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Hardware Instruction for Y7S-series Advanced Servo Drive (Pulse)

1 Preface

Thank you for purchasing Y7Smart-series servo drive. This manual mainly describes the safety use, installation and wiring for Y7-series servo drive. For more details, please refer to < User Manual for Y7 Series Pulse Servo Drive >.

Confirm the following items when unpacking:

Item	Name	Quantity
1	Y7S-series advanced servo drive	1
2	STO terminal	1
	Accessories	1
3	50pin terminal (CN1)	1
4	Hardware Instruction for Y7S-series Advanced Servo Drive (Pulse)	1
	Qualified certificate	1

- Power supply input terminal *1 and power output terminal *1 for 3kw and below models.
- General N models do not have STO terminal and 50pin terminal (CN1 interface).
- Fully functional Model F includes second encoder terminal (CN4 interface).
- Check if there are some damages to the products during transportation.
- Any questions, please contact the HCFA Technology.

Safety symbols

Please pay attention to the following safety precautions anywhere and anytime during acceptance inspection, installation, wiring, operation and maintenance. In this manual, the safety precautions are ranked as "DANGER" and "CAUTION".

- DANGER** Indicates that incorrect handling may result in death or severe injury.
 - CAUTION** Indicates that incorrect handling may result in medium or slight personal injury or physical damage.
- The following graphic symbols shall be used to describe the matters to be observed.
- ⊘ Indicates "Prohibitions" (Indicates what must not be done).
 - Ⓜ Indicates "Strict Enforcement" (Indicates what must be done).

⚠ DANGER	
Do not connect the motor to the terminals. Power cables should be bundled around the servo motor and drive.	To prevent fire or malfunction.
Be sure to protect the drives through the case, and leave specified clearances between the case or other equipment and the drive.	To prevent fire, electric shock, fire or malfunction.
Install it at the place free from excessive dust and dirt, water and oil mist. Install the equipment to incombustibles, such as metal.	To prevent electric shock, fire, malfunction or damage.
Any person who is involved in wiring and inspection should be fully competent to do the work.	To prevent fire.
FG terminal of motor and drive must be grounded.	To prevent electric shock.
Perform the wiring correctly after cut off the breaker.	To prevent electric shock, fire, malfunction or damage.
Have the insulation processing when connecting cables.	To prevent electric shock, fire or malfunction.

⊘ About operation and running.	During operation, never touch the internal parts of the drive.	To prevent burns or electric shock.
⊘	The cables should not be damaged, stressed, loosened, or pinched.	To prevent electric shock, malfunction or damage.
	During operation, never touch the rotating parts of the servo motor.	To prevent injury.
⊘	Do not immerse the cable in oil or water when operation.	To prevent fire.
	Operate the switches and wiring with dry hand.	To prevent electric shock, injury or fire.
⊘	Do not touch the keypad directly when using the motor with shaft-end keypad drive and radiator.	To prevent injury.
	Do not touch the surface of motor, drive and radiator.	To prevent burns or parts damaged.
⊘	Do not drive the motor by external drive.	To prevent fire.
	Do not follow other safety instructions.	To prevent fire.
Ⓜ	Confirm the equipment's safety after the earthquake happens.	To prevent electric shock, injury or fire.
	Installing and setting correctly to prevent the fire and personal injury when earthquake happens.	To prevent injury, electric shock, fire, malfunction or damage.
Ⓜ	Provide an external emergency stop circuit to ensure that operation can be stopped and power switched off immediately.	To prevent injury, electric shock, fire, malfunction or damage.
	Before wiring or inspection, turn off the power and wait for 5 minutes or more. And it's not allowed to disassemble the servo drive.	To prevent electric shock.

⚠ CAUTION

Please follow the specified combination of the motor and drive.

Do not touch the terminals of connector directly.

Do not block intake and prevent the foreign matters from entering into the drive.

Fix the motor and have the test run away from the mechanical system. After operation, the servo motor can be securely mounted to mechanical system.

The servo motor must be installed in the specified direction.

Install the equipment correctly in accordance with its weight and rated output.

⊘ About operation and running.

Do not stand on servo equipment. Do not put heavy objects on equipment.

The parameter settings must not be changed excessively otherwise, the operation of the servo will be unstable.

Keep it away from the direct sunlight.

Do not subject the motor and motor shaft to strong impacts.

The electromagnetic brake on the servo motor is designed to hold the servo motor. It should not be used for ordinary braking.

When power is restored after an instantaneous power failure, keep away from the machine because the machine may be restarted suddenly (design the hazard if restarted), secured against.

Do not install or operate a faulty servo motor or drive.

Check the power specification.

The select mode keys may not hold the servo motor shaft. To ensure safety, install a stopper on the machine side.

A sudden restart is made if an alarm is reset with the run signal on.

Connect the relay for emergency stop and for brake in series.

Do not subject the equipment to the place with rain, watertight, poisonous gases or liquids.

Do not carry the servo motor by the cables, shaft or encoder during transportation.

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Ⓜ	Do not drop or dump the motor during transportation and installation.	To prevent injury or malfunction.
Ⓜ	When long-term storage is required, please consult HCFA Technology.	To prevent malfunction.
	Store the unit in a place in accordance with the instruction manual.	To prevent malfunction.
⊘	About other safety instructions (regulations).	To prevent malfunction.
	Please dispose the battery according to your local laws and regulations.	To prevent malfunction.
⊘	About maintenance and inspection (regulations).	To prevent malfunction.
	Do not disassemble and for repair the equipment on customer side.	To prevent malfunction.
Ⓜ	Do not turn on or switch off the main power frequently.	To prevent malfunction.
	When the drive become faulty, switch off the control circuit and main power.	To prevent fire.
Ⓜ	If the servo motor is to be stored for a long time, switch off the power.	To prevent misoperation and injury.
	About maintenance and inspection (regulations).	To prevent malfunction.

< Warranty period >
The warranty period for the product is 18 months from the date of manufacture. It's exceptional to brake motors as they are warranted when acceleration / deceleration times is not beyond the specified service life.

< This warranty applies >
This warranty applies only when the condition, method, environment, etc. of use are in compliance with the terms and conditions and instructions that are stated in the instruction manual and user manual for the product.

< Exclusions >
The warranty does not apply to the product when the customer in the following cases:
1) A failure caused by improper storing or handling, repair and modification.
2) A failure caused by the parts which have dropped down or damaged after acceptance.
3) Acceptance caused when the products have been used beyond the product specification.
4) A failure caused by external factors such as inevitable accidents, including but not limited to fire, earthquake, lightning stroke, windstorm disaster, flood, damage, along with fluctuation of voltage and other natural disaster.
5) A failure caused by the intrusion of water, oil, metal and other foreign matters.

The warranty coverage is only for the product itself. We assume no responsibilities for any losses of opportunity and/or profit incurred by consumer due to a failure of the product.

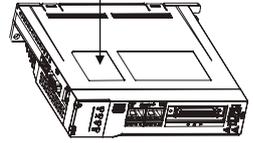
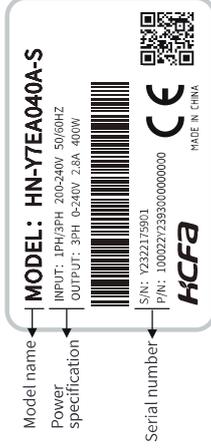
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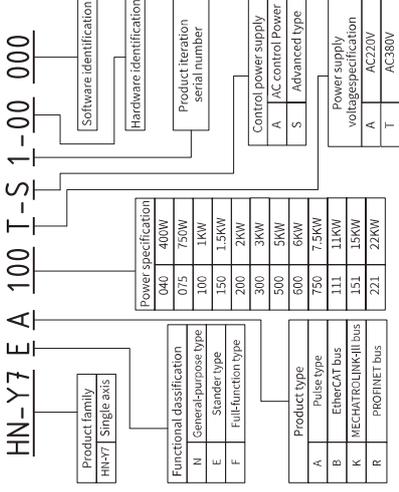
2 Product introduction and model selection

Introduction for servo drive nameplate

Description of side labels of Y7Smart series servo drives.



Model name identification



3 Product specification

Environmental specifications

Items	Specifications
Environmental requirements	Open environment or indoor use
Environmental temperature	0°C ~ 50°C (Environmental Temperature above 45°C, Derate 10% for every 5 degree increase)/-20°C ~ +70°C
Storage temperature	-20°C ~ 65°C (Maximum temperature guarantee: 80°C /2h (No condensation))
Ambient humidity	20% ~ 85%RH or less (No condensation)
Storage humidity	20% ~ 85%RH or less (No condensation)
Vibration resistance	5.88m/s ² (0.6G) or less, 10-60Hz (Do not connect at the resonance point)
Impact strength	Acceleration: 100m/s ² or less (XYZ)
Protection level	IP20
Cleanliness	• Free from corrosive gas, flammable gas • Free from water, oil, chemical splash (to 2000m)
Altitude	1000m or less (It can be used after de-rating at 1000 to 2000m)
Pollution level	2
Overvoltage classification	III
Short-circuit current	5Ka
Others	No electrostatic interference, strong electric field, strong magnetic field, radiation, etc.

Basic specifications for models of 220VAC

Items	Specifications
Models	HN-Y7 □ □ ***A-S ***
Maximum applicable motor capacity (kW)	0.40 0.75 1.00 1.50 2.00
Continuous output current (A Arms)	0.4 0.75 1.0 1.5 2.0
Instantaneous max. output current (A Arms)	2.8 5.5 7.6 11.6 15.6
Main circuit	1-phase 200 ~ 240VAC, 50/60Hz
Power voltage (Arms)	2.5 4.1 5.7 7.3 10
Control power	Share the main circuit power supply
Regene- resistor	Built-in Resistance (Ω) — 50 50 50 50 20
External mini. allowable resistor resistance (Ω)	— 80 80 100 100
Overvoltage level	40 40 35 20 20

CN1 Terminal arrangement

1	SG	GND	1	SG	Open collector instruction with internal power supply 12V	27	/TCON+	Rotary detection signal output	26	/V-CMP- (/CON1-)	Velocity matching signal output
2	SG	SEN signal input	3	PL1	Analog speed input instruction	29	/S- RDY+	Servo ready signal output	28	/TCON-	Rotary detection signal output
4	SEN	SEN signal input	5	V-REF	Analog speed input instruction	31	ALM+	Servo alarm output	30	/S-RDY-	Servo ready signal output
6	SG	GND	7	PULS	Instruction pulse input	33	PAO	The number of encoder frequency division pulse output - A phase	32	ALM-	Servo alarm output
8	/PULS	Instruction pulse input	9	T-REF	Analog torque input instruction	35	PBO	The number of encoder frequency division pulse output - B phase	34	/PAO	The number of encoder frequency division pulse output - A phase
10	SG	GND	11	SIGN	Instruction symbol input	37	OUT5+	Output signal	36	/PBO	The number of encoder frequency division pulse output - B phase
12	/SIGN	Instruction symbol input	13	PL2	Open collector instruction with internal power supply 12V	39	DAC0	Analog output 1	38	OUT5-	Output signal
14	CLR	Clear input	15	N/A	N/A	41	/P-CON	P action input	40	/S-ON	Servo ON input
16	CC-P	Open collector instruction external power supply 5V	17	CC-D	Open collector instruction external power supply 5V	43	N-OT	Reverse Drive Prohibit	42	P-OT	Forward Drive Prohibit
18	PL3	Open collector instruction with internal power supply 12V	19	PCO+	The number of encoder frequency division pulse output - C phase	44	ALM- RST	/ALM-RST	44	ALM- RST	/ALM-RST
20	/PCO-	The number of Encoder frequency pulse output - C phase	21	N/A	N/A	45	/P-CL	Forward External Torque Limit	46	/N-CL	Reverse External Torque Limit
22	N/A	N/A	23	CC-P	Open collector instruction external power supply 24V	47	(COM)	External 24V power input	48	DAC1	Analog output 2
24	24V	Open collector instruction external power supply 24V	25	(CON1+)	Velocity matching signal output	49	OCZ	Z signal Open collector instruction output	50	TH	External temperature detection

Note 1) : General N type has no analog input and analog output.

Encoder signal (CN2)

Interface layout	Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin6	Shell
	Encoder power supply +5V	Encoder power supply 0V	-	-	Serial data (+)	Serial data (-)	-	-

STO signal (CN3)

Driver STO interface	Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
	NC+	NC-	HWBB1-	HWBB1+	HWBB2-	HWBB2+	EDM-	EDM+
Driver STO interface	Input 1-	Input 1+	Input 2-	Input 2+	Output-	Output+	-	-

Secondary encoder signal (CN4)

Pin	Incremental ABZ encoder with differential Hall sensor	BISS encoder	TAMAGAMA encoder
1	+5V output current output ≤ 300mA	+5V output current output ≤ 300mA	+5V output current output ≤ 300mA
2	0V output	0V output	0V output
3	Hall U+	Hall U+	-
4	Hall U-	Hall U-	-
5	Hall V+	Hall V+	-
6	Incremental encoder A-	BISS-C CLK-	Serial DATA-
7	Incremental encoder B-	BISS-C DATA-	-
8	Incremental encoder Z-	Incremental encoder Z-	-
9	Hall W+	Hall W+	-
10	Incremental encoder A+	BISS-C CLK+	Serial DATA+
11	Incremental encoder B+	BISS-C DATA+	-
13	Incremental encoder Z+	Incremental encoder Z+	-
14	Hall W-	-	-
15	Temperature sensor signal	Temperature sensor signal	Temperature sensor signal
Housing	Shield	Shield	Shield

Communication interface (CN6)

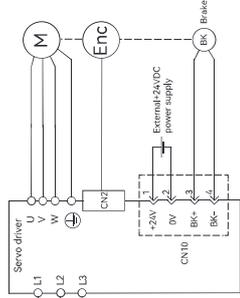
Interface layout	Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
	-	-	485A	485B	-	-	-	GND

Brake interface (CN10)

Drive STO interface	Pin1	Pin2	Pin3	Pin4	Pin5	Pin6
	24V power supply	0V	BK+	BK-	Temperature control+	Temperature control-
STO connector						
Interface layout	1	2	3	4	5	6
	0V	BK-	BK+	T+	T-	24V

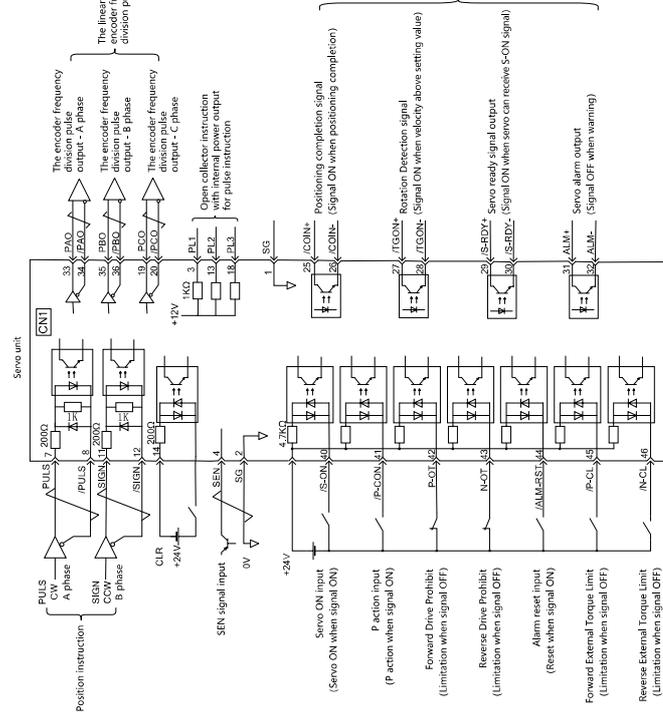
Note 1) : The brake DC24V power supply is not to be shared with the CN1 control circuit power supply. The NTC specification is KT78.

Brake wiring



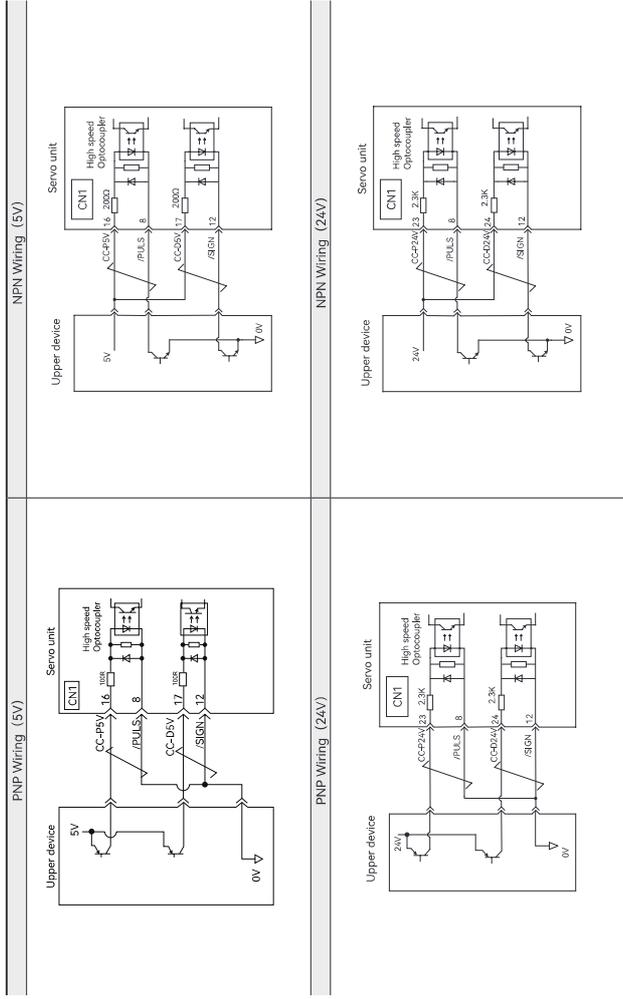
10F: Wiring circuit breaker
 FL: Noise filter
 15UF: Surge suppressor

Connection example for position control (pulse type)

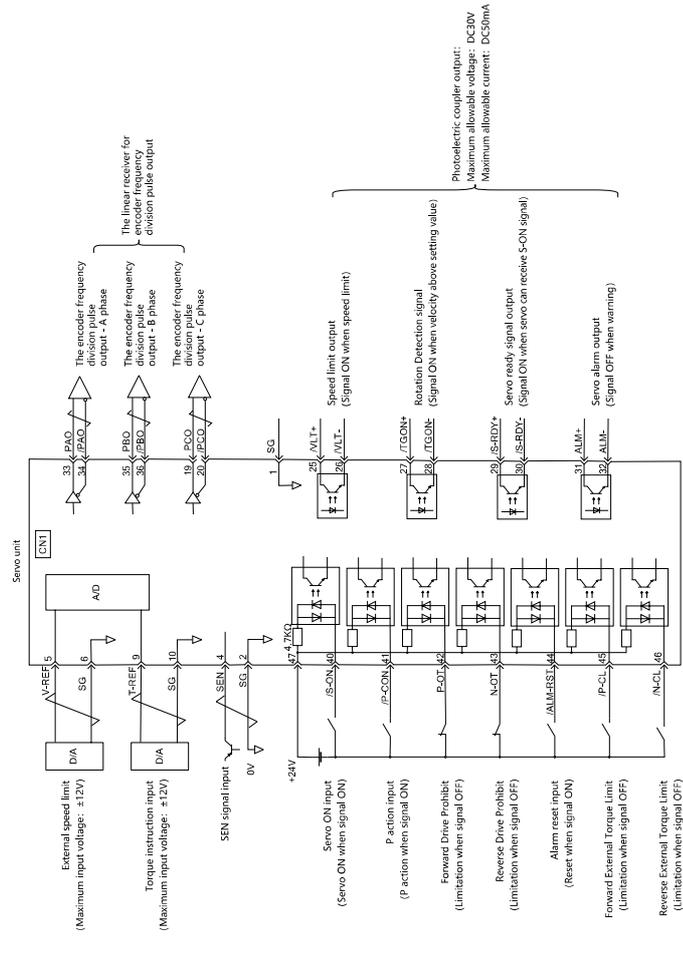


Note: This connection method is only applicable to 5V PNP, NPN, and 24V PNP NPN connections, refer to the following figure

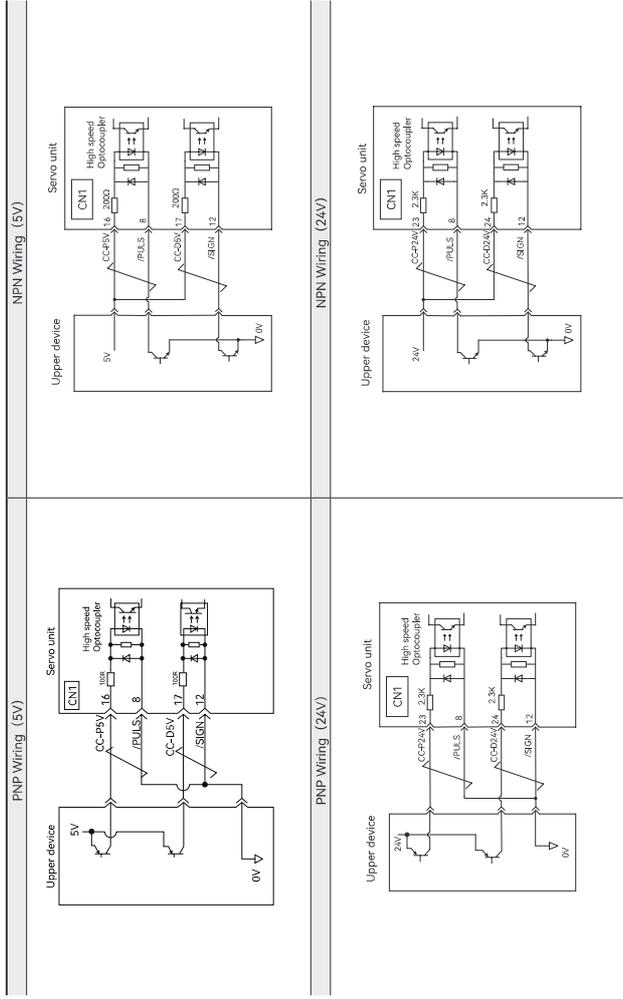
Example of non-differential input wiring of position control pulse and direction signal



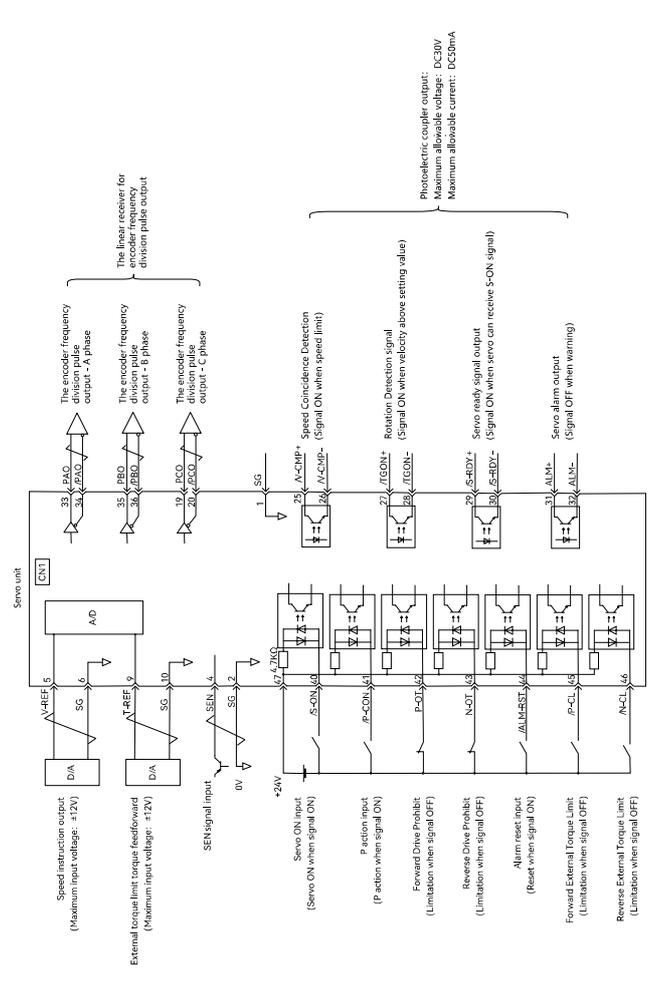
Connection example for torque control (pulse type)



Example of non-differential input wiring of position control pulse and direction signal



Connection example for position control (pulse type)



6 Y7SmartSeries servo alarm table

Reason of error alarm and handling method

Error No.: Error Name (Con. tent)	Reason	Confirmation method	Handling method
A.020: Parameter and check are abnormal (Abnormal data of internal parameters of servo unit)	The power supply voltage drops instantaneously.	Measuring power supply voltage; Confirm the time of the power outage	Set the power supply voltage within the specification range and initializes the parameter Settings (Fn005).
	The power is turned off during parameter writing.	Verify that frequent parameter changes have been made from the upper device.	After the initial parameter setting (Fn005), write the parameters again. It could be a servo unit failure. Replace the servo unit. Change the parameter writing method.
A.021: Parameter formatting error (Data form of internal parameters of servo unit is abnormal)	Misfunction is caused by noise from AC power supply, grounding, and static electricity.	When the alarm still occurs after multiple power connections, noise may be the reason.	Take measures to prevent noise interference.
	The components inside the servo unit fail due to gas, water droplets or cutting oil.	Confirm the installation environment	It could be a servo unit failure. Replace the servo unit.
A.022: The system and verification are abnormal (Data of Internal parameter of servo unit is abnormal)	Servo unit fault	When the alarm still occurs after multiple power connections.	It could be a servo unit failure. Replace the servo unit.
	The software version of the written parameter is newer than the software version of the servo unit where the alarm occurred.	Use Fn012 to check whether the software version is the same. If the version is different, an alarm may occur	Write the parameters of other servo units with the same software version and model, and then switch on the power.
A.030: The main circuit is detected faulty	Servo unit fault	—	It could be a servo unit failure. Replace the servo unit.
	The power supply voltage drops instantaneously.	Measuring supply voltage	Replace the servo unit.
A.040: Parameter setting abnormal (Beyond the set range)	The power was turned off when setting the auxiliary function	Confirm the time of the power off	It could be a servo unit failure. Replace the servo unit.
	Servo unit fault	When the alarm still occurs after multiple power connections.	It could be a servo unit failure. Replace the servo unit.
A.041: Frequency division pulse output setting is abnormal	Servo unit fault	—	It could be a servo unit failure. Replace the servo unit.
	The servo unit capacity does not match the servo motor capacity	Confirm the capacity and combination of servo unit and servo motor	Make the servo unit and servo motor capacity match each other. It could be a servo unit failure. Replace the servo unit.
A.042: Frequency division pulse output setting is abnormal	Servo unit fault	—	It could be a servo unit failure. Replace the servo unit.
	Outside the parameter setting range	Verify that the electronic gear ratio is outside the set range	Changed parameter the value within the set range. Set the electronic gear ratio to $0.001 < (Pn78C/Pn78E) < 4000$.
A.043: Frequency division pulse output setting is abnormal	The number of frequency division pulses of encoder (Pn212) does not satisfy the set range and set conditions	Confirm Pn212	Set Pn212 to the appropriate value.
	The speed of the program JOG running (Fn004) is not within the electronic gear ratio (Pn78C/Pn78E) or servo motor	Check whether the formula $*1$ is valid	Reduce the value of electronic gear ratio (Pn78C/Pn78E).
A.044: Parameter combination abnormal	The program JOG running speed (Fn004) does not satisfy the set range due to the change of program JOG moving speed (Pn533)	Check whether the formula $*1$ is valid	Increase the value of the program JOG speed (Pn533).
	The movement speed of advanced automatic tuning is not satisfying the set range due to change of electronic gear ratio (Pn78C/Pn78E) or servo motor	Check whether the formula $*1$ is valid	Reduce the value of electronic gear ratio (Pn78C/Pn78E).
A.045: Semi-closed loop/full closed loop parameter setting error	The fully closed loop module is inconsistent with the setting of Pn002.3	Confirm the Settings for Pn002.3	Make the full closed-loop module conform to the setting of Pn002.3
	The capacity of the servo unit does not match the capacity of the servo motor	Confirm $\frac{1}{4} \leq \frac{\text{the capacity of the motor}}{\text{the capacity of the servo}} \leq 4$	Make the servo unit and servo motor capacity match each other.
A.050: Combination error (Outside capacity range of combinable motors)	Encoder fault	Replace with other servomotors to ensure the alarm does not occur again	Replace the servo motor (Encoder)
	Servo unit fault	—	It could be a servo unit failure. Replace the servo unit.
A.051: The product does not support alarm.	The unsupported serial conversion unit, encoder, and external encoder are connected to the servo unit.	Confirm the product	Change to a matching combination.
	After performing the motor power-off (stop) function, the servo ON (Pn78ON) signal is input from the outside	—	Power on the servo unit again or perform software reset.

Error No.: Error Name (Con. tent)	Reason	Confirmation method	Handling method
A.100: Overcurrent detection (Overcurrent flows through the power transistor or heat sink overheating)	The main circuit cable is connected incorrectly or in poor contact	Check whether the cable connection is correct	Modify cable connections.
	A short circuit or ground fault occurs inside the main circuit cable	Check whether short circuit occurs between UVW phases and the grounding of the cable.	The cable may be short-circuited. Replace the cable.
A.300: Regenerative error	Short circuit or ground short circuit occurs inside the servo motor	Check whether there is short circuit between the UVW phase and the grounding of the motor terminal.	It could be a servo motor failure. Replace the servo motor.
	Short-circuit or grounding occurs inside the servo unit	Confirm whether short circuit occurs between UVW phase and UVM and ground of the servo motor connection terminal of the servo unit.	It could be a servo unit failure. Replace the servo unit.
A.320: Regenerative resistor overload	Regenerative resistor wiring error or poor contact	Check whether the cable connection is correct	Modify cable connections.
	Dynamic brake (emergency stop due to DB servo unit) is used frequently, or DB overload alarm occurs	Check the DB resistance power consumption (Un00B) to determine the DB frequency. Or use the display of alarm record (Fn000) to confirm whether DB overload alarms A.730, A.731 have occurred.	Change the selection, operation method and mechanism of servo unit to reduce DB usage frequency.
A.330: Regenerative resistor	The regenerative resistance value is too high and exceeds regenerative processing capacity	Use the regenerative load rate (Un00A) to confirm the frequency of the regenerative resistance.	Considering the operating conditions and load, then confirm regenerative resistance value again.
	The regenerative resistance value of servo unit is too small	Use the regenerative load rate (Un00A) to confirm the frequency of the regenerative resistance.	Change the regenerative resistance value to a value above the minimum allowable resistance value of the servo unit.
A.330: Regenerative resistor	High load is borne when the servo motor stops or runs at low speed	Verify that the operating conditions are within the specifications of the servo drive.	Reduce the load on the servo motor or operate at a higher speed.
	Abnormal movements caused by noise	Improve wiring, installation, and other noise environment, confirm whether the effect	Take measures to prevent noise, such as correct FG wiring. In addition, the size of FG wire should be the same as the size of servo unit main circuit wire.
A.330: Regenerative resistor	Servo unit fault	—	Switch on the power again, there is still an alarm, it could be a servo unit failure. Replace the servo unit.
	Set the regenerative resistance capacity (Pn600) to a value other than "0" without an external regenerative resistor	Confirm the connection of the external regenerative resistor and the value of Pn600.	Connect an external regenerative resistor, or set Pn600 to 0 when a regenerative resistor is not required.
A.330: Regenerative resistor	There is no external regenerative resistor, and the jumper of the power terminal B2-B3 of the servo unit is loose	Verify that the power terminal jumper is connected	Connect the jumper cables correctly.
	The external regenerative resistor is poorly connected or disconnected	Confirm the wiring of the external regenerative resistor	Connect the external regenerative resistor correctly.
A.330: Regenerative resistor	Servo unit fault	—	In the state of not connected to the main circuit power supply, connected to the control power supply, still occur alarm, it could be a servo unit failure. Replace the servo unit.
	The power supply voltage exceeds the specification range	Measuring supply voltage	Set the supply voltage within the specification range.
A.330: Regenerative resistor	External regenerative resistance value or regenerative resistance capacity is insufficient, or in the state of continuous regeneration	Reconfirm the running condition or capacity	Change the regenerative resistance value and regenerative resistance capacity, and adjust the operating conditions again.
	Continuous load bearing, in a state of continuous regeneration	Confirm the load applied to the running servo motor	Discuss the system including servo, machinery and operating conditions.
A.330: Regenerative resistor	The capacity set in parameter Pn600 is smaller than that of the external regenerative resistor	Confirm the regenerative resistor connection and Pn600 value	Correct the set value of parameter Pn600.
	The external regenerative resistance value is too large	Verify that the regenerative resistance value is correct	Change it to the correct resistance value and capacity.
A.330: Regenerative resistor	Servo unit fault	—	It could be a servo unit failure. Replace the servo unit.
	The power supply voltage inside the servo unit is too high, and the regenerative resistor is disconnected	Measuring the resistance value of regenerating resistor	Replace the servo unit when using the regenerative resistor built in the servo unit. When using an external regenerative resistor, replace the regenerative resistor.
A.330: Regenerative resistor	When setting the AC power input, the DC power is input	Check whether the power supply is DC	Make the set value of the power supply consistent with the power supply used.
	When setting the DC power input, the AC power is input	Check whether the power supply is AC	Make the set value of the power supply consistent with the power supply used.
A.330: Regenerative resistor	The main circuit power supply is incorrectly connected	Confirm the connection of the external regenerative resistor and the value of Pn600	Connect an external regenerative resistor or set Pn600 to 0 when an external regenerative resistor is not required.
	* Check out when switch on the main circuit power supply	Verify that the power terminal jumper is connected	Connect the jumper cables correctly.
A.330: Regenerative resistor	Servo unit fault	—	It could be a servo unit failure. Replace the servo unit.

Error No.: Error Name (Con. tent)	Reason	Confirmation method	Handling method
A.400: Overvoltage (Overvoltage is detected through the power supply section of the main circuit of the servo unit)	AC200V servo unit and AC power supply voltage above 290V or AC400V servo unit detects power supply voltage above AC580V	Measure voltage of power supply	Adjust the AC/DC power supply voltage to range of the product specifications.
	The power supply is unstable or affected by lightning strikes	Measure voltage of power supply	Improve the power supply condition, set the surge suppression etc. and then switch on the power again, still replace the servo unit.
A.410: Undervoltage (Check the undervoltage section of the main circuit of the servo unit)	When the AC power supply voltage is higher than the specification range, the acceleration and deceleration motion is carried out.	Confirm the power supply voltage and the speed and torque in operation	Adjust the AC power supply voltage to range of the product specifications.
	The external regenerative resistance value is larger than the operating condition	Confirm operating conditions and regenerative resistance values	Considering the operating conditions and load, the regenerative resistance value should be discussed again.
A.450: Main circuit capacitor overvoltage	Operating in a state with an inertia ratio which above the allowable value	Verify that the moment of inertia ratio is within the allowable value	Extend the deceleration time, or reduce the load.
	Servo unit fault.	—	In the state of not connected to the main circuit power supply, connected to the control power supply, still occur alarm, it could be a servo unit failure. Replace the servo unit.
A.510: Overspeed (motor speed above maximum speed)	AC200V servo unit, AC power supply voltage below 120V	Measure voltage of power supply	Adjust the supply voltage to the normal range.
	AC400V servo unit, AC power supply voltage is below 220V	Measure voltage of power supply	Increase the power capacity.
A.511: Frequency division pulse output over-speed	The power supply voltage drops during operation	Measure voltage of power supply	When the instantaneous outage hold time (Pn509) is changed, set it to a smaller value.
	Instantaneous power cut	Measure voltage of power supply	Replace the servo unit and connect the reactor before using the servo unit.
A.520: Vibration alarm	The fuse of the servo unit has blown	—	Replace the servo unit.
	Servo unit fault	—	Replace the servo unit.
A.571: Advanced automatic tuning alarm (Vibration parameter tuning EasyFFT, no adjustment power)	Servo unit fault	—	Replace the servo unit.
	The U, V, W phase sequence of the motor connection is wrong	Confirm the connection of servo motor	Confirm whether there is any problem with motor wiring.
A.710: Overload (Instantaneous maximum load)	The instruction input value exceeded the overspeed value	Confirm input instruction	Decrease the command value, or adjust the gain.
	The motor speed exceeds the maximum speed	Confirm motor speed waveform	Reduce speed instruction input gain, adjust servo gain, or adjust operating conditions. Replace the servo unit.
A.720: Overload (Continuous maximum load)	Servo unit fault	—	Replace the servo unit.
	The output frequency of the frequency division pulse exceeds the limit value	Confirm the output Settings of the frequency division pulse	Reduce motor speed.
A.730: DB overload (The power consumption of dynamic brake is detected to be too high)	Abnormal motor speed vibration is detected	Confirm the abnormal sound of the motor and the speed and torque waveform during operation	Reduce motor speed. Or reduce the speed loop gain (Pn100).
	The value of the moment of inertia ratio (Pn103) is larger than the actual value or has a large change	Confirm the moment of inertia ratio	Set the moment of inertia ratio correctly (Pn103).
A.740: Impulse current limiting resistor overload (The frequency of main circuit power supply is too high)	The motor vibrates greatly when using the free adjustment function	Confirm motor speed waveform	Reduce the load below the allowable moment of inertia ratio, or raise the load value of the free adjustment value setting (Pn200), or reduce the rigidity value.
	In the process of single parameter tuning and EasyFFT, the motor vibrates greatly	Confirm motor speed waveform	Implement the handling measures in each functional operation step.
A.747: Heat sink overheating (Heat sink temperature of servo unit exceeds 100°C)	Motor wiring, encoder wiring or connection are abnormal	Confirm wiring	Confirm whether there is any problem with motor wiring and encoder wiring.
	Motor operation exceeds the overload protection characteristic	Confirm the overload characteristics of the motor and running instructions	The load condition and operation condition should be discussed again or reduce motor capacity.
A.748: Servo unit built-in fan stops	The motor is not operated due to excessive load during operation	Confirm running instructions and motor speed	Improve mechanical factors.
	Servo unit fault	—	Replace the servo unit failure. Replace the servo unit.
A.749: DB overload (The power consumption of dynamic brake is detected to be too high)	The motor is being driven by external forces	Confirm running status	Do not drive the motor through external forces.
	The rotational energy of the DB at stop exceeds the capacity of the DB resistance	Check the DB resistance power consumption (Un00B) to determine the DB frequency	Try the following measures: Reduce the moment of inertia ratio. Reduce the number of DB stops. Replace the servo unit.

Error No.: Error Name (Con. tent)	Reason	Confirmation method	Handling method
A.740: Impulse current limiting resistor overload (The frequency of main circuit power supply is too high)	The number of times the impulse current limiting resistance exceeds the ON/OFF limit of the main circuit power supply	—	Reduce the ON/OFF frequency of the main circuit power supply.
	Servo unit fault	—	It could be a servo unit failure. Replace the servo unit. Improve the installation condition of servo unit and reduce the ambient temperature. Change the reset method of the alarm.
A.740: Heat sink overheating (Heat sink temperature of servo unit exceeds 100°C)	Ambient temperature is too high	Use a thermometer to measure the ambient temperature	Improve the installation condition of servo unit and reduce the ambient temperature.
	The operation was performed after resetting the overload alarm several times by turning off the power	The overload alarm is recognized by the display of the alarm record (Fn000)	The overload alarm is recognized by the display of the alarm record (Fn000)
A.747: Heat sink overheating (Heat sink temperature of servo unit exceeds 100°C)	The load is too large or exceeds the regenerative processing capacity at running	The load in operation is confirmed by the cumulative load rate (Un009) and the regenerative processing capacity is confirmed by the regenerative load rate (Un00A)	The load condition and operation condition should be discussed again.
	The mounting direction and spacing between servo unit and other servo units are unreasonable	Confirm the installation status of the servo unit	Install according to servo unit installation standards.
A.748: Servo unit built-in fan stops	Servo unit fault	—	It could be a servo unit failure. Replace the servo unit. If an alarm still occurs after the foreign object is removed, it could be a servo unit failure. Replace the servo unit.
	The fan inside the servo unit stops rotating	Confirm there's no foreign object stuck for the first time	Perform the encoder setting operation (Fn008).
A.810: Encoder backup alarm (Checked only when absolute value encoder is connected)	Power on the absolute value encoder for the first time	Check whether it is powered on for the first time	Confirm the connection of the encoder and set up the encoder (Fn008)
	The encoder cable was removed and then reconnected	Check whether it is powered on for the first time	After restoring the power supply to the encoder (replacing the battery, etc.), set up the encoder (Fn008).
A.820: Encoder sum check alarm (Checked out on the encoder side)	The control power supply (+5V) of the servo unit and the battery power supply are faulty	Verify that the battery and plug status of the encoder plug are correct	Replace the servo motor if the alarm cannot be disarmed even if the setting operation is performed again. It could be a servo unit failure. Replace the servo unit.
	Absolute value encoder fault	—	Replace the servo unit. - Absolute encoder time. - If the (Fn008) encoder is set again and alarms still occur frequently, it could be a servo unit failure. - For rotary absolute encoder or incremental encoder, it could be a servo motor failure. Replace the servo motor. It could be a servo unit failure.
A.830: Encoder battery alarm (Absolute encoder battery voltage below the specified value)	Servo unit fault	—	Replace the battery properly.
	The battery is improperly connected or disconnected	Check the battery connection	Connect the battery properly.
A.840: Encoder data alarm (Checked out on the encoder side)	Battery voltage below the specified value (Z.7V)	Measure the voltage of the battery	Replace the battery. It could be a servo unit failure. Replace the servo unit.
	Servo unit fault	—	Switch on the power again, there is still an alarm, it could be a servo motor failure. Replace the servo motor. To repair connecting wiring of the encoder periphery. (Specify the correct servo motor main circuit cable, grounding treatment, etc.)
A.850: Encoder overspeed (Checked when the control power is switched on)	Encoder malfunction	—	Adjust the servo motor speed to less than 200 rpm, and then switch on the control power.
	Encoder malfunction due to noise and other interference	—	Switch on the power again, there is still an alarm, it could be a servo motor failure. Replace the servo motor. Switch on the power again, there is still an alarm, it could be a servo unit failure. Replace the servo unit.
A.860: Encoder overheating (Checked only when absolute value encoder is connected)	When the control power is switched on, the servo motor rotates at a speed of more than 200 rpm	Confirm the motor speed when powered on by the motor rotation speed monitor (Un000)	Adjust the ambient temperature of the servo motor below 40°C. Adjust the load of the servo motor to within the rated value before running.
	Encoder fault	—	Switch on the power again, there is still an alarm, it could be a servo motor failure. Replace the servo motor. Switch on the power again, there is still an alarm, it could be a servo unit failure. Replace the servo unit.
A.860: Encoder overheating (Checked only when absolute value encoder is connected)	Servo unit fault	—	Stop the motor when setting the origin position. Confirm that the motor is not running by the full closed-loop feedback pulse counter monitor (Un00E)
	The ambient temperature of the servo motor is too high	Measure the ambient temperature of the servo motor	Replace the external encoder. Replace the external conversion unit.
A.880: External encoder error	The servo motor operates at a load which exceed the rated value	Motor load is confirmed by cumulative load rate (Un009)	Adjust the load of the servo motor to within the rated value before running.
	Encoder fault	—	Switch on the power again, there is still an alarm, it could be a servo motor failure. Replace the servo motor. Switch on the power again, there is still an alarm, it could be a servo unit failure. Replace the servo unit.
A.8A0: External encoder error	Servo unit fault	—	Stop the motor when setting the origin position. Confirm that the motor is not running by the full closed-loop feedback pulse counter monitor (Un00E)
	Motor running, absolute value external encoder origin setting failed.	Before setting the origin position, confirm that the motor is not running by the full closed-loop feedback pulse counter monitor (Un00E)	Stop the motor when setting the origin position. Confirm that the motor is not running by the full closed-loop feedback pulse counter monitor (Un00E)
A.8A1: The external encoder module error	External encoder error	—	Replace the external encoder.
	External encoder error	—	Replace the external conversion unit.
A.8A2: The external encoder sensor error (Incremental type)	The serial conversion unit error	—	Replace the serial conversion unit.
	External encoder error	—	Replace the external encoder.

Error No.: Error Name (Con. tent)	Reason	Confirmation method	Handling method
A.BA3: The external encoder position error (Absolute value)	Absolute external encoder error	—	It is possible that the absolute value external encoder fault. Please take corresponding measures according to the manufacturer's instruction manual.
A.BA5: External encoder overspeed error	Detected overspeed of external encoder	Confirm the maximum speed of the external encoder	Use the external encoder below its maximum speed.
A.BA6: External encoder overheating error	Detected overheating of external encoder	—	Replace the external encoder.
A.B70: Speed instruction A/D is abnormal * Check out when the servo is ON	Malfunction of speed instruction input section	—	Reset the alarm and run again.
A.B71: Speed instruction A/D conversion data is abnormal	Servo unit fault	—	Switch on the power again. there is still an alarm. It could be a servo unit failure. Replace the servo unit.
A.B20: Torque instruction A/D is abnormal * Check out when the servo is ON	Malfunction of torque instruction input section	—	Switch on the power again. there is still an alarm. It could be a servo unit failure.
A.B31: Current detection error 1	Servo unit fault	—	Switch on the power again. there is still an alarm. It could be a servo unit failure.
A.B32: Current detection error 2	U-phase current detection loop error	—	Switch on the power again. there is still an alarm. It could be a servo unit failure.
A.B33: Current detection error 3	V-phase current detection loop error	—	Switch on the power again. there is still an alarm. It could be a servo unit failure.
A.BF0: System alarm 0	The current detection loop error	—	Switch on the power again. there is still an alarm. It could be a servo unit failure.
A.BF1: System alarm 1	The main circuit cable of servo motor is disconnected	Confirm whether the main circuit cable of the servo motor is disconnected	Repair the motor cable.
A.BF2: System alarm 2	Servo unit fault	—	Switch on the power again. there is still an alarm. It could be a servo unit failure.
A.BF3: System alarm 3	Servo unit fault	—	Switch on the power again. there is still an alarm. It could be a servo unit failure.
A.BF4: System alarm 4	Servo unit fault	—	Switch on the power again. there is still an alarm. It could be a servo unit failure.
A.C10: Prevent out of control detection * Check out when the servo is ON	The U, V, W phase sequence of the motor connection is wrong	Confirm motor wiring	Confirm whether there is any problem with motor wiring. If there is no problem with the motor wiring, switch on the power again. there is still an alarm, it could be a servo motor failure.
A.C30: Encoder clear abnormal (When the number of turns is abnormal)	Encoder fault	—	Replace the servo motor.
A.C90: Encoder communication error	Servo unit fault	—	Switch on the power again. there is still an alarm. It could be a servo unit failure.
A.C90: Encoder communication error	Encoder fault	—	Replace the servo motor.
A.C90: Encoder communication error	Servo unit fault	—	Switch on the power again. there is still an alarm. It could be a servo unit failure.
A.C90: Encoder communication error	Poor contact of encoder connector, or wrong plug connection	Confirm the status of the port used by the encoder connection	Insert encoder plug again to confirm the encoder connection.
A.C90: Encoder communication error	Encoder cable breaks, short circuit, or uses a cable that exceeds the specified impedance	Confirm the status of the encoder cable	Use the encoder cable as required specification.
A.C90: Encoder communication error	Corrosion caused by temperature, humidity and gas; Short circuit caused by water drop and cutting oil; Poor plug contact due to vibration	Confirm the operating environment	Improve the operating environment and replace the servo unit. Even if there is no improvement, replace the servo unit.
A.C90: Encoder communication error	Malfunction caused by noise interference.	—	Correctly connect wiring of the encoder periphery (separate the encoder cable from the servo motor main circuit cable; ground treatment, etc.).
A.C90: Encoder communication error	Servo unit fault	—	If no alarm occurs when the servo motor is connected to other servo units and the control power is switched on, it could be a servo unit failure. Replace the servo unit.

Error No.: Error Name (Con. tent)	Reason	Confirmation method	Handling method
A.C91: Encoder communication position data acceleration is abnormal	Encoder cable may be sagged, cladding damaged and signal line interfered	Confirm the status of encoder cables and access ports	Confirm whether there is a problem with the laying of encoder cables.
A.C92: The encoder communication timer is abnormal	Encoder cables are bundled or too close to high current wires	Confirm the setting status of the encoder cable	Lay the encoder cable in a position where it will not be subjected to surge voltage.
A.C90: Encoder parameter abnormal	The potential varies of FG due to the influence of the equipment (welding machine, etc.) at the motor side	Confirm the setting status of the encoder cable	Ground the machine to prevent shunt to the encoder side FG.
A.C90: Encoder parameter abnormal	The signal line of the encoder is interfered	—	Implement anti-jamming countermeasures for encoder wiring.
A.C90: Encoder parameter abnormal	Encoder withstand excessive vibration impact	Confirm service condition	Reduce the vibration of the machine. Or install the servo motor correctly.
A.C90: Encoder parameter abnormal	Encoder fault	—	Switch on the power again. there is still an alarm, it could be a servo motor failure. Replace the servo motor.
A.C90: Encoder parameter abnormal	Servo unit fault	—	Switch on the power again. there is still an alarm, it could be a servo unit failure.
A.C90: Encoder parameter abnormal	Encoder fault	—	Switch on the power again. there is still an alarm, it could be a servo motor failure. Replace the servo motor.
A.C90: Encoder parameter abnormal	Servo unit fault	—	Switch on the power again. there is still an alarm, it could be a servo unit failure.
A.C90: Encoder parameter abnormal	Encoder wiring error, poor contact	Check the encoder wiring	Check whether the cable to the encoder is faulty.
A.C90: Encoder parameter abnormal	Encoder cable specifications differ or subject to noise interference	—	Change the cable specifications to double stranded cable or double stranded overall shielded cable. The core wire is more than 0.12mm ² and tinned soft copper stranded cable.
A.C90: Encoder parameter abnormal	The connection distance of encoder cable is too long, which is interfered by noise	—	The maximum connection distance is 50m.
A.C90: Encoder parameter abnormal	The potential varies of FG due to the influence of the equipment (welding machine, etc.) at the motor side	Confirm the setting status of the encoder cable	Ground the machine to prevent shunt to the encoder side FG.
A.C90: Encoder parameter abnormal	Encoder withstand excessive vibration impact	Confirm service condition	Reduce the vibration of the machine. Or install the servo motor correctly.
A.C90: Encoder parameter abnormal	Encoder fault	—	Switch on the power again. there is still an alarm, it could be a servo motor failure. Replace the servo motor.
A.C90: Encoder parameter abnormal	Servo unit fault	—	Switch on the power again. there is still an alarm, it could be a servo unit failure. Replace the servo unit.
A.C90: Encoder parameter abnormal	The upper limit for DD motor rotation limit for encoder rotation	Confirm Pr205	Set the Pr205 correctly (0 ~ 65535)
A.C90: Encoder parameter abnormal	The upper limit of the number of turns from the parameter of the servo unit, or this parameter is changed	Confirm the value of servo unit Pr205	Change the Setting Fr013 when an alarm is occurring.
A.C90: Encoder parameter abnormal	Servo unit fault	—	Switch on the power again. there is still an alarm, it could be a servo unit failure. Replace the servo unit.
A.C90: Encoder parameter abnormal	The connection of U, V and W of servo motor is incorrect	Confirm the connection of main circuit cable of servo motor	Check whether the motor cable or encoder cable has poor contact and other problems.
A.d00: Excessive position deviation (When the servo is OFF, the position deviation exceeds the position deviation alarm value (Pr520))	The frequency of the position instruction is too high	Try to decrease the command pulse rate before running	Reduce the position command pulse frequency or command acceleration, or adjust the electronic gear ratio.
A.d01: Excessive position deviation alarm when servo ON	Position instruction acceleration is too large	Try to decrease the command acceleration before running	Add smoothing functions of the time constant of position instruction acceleration and deceleration (Pr216).
A.d02: Warning of excessive position deviation caused by speed limit when servo ON	The alarm value of "excessive position deviation" (Pr520) is too low relative to the operating conditions	Verify that the position deviation alarm value (Pr520) is appropriate	Set the Pr520 parameter correctly.
A.d03: Excessive position deviation alarm when servo ON	Servo unit fault	—	Switch on the power again. there is still an alarm, it could be a servo unit failure. Replace the servo unit.
A.d04: Warning of excessive position deviation caused by speed limit when servo ON	When the position deviation is above the set value of Pr526, the servo ON	Confirm the position deviation of the servo ON (Un008)	To clear the position deviation when the servo ON or set the correct alarm value of excessive position deviation (Pr526) when the servo ON.
A.d05: Warning of excessive position deviation caused by speed limit when servo ON	When the servo is ON in the position deviation accumulation state, the speed is limited by the speed limit value (Pr529) when the servo is ON, input a position command in this state exceeds the set value of the "excessive position deviation" alarm (Pr520)	—	To clear the position deviation when the servo ON or set the correct alarm value of excessive position deviation (Pr526) when the servo ON or set the servo ON speed limit value (Pr529) to the correct value.
A.d10: Excessive position deviation between Motor - load	Motor rotation direction is opposite to the normal encoder mounting direction, etc., and the installation failure of the external encoder junction	Confirm the motor rotation direction at the external encoder installation	Reverse the mounting direction of the external encoder, or set the motor direction. Note: If using the External Encoder (Pr002.3) to the opposite direction.
A.d10: Excessive position deviation between Motor - load	Excessive position deviation between Motor - load	Confirm external encoder connection	Mechanical binding again.

Error No.: Error Name (Con. tent)	Reason	Confirmation method	Handling method
A.E01: The signal input time of the security function is abnormal	The startup time difference between the input signals /HWBB1 and /HWBB2 of the hardwired base blocking function is more than 10 seconds	Measure the time difference between the two input signals	May be /HWBB1 /HWBB2 output signal loop fault, machine fault, servo unit input signal loop fault, input signal cable broken; Confirm the fault or disconnection.
A.F10: Power phase loss (In the ON state of the main power supply, the low voltage state of a phase in the R, S, T phase lasts for more than 1 second) when the main circuit power supply is switched on	The three-phase power cable is poor connected The three-phase power supply is unbalanced Without the parameter setting of single-phase input (Pn00B2 = 1), the single-phase power supply is directly input	Confirm power cables Measure the voltage of each phase of the three-phase power supply Confirm power and parameter Settings	Check whether the power cable is faulty. Correct unbalance of power supply (transpose phase). Set power input and parameters correctly.
FL-112: System alarm FL-22: System alarm	Servo unit fault Servo unit fault Servo unit fault	— — —	Switch on the power again, there is still an alarm, it could be a servo unit failure. Replace the servo unit. Switch on the power again, there is still an alarm, it could be a servo unit failure. Replace the servo unit.

Reason of warning and handling method

Warning No./ Warning name (Content)	Reason	Confirmation method	Handling method
A.900: Excessive position deviation	The connection of U, V and W of servo motor is incorrect. The servo unit gain is low The frequency of the position instruction pulse is too high Position instruction acceleration is too large. The excessive position deviation alarm value (Pn520) is too low relative to the operating conditions	Confirm the connection of main circuit cable of servo motor. Check if the gain of the servo unit is too low Try to decrease the command pulse rate before running Try to decrease the command acceleration before running Verify that the excessive position deviation alarm value (Pn520) is appropriate	Check whether the motor cable or encoder cable has poor contact and other problems. Improve servo gain through advanced automatic tuning. Reduce the position command pulse frequency or command acceleration, or adjust the electronic gear ratio. Add smoothing functions of the time constant of position instruction acceleration and deceleration (Pn216/Pn217). Set the Pn520 correctly.
A.901: Excessive position deviation when servo ON	Servo unit fault When servo ON, the accumulated position deviation exceeds set ratio Pn520 x Pn51E 100	— —	Switch on the power again, there is still an alarm, it could be a servo unit failure. Replace the servo unit. To clear the position deviation when the servo is OFF or when the stop is completed, set the appropriate excessive warning value when the servo is ON (Pn528).
A.910: Overload (Then Warning becomes alarm (A.710 A.720))	Motor wiring, encoder wiring or poor connection Motor operation exceeds the overload protection characteristic The motor is not driven due to mechanical factors, resulting in excessive load during operation	Confirm connection Confirm motor overload characteristics and operation instructions Confirm instructions and motor speed	Confirm whether there is any problem with motor wiring and encoder wiring. Reconsider the load and operating conditions. Or, increase the motor capacity. Improve mechanical factors.
A.911: Vibration	Servo unit fault Detect abnormal vibration in motor operation	— Confirm the abnormal sound of the motor and the speed and torque waveform during operation	It could be a servo unit failure. Replace the servo unit. Reduce motor speed or servo gain by single parameter tuning.
A.920: Regenerative overload (The warning before it becomes regenerative alarm (A.320))	The value of the rotary inertia ratio (Pn103) is larger than the actual value The power supply voltage exceeds the servo rated voltage Excessive regenerative resistance value, servo unit capacity or regenerative resistance capacity is insufficient, or in continuous regenerative state Continuous bearing of negative load, in a state of continuous regeneration	Confirm the rotary inertia ratio Measure voltage of power supply Reconfirm running conditions or capacity (Capacity selection software HCServoWorks, etc.) Confirm the load applied to the running servo motor	Set the rotary inertia ratio correctly (Pn103). Set the voltage of power supply within the specification range. Change the regenerative resistance value, regenerative resistance capacity, or servo unit capacity. The operating conditions were adjusted again (capacity selection software HCServoWorks, etc.). Rediscuss the system including servo, machinery and operating conditions.
A.921: DB overload (The warning before it becomes DB overload (A.731))	The rotational energy of the DB at stop exceeds the capacity of the DB resistance	Check the DB resistance power consumption (Un00B) to determine the DB frequency	Do not drive the motor through external forces. Try the following measures · Reduce the command speed of the servo motor. · Reduce the moment of inertia ratio. · Reduce the number of DB stops.
A.930: Failure of absolute value encoder (Absolute value encoder battery voltage below the specified value) * Check out when connecting absolute value encoder only	Servo unit fault The battery is improperly connected or disconnected Battery voltage below the specified value (2.7V)	— Check the battery connection Measure the voltage of the battery	It could be a servo unit failure. Replace the servo unit. Connect the battery properly. Replace the battery.

Warning No./ Warning name (Content)	Reason	Confirmation method	Handling method
A.941: Changed the parameters that need to be repower	Changed the parameters that need to be repower 200V servo unit, AC power supply voltage below 140V, 400V servo unit, AC power supply voltage below 280V	— Measure voltage of power supply	Repower servo drive Adjust the supply voltage to the normal range.
A.971: Undervoltage	The power supply voltage drops during operation Instantaneous power cut The fuse of the servo unit has blown Servo unit fault	Measure voltage of power supply Measure voltage of power supply — —	Increase the power capacity. If the instantaneous outage hold time (Pn509) is changed, set it to a smaller value. Replace the servo unit and connect the reactor before using the servo unit. Replace the servo unit. Replace the fuse.
A.940: Overtravel (Overtravel status was detected)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal monitor (Un005).	The reason of error and handling method can be judged from the reason of error. In addition, if the overtravel signal cannot be confirmed with the input signal monitor (Un005), a transient overtravel may be detected. Take the following measures · Do not send instructions from the upper device to the position which is overtravel. · Confirm the signal connection of the overtravel signal. · Adapt anti-interference countermeasures.
A.977: The enable condition is not satisfied	The power supply of the main circuit is abnormal SEN signal is not connected when absolute value motor is used	Confirm the connection of the power cable of the servo main circuit Confirm the SEN signal connection	Confirm whether the main circuit power supply is normal. Confirm whether the bus voltage is normal. Confirm the SEN signal connection

Function code definition

Function name	Name description	Function	Definition of the digital input terminal (DI)	Function instruction
S-ON	Servo enable	Invalid: Servo motor disabled Valid: Servo motor enabled	—	—
ALM-RST	Alarm reset signal	—	Depending on the alarm type, servo can continue to operate after some alarms are reset	—
P-COIN	—	—	Zero speed motor clamping signal, command pulse disabled.	—
P-OT	Forward Drive Prohibit	—	When the mechanical movement exceeds the movable range limit switch action, enter the overtravel protection function Valid: Positive limit, positive motion is prohibited Invalid: Normal range, positive motion is allowed	When the mechanical movement exceeds the movable range limit switch action, enter the overtravel protection function
N-OT	Reverse Drive Prohibit	—	When the mechanical movement exceeds the movable range limit switch action, enter the overtravel protection function Effective: Negative limit, negative motion is prohibited Invalid: Normal range, negative motion is allowed	When the mechanical movement exceeds the movable range limit switch action, enter the overtravel protection function
P-CL	Forward External Torque Limit	—	Valid: External torque limit is valid	—
N-CL	Reverse External Torque Limit	—	Valid: External torque limit is valid Invalid: External torque limit is invalid	—
SPD-D	Internal setting speed control input signal	—	Switch the rotation direction of the servo motor	—
SPD-A	—	—	Select the internal setting speed	—
SPD-B	—	—	Select the internal setting speed	—
C-SEL	Mode switching selection signal	—	Switch control mode between speed, position and torque according to the selected control mode (7, 8, 9)	—
ZCLAMP	Zero speed motor clamping signal	—	Valid: Zero speed motor clamping function is disabled Invalid: Zero speed motor clamping function is enabled	—
INHIBIT	Pulse command prohibit signal	—	Valid: Stop pulse instruction counting Invalid: Start pulse instruction counting	—
G-SEL	Manually switching gain	—	Invalid: Switch to first gain Valid: Switch to second gain	—
COIN	Positioning completion signal	—	Invalid: Positioning is not complete Valid: Positioning completed	—
V-CMP	Speed Coincidence Detection signal	—	Invalid: Velocity is not matching Valid: Velocity matching	—
TGOON	Rotation Detection signal	—	Invalid: servo motor speed is lower than Pn502 set value Valid: servo motor speed is higher than Pn502 set value	—
S-RDY	Servo ready output signal	—	Invalid: The status that servo cannot receive the servo ON (/S-ON) signal Valid: The status that servo can receive servo ON (/S-ON) signal	—
CLT	Torque control check out signal	—	Invalid: Motor output torque is not limited Valid: Motor output torque is limited	—
VLT	Speed control check out signal	—	Invalid: Motor speed is not limited Valid: Motor speed limited	—
BK	Brake signal	—	Invalid: Brake action Valid: Brake does not act	—
WARN	Warning signal	—	Invalid: Servo unit normal state Valid: Servo unit warning status	—
NEAR	Near signal	—	Invalid: Location completion near point has not been reached Valid: Location completion near point is reached	—
PSELA	Instruction pulse rate switching	—	Invalid: This signal function is not used Valid: Switch the multiple of the position instruction pulse input to the multiple set by Pn218	—