clearing Method	Power Re-set

AL.044	Internal Position S Curve Setting Error
Alarm Cause	Pn322, Pn323 & Pn333 parameter setting error,
Check and Handling	Please refer to the description “5-4-4 Position command acceleration/deceleration function”.
Alarm Clearing Method	Switch Reset

AL.045	Communication Type Encoder Model Error
Alarm Cause	Motor Model Number Setting Error or Automatic Identification Function Error.
Check and Handling	Confirm if the encoder correctly matches Cn030 motor model; please refer to “Servo drive and servo motor matching comparison table” for Cn030 motor code.
Alarm Clearing Method	Power Re-set

AL.046	Encoder Feedback Value Error
Alarm Cause	Encoder Speed Error is too High.
Check and Handling	The Alarm still occurs after power is re-connected for operations, need to confirm if the Encoder is damaged. (please contact Dealer or Manufacturer)
Alarm Clearing Method	Power Re-set

AL.050	Absolute Type Encoder Position Error
Alarm Cause	Absolute Type Encoder Position Error.
Check and Handling	The Alarm still occurs after power is re-connected, need to confirm if the Encoder is damaged. (please contact Dealer or Manufacturer)
Alarm Clearing Method	Power Re-set

AL.051	Motor overload
Alarm Cause	The motor's effective load rate exceeded the setting value of Cn099.
Check and Handling	<ol style="list-style-type: none"> 1. Check whether the wiring (U, V, W) of the motor terminal and the wiring of the encoder are correct. 2. Adjust the drive gain because improper gain adjustment will cause motor resonance, resulting in excessive current, and causing the motor to overload. 3. In the allowable range, extend the acceleration/deceleration time or reduce the load inertia. <p>※This message usually occurs while moving; if the abnormal alarm occurred not long after moving, please perform inspection item 1.</p>
Alarm Clearing Method	Switch reset

AL.052	External sensor overtemperature
Alarm Cause	External sensor over-temperature detected.
Check and Handling	<ol style="list-style-type: none"> 1. Please correct the operation method when overheating occurs repeatedly. 2. Confirm whether the setting values of Cn009.3 and Cn086 are correct.
Alarm Clearing Method	Switch reset

AL.055	Pulse encoder UVW signal abnormal
Alarm Cause	<ol style="list-style-type: none"> 1. Motor encoder failure or poor cable used to connect the encoder. 2. Encoder signal wiring error.
Check and Handling	<ol style="list-style-type: none"> 1. Check whether the wiring of the motor encoder is connected to the drive. 2. Check whether the connector of the encoder is short-circuited, cold-welded or fell

	off. 3. Check whether the wiring of the encoder signal is correct.
Alarm Clearing Method	Switch reset

AL.056	Pulse encoder ABZ signal abnormal
Alarm Cause	1. Motor encoder failure or poor cable used to connect the encoder. 2. Encoder signal wiring error.
Check and Handling	1. Check whether the wiring of the motor encoder is connected to the drive. 2. Check whether the connector of the encoder is short-circuited, cold-welded or fell off. 3. Check whether the wiring of the encoder signal is correct.
Alarm Clearing Method	Switch reset

AL.058	Electronic gear ratio setting error
Alarm Cause	Parameter setting error; please refer to the Pn302~306 setting description for details.
Check and Handling	Please refer to the Pn302~306 setting description.
Alarm Clearing Method	Switch reset

AL.061	Regenerative parameter setting error
Alarm Cause	Parameter setting error.
Check and Handling	1. Confirm the hardware wiring and cables. 2. If the alarm still occurred during operation after reconnecting the power, confirm whether the drive is damaged. (Please consult the dealer or the manufacturer).
Alarm Clearing Method	Switch reset

AL.062	Servo excitation instruction invalid
Alarm Cause	When the drive has dynamic brakes, Son signal is sent to the motor while it is rotating
Check and Handling	Send to the Son signal when the motor is under 20rpm
Alarm Clearing Method	Switch reset



AL.063	Mapping parameter setting error
Alarm Cause	Map parameter address (MAb group) parameter setting error
Check and Handling	Please refer to the MAb01~08 setting description.
Alarm Clearing Method	Switch reset, reset parameter

AL.064	Software limit setting error
Alarm Cause	Software limit setting error
Check and Handling	Please refer to the Pn357 and Pn358 setting descriptions.
Alarm Clearing Method	Switch reset

Descriptions on the clearing methods of abnormal alarms:

1. Switch reset: The following two methods can be used to clear abnormal alarms:

(a) Digital input contact reset: When the abnormality is eliminated, first release the **SON** action of the digital input contact (which is releasing the motor excitation status), then make the digital input contact **ALRS** act to clear the abnormal alarm and make the drive resume normal operation. As for the digital input contact effective logic, please set them by referring to “**5-3-1 Digital** input/output contact function plan”.

(b) Button reset: When the abnormality is eliminated, first release the **SON** action of the digital input contact (which is releasing the motor excitation status), then press the  and  buttons simultaneously to clear the abnormal alarm, and make the drive resume normal operation.

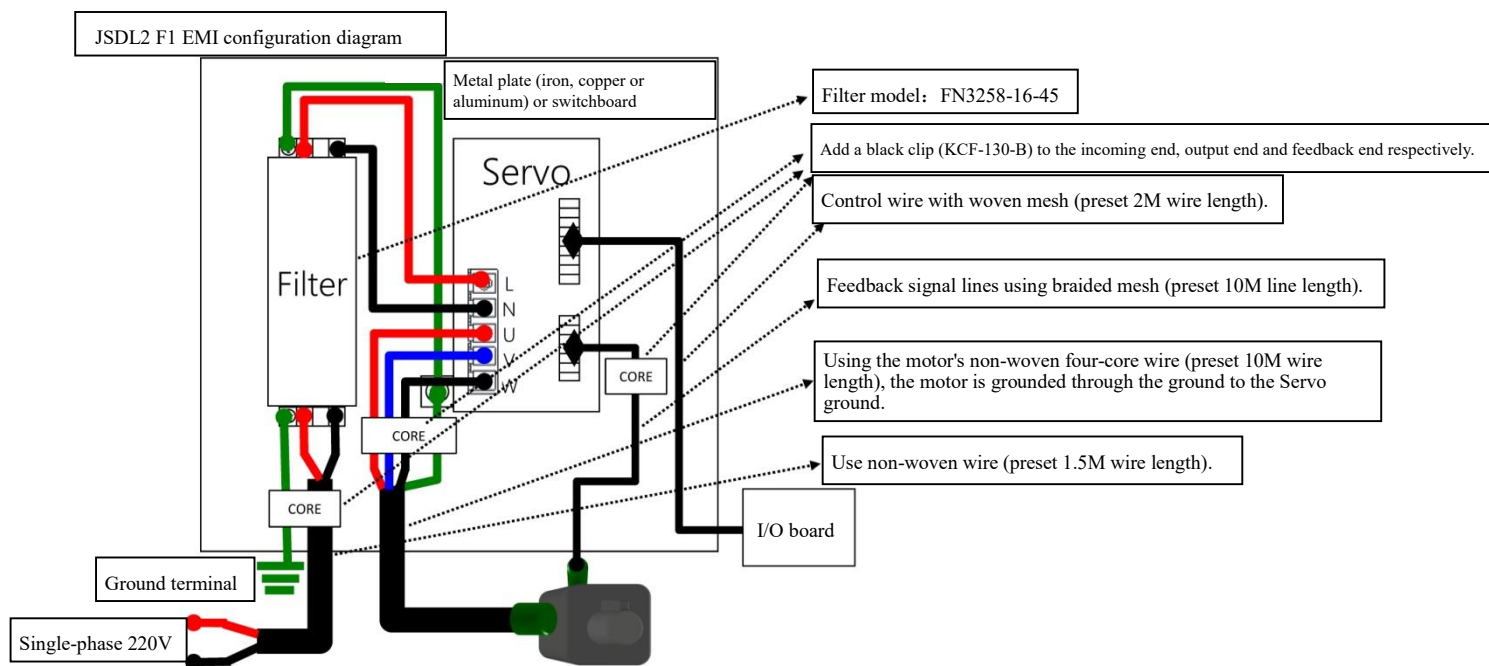
2. Power reset: When the abnormality is eliminated, **rebooting** is required (turn off the power and then input power again) to clear the abnormal alarm and make the drive resume normal operation. **It is strongly recommended to release the digital input contact SON action first (releasing the motor’s excitation status) when using power reset to clear abnormal alarms.**



Caution

Before clearing abnormal alarms, confirm that the controller is not sending commands to the drive in order to prevent the motor from going out of control

Appendix A



Appendix B

