



General-Purpose AC Servo

MITSUBISHI SERVO AMPLIFIERS & MOTORS

**MELSERVO-J4**

# **MELSERVO-J4 Servo amplifier**

INSTRUCTION MANUAL TROUBLE SHOOTING

# ● Safety Instructions ●

Please read the instructions carefully before using the equipment.

To use the equipment correctly, do not attempt to install, operate, maintain, or inspect the equipment until you have read through this Instruction Manual, Installation guide, and appended documents carefully. Do not use the equipment until you have a full knowledge of the equipment, safety information and instructions. In this Instruction Manual, the safety instruction levels are classified into "WARNING" and "CAUTION".



Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.




Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight injury to personnel or may cause physical damage.

Note that the CAUTION level may lead to a serious consequence according to conditions. Please follow the instructions of both levels because they are important to personnel safety. What must not be done and what must be done are indicated by the following diagrammatic symbols.



Indicates what must not be done. For example, "No Fire" is indicated by .



Indicates what must be done. For example, grounding is indicated by .

In this Instruction Manual, instructions at a lower level than the above, instructions for other functions, and so on are classified into "POINT".

After reading this Instruction Manual, keep it accessible to the operator.

## 1. To prevent electric shock, note the following

### WARNING

- Before wiring or inspection, turn off the power and wait for 15 minutes or more until the charge lamp turns off. Then, confirm that the voltage between P+ and N- is safe with a voltage tester and others. Otherwise, an electric shock may occur. In addition, when confirming whether the charge lamp is off or not, always confirm it from the front of the servo amplifier.
- Do not operate switches with wet hands. Otherwise, it may cause an electric shock.

## 2. To prevent fire, note the following

### CAUTION

- When you use a MR-J4 multi-axis servo amplifier, connecting an encoder for different axis to the CN2A, CN2B, or CN2C connector may cause a fire.

## 3. To prevent injury, note the following

### CAUTION

- The servo amplifier heat sink, regenerative resistor, servo motor, etc. may be hot while power is on or for some time after power-off. Take safety measures, e.g. provide covers, to prevent accidental contact of hands and parts (cables, etc.) with them.

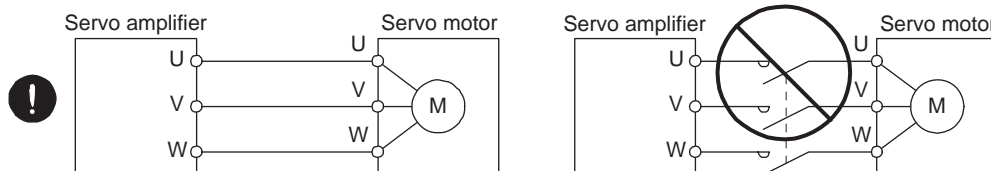
## 4. Additional instructions

The following instructions should also be fully noted. Incorrect handling may cause a malfunction, injury, electric shock, etc.

### (1) Wiring

### CAUTION

- Wire the equipment correctly and securely. Otherwise, the servo motor may operate unexpectedly.
- To avoid a malfunction, connect the wires to the correct phase terminals (U, V, and W) of the servo amplifier and servo motor.
- Connect the servo amplifier power output (U, V, and W) to the servo motor power input (U, V, and W) directly. Do not let a magnetic contactor, etc. intervene. Otherwise, it may cause a malfunction.



## (2) Usage

### ⚠ CAUTION

- Before resetting an alarm, make sure that the run signal of the servo amplifier is off in order to prevent a sudden restart. Otherwise, it may cause an accident.
- Use the servo amplifier with the specified servo motor.

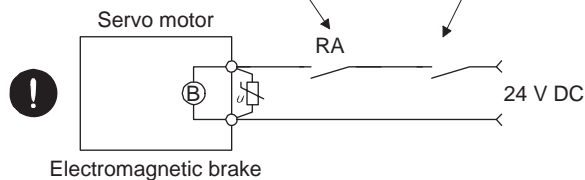
## (3) Corrective actions

### ⚠ CAUTION

- When it is assumed that a hazardous condition may occur due to a power failure or product malfunction, use a servo motor with an electromagnetic brake or external brake to prevent the condition.
- Configure an electromagnetic brake circuit so that it is activated also by an external EMG stop switch.

Contacts must be opened when CALM (Common malfunction) or MBR (Electromagnetic brake interlock) turns off.

Contacts must be opened with the EMG stop switch.



- When any alarm has occurred, eliminate its cause, ensure safety, and deactivate the alarm before restarting operation.
- Provide an adequate protection to prevent unexpected restart after an instantaneous power failure.

<<About the manual>>

This Instruction Manual covers the following models.

- MR-J4-\_A
- MR-J4-\_B
- MR-J4W\_-\_B

The symbols in the target column mean as follows.

MR-J4-\_A: [A]

MR-J4-\_B: [B]

MR-J4W\_-\_B: [WB]



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# 1. TROUBLESHOOTING

## 1. TROUBLESHOOTING

### 1.1 Alarm and warning list

When an error occurs during operation, the corresponding alarm or warning is displayed. If any alarm or warning has occurred, refer to section 1.2 and take the appropriate action. When an alarm occurs, ALM (Malfunction) will turn off.

	No.	Name	Detail display	Detail name
Alarm	10	Undervoltage	10.1	Voltage drop in the control power
			10.2	Voltage drop in the main circuit power
	11	Switch setting error	11.1	Axis number setting error
			11.2	Disabling control axis setting error
	12	Memory error 1 (RAM)	12.1	RAM error 1
			12.2	RAM error 2
			12.3	RAM error 3
			12.4	RAM error 4
			12.5	RAM error 5
	13	Clock error	13.1	Clock error 1
			13.2	Clock error 2
	14	Control process error	14.1	Control process error 1
			14.2	Control process error 2
			14.3	Control process error 3
			14.4	Control process error 4
			14.5	Control process error 5
			14.6	Control process error 6
			14.7	Control process error 7
			14.8	Control process error 8
			14.9	Control process error 9
			14.A	Control process error 10
	15	Memory error 2 (EEP-ROM)	15.1	EEP-ROM error at power on
			15.2	EEP-ROM error during operation
	16	Encoder initial communication error 1	16.1	Encoder initial communication - Receive data error 1
			16.2	Encoder initial communication - Receive data error 2
			16.3	Encoder initial communication - Receive data error 3
			16.5	Encoder initial communication - Transmission data error 1
16.6			Encoder initial communication - Transmission data error 2	
16.7			Encoder initial communication - Transmission data error 3	
16.A			Encoder initial communication - Process error 1	
16.B			Encoder initial communication - Process error 2	
16.C			Encoder initial communication - Process error 3	
16.D			Encoder initial communication - Process error 4	
16.E			Encoder initial communication - Process error 5	
16.F			Encoder initial communication - Process error 6	
17	Board error	17.1	Board error 1	
		17.3	Board error 2	
		17.4	Board error 3	
		17.5	Board error 4	
		17.6	Board error 5	
19	Memory error 3 (Flash-ROM)	19.1	Flash-ROM error 1	
		19.2	Flash-ROM error 2	
1A	Servo motor combination error	1A.1	Servo motor combination error	
		1A.2	Servo motor control mode combination error	
1E	Encoder initial communication error 2	1E.1	Encoder malfunction	
1F	Encoder initial communication error 3	1F.1	Incompatible encoder	



# 1. TROUBLESHOOTING

No.	Name	Detail display	Detail name
Alarm	20 Encoder normal communication error 1	20.1	Encoder normal communication - Receive data error 1
		20.2	Encoder normal communication - Receive data error 2
		20.3	Encoder normal communication - Receive data error 3
		20.5	Encoder normal communication - Transmission data error 1
		20.6	Encoder normal communication - Transmission data error 2
		20.7	Encoder normal communication - Transmission data error 3
		20.9	Encoder normal communication - Receive data error 4
		20.A	Encoder normal communication - Receive data error 5
	21 Encoder normal communication error 2	21.1	Encoder data error 1
		21.2	Encoder data update error
		21.3	Encoder data waveform error
		21.4	Encoder non-signal error
		21.5	Encoder hardware error 1
		21.6	Encoder hardware error 2
		21.9	Encoder data error 2
	24 Main circuit error	24.1	Ground fault detected by hardware detection circuit
		24.2	Ground fault detected by software detection function
	25 Absolute position erased	25.1	Servo motor encoder - Absolute position erased
	27 Initial magnetic pole detection error	27.1	Magnetic pole detection - Abnormal termination
		27.2	Magnetic pole detection - Time out error
		27.3	Magnetic pole detection - Limit switch error
		27.4	Magnetic pole detection - Estimated error
		27.5	Magnetic pole detection - Position deviation error
		27.6	Magnetic pole detection - Speed deviation error
		27.7	Magnetic pole detection - Current error
	28 Linear encoder error 2	28.1	Linear encoder - Environment error
	2A Linear encoder error 1	2A.1	Linear encoder error 1-1
		2A.2	Linear encoder error 1-2
		2A.3	Linear encoder error 1-3
		2A.4	Linear encoder error 1-4
		2A.5	Linear encoder error 1-5
		2A.6	Linear encoder error 1-6
		2A.7	Linear encoder error 1-7
		2A.8	Linear encoder error 1-8
	2B Encoder counter error	2B.1	Encoder counter error 1
		2B.2	Encoder counter error 2
	30 Regenerative error	30.1	Regeneration heat error
		30.2	Regeneration signal error
		30.3	Regeneration feedback signal error
	31 Overspeed	31.1	Abnormal motor speed
	32 Overcurrent	32.1	Overcurrent detected at hardware detection circuit (during operation)
		32.2	Overcurrent detected at software detection function (during operation)
32.3		Overcurrent detected at hardware detection circuit (during a stop)	
32.4		Overcurrent detected at software detection function (during a stop)	
33 Overvoltage	33.1	Main circuit voltage error	
34 SSCNET receive error 1	34.1	SSCNET receive data error	
	34.2	SSCNET connector connection error	
	34.3	SSCNET communication data error	
	34.4	Hardware error signal detection	
35 Command frequency error	35.1	Command frequency error	
36 SSCNET receive error 2	36.1	Continuous communication data error	
37 Parameter error	37.1	Parameter setting range error	
	37.2	Parameter combination error	
3A Inrush current suppression circuit error	3A.1	Inrush current suppression circuit error	
3E Operation mode error	3E.1	Operation mode error	

# 1. TROUBLESHOOTING

	No.	Name	Detail display	Detail name
Alarm	42	Servo control error	42.1	Servo control error by position deviation
			42.2	Servo control error by speed deviation
			42.3	Servo control error by torque/thrust deviation
	45	Main circuit device overheat	45.1	Main circuit device overheat error
	46	Servo motor overheat	46.1	Abnormal temperature of servo motor 1
			46.2	Abnormal temperature of servo motor 2
			46.3	Thermistor disconnected
			46.5	Abnormal temperature of servo motor 3
			46.6	Abnormal temperature of servo motor 4
	47	Cooling fan error	47.1	Cooling fan stop error
			47.2	Cooling fan speed reduction error
	50	Overload 1	50.1	Thermal overload error 1 during operation
			50.2	Thermal overload error 2 during operation
			50.3	Thermal overload error 4 during operation
			50.4	Thermal overload error 1 during a stop
			50.5	Thermal overload error 2 during a stop
			50.6	Thermal overload error 4 during a stop
	51	Overload 2	51.1	Thermal overload error 3 during operation
			51.2	Thermal overload error 3 during a stop
	52	Error excessive	52.1	Excess droop pulse 1
			52.3	Excess droop pulse 2
			52.4	Error excessive during 0 torque limit
			52.5	Excess droop pulse 3
	54	Oscillation detection	54.1	Oscillation detection error
	56	Forced stop error	56.2	Over speed during forced stop
			56.3	Estimated distance over during forced stop
	63	STO timing error	63.1	STO1 off
			63.2	STO2 off
	8A	USB communication time-out error	8A.1	USB communication time-out error
	8E	USB communication error	8E.1	USB communication receive error
8E.2			USB communication checksum error	
8E.3			USB communication character error	
8E.4			USB communication command error	
8E.5			USB communication data number error	
888/ 88888	Watchdog	88._/ 8888._	Watchdog	


# 1. TROUBLESHOOTING

	No.	Name	Detail display	Detail name
Warning	91	Servo amplifier overheat warning	91.1	Main circuit device overheat warning
	92	Battery cable disconnection warning	92.1	Encoder battery cable disconnection warning
			92.3	Battery degradation
	95	STO warning	95.1	STO1 off detection
			95.2	STO2 off detection
	96	Home position setting warning	96.1	In-position warning at home positioning
			96.2	Command input warning at home positioning
			96.3	Servo off warning at home positioning
	99	Stroke limit warning	99.1	Forward rotation stroke end off
			99.2	Reverse rotation stroke end off
	9F	Battery warning	9F.1	Low battery
			9F.2	Battery degradation warning
	E0	Excessive regeneration warning	E0.1	Excessive regeneration warning
	E1	Overload warning 1	E1.1	Thermal overload warning 1 during operation
			E1.2	Thermal overload warning 2 during operation
			E1.3	Thermal overload warning 3 during operation
			E1.4	Thermal overload warning 4 during operation
			E1.5	Thermal overload error 1 during a stop
			E1.6	Thermal overload error 2 during a stop
			E1.7	Thermal overload error 3 during a stop
			E1.8	Thermal overload error 4 during a stop
	E2	Servo motor overheat warning	E2.1	Servo motor temperature warning
	E3	Absolute position counter warning	E3.1	Multi-revolution counter travel distance excess warning
			E3.2	Encoder absolute positioning counter warning
			E3.5	Absolute position counter warning
	E4	Parameter warning	E4.1	Parameter setting range error warning
	E5	ABS time-out warning	E5.1	Time-out during ABS data transfer
			E5.2	ABSM off during ABS data transfer
			E5.3	SON off during ABS data transfer
	E6	Servo forced stop warning	E6.1	Forced stop warning
	E7	Controller forced stop warning	E7.1	Controller forced stop warning
	E8	Cooling fan speed reduction warning	E8.1	Decreased cooling fan speed warning
	E9	Main circuit off warning	E9.1	Servo-on signal on during main circuit off
			E9.2	Bus voltage drop during low speed operation
			E9.3	Ready-on signal on during main circuit off
	EA	ABS servo-on warning	EA.1	ABS servo-on warning
EB	The other axis error warning	EB.1	The other axis error warning	
EC	Overload warning 2	EC.1	Overload warning 2	
ED	Output watt excess warning	ED.1	Output watt excess warning	
F0	Tough drive warning	F0.1	Instantaneous power failure tough drive warning	
		F0.3	Vibration tough drive warning	
F2	Drive recorder - Miswriting warning	F2.1	Drive recorder - Area writing time-out warning	
		F2.2	Drive recorder - Data miswriting warning	
F3	Oscillation detection warning	F3.1	Oscillation detection warning	

# 1. TROUBLESHOOTING

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## 1.2 Remedies for alarms

 <b>CAUTION</b>	<ul style="list-style-type: none"><li>● When any alarm has occurred, eliminate its cause, ensure safety, and deactivate the alarm before restarting operation. Otherwise, it may cause injury.</li><li>● If [AL. 25 Absolute position erased] occurs, always make home position setting again. Otherwise, it may cause an unexpected operation.</li><li>● As soon as an alarm occurs, make the Servo-off status and interrupt the main circuit power.</li></ul>
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POINT
<ul style="list-style-type: none"><li>● When any of the following alarms has occurred, do not cycle the power repeatedly to restart. Doing so will cause a malfunction of the servo amplifier and the servo motor. Remove its cause and allow about 30 minutes for cooling before resuming the operation.<ul style="list-style-type: none"><li>▪ [AL. 30 Regenerative error]    • [AL. 45 Main circuit device overheat]</li><li>▪ [AL. 46 Servo motor overheat]    • [AL. 50 Overload 1]</li><li>▪ [AL. 51 Overload 2]</li></ul></li></ul>

Remove the cause of the alarm in accordance with this section. Use MR Configurator2 to refer to a factor of alarm occurrence.

# 1. TROUBLESHOOTING

Alarm No.: 10		Name: Undervoltage					
Alarm content		<ul style="list-style-type: none"> <li>• The voltage of the control circuit power supply has dropped.</li> <li>• The voltage of the main circuit power supply has dropped.</li> </ul>					
Display	Detail name	Cause	Check method	Check result	Action	Target	
10.1	Voltage drop in the control power	(1)	The connection of the control circuit power supply connector (CNP2) has a failure.	Check the control circuit power supply connector.	It has a failure.	Connect it correctly.	[A] [B] [WB]
					It has no failure.	Check (2).	
		(2)	The voltage of the control circuit power supply is low.	Check if the voltage of the control circuit power supply is lower than 160 V AC.	The voltage is lower than 160 V AC.	Review the voltage of the control circuit power supply.	
					The voltage is higher than 160 V AC.	Check (3).	
		(3)	An instantaneous power failure has occurred for longer time than the specified time. The time will be 60 ms when [Pr. PA20] is "_ 0 _ _". The time will be the value set in [Pr. PF25] when [Pr. PA20] is "_ 1 _ _".	Check if the power has a problem.	It has a problem.	Review the power.	
		10.2	Voltage drop in the main circuit power	(1)	The main circuit power supply connector (CNP1) was disconnected.	Check the main circuit power supply connector.	
It is connected.	Check (2).						
(2)	The voltage of the main circuit power supply is low.			Check if the voltage of the main circuit power supply is lower than 160 V AC.	The voltage is lower than 160 V AC.	Increase the voltage of the main circuit power supply.	
					The voltage is higher than 160 V AC.	Check (3).	
(3)	The alarm has occurred during acceleration.			Check that the bus voltage during acceleration is 200 V DC or more.	The voltage is less than 200 V DC.	Increase the acceleration time constant. Or increase the power supply capacity.	
					The voltage is 200 V DC or more.	Check (4).	
(4)	The servo amplifier is malfunctioning.			Check the bus voltage value.	The voltage of the main circuit power supply is 160 V AC or more, and the bus voltage is less than 200 V DC.	Replace the servo amplifier.	

# 1. TROUBLESHOOTING

Alarm No.: 11		Name: Switch setting error					
Alarm content		<ul style="list-style-type: none"> <li>• The setting of the axis selection rotary switch or auxiliary axis number setting switch is incorrect.</li> <li>• The setting of the disabling control axis switch is incorrect.</li> </ul>					
Display	Detail name	Cause	Check method	Check result	Action	Target	
11.1	Axis number setting error	(1)	The setting of the Axis No. is incorrect.	Check the settings of the auxiliary axis number setting switch (SW2) and axis selection rotary switch (SW1).	When both of the auxiliary axis number setting switches are on, check the axis selection rotary switch if "E" is selected for MR-J4W2, ("E" or "F" is selected for MR-J4W2).	Set the axis No. correctly.	[WB]
					Both of the auxiliary axis number setting switches are off.	Replace the servo amplifier.	
11.2	Disabling control axis setting error	(1)	The setting of the disabling control axis switch is incorrect.	Check the setting of the disabling control axis switch.	Check if the setting is as follows.	Set it correctly.	
					<ol style="list-style-type: none"> <li>1) Only A-axis is disabled.</li> <li>2) Only B-axis is disabled.</li> <li>3) A-axis and B-axis are disabled.</li> <li>4) A-axis and C-axis are disabled.</li> </ol>		
					The setting is other than above.	Replace the servo amplifier.	

Alarm No.: 12		Name: Memory error 1 (RAM)					
Alarm content		• A part (RAM) in the servo amplifier is failure.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
12.1	RAM error 1	(1)	A part in the servo amplifier is failure.	Disconnect the cables except the control circuit power supply, and then check the repeatability.	It is repeatable.	Replace the servo amplifier.	[A]
				It is not repeatable.	Check (2).	[B]	
		(2)	Something near the device caused it.	Check the power supply for noise.	It has a failure.	Take countermeasures against its cause.	[WB]
12.2	RAM error 2	Check it with the check method for [AL. 12.1].					
12.3	RAM error 3						
12.4	RAM error 4						
12.5	RAM error 5						

# 1. TROUBLESHOOTING

Alarm No.: 13		Name: Clock error				
Alarm content		<ul style="list-style-type: none"> <li>• A part in the servo amplifier is failure.</li> <li>• A clock error transmitted from the controller occurred.</li> </ul>				
Display	Detail name	Cause	Check method	Check result	Action	Target
13.1	Clock error 1	(1) A part in the servo amplifier is failure.	Disconnect the cables except the control circuit power supply, and then check the repeatability.	It is repeatable.	Replace the servo amplifier.	[A]
				It is not repeatable.	Check (2).	[B] [WB]
		(2) A clock error transmitted from the controller occurred.	Check if the error occurs when you connect the amplifier to the controller.	It occurs.	Replace the controller.	[B] [WB]
				It does not occur.	Check (3).	
		(3) The servo amplifier of the next axis is malfunctioning.	Check if the servo amplifier of the next axis is malfunctioning.	It is malfunctioning.	Replace the servo amplifier of the next axis.	
				It is not malfunctioning.	Check (4).	
		(4) Something near the device caused it.	Check the power supply for noise. Check if the connector is shorted.	It has a failure.	Take countermeasures against its cause.	[A] [B] [WB]
		13.2	Clock error 2	Check it with the check method for [AL. 13.1].		

# 1. TROUBLESHOOTING

Alarm No.: 14		Name: Control process error					
Alarm content		• The process did not complete within the specified time.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
14.1	Control process error 1	(1)	The parameter setting is incorrect.	Check if the parameter setting is incorrect.	It is incorrect.	Set it correctly.	[A] [B] [WB]
					It is correct.	Check (2).	
		(2)	Something near the device caused it.	Check the power supply for noise. Check if the connector is shorted.	It has a failure.	Take countermeasures against its cause.	
				It has no failure.	Check (3).		
(3)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.			
14.2	Control process error 2	(1)	A synchronous signal error transmitted from the controller occurred.	Replace the controller, and then check the repeatability.	It is repeatable.	Replace the servo amplifier.	[B] [WB]
					It is not repeatable.	Check (2).	
		(2)	The parameter setting is incorrect.	Check if the parameter setting is incorrect.	It is incorrect.	Set it correctly.	[A] [B] [WB]
					It is correct.	Check (3).	
		(3)	Something near the device caused it.	Check the power supply for noise. Check if the connector is shorted.	It has a failure.	Take countermeasures against its cause.	
					It has no failure.	Check (4).	
		(4)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	
		14.3	Control process error 3	Check it with the check method for [AL. 14.1].			
14.4	Control process error 4						
14.5	Control process error 5						
14.6	Control process error 6						
14.7	Control process error 7						
14.8	Control process error 8						
14.9	Control process error 9						
14.A	Control process error 10						



# 1. TROUBLESHOOTING

Alarm No.: 15		Name: Memory error 2 (EEP-ROM)					
Alarm content		• A part (EEP-ROM) in the servo amplifier is failure.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
15.1	EEP-ROM error at power on	(1)	EEP-ROM is malfunctioning at power on.	Disconnect the cables except the control circuit power supply, and then check the repeatability.	It is repeatable.	Replace the servo amplifier.	[A] [B] [WB]
				It is not repeatable.	Check (2).		
		(2)	Something near the device caused it.	Check the power supply for noise. Check if the connector is shorted.	It has a failure.	Take countermeasures against its cause.	
				It has no failure.	Check (3).		
		(3)	The number of write times exceeded 100,000.	Check if parameters has been used very frequently.	It has a failure.	Replace the servo amplifier. Change the process to use parameters less frequently after replacement.	
					It does not occur.	Check (2).	
15.2	EEP-ROM error during operation	(1)	EEP-ROM is malfunctioning during normal operation.	Check if the error occurs when you change parameters during normal operation.	It occurs.	Replace the servo amplifier.	
				It does not occur.	Check (2).		
		(2)	A write error occurred while tuning results was processed.	Check if the alarm occurs after an hour from power on.	It takes an hour or more.	Replace the servo amplifier.	
					It takes less than an hour.	Check (3).	
		(3)	Something near the device caused it.	Check the power supply for noise. Check if the connector is shorted.	It has a failure.	Take countermeasures against its cause.	
					It has no failure.	Check (3).	

Alarm No.: 16		Name: Encoder initial communication error 1					
Alarm content		• Communication error occurred between encoder and servo amplifier.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
16.1	Encoder initial communication - Receive data error 1	(1)	An encoder cable is malfunctioning.	Check if the encoder cable is disconnected or shorted.	It has a failure.	Replace or repair the cable.	[A] [B] [WB]
				It has no failure.	Check (2).		
		(2)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	
					It is repeatable.	Check (3).	
		(3)	An encoder is malfunctioning.	Replace the servo motor or linear encoder, and then check the repeatability.	It is not repeatable.	Replace the servo motor.	
					It is repeatable.	Check (4).	
		(4)	Something near the device caused it.	Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
					It has no failure.	Check (3).	
16.2	Encoder initial communication - Receive data error 2	Check it with the check method for [AL. 16.1].					

# 1. TROUBLESHOOTING

Alarm No.: 16		Name: Encoder initial communication error 1					
Alarm content		• Communication error occurred between encoder and servo amplifier.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
16.3	Encoder initial communication - Receive data error 3	(1)	An axis not used is not set as disabled-axis.	Check the setting of the disabling control axis switch (SW2).	It is not set as disabled-axis.	Set it as disabled-axis.	[WB]
					It is set as disabled-axis.	Check (2).	
		(2)	An encoder cable was disconnected.	Check if the encoder cable is connected correctly.	It is not connected.	Connect it correctly.	[A]
					It is connected.	Check (3).	[B] [WB]
		(3)	The parameter setting of two-wire type/four-wire type is incorrect. Type A: [Pr. PC22] Type B: [Pr. PC04]	Check the parameter setting.	The setting is incorrect.	Set it correctly.	
					The setting is correct.	Check (4).	
		(4)	An encoder cable is malfunctioning.	Check if the encoder cable is disconnected or shorted.	It has a failure.	Replace or repair the cable.	
					It has no failure.	Check (5).	
		(5)	The voltage of the control circuit power supply has been unstable.	Check the voltage of the control circuit power supply.	The control circuit power supply has been an instantaneous power failure.	Review the power and related parts.	
					It has no failure.	Check (6).	
		(6)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	
					It is repeatable.	Check (7).	
		(7)	An encoder is malfunctioning.	Replace the servo motor, and then check the repeatability.	It is not repeatable.	Replace the servo motor.	
					It is repeatable.	Check (8).	
(8)	Something near the device caused it.	Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.			
16.5	Encoder initial communication - Transmission data error 1	Check it with the check method for [AL. 16.1].					
16.6	Encoder initial communication - Transmission data error 2						
16.7	Encoder initial communication - Transmission data error 3						

# 1. TROUBLESHOOTING

Alarm No.: 16		Name: Encoder initial communication error 1					
Alarm content		• Communication error occurred between encoder and servo amplifier.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
16.A	Encoder initial communication - Process error 1	(1)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	[A] [B] [WB]
				It is repeatable.	Check (2).		
		(2)	An encoder is malfunctioning.	Replace the servo motor, and then check the repeatability.	It is not repeatable.	Replace the servo motor.	
				It is repeatable.	Check (3).		
		(3)	Something near the device caused it.	Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
		16.B	Encoder initial communication - Process error 2	Check it with the check method for [AL. 16.A].			
16.C	Encoder initial communication - Process error 3						
16.D	Encoder initial communication - Process error 4						
16.E	Encoder initial communication - Process error 5						
16.F	Encoder initial communication - Process error 6						

# 1. TROUBLESHOOTING

Alarm No.: 17		Name: Board error					
Alarm content		• A part in the servo amplifier is malfunctioning.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
17.1	Board error 1	(1)	A current detection circuit is malfunctioning.	Check if the alarm occurs during the servo-on status.	It occurs.	Replace the servo amplifier.	[A] [B] [WB]
					It does not occur.	Check (2).	
		(2)	Something near the device caused it.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
17.3	Board error 2	Check it with the check method for [AL. 17.1]".					
17.4	Board error 3	(1)	The servo amplifier recognition signal was not read properly.	Disconnect the cables except the control circuit power supply, and then check the repeatability.	It is repeatable.	Replace the servo amplifier.	
					It is not repeatable.	Check (2).	
		(2)	Something near the device caused it.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
17.5	Board error 4	(1)	The setting value of the rotary switch (SW1) was not read properly.	Disconnect the cables except the control circuit power supply, and then check the repeatability.	It is repeatable.	Replace the servo amplifier.	[B] [WB]
					It is not repeatable.	Check (2).	
		(2)	Something near the device caused it.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
17.6	Board error 5	(1)	The setting value of the DIP switches (SW2) was not read properly.	Disconnect the cables except the control circuit power supply, and then check the repeatability.	It is repeatable.	Replace the servo amplifier.	
					It is not repeatable.	Check (2).	
		(2)	Something near the device caused it.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	

# 1. TROUBLESHOOTING

Alarm No.: 19		Name: Memory error 3 (Flash-ROM)					
Alarm content		• A part (Flash-ROM) in the servo amplifier is failure.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
19.1	Flash-ROM error 1	(1)	The Flash-ROM is malfunctioning.	Disconnect the cables except the control circuit power supply, and then check the repeatability.	It is repeatable.	Replace the servo amplifier.	[A] [B] [WB]
				It is not repeatable.	Check (2).		
		(2)	Something near the device caused it.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
19.2	Flash-ROM error 2	Check it with the check method for [AL. 19.1].					

Alarm No.: 1A		Name: Servo motor combination error					
Alarm content		• The combination of servo amplifier and servo motor is incorrect.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
1A.1	Servo motor combination error	(1)	The servo amplifier and the servo motor was connected incorrectly.	Check the model name of the servo motor and corresponding servo amplifier.	The combination is incorrect.	Use them in the correct combination.	[A] [B] [WB]
				The combination is correct.	Check (2).		
		(2)	The setting of [Pr. PA01] is not corresponding to the connected servo motor.	Check the [Pr. PA01] setting. Rotary servo motor: "_ _ 0 _" Linear servo motor: "_ _ 4 _" Direct drive motor: "_ _ 6 _"	The combination is incorrect.	Set [Pr. PA01] correctly.	[B] [WB]
					The combination is correct.	Check (3).	
(3)	An encoder is malfunctioning.	Replace the servo motor, and then check the repeatability.	It is not repeatable.	Replace the servo motor.	[A] [B] [WB]		
1A.2	Servo motor control mode combination error	(1) The setting of [Pr. PA01] is not corresponding to the connected servo motor.	Check the [Pr. PA01] setting. Rotary servo motor: "_ _ 0 _" Linear servo motor: "_ _ 4 _" Direct drive motor: "_ _ 6 _"	The combination is incorrect.	Set [Pr. PA01] correctly.	[B] [WB]	

Alarm No.: 1E		Name: Encoder initial communication error 2					
Alarm content		• An encoder is malfunctioning.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
1E.1	Encoder malfunction	(1)	An encoder is malfunctioning.	Replace the servo motor, and then check the repeatability.	It is not repeatable.	Replace the servo motor.	[A] [B] [WB]
				It is repeatable.	Check (2).		
		(2)	Something near the device caused it.	Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	

# 1. TROUBLESHOOTING

Alarm No.: 1F		Name: Encoder initial communication error 3					
Alarm content		• The connected encoder is not compatible with the servo amplifier.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
1F.1	Incompatible encoder	(1)	A servo motor or linear encoder, which is not compatible with the servo amplifier, was connected.	Check the model the servo motor/linear encoder.	It is not compatible with the servo amplifier.	Replace it with a compatible one.	[A] [B] [WB]
					It is compatible with the servo amplifier.	Check (2).	
		(2)	The software version of the servo amplifier does not support the servo motor or linear encoder.	Check if the software version supports the servo motor/linear encoder.	It is not supported.	Replace the servo amplifier to one which software version supports the servo motor/linear encoder.	
					It is supported.	Check (3).	
		(3)	An encoder is malfunctioning.	Replace the servo motor or linear encoder, and then check the repeatability.	It is not repeatable.	Replace the servo motor or linear encoder.	
					It is repeatable.	Replace the servo amplifier.	

# 1. TROUBLESHOOTING

Alarm No.: 20		Name: Encoder normal communication error 1					
Alarm content		• Communication error occurred between encoder and servo amplifier.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
20.1	Encoder normal communication - Receive data error 1	(1)	An encoder cable is malfunctioning.	Check if the encoder cable is disconnected or shorted.	It has a failure.	Repair or replace the cable.	[A] [B] [WB]
					It has no failure.	Check (2).	
		(2)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	
					It is repeatable.	Check (3).	
		(3)	An encoder is malfunctioning.	Replace the servo motor or linear encoder, and then check the repeatability.	It is not repeatable.	Replace the servo motor or linear encoder.	
					It is repeatable.	Check (4).	
		(4)	Something near the device caused it.	Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
		20.2	Encoder normal communication - Receive data error 2	Check it with the check method for [AL. 20.1].			
20.3	Encoder normal communication - Receive data error 3						
20.5	Encoder normal communication - Transmission data error 1						
20.6	Encoder normal communication - Transmission data error 2						
20.7	Encoder normal communication - Transmission data error 3						
20.9	Encoder normal communication - Receive data error 4						
20.A	Encoder normal communication - Receive data error 5						

# 1. TROUBLESHOOTING

Alarm No.: 21		Name: Encoder normal communication error 2					
Alarm content		• The encoder detected an error signal.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
21.1	Encoder data error 1	(1)	The encoder detected a high speed/acceleration rate due to an oscillation or other factors.	Decrease the loop gain, and then check the repeatability.	It is not repeatable.	Use the encoder with low loop gain.	[A] [B] [WB]
					It is repeatable.		
		(2)	An encoder is malfunctioning.	Replace the servo motor, and then check the repeatability.	It is not repeatable.	Replace the servo motor.	
					It is repeatable.	Check (3).	
		(3)	Something near the device caused it.	Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
		21.2	Encoder data update error	(1)	An encoder is malfunctioning.	Replace the servo motor, and then check the repeatability.	
It is repeatable.	Check (2).						
(2)	Something near the device caused it.			Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
21.3	Encoder data waveform error	Check it with the check method for for [AL. 21.2].					
21.4	Encoder non-signal error	(1)	A signal of the linear encoder has not been inputted.	Check if the linear encoder cable is wired correctly.	It has a failure.	Review the wiring.	[B] [WB]
					It has no failure.	Check (2).	
		(2)	Something near the device caused it.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
21.5	Encoder hardware error 1	Check it with the check method for [AL. 21.2].					
21.6	Encoder hardware error 2						
21.9	Encoder data error 2	Check it with the check method for [AL. 21.1].					



# 1. TROUBLESHOOTING

Alarm No.: 24		Name: Main circuit error					
Alarm content		<ul style="list-style-type: none"> <li>• A ground fault occurred on the servo motor power lines.</li> <li>• A ground fault occurred at the servo motor.</li> </ul>					
Display	Detail name	Cause	Check method	Check result	Action	Target	
24.1	Ground fault detected by hardware detection circuit	(1)	The servo amplifier is malfunctioning.	Disconnect the servo motor power cables (U, V, and W) and check if the alarm occurs.	It occurs.	Replace the servo amplifier.	[A] [B] [WB]
				It does not occur.	Check (2).		
		(2)	A ground fault or short occurred at the servo motor power cable.	Check if only the servo motor power cable is shorted.	It is shorted.	Replace the servo motor power cable.	
				It is not shorted.	Check (3).		
		(3)	A ground fault occurred at the servo motor.	Disconnect the servo motor power cables on motor side, and check insulation of the motor (between U, V, W, and ⊕).	It is shorted.	Replace the servo motor.	
				It is not shorted.	Check (4).		
		(4)	The main circuit power supply cable and servo motor power cable were shorted.	Shut off the power, and check if the main circuit power supply cable and servo motor power cable are in contact.	They are in contact.	Correct the wiring.	
				They are not in contact.	Check (5).		
		(5)	Something near the device caused it.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
		24.2	Ground fault detected by software detection function	Check it with the check method for [AL. 24.1].			

# 1. TROUBLESHOOTING

Alarm No.: 25		Name: Absolute position erased						
Alarm content		<ul style="list-style-type: none"> <li>• Absolute position data in error</li> <li>• Power was switched on for the first time in the absolute position detection system.</li> </ul>						
Display	Detail name	Cause	Check method	Check result	Action	Target		
25.1	Servo motor encoder - Absolute position erased	(1)	Power was switched on for the first time in the absolute position detection system.	Check if this is the first time in the absolute position detection system.	This is the first time.	Check that the battery is mounted, and make home position return.	[A] [B] [WB]	
					This is not the first time.	Check (2).		
		(2)	The battery was removed (replaced) when the control circuit power supply was off.	Check if the battery was removed (changed) when the control circuit power supply was off.	It was removed.	Check that the battery is mounted, and make home position return.		
					It was not removed.	Check (3).		
		(3)	The battery voltage is low. The battery is consumed.	Check the battery voltage with a tester.	It is less than DC 3.0 V.	Replace the battery.		
					It is DC 3.0 V or more.	Check (4).		
		(4)	The voltage drop of the battery cable is large.	Check if a recommended wire is used.	It is not used.	Use a recommended wire.		
					It is used.	Check (5).		
		(5)	A battery cable is malfunctioning.	Check for the loose connection with a tester.	It has a failure.	Replace the battery cable.		
					It has no failure.	Check (6).		
		(6)	There is a loose connection of the encoder cable on the servo motor side.	Check for the loose connection with a tester. Measure the voltage on the servo motor side.	It has a failure.	Repair or replace the encoder cable.		
					It has no failure.	Check (7).		
		(7)	The absolute position storage unit was not connected for using a direct drive motor.	Check if the absolute position storage unit is connected correctly.	It is not connected.	Connect the absolute position storage unit correctly.		[B] [WB]
					It is connected.	Check (8).		
		(8)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.		[A] [B] [WB]
					It is repeatable.	Check (9).		
		(9)	An encoder is malfunctioning.	Replace the servo motor, and then check the repeatability.	It is not repeatable.	Replace the servo motor.		

# 1. TROUBLESHOOTING

Alarm No.: 27		Name: Initial magnetic pole detection error					
Alarm content		• The initial magnetic pole detection was not completed properly.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
27.1	Magnetic pole detection - Abnormal termination	(1)	A moving part collided against the machine.	Check if it collided.	It collided.	Move the start position of the magnetic pole detection.	[B] [WB]
				It did not collide.	Check (2).		
		(2)	The wiring of the servo motor power cable is incorrect.	Check if the wiring of the servo motor power cable is correct.	It has a failure.	Correct the wiring.	
				It has no failure.	Check (3).		
		(3)	The linear encoder resolution setting differs from the setting value.	Check the setting of [Pr. PL02] and [Pr. PL03].	The setting is incorrect.	Set it correctly.	
				The setting is correct.	Check (4).		
		(4)	The direction of mounting linear encoder is incorrect.	Check polarities of the linear encoder and the linear servo motor.	The mounting direction is incorrect.	Mount it correctly.	
				The mounting direction is correct.	Check (5).		
		(5)	The magnetic pole detection voltage level is small.	Check if the travel distance during the magnetic pole detection is too short (for a position detection method).	It is too short.	Increase it with the [Pr. PL09] setting.	
				Check if the travel distance during the magnetic pole detection is too long or if a vibration is occurring (for a minute position detection method).	The travel distance is too long or a vibration is occurring.	Review the [Pr. PL17] setting.	
27.2	Magnetic pole detection - Time out error	(1)	Only one of the limit switches of FLS/RLS is on.	Check the limit switches.	It has a failure.	Remove the cause. Move the start position of the magnetic pole detection.	
				It has no failure.	Check (2).		
		(2)	The magnetic pole detection voltage level is small.	Check if the travel distance during the magnetic pole detection is too short (for a position detection method).	It is too short.	Increase it with the [Pr. PL09] setting.	
27.3	Magnetic pole detection - Limit switch error	(1)	Both of the limit switches of FLS/RLS are on during the magnetic pole detection.	Check the limit switches.	Both of them are off.	Turn on the limit switches.	
27.4	Magnetic pole detection - Estimated error	Check it with the check method for [AL. 27.1].					
27.5	Magnetic pole detection - Position deviation error						
27.6	Magnetic pole detection - Speed deviation error						
27.7	Magnetic pole detection - Current error						

# 1. TROUBLESHOOTING

Alarm No.: 28		Name: Linear encoder error 2					
Alarm content		• Working environment of linear encoder is not normal.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
28.1	Linear encoder - Environment error	(1)	The ambient temperature of the linear encoder is out of specifications.	Check the ambient temperature of the linear encoder.	It is out of specifications.	Lower the temperature. Contact the linear encoder manufacturer.	[B] [WB]
					It is within specifications.		
		(2)	The signal level of the linear encoder has dropped.	Check the mounting condition of the linear encoder.	It has a failure.	Correct the mounting method of the linear encoder.	

Alarm No.: 2A		Name: Linear encoder error 1					
Alarm content		• An error of the linear encoder was detected. (The details differ depending on the linear encoder manufacturer.)					
Display	Detail name	Cause	Check method	Check result	Action	Target	
2A.1	Linear encoder error 1-1	(1)	Mounting condition of the linear encoder and head is failure.	Adjust the positions of the scale and head, and then check the repeatability.	It is not repeatable.	Use the equipment at the adjusted position.	[B] [WB]
					It is repeatable.	Check (2).	
		(2)	Something near the device caused it.	Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
					It has no failure.	Check (3).	
		(3)	An alarm of the linear encoder was detected.	Check the content of the alarm detail list of the Linear Encoder Instruction Manual.	Remove its cause described in the instruction manual.	Contact each encoder manufacturer for how to deal with it.	
		2A.2	Linear encoder error 1-2	Check it with the check method for [AL. 2A.1].			
2A.3	Linear encoder error 1-3						
2A.4	Linear encoder error 1-4						
2A.5	Linear encoder error 1-5						
2A.6	Linear encoder error 1-6						
2A.7	Linear encoder error 1-7						
2A.8	Linear encoder error 1-8						

# 1. TROUBLESHOOTING

Alarm No.: 2B		Name: Encoder counter error					
Alarm content		• Data which encoder created is failure.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
2B.1	Encoder counter error 1	(1)	An encoder cable is malfunctioning.	Check if the encoder cable is disconnected or shorted.	It has a failure.	Repair or replace the cable.	[B] [WB]
				It has no failure.	Check (2).		
		(2)	Something near the device caused it.	Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
				It has no failure.	Check (3).		
(3)	An encoder is malfunctioning.	Replace the direct drive motor, and then check the repeatability.	It is not repeatable.	Replace the direct drive motor.			
2B.2	Encoder counter error 2	Check it with the check method for [AL. 2B.1].					

Alarm No.: 30		Name: Regenerative error					
Alarm content		• Permissible regenerative power of the built-in regenerative resistor or regenerative option is exceeded. • A regenerative transistor in the servo amplifier is malfunctioning.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
30.1	Regeneration heat error	(1)	The setting of the regenerative resistor (regenerative option) is incorrect.	Check the regenerative resistor (regenerative option) and [Pr. PA02] setting.	The setting value is incorrect.	Set it correctly.	[A] [B] [WB]
				It is set correctly.	Check (2).		
		(2)	The regenerative resistor (regenerative option) is not connected.	Check if the regenerative resistor (regenerative option) is connected correctly.	It is not connected correctly.	Connect it correctly.	
				It is connected correctly.	Check (3).		
(3)	Power supply voltage high.	Check the input power supply voltage.	It is 240 V AC or more.	Reduce the power supply voltage.			
				It is less than 240 V AC.	Check (4).		
(4)	The regenerative load ratio has been over 100%.	Check the regenerative load ratio when alarm occurs.	It is 100% or more.	Reduce the frequency of positioning. Reduce the load. Use a regenerative option if not being using. Review the regenerative option capacity.			
30.2	Regeneration signal error	(1) A detection circuit of the servo amplifier is malfunctioning.	Check if the regenerative resistor (regenerative option) is overheating.	It is overheating abnormally.	Replace the servo amplifier.		
30.3	Regeneration feedback signal error	(1)	A detection circuit of the servo amplifier is malfunctioning.	Remove the regenerative option or built-in regenerative resistor and then check if the alarm occur at power on.	The alarm occurs.	Replace the servo amplifier.	
				The alarm does not occur.	Check (2).		
(2)	Something near the device caused it.	Check the noise, ground fault, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.			

# 1. TROUBLESHOOTING

Alarm No.: 31		Name: Overspeed					
Alarm content		<ul style="list-style-type: none"> <li>The servo motor speed has exceeded the permissible instantaneous speed.</li> <li>The linear servo motor speed has exceeded the permissible instantaneous speed.</li> </ul>					
Display	Detail name	Cause	Check method	Check result	Action	Target	
31.1	Abnormal motor speed	(1)	The command pulse frequency is high.	Check the command pulse frequency.	The command pulse frequency is high.	Check operation pattern.	[A]
					The command pulse frequency is low.	Check (3).	
		(2)	The command from the controller is excessive.	Check if the command from the controller is over the permissible speed.	It is over the permissible speed.	Check operation pattern.	[B] [WB]
					It is less than the permissible speed.	Check (3).	
		(3)	A larger speed command than the overspeed alarm level was inputted.	Check that the actual motor speed is higher than the setting value of [Pr. PC08 Overspeed alarm detection level].	The motor speed is higher than the overspeed alarm detection level.	Review the [Pr. PC08] setting.	[A] [B] [WB]
					The motor speed is lower than the overspeed alarm level.	Check (4).	
		(4)	The servo motor was at the maximum torque (maximum thrust) at the time of acceleration.	Check if the torque (thrust) at the time of acceleration is the maximum torque (maximum thrust).	It is the maximum torque (maximum thrust).	Increase the acceleration/deceleration time constant. Or reduce the load.	[A] [B] [WB]
					It is less than the maximum torque (maximum thrust).	Check (5).	
		(5)	The servo system is unstable and oscillating.	Check if the servo motor is oscillating.	It is oscillating.	Adjust the servo gain. Or reduce the load.	[A] [B] [WB]
					It is not oscillating.	Check (6).	
		(6)	The velocity waveform has overshoot.	Check if it is overshooting because the acceleration time constant is too short.	It is overshooting.	Increase the acceleration/deceleration time constant.	[A] [B] [WB]
					It is not overshooting.	Check (7).	
		(7)	The connection destination of the encoder cable is incorrect.	Check the connection destinations of CN2A, CN2B, and CN2C.	It is not correct.	Wire it correctly.	[WB]
					It is correct.	Check (8).	
(8)	The encoder or linear encoder is malfunctioning.	Check if the alarm is occurring during less than permissible instantaneous speed.	It is occurring during less than permissible instantaneous speed.	Replace the servo motor or linear encoder.	[A] [B] [WB]		

# 1. TROUBLESHOOTING

Alarm No.: 32		Name: Overcurrent					
Alarm content		• Current that flew is higher than the permissible current of the servo amplifier.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
32.1	Overcurrent detected at hardware detection circuit (during operation)	(1)	The servo amplifier is malfunctioning.	Disconnect the servo motor power cables (U, V, and W) and check if the alarm occurs.	It occurs.	Replace the servo amplifier.	[A] [B] [WB]
					It does not occur.	Check (2).	
		(2)	A ground fault or short occurred at the servo motor power cable.	Check if only the servo motor power cable is shorted.	It is shorted.	Replace the servo motor power cable.	[A] [B] [WB]
					It is not shorted.	Check (3).	
		(3)	The servo motor is malfunctioning.	Disconnect the servo motor power cables on motor side, and check insulation of the motor (between U, V, W, and $\ominus$ ).	A ground fault is occurring.	Replace the servo motor.	[A] [B] [WB]
					A ground fault is not occurring.	Check (4).	
		(4)	The dynamic brake is malfunctioning.	Check if the error occurs when you turn on the servo-on command.	It occurs.	Replace the servo amplifier.	[A] [B] [WB]
					It does not occur.	Check (5).	
		(5)	The connection destination of the encoder cable is incorrect.	Check the connection destinations of CN2A, CN2B, and CN2C.	It is not correct.	Wire it correctly.	[A] [B] [WB]
					It is correct.	Check (6).	
		(6)	Something near the device caused it.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	[A] [B] [WB]

# 1. TROUBLESHOOTING

Alarm No.: 32		Name: Overcurrent						
Alarm content		• Current that flew is higher than the permissible current of the servo amplifier.						
Display	Detail name	Cause	Check method	Check result	Action	Target		
32.2	Overcurrent detected at software detection function (during operation)	(1)	The servo gain is high.	Check if an oscillation is occurring.	An oscillation is occurring.	Reduce the speed loop gain ([Pr. PB09]).	[A] [B] [WB]	
					An oscillation is not occurring.	Check (2).		
		(2)	The servo amplifier is malfunctioning.	Disconnect the servo motor power cables (U, V, and W) and check if the alarm occurs.	It occurs.	Replace the servo amplifier.		
					It does not occur.	Check (3).		
		(3)	A ground fault or short occurred at the servo motor power cable.	Check if only the servo motor power cable is shorted.	It is shorted.	Replace the servo motor power cable.		
					It is not shorted.	Check (4).		
		(4)	The servo motor is malfunctioning.	Disconnect the servo motor power cables on motor side, and check insulation of the motor (between U, V, W, and $\oplus$ ).	A ground fault is occurring.	Replace the servo motor.		
					A ground fault is not occurring.	Check (5).		
		(5)	The connection destination of the encoder cable is incorrect.	Check the connection destinations of CN2A, CN2B, and CN2C.	It is not correct.	Connect it correctly.		[WB]
					It is correct.	Check (6).		
		(6)	Something near the device caused it.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.		[A] [B] [WB]
		32.3	Overcurrent detected at hardware detection circuit (during a stop)	Check it with the check method for [AL. 32.1].				
32.4	Overcurrent detected at software detection function (during a stop)	Check it with the check method for [AL. 32.2].						



# 1. TROUBLESHOOTING

Alarm No.: 33		Name: Overvoltage					
Alarm content		• The value of the bus voltage exceeded 400 V DC.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
33.1	Main circuit voltage error	(1)	The setting of the regenerative resistor (regenerative option) is incorrect.	Check the regenerative resistor (regenerative option) and [Pr. PA02] setting.	The setting value is incorrect.	Set it correctly.	[A] [B] [WB]
					It is set correctly.	Check (2).	
		(2)	The regenerative resistor (regenerative option) is not connected.	Check if the regenerative resistor (regenerative option) is connected correctly.	It is not connected correctly.	Connect it correctly.	
					It is connected correctly.	Check (3).	
		(3)	Wire breakage of built-in regenerative resistor or regenerative option	Measure the resistance of the built-in regenerative resistor or regenerative option.	The resistance is abnormal.	When using a built-in regenerative resistor, replace the servo amplifier. When using a regenerative option, replace the regenerative option.	
					The resistance is normal.	Check (4).	
		(4)	The regeneration capacity is insufficient.	Set a larger deceleration time constant, and then check the repeatability.	It is not repeatable.	When using a built-in regenerative resistor, use a regenerative option. When using a regenerative option, use a larger capacity one.	
					It is repeatable.	Check (5).	
		(5)	Power supply voltage high.	Check the input voltage.	It is over 264 V AC.	Reduce the input voltage.	
					It is 264 V AC or less.	Check (6).	
		(6)	Something near the device caused it.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	

# 1. TROUBLESHOOTING

Alarm No.: 34		Name: SSCNET receive error 1					
Alarm content		• An error occurred in SSCNET III/H communication. (continuous communication error with 3.5 ms interval)					
Display	Detail name	Cause	Check method	Check result	Action	Target	
34.1	SSCNET receive data error	(1)	The SSCNET III cable is disconnected.	Check the SSCNET III cable connection.	It is disconnected.	Turn off the control circuit power supply of the servo amplifier, and then connect the SSCNET III cable.	[B] [WB]
					It is connected.		
		(2)	The surface at the end of SSCNET III cable got dirty.	Wipe off the dirt from the cable tip, and then check the repeatability.	It is not repeatable.	Take measure to keep the cable tip clean.	
					It is repeatable.		
		(3)	The SSCNET III cable is broken or severed.	Check if the SSCNET III cable is malfunctioning.	It has a failure.	Replace the SSCNET III cable.	
					It has no failure.		
		(4)	A vinyl tape is stacked to the SSCNET III cable. Or a wire insulator containing migrating plasticizer is adhered to the cable.	Check if a vinyl tape is used. Check if the cable is contacting with other cables.	It is used. They are in contact.	Take countermeasures against its cause.	
					It is not used. They are not in contact.		
		(5)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	
					It is repeatable.		
		(6)	The previous or next axis servo amplifier of the alarm occurred is malfunctioning.	Replace the previous and next servo amplifier of the alarm occurred axis, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	
					It is repeatable.		
		(7)	The controller is malfunctioning.	Replace the controller, and then check the repeatability.	It is not repeatable.	Replace the controller.	
					It is repeatable.		
		(8)	Something near the device caused it.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
		34.2	SSCNET connector connection error	Check it with the check method for [AL. 34.1].			
34.3	SSCNET communication data error						
34.4	Hardware error signal detection						

# 1. TROUBLESHOOTING

Alarm No.: 35		Name: Command frequency error					
Alarm content		• Input pulse frequency of command pulse is too high.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
35.1	Command frequency error	(1)	The command pulse frequency is high.	Check the command pulse frequency.	The command pulse frequency is high.	Check operation pattern.	[A]
					The command pulse frequency is low.	Check (4).	
		(2)	The command from the controller is excessive.	Check if the command from the controller is over the permissible speed.	It is over the permissible speed.	Check operation pattern.	[B] [WB]
					It is less than the permissible speed.	Check (3).	
		(3)	The controller is malfunctioning.	Replace the controller, and then check the repeatability.	It is not repeatable.	Replace the controller.	
					It is repeatable.	Check (4).	
		(4)	Something near the device caused it.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	[A] [B] [WB]

# 1. TROUBLESHOOTING

Alarm No.: 36		Name: SSCNET receive error 2					
Alarm content		<ul style="list-style-type: none"> <li>An error occurred in SSCNET III/H communication. (intermittent communication error with about 70 ms interval)</li> </ul>					
Display	Detail name	Cause	Check method	Check result	Action	Target	
36.1	Continuous communication data error	(1)	The SSCNET III cable is disconnected.	Check the SSCNET III cable connection.	It is disconnected.	Turn off the control circuit power supply of the servo amplifier, and then connect the SSCNET III cable.	[B] [WB]
					It is connected.	Check (2).	
		(2)	The surface at the end of SSCNET III cable got dirty.	Wipe off the dirt from the cable tip, and then check the repeatability.	It is not repeatable.	Take measure to keep the cable tip clean.	
					It is repeatable.	Check (3).	
		(3)	The SSCNET III cable is broken or severed.	Check if the SSCNET III cable is malfunctioning.	It has a failure.	Replace the SSCNET III cable.	
					It has no failure.	Check (4).	
		(4)	A vinyl tape is stacked to the SSCNET III cable. Or a wire insulator containing migrating plasticizer is adhered to the cable.	Check if a vinyl tape is used. Check if the cable is contacting with other cables.	It is used. They are in contact.	Take countermeasures against its cause.	
					It is not used. They are not in contact.	Check (5).	
		(5)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	
					It is repeatable.	Check (6).	
		(6)	The previous or next axis servo amplifier of the alarm occurred is malfunctioning.	Replace the previous and next servo amplifier of the alarm occurred axis, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	
					It is repeatable.	Check (7).	
		(7)	The controller is malfunctioning.	Replace the controller, and then check the repeatability.	It is not repeatable.	Replace the controller.	
					It is repeatable.	Check (8).	
(8)	Something near the device caused it.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.			

# 1. TROUBLESHOOTING

Alarm No.: 37		Name: Parameter error					
Alarm content		• Parameter setting is incorrect.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
37.1	Parameter setting range error	(1)	A parameter was set out of setting range.	Check the parameter error No. and setting value.	It is out of setting range.	Set it within the range.	[A]
				It is within the setting range.	Check (2).		
		(2)	The parameter setting has changed due to a servo amplifier malfunction.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	[A] [B] [WB]
				Check the parameter error No. and setting value of the servo parameter of the controller.	It is out of setting range.	Set it within the range.	[B] [WB]
37.2	Parameter combination error	(1)	A parameter setting contradicts another.	Check the parameter error No. and setting value.	A setting value is incorrect.	Correct the setting value.	[A]
				Check the parameter error No. and setting value of the servo parameter of the controller.	A setting value is incorrect.	Correct the setting value.	[B] [WB]

Alarm No.: 3A		Name: Inrush current suppression circuit error				
Alarm content		• The inrush current suppression circuit error was detected.				
Display	Detail name	Cause	Check method	Check result	Action	Target
3A.1	Inrush current suppression circuit error	(1) Inrush current suppressor circuit faulty.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	[A] [B] [WB]

Alarm No.: 3E		Name: Operation mode error				
Alarm content		• The operation mode setting was changed.				
Display	Detail name	Cause	Check method	Check result	Action	Target
3E.1	Operation mode error	(1) The MR-J4 servo amplifier used in J3 compatibility mode was connected to the other SSCNET III/H controller. Or a MR-J4 servo amplifier which was connected another SSCNET III/H controller was connected to the SSCNET III controller.	Check if the connection was changed to like these.	It is changed.	Initialize the servo amplifier with the built-in application software "MR-J4(W)-B mode selection" of MR Configurator2, and then connect the amplifier to the controller.	[B] [WB]
		(2) The [Pr. PA01] setting value was changed.	Check if [Pr. PA01] was changed.	It is changed.	Set [Pr. PA01] correctly.	

# 1. TROUBLESHOOTING

Alarm No.: 42		Name: Servo control error					
Alarm content		• A servo control error occurred.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
42.1	Servo control error by position deviation	(1)	The linear encoder resolution setting differs from the setting value.	Check the setting of [Pr. PL02] and [Pr. PL03].	The setting is incorrect.	Set it correctly.	[B] [WB]
					The setting is correct.	Check (2).	
		(2)	The direction of mounting linear encoder is incorrect.	Check polarities of the linear encoder and the linear servo motor.	The mounting direction is incorrect.	Mount it correctly.	
					The mounting direction is correct.	Check (3).	
		(3)	The connection of the servo motor is incorrect.	Check the wiring.	The wiring is incorrect.	Connect it correctly.	
					The wiring is correct.	Check (4).	
		(4)	The initial magnetic pole detection was not executed.	Execute the magnetic pole detection, and then check the repeatability.	It is not repeatable.	Execute the magnetic pole detection.	
					It is repeatable.	Check (5).	
		(5)	The position deviation exceeded the detection level.	Check the value of droop pulses.	The deviation is large.	Review the operation status. Review the [Pr. PL05] setting depending on circumstances.	
		42.2	Servo control error by speed deviation	(1)	The linear encoder resolution setting differs from the setting value.	Check the setting of [Pr. PL02] and [Pr. PL03].	
The setting is correct.	Check (2).						
(2)	The direction of mounting linear encoder is incorrect.			Check polarities of the linear encoder and the linear servo motor.	The mounting direction is incorrect.	Mount it correctly.	
					The mounting direction is correct.	Check (3).	
(3)	The connection of the servo motor is incorrect.			Check the wiring.	The wiring is incorrect.	Connect it correctly.	
					The wiring is correct.	Check (4).	
(4)	The initial magnetic pole detection was not executed.			Execute the magnetic pole detection, and then check the repeatability.	It is not repeatable.	Execute the magnetic pole detection.	
					It is repeatable.	Check (5).	
(5)	The speed deviation exceeded the detection level.			Calculate the deviation between the speed command and actual speed.	The deviation is large.	Review the operation status. Review the [Pr. PL06] setting depending on circumstances.	

# 1. TROUBLESHOOTING

Alarm No.: 42		Name: Servo control error					
Alarm content		• A servo control error occurred.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
42.3	Servo control error by torque/thrust deviation	(1)	The linear encoder resolution setting differs from the setting value.	Check the setting of [Pr. PL02] and [Pr. PL03].	The setting is incorrect.	Set it correctly.	[B] [WB]
					The setting is correct.	Check (2).	
		(2)	The direction of mounting linear encoder is incorrect.	Check polarities of the linear encoder and the linear servo motor.	The mounting direction is incorrect.	Mount it correctly.	
					The mounting direction is correct.	Check (3).	
		(3)	The connection of the servo motor is incorrect.	Check the wiring.	The wiring is incorrect.	Connect it correctly.	
					The wiring is correct.	Check (4).	
		(4)	The initial magnetic pole detection was not executed.	Execute the magnetic pole detection, and then check the repeatability.	It is not repeatable.	Execute the magnetic pole detection.	
					It is repeatable.	Check (5).	
		(5)	The torque deviation exceeded the detection level.	Calculate the deviation between the current command and torque.	The deviation is large.	Review the operation status. Review the [Pr. PL07] setting depending on circumstances.	

# 1. TROUBLESHOOTING

Alarm No.: 45		Name: Main circuit device overheat					
Alarm content		• Inside of the servo amplifier overheated.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
45.1	Main circuit device overheat error	(1)	Ambient temperature has exceeded 55 °C.	Check the ambient temperature.	It is over 55 °C.	Lower the ambient temperature.	[A] [B] [WB]
					It is less than 55 °C.	Check (2).	
		(2)	The close mounting is out of specifications.	Check the specifications of close mounting.	It is out of specifications.	Use within the range of specifications.	
					It is within specifications.	Check (3).	
		(3)	Turning on and off were repeated under the overload status.	Check if the overload status occurred many times.	It occurred.	Check operation pattern.	
					It did not occur.	Check (4).	
		(4)	A cooling fan, heat sink, or openings is clogged with foreign matter.	Clean the cooling fan, heat sink, or openings, and then check the repeatability.	It is not repeatable.	Clean it periodically.	
					It is repeatable.	Check (5).	
		(5)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	



# 1. TROUBLESHOOTING

Alarm No.: 46		Name: Servo motor overheat					
Alarm content		• The servo motor overheated.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
46.1	Abnormal temperature of servo motor 1	(1)	Ambient temperature of the servo motor has exceeded 40 °C.	Check the ambient temperature of the servo motor.	It is over 40 °C.	Lower the ambient temperature.	[A] [B] [WB]
					It is less than 40 °C.	Check (2).	
		(2)	Servo motor is overloaded.	Check the effective load ratio.	The effective load ratio is large.	Reduce the load or review the operation pattern.	
					The effective load ratio is small.	Check (3).	
(3)	The thermal sensor in the encoder is malfunctioning.	Check the servo motor temperature when the alarm occurs.	The servo motor temperature is low.	Replace the servo motor.			
46.2	Abnormal temperature of servo motor 2	(1)	Ambient temperature of the linear servo motor or direct drive motor has exceeded 40 °C.	Check the ambient temperature of the linear servo motor or direct drive motor.	It is over 40 °C.	Lower the ambient temperature.	[B] [WB]
					It is less than 40 °C.	Check (2).	
		(2)	The linear servo motor or direct drive motor has been under overload status.	Check the effective load ratio.	The effective load ratio is large.	Reduce the load or review the operation pattern.	
					The servo motor temperature is low.	Replace the servo motor.	
(3)	The thermal sensor in the encoder is malfunctioning.	Check the servo motor temperature when the alarm occurs.	The servo motor temperature is low.	Replace the servo motor.			
46.3	Thermistor disconnected	(1)	A thermistor wire is not connected.	Check the thermistor wire.	It is not connected.	Connect it correctly.	[A] [B] [WB]
					It is connected.	Check (2).	
		(2)	The thermistor wire is disconnected.	Check the thermistor wire.	It is disconnected.	Repair the lead wire.	
					It is not disconnected.	Replace the servo motor.	
46.5	Abnormal temperature of servo motor 3	Check it with the check method for [AL. 46.1].					[A] [B] [WB]
46.6	Abnormal temperature of servo motor 4	(1)	A current was applied to the servo amplifier in excess of its continuous output current.	Check the effective load ratio.	The effective load ratio is high.	Reduce the load or review the operation pattern. Or use a larger capacity motor.	

# 1. TROUBLESHOOTING

Alarm No.: 47		Name: Cooling fan error					
Alarm content		<ul style="list-style-type: none"> <li>• The speed of the servo amplifier cooling fan decreased.</li> <li>• Or the fan speed decreased to the alarm occurrence level or less.</li> </ul>					
Display	Detail name	Cause	Check method	Check result	Action	Target	
47.1	Cooling fan stop error	(1)	Foreign matter was caught in the cooling fan.	Check if a foreign matter is caught in the cooling fan.	Something has been caught.	Remove the foreign matter.	[A] [B] [WB]
					Nothing has been caught.	Check (2).	
		(2)	Cooling fan life expired.	Check if the cooling fan is stopping.	It is stopping.	Replace the servo amplifier.	
47.2	Cooling fan speed reduction error	(1)	Foreign matter was caught in the cooling fan.	Check if a foreign matter is caught in the cooling fan.	Something has been caught.	Remove the foreign matter.	
					Nothing has been caught.	Check (2).	
		(2)	Cooling fan life expired.	Check the cooling fan speed.	The fan speed is less than the alarm occurrence level.	Replace the servo amplifier.	

# 1. TROUBLESHOOTING

Alarm No.: 50		Name: Overload 1					
Alarm content		• Load exceeded overload protection characteristic of servo amplifier.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
50.1	Thermal overload error 1 during operation	(1)	The servo motor power cable was disconnected.	Check the servo motor power cable.	It is disconnected.	Repair or replace the servo motor power cable.	[A] [B] [WB]
					It is not disconnected.	Check (2).	
		(2)	The connection of the servo motor is incorrect.	Check the wiring of U, V, and W.	It is incorrect.	Connect it correctly.	[A] [B] [WB]
					It is correct.	Check (3).	
		(3)	The electromagnetic brake has not released. (The electromagnetic brake has been activated.)	Check if the electromagnetic brake is released during operation.	It is not released.	Release the electromagnetic brake.	[A] [B] [WB]
					It is released.	Check (4).	
		(4)	A current was applied to the servo amplifier in excess of its continuous output current.	Check the effective load ratio.	The effective load ratio is high.	Reduce the load. Or use a larger capacity motor.	[A] [B] [WB]
					The effective load ratio is small.	Check (5).	
		(5)	The connection destination of the encoder cable is incorrect.	Check the connection destinations of CN2A, CN2B, and CN2C.	It is not correct.	Connect it correctly.	[WB]
					It is correct.	Check (6).	
		(6)	The servo system is unstable and resonating.	Check if it is resonating.	It is resonating.	Adjust gains.	[A] [B] [WB]
					It is not resonating.	Check (7).	
		(7)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	[A] [B] [WB]
					It is repeatable.	Check (8).	
(8)	The encoder or liner encoder is malfunctioning.	Replace the servo motor or linear encoder, and then check the repeatability.	It is not repeatable.	Replace the servo motor or linear encoder.	[A] [B] [WB]		
50.2	Thermal overload error 2 during operation	Check it with the check method for [AL. 50.1].					
50.3	Thermal overload error 4 during operation						

# 1. TROUBLESHOOTING

Alarm No.: 50		Name: Overload 1					
Alarm content		• Load exceeded overload protection characteristic of servo amplifier.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
50.4	Thermal overload error 1 during a stop	(1)	A moving part collided against the machine.	Check if it collided.	It collided.	Check operation pattern.	[A] [B] [WB]
				It did not collide.	Check (2).		
		(2)	The servo motor power cable was disconnected.	Check the servo motor power cable.	It is disconnected.	Repair or replace the servo motor power cable.	Check (3).
					It is not disconnected.	Check (3).	
		(3)	Hunting occurs during servo-lock.	Check if the hunting is occurring.	The hunting is occurring.	Adjust gains.	Check (4).
					The hunting is not occurring.	Check (4).	
		(4)	The electromagnetic brake has not released. (The electromagnetic brake has been activated.)	Check if the electromagnetic brake is released.	It is not released.	Release the electromagnetic brake.	Check (5).
					It is released.	Check (5).	
		(5)	A current was applied to the servo amplifier in excess of its continuous output current.	Check the effective load ratio.	The effective load ratio is high.	Reduce the load. Or use a larger capacity motor.	Check (6).
					The effective load ratio is small.	Check (6).	
		(6)	The connection destination of the encoder cable is incorrect.	Check the connection destinations of CN2A, CN2B, and CN2C.	It is not correct.	Connect it correctly.	[WB]
					It is correct.	Check (7).	
		(7)	The servo system is unstable and resonating.	Check if it is resonating.	It is resonating.	Adjust gains.	[A] [B] [WB]
					It is not resonating.	Check (8).	
(8)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	Check (9).		
			It is repeatable.	Check (9).			
(9)	The encoder or liner encoder is malfunctioning.	Replace the servo motor or linear encoder, and then check the repeatability.	It is not repeatable.	Replace the servo motor or linear encoder.			
50.5	Thermal overload error 2 during a stop	Check it with the check method for [AL. 50.4].					
50.6	Thermal overload error 4 during a stop						

# 1. TROUBLESHOOTING

Alarm No.: 51		Name: Overload 2							
Alarm content		• Maximum output current flowed continuously due to machine collision or the like.							
Display	Detail name	Cause	Check method	Check result	Action	Target			
51.1	Thermal overload error 3 during operation	(1)	The servo motor power cable was disconnected.	Check the servo motor power cable.	It is disconnected.	Repair or replace the servo motor power cable.	[A] [B] [WB]		
					It is not disconnected.	Check (2).			
		(2)	The connection of the servo motor is incorrect.	Check the wiring of U, V, and W.	It is incorrect.	Connect it correctly.			
					It is correct.	Check (3).			
		(3)	The connection of the encoder cable is incorrect.	Check if the encoder cable is connected correctly.	It is incorrect.	Connect it correctly.			
					It is correct.	Check (4).			
		(4)	The torque is insufficient.	Check the peak load ratio.	The torque is saturated.	Reduce the load or review the operation pattern. Or use a larger capacity motor.			
					The torque is not saturated.	Check (5).			
		(5)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.			
					It is repeatable.	Check (6).			
		(6)	An encoder is malfunctioning.	Replace the servo motor, and then check the repeatability.	It is not repeatable.	Replace the servo motor.			
		51.2	Thermal overload error 3 during a stop	(1)	A moving part collided against the machine.	Check if it collided.		It collided.	Check operation pattern.
								It did not collide.	Refer to (2).
				(2)	The servo motor power cable was disconnected.	Check it with the check method for [AL. 50.1].			
(3)	The connection of the servo motor is incorrect.								
(4)	The connection of the encoder cable is incorrect.								
(5)	The torque is saturated.								
(6)	The servo amplifier is malfunctioning.								
(7)	An encoder is malfunctioning.								

# 1. TROUBLESHOOTING

Alarm No.: 52		Name: Error excessive					
Alarm content		• Droop pulses have exceeded the alarm occurrence level.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
52.1	Excess droop pulse 1	(1)	The servo motor power cable was disconnected.	Check the servo motor power cable.	It is disconnected.	Repair or replace the servo motor power cable.	[A] [B] [WB]
					It is not disconnected.	Check (2).	
		(2)	The connection of the servo motor is incorrect.	Check the wiring of U, V, and W.	It is incorrect.	Connect it correctly.	
					It is correct.	Check (3).	
		(3)	The connection of the encoder cable is incorrect.	Check if the encoder cable is connected correctly.	It is incorrect.	Connect it correctly.	
					It is correct.	Check (4).	
		(4)	The torque limit has been enabled.	Check if the limiting torque is in progress.	The limiting torque is in progress.	Increase the torque limit value.	
					The limiting torque is not in progress.	Check (5).	
		(5)	A moving part collided against the machine.	Check if it collided.	It collided.	Check operation pattern.	
					It did not collide.	Check (6).	
		(6)	The torque is insufficient.	Check the peak load ratio.	The torque is saturated.	Reduce the load or review the operation pattern. Or use a larger capacity motor.	
The torque is not saturated.	Check (7).						
(7)	Power supply voltage dropped.	Check the bus voltage value.	The bus voltage is low.	Check the power supply voltage and power supply capacity.			
			The bus voltage is high.	Check (8).			
(8)	Acceleration/deceleration time constant is too short.	Set a longer deceleration time constant, and then check the repeatability.	It is not repeatable.	Increase the acceleration/deceleration time constant.			
			It is repeatable.	Check (9).			
(9)	The position loop gain is small.	Increase the position loop gain, and then check the repeatability.	It is not repeatable.	Increase the position loop gain ([Pr. PB08]).			
			It is repeatable.	Check (10).			
(10)	Servo motor shaft was rotated by external force.	Measure the actual position under the servo-lock status.	It is rotated by external force.	Review the machine.			
			It is not rotated by external force.	Check (11).			
(11)	An encoder is malfunctioning.	Replace the servo motor, and then check the repeatability.	It is not repeatable.	Replace the servo motor.			
52.3	Excess droop pulse 2	Check it with the check method for [AL. 52.1].					
52.4	Error excessive during 0 torque limit	(1)	The torque limit has been 0.	Check the torque limit value.	The torque limit has been 0.	Do not input a command while the torque limit value is 0.	[A] [B] [WB]
52.5	Excess droop pulse 3	Check it with the check method for [AL. 52.1].					

# 1. TROUBLESHOOTING

Alarm No.: 54		Name: Oscillation detection					
Alarm content		• An oscillation of the servo motor was detected.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
54.1	Oscillation detection error	(1)	The servo system is unstable and oscillating.	Check if the servo motor is oscillating. Check the torque ripple with MR Configurator2.	The torque ripple is vibrating.	Adjust the servo gain with the auto tuning. Set the machine resonance suppression filter.	[A] [B] [WB]
					The torque ripple is not vibrating.		
		(2)	The resonance frequency has changed due to deterioration.	Measure the resonance frequency of the equipment and compare it with the setting value of the machine resonance suppression filter.	The resonance frequency of the equipment is different from the filter setting value.	Change the setting value of the machine resonance suppression filter.	
					The resonance frequency of the equipment is the same as the filter setting value.	Check (3).	
		(3)	The encoder or linear encoder is malfunctioning.	Replace the servo motor or linear encoder, and then check the repeatability.	It is not repeatable.	Replace the servo motor or linear encoder.	

# 1. TROUBLESHOOTING

Alarm No.: 56		Name: Forced stop error							
Alarm content		• The servo motor does not decelerate normally during forced stop deceleration.							
Display	Detail name	Cause	Check method	Check result	Action	Target			
56.2	Over speed during forced stop	(1)	The forced stop deceleration time constant value is short. Type A: [Pr. PC51] Type B: [Pr. PC24]	Increase the parameter setting value, and then check the repeatability.	It is not repeatable.	Adjust the deceleration time constant.	[A] [B] [WB]		
				It is repeatable.	Check (2).				
		(2)	The torque limit has been enabled.	Check if the limiting torque is in progress.	The limiting torque is in progress.	Review the torque limit value.			
					The limiting torque is not in progress.	Check (3).			
		(3)	The servo system is unstable and oscillating.	Check if the servo motor is oscillating. Check the torque ripple with MR Configurator2.	The torque ripple is vibrating.	Adjust the servo gain. Set the machine resonance suppression filter.			
					The torque ripple is not vibrating.	Check (4).			
		(4)	The encoder or liner encoder is malfunctioning.	Replace the servo motor or linear encoder, and then check the repeatability.	It is not repeatable.	Replace the servo motor or linear encoder.			
		56.3	Estimated distance over during forced stop	(1)	The forced stop deceleration time constant value is short. Type A: [Pr. PC51] Type B: [Pr. PC24]	Increase the parameter setting value, and then check the repeatability.		It is not repeatable.	Adjust the deceleration time constant.
						It is repeatable.		Check (2).	
				(2)	The torque limit has been enabled.	Check if the limiting torque is in progress.		The limiting torque is in progress.	Review the torque limit value.
The limiting torque is not in progress.	Check (3).								
(3)	The encoder or liner encoder is malfunctioning.			Replace the servo motor or linear encoder, and then check the repeatability.	It is not repeatable.	Replace the servo motor or linear encoder.			



# 1. TROUBLESHOOTING

Alarm No.: 63		Name: STO timing error				
Alarm content		• STO was activated during motor driving.				
Display	Detail name	Cause	Check method	Check result	Action	Target
63.1	STO1 off	(1) STO1 was turned off under the following speed conditions. 1) Servo motor speed: 50 r/min or more 2) Linear servo motor speed: 50 mm/s or more 3) Direct drive motor speed: 5 r/min or more	Check if STO1 is off.	It is off.	Turn on STO1.	[A] [B] [WB]
63.2	STO2 off	(1) STO2 was turned off under the following speed conditions. 1) Servo motor speed: 50 r/min or more 2) Linear servo motor speed: 50 mm/s or more 3) Direct drive motor speed: 5 r/min or more	Check if STO2 is off.	It is off.	Turn on STO2.	

Alarm No.: 8A		Name: USB communication time-out error/serial communication time-out error					
Alarm content		• Communication between the servo amplifier and a personal computer stopped for the specified time or longer.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
8A.1	USB communication time-out error/serial communication time-out error	(1)	Communication commands have not been transmitted.	Check if a command was transmitted from the personal computer.	It was not transmitted.	Transmit a command.	[A] [B] [WB]
				It was transmitted.	Check (2).		
		(2)	A USB cable is disconnected.	Replace the USB cable, and then check the repeatability.	It is not repeatable.	Replace the USB cable.	
				It is repeatable.	Check (3).		
		(3)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	


# 1. TROUBLESHOOTING

Alarm No.: 8E		Name: USB communication error/serial communication error					
Alarm content		• The USB communication error occurred between servo amplifier and a personal computer.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
8E.1	USB communication receive error	(1)	A USB cable is malfunctioning.	Check the USB cable, and then check the repeatability.	It is not repeatable.	Replace the USB cable.	[A] [B] [WB]
					It is repeatable.	Check (2).	
		(2)	The setting of the personal computer is incorrect.	Check the setting of the personal computer.	It is incorrect.	Review the settings.	
					It is correct.	Check (3).	
		(3)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	
		8E.2	USB communication checksum error	(1)	The setting of the personal computer is incorrect.	Check the setting of the personal computer.	
8E.3	USB communication character error	(1)	The transmitted character is out of specifications.	Check the character code at the time of transmission.	The transmitted character is out of specifications.	Correct the transmission data.	
					The transmitted character is within specifications.	Check (2).	
		(2)	The communication protocol is failure.	Check if transmission data conforms the communication protocol.	It is not conforming.	Modify the transmission data according to the communication protocol.	
					It is conforming.	Check (3).	
		(3)	The setting of the personal computer is incorrect.	Check the setting of the personal computer.	It is incorrect.	Review the settings.	
		8E.4	USB communication command error	(1)	The transmitted command is out of specifications.	Check the command at the time of transmission.	The transmitted command is out of specifications.
The transmitted command is within specifications.	Check (2).						
(2)	The communication protocol is failure.			Check if transmission data conforms the communication protocol.	It is not conforming.	Modify the transmission data according to the communication protocol.	
					It is conforming.	Check (3).	
(3)	The setting of the personal computer is incorrect.			Check the setting of the personal computer.	It is incorrect.	Review the settings.	
8E.5	USB communication data number error			(1)	The transmitted data number is out of specifications.	Check the data number at the time of transmission.	The transmitted data number is out of specifications.
		The transmitted data number is within specifications.	Check (2).				
		(2)	The communication protocol is failure.	Check if transmission data conforms the communication protocol.	It is not conforming.	Modify the transmission data according to the communication protocol.	
					It is conforming.	Check (3).	
		(3)	The setting of the personal computer is incorrect.	Check the setting of the personal computer.	It is incorrect.	Review the settings.	

# 1. TROUBLESHOOTING

Alarm No.: 88888		Name: Watchdog					
Alarm content		• A part such as CPU is malfunctioning.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
88._/ 8888._	Watchdog	(1) A part in the servo amplifier is failure.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.	[A] [B] [WB]	

## 1.3 Remedies for warnings


**CAUTION** ● If [AL. E3 Absolute position counter warning] occurs, always make home position setting again. Otherwise, it may cause an unexpected operation.

POINT	<p>● When any of the following alarms has occurred, do not cycle the power of the servo amplifier repeatedly to restart. Doing so will cause a malfunction of the servo amplifier and the servo motor. If the power of the servo amplifier is switched off/on during the alarms, allow more than 30 minutes for cooling before resuming operation.</p> <ul style="list-style-type: none"> <li>▪ [AL. 91 Servo amplifier overheat warning]</li> <li>▪ [AL. E0 Excessive regeneration warning]</li> <li>▪ [AL. E1 Overload warning 1]</li> <li>▪ [AL. E2 Servo motor overheat warning]</li> <li>▪ [AL. EC Overload warning 2]</li> </ul>
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If [AL. E6], [AL. E7], [AL. E9], [AL. EA], or [AL. EB] occurs, the servo-off status is established. If any other warning occurs, operation can be continued but an alarm may take place or proper operation may not be performed.

Remove the cause of warning according to this section. Use MR Configurator2 to refer to a factor of warning occurrence.

Alarm No.: 91		Name: Servo amplifier overheat warning					
Alarm content		• The temperature inside of the servo amplifier reached a warning level.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
91.1	Main circuit device overheat warning	(1) Ambient temperature of the servo amplifier has exceeded 55 °C.	Check the ambient temperature.	It is over 55 °C.	Lower the ambient temperature.	[A] [B] [WB]	
		(2) The close mounting is out of specifications.		It is less than 55 °C.			Check (2).
			Check the specifications of close mounting.	It is out of specifications.	Use within the range of specifications.		

# 1. TROUBLESHOOTING

Alarm No.: 92		Name: Battery cable disconnection warning					
Alarm content		• Absolute position detection system battery voltage is low.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
92.1	Encoder battery cable disconnection warning	(1)	Battery cable is disconnected.	Check if the battery cable is malfunctioning.	It has a failure.	Replace or repair the cable.	[A] [B] [WB]
				It has no failure.	Check (2).		
		(2)	The battery voltage is low. The battery is consumed.	Check the battery voltage with a tester.	It is less than DC 3.1 V.	Replace the battery.	
					It is DC 3.1 V or more.	Check (3).	
(3)	An encoder cable was disconnected.	Check if the encoder cable is disconnected.	It is disconnected.	Replace or repair the cable.			
92.3	Battery degradation	(1)	The battery has deteriorated.	Replace the battery, and then check the repeatability.	It is not repeatable.	Replace the battery.	

Alarm No.: 95		Name: STO warning					
Alarm content		• The STC signal turned off while the servo motor is stopped.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
95.1	STO1 off detection	(1)	STO1 was turned off under the following speed conditions. 1) Servo motor speed: 50 r/min or less 2) Linear servo motor speed: 50 mm/s or less 3) Direct drive motor speed: 5 r/min or less	Check if STO1 is off.	It is off.	Turn on STO1.	[A] [B] [WB]
95.2	STO2 off detection	(1)	STO2 was turned off under the following speed conditions. 1) Servo motor speed: 50 r/min or less 2) Linear servo motor speed: 50 mm/s or less 3) Direct drive motor speed: 5 r/min or less	Check if STO2 is off.	It is off.	Turn on STO2.	

# 1. TROUBLESHOOTING

Alarm No.: 96		Name: Home position setting warning				
Alarm content		• Home position setting could not be made.				
Display	Detail name	Cause	Check method	Check result	Action	Target
96.1	In-position warning at home positioning	(1) INP (In-position) did not turn on within the specified time during home positioning.	Check the droop pulses during home positioning.	It is In-position range or more.	Adjust gains to set droop pulses within the In-position range. Remove the cause of droop pulse occurrence.	[A] [B] [WB]
96.2	Command input warning at home positioning	(1) A command has already inputted at the time of home positioning.	Check if a command is inputted at home positioning.	A command is inputted.	Set it after home positioning.	
				A command is not inputted.	Check (2).	
		(2) Creep speed is high.	Decrease the creep speed, and then check the repeatability.	It is not repeatable.	Reduce the creep speed.	
96.3	Servo off warning at home positioning	(1) A home positioning was executed during servo-off.	Check if the status is servo-off at home positioning.	It is servo-off.	Turn to servo-on, and then execute the home positioning.	[A]

Alarm No.: 99		Name: Stroke limit warning				
Alarm content		• The stroke limit signal is off.				
Display	Detail name	Cause	Check method	Check result	Action	Target
99.1	Forward rotation stroke end off	(1) The forward rotation stroke limit switch has not connected.	Check if the limit switch is connected correctly.	It is not connected.	Connect it correctly.	[A]
				It is connected.	Check (2).	
		(2) The forward rotation stroke limit was exceeded during driving.	Check if the forward rotation stroke limit switch turned off.	It turned off.	Check operation pattern.	
99.2	Reverse rotation stroke end off	(1) The reverse rotation stroke limit switch has not connected.	Check if the limit switch is connected correctly.	It is not connected.	Connect it correctly.	
				It is connected.	Check (2).	
		(2) The reverse rotation stroke limit was exceeded during driving.	Check if the reverse rotation stroke limit switch turned off.	It turned off.	Check operation pattern.	

# 1. TROUBLESHOOTING

Alarm No.: 9F		Name: Battery warning				
Alarm content		▪ Absolute position detection system battery voltage is low.				
Display	Detail name	Cause	Check method	Check result	Action	Target
9F.1	Low battery	(1) The battery voltage is low. The battery is consumed.	Check the battery voltage with a tester.	It is less than DC 4.9 V.	Replace the battery.	[A] [B] [WB]
9F.2	Battery degradation warning	(1) The absolute position storage unit has not connected.	Check if the absolute position storage unit is connected correctly.	It is not connected.	Connect it correctly.	[B] [WB]

Alarm No.: E0		Name: Excessive regeneration warning				
Alarm content		▪ There is a possibility that regenerative power may exceed permissible regenerative power of built-in regenerative resistor or regenerative option.				
Display	Detail name	Cause	Check method	Check result	Action	Target
E0.1	Excessive regeneration warning	(1) The regenerative power exceeded 85% of the permissible regenerative power of the built-in regenerative resistor or regenerative option.	Check the effective load ratio.	It is 85% or more.	Reduce the frequency of positioning. Increase the deceleration time constant. Reduce the load. Use a regenerative option if not being using.	[A] [B] [WB]

# 1. TROUBLESHOOTING

Alarm No.: E1		Name: Overload 1				
Alarm content		• [AL.50 Overload 1] or [AL.51 Overload 2] may occur.				
Display	Detail name	Cause	Check method	Check result	Action	Target
E1.1	Thermal overload warning 1 during operation	(1) The load was over 85% to the alarm level of [AL. 50.1 Thermal overload error 1 during operation].	Check it with the check method for [AL. 50.1].			[A] [B] [WB]
E1.2	Thermal overload warning 2 during operation	(1) The load was over 85% to the alarm level of [AL. 50.2 Thermal overload error 2 during operation].	Check it with the check method for [AL. 50.2].			
E1.3	Thermal overload warning 3 during operation	(1) The load was over 85% to the alarm level of [AL. 51.1 Thermal overload error 3 during operation].	Check it with the check method for [AL. 51.1].			
E1.4	Thermal overload warning 4 during operation	(1) The load was over 85% to the alarm level of [AL. 50.3 Thermal overload error 4 during operation].	Check it with the check method for [AL. 50.3].			
E1.5	Thermal overload error 1 during a stop	(1) The load was over 85% to the alarm level of [AL. 50.4 Thermal overload error 1 during a stop].	Check it with the check method for [AL. 50.4].			
E1.6	Thermal overload error 2 during a stop	(1) The load was over 85% to the alarm level of [AL. 50.5 Thermal overload error 2 during a stop].	Check it with the check method for [AL. 50.5].			
E1.7	Thermal overload error 3 during a stop	(1) The load was over 85% to the alarm level of [AL. 51.2 Thermal overload error 3 during operation].	Check it with the check method for [AL. 51.2].			
E1.8	Thermal overload error 4 during a stop	(1) The load was over 85% to the alarm level of [AL. 50.6 Thermal overload error 4 during a stop].	Check it with the check method for [AL. 50.6].			

Alarm No.: E2		Name: Servo motor overheat warning				
Alarm content		• [AL. 46.2 Abnormal temperature of servo motor 2] may occur.				
Display	Detail name	Cause	Check method	Check result	Action	Target
E2.1	Servo motor temperature warning	(1) The temperature of the linear servo motor or direct drive motor reached 85% of the occurrence level of [AL. 46.2 Abnormal temperature of servo motor 2].	Check it with the check method for [AL. 46.2].			[B] [WB]

# 1. TROUBLESHOOTING

Alarm No.: E3		Name: Absolute position counter warning				
Alarm content		<ul style="list-style-type: none"> <li>The multi-revolution counter value of the absolute position encoder exceeded the maximum range.</li> <li>Absolute position encoder pulses are faulty.</li> </ul>				
Display	Detail name	Cause	Check method	Check result	Action	Target
E3.1	Multi-revolution counter travel distance excess warning	(1) The travel distance from the home position exceeded 32768 rotation in the absolute position system.	Check the value of the multi-revolution counter.	It is over 32768 rotation.	Review operation range. Execute the home position return again.	[A]
E3.2	Encoder absolute positioning counter warning	(1) Something near the device caused it.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	[A] [B] [WB]
		(2) An encoder is malfunctioning.	Replace the servo motor, and then check the repeatability.	It has no failure.	Check (2).	
E3.5	Absolute position counter warning	Check it with the check method for [AL. E3.2].				

Alarm No.: E4		Name: Parameter warning				
Alarm content		<ul style="list-style-type: none"> <li>Out of the setting range was attempted to write during parameter writing.</li> </ul>				
Display	Detail name	Cause	Check method	Check result	Action	Target
E4.1	Parameter setting range error warning	(1) Parameter value set from servo system controller is outside setting range.	Check the parameter setting value set with the servo system controller.	It is out of setting range.	Set it within the range.	[B] [WB]

Alarm No.: E5		Name: ABS time-out warning				
Alarm content		<ul style="list-style-type: none"> <li>A response from the programmable controller was over 5 s at the absolute position erased data transfer.</li> <li>ABSM (ABS transfer mode) turned off during the absolute position erased data transfer.</li> <li>SON (Servo-on), RES (Reset), or EM2/EM1 (Forced stop) turned off during the absolute position erased data transfer.</li> </ul>				
Display	Detail name	Cause	Check method	Check result	Action	Target
E5.1	Time-out during ABS data transfer	(1) The wiring of I/O signals is incorrect.	Check if the I/O signal wire is disconnected or connected loosely.	It has a failure.	Repair or replace the I/O signal wire.	[A]
		(2) A ladder program of the programmable controller is incorrect.	Check the ladder program.	It has no failure.	Check (2).	
E5.2	ABSM off during ABS data transfer	Check it with the check method for [AL. E5.1].				
E5.3	SON off during ABS data transfer					



# 1. TROUBLESHOOTING

Alarm No.: E6		Name: Servo forced stop warning					
Alarm content		• EM2/EM1 (Forced stop) turned off.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
E6.1	Forced stop warning	(1)	EM2/EM1 (Forced stop) turned off.	Check the status of EM2/EM1.	It is off.	Ensure safety and turn on EM2/EM1 (Forced stop).	[A] [B] [WB]
					It is on.	Check (2).	
		(2)	An external 24 V DC power supply have not inputted.	Check if the external 24 V DC power supply is inputted.	It is not inputted.	Input the 24 V DC power supply.	
					It is inputted.	Check (3).	
(3)	The servo amplifier is malfunctioning.	Replace the servo amplifier, and then check the repeatability.	It is not repeatable.	Replace the servo amplifier.			

Alarm No.: E7		Name: Controller forced stop warning					
Alarm content		• The forced stop signal of the servo system controller was enabled.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
E7.1	Controller forced stop warning	(1)	The forced stop signal of the servo system controller was inputted.	Check if the servo system controller is a forced stop status.	It is the forced stop status.	Ensure safety and cancel the forced stop signal of the controller.	[B] [WB]

Alarm No.: E8		Name: Cooling fan speed reduction warning					
Alarm content		• The cooling fan speed decreased to the warning occurrence level or less.					
Display	Detail name	Cause	Check method	Check result	Action	Target	
E8.1	Decreased cooling fan speed warning	(1)	Foreign matter caught in the cooling fan and the speed was decreased.	Check if a foreign matter is caught in the cooling fan.	Something has been caught.	Remove the foreign matter.	[A] [B] [WB]
					Nothing has been caught.	Check (2).	
		(2)	Cooling fan life expired.	Check the total of power on time of the servo amplifier.	It exceed the cooling fan life.	Replace the servo amplifier.	

# 1. TROUBLESHOOTING

Alarm No.: E9		Name: Main circuit off warning					
Alarm content		<ul style="list-style-type: none"> <li>The servo-on command was inputted with main circuit power supply off.</li> <li>The bus voltage dropped during the linear servo motor driving under 50 m/s.</li> </ul>					
Display	Detail name	Cause	Check method	Check result	Action	Target	
E9.1	Servo-on signal on during main circuit off	(1)	The main circuit power supply is off.	Check if the main circuit power supply is inputted.	It is not inputted.	Turn on the main circuit power.	[A] [B] [WB]
					It is inputted.	Check (2).	
		(2)	The main circuit power supply connector was disconnected.	Check the main circuit power supply connector.	It is disconnected.	Connect it correctly.	
				It has no failure.	Check (3).		
		(3)	The bus voltage is less than 215 V DC.	Check the bus voltage.	It is less than 215 V DC.	Review the wiring. Check the power supply capacity.	
E9.2	Bus voltage drop during low speed operation	(1)	The bus voltage dropped during the linear servo motor driving under 50 m/s.	Check the bus voltage.	It is less than 200 V DC.	Review the power supply capacity. Increase the acceleration time constant.	
E9.3	Ready-on signal on during main circuit off	Check it with the check method for [AL. E9.1].					[B] [WB]

Alarm No.: EA		Name: ABS servo-on warning					
Alarm content		<ul style="list-style-type: none"> <li>The servo-on was not executed within 1 s after ABSM (ABS transfer mode) was turned on.</li> </ul>					
Display	Detail name	Cause	Check method	Check result	Action	Target	
EA.1	ABS servo-on warning	(1)	The wiring of I/O signals is incorrect.	Check if the I/O signal wire is disconnected or connected loosely.	It has a failure.	Repair or replace the I/O signal wire.	[A]
					It has no failure.	Check (2).	
		(2)	A ladder program of the programmable controller is incorrect.	Check the ladder program.	The ladder program is incorrect.	Modify the program.	

# 1. TROUBLESHOOTING

Alarm No.: EB		Name: The other axis error warning					
Alarm content		<ul style="list-style-type: none"> <li>An alarm, which stops all axes, such as [AL. 24 Main circuit error] or [AL. 32 Overcurrent] occurred in other axis.</li> <li>"All alarms" was set for alarm occurrence.</li> </ul>					
Display	Detail name	Cause	Check method	Check result	Action	Target	
EB.1	The other axis error warning	(1)	[AL. 24] occurred at other axis.	Check if [AL. 24] is occurring at other axis.	It is occurring.	Eliminate the cause of [AL. 24] on the other axis side.	[WB]
					It did not occur.	Check (2).	
		(2)	[AL. 32] occurred at other axis.	Check if [AL. 32] is occurring at other axis.	It is occurring.	Eliminate the cause of [AL. 32] on the other axis side.	
					It did not occur.	Check (3).	
		(3)	"All alarms" was set for alarm occurrence.	Check the [Pr. PF02] setting.	"All alarms" is selected.	Remove the cause of the occurring alarm at other axis.	

Alarm No.: EC		Name: Overload 2				
Alarm content		<ul style="list-style-type: none"> <li>Operation, in which a current exceeding the rating flew intensively in any of the U, V, and W phases of the servo motor, was repeated.</li> </ul>				
Display	Detail name	Cause	Check method	Check result	Action	Target
EC.1	Overload warning 2	(1) The load is too large or the capacity is not enough.	Check the effective load ratio.	The effective load ratio is high.	Reduce the load. Replace the servo motor with the one of larger capacity.	[A] [B] [WB]

Alarm No.: ED		Name: Output watt excess warning				
Alarm content		<ul style="list-style-type: none"> <li>The status, in which the output wattage (speed x torque) of the servo motor exceeded the rated output, continued steadily.</li> </ul>				
Display	Detail name	Cause	Check method	Check result	Action	Target
ED.1	Output watt excess warning	(1) The status, in which the output wattage (speed x torque or thrust) of the servo motor exceeded 150% of the rated output (continuous thrust), continued steadily.	Check the servo motor speed and torque, or check the motor speed and thrust.	The output wattage is 150% of rating.	Reduce the servo motor speed. Reduce the load.	[A] [B] [WB]

# 1. TROUBLESHOOTING

Alarm No.: F0		Name: Tough drive warning				
Alarm content		• Tough drive function was activated.				
Display	Detail name	Cause	Check method	Check result	Action	Target
F0.1	Instantaneous power failure tough drive warning	(1) The voltage of the control circuit power supply has dropped.	Check it with the check method for alarm No. "10.1".			[A] [B] [WB]
F0.3	Vibration tough drive warning	(1) The setting value of the machine resonance suppression filter was changed due to a machine resonance.	Check if it was changed frequently.	It was changed frequently.	Set the machine resonance suppression filter. Check the machine status if screws are loose or the like.	

Alarm No.: F2		Name: Drive recorder - Miswriting warning				
Alarm content		• A waveform measured by the drive recorder function was not recorded.				
Display	Detail name	Cause	Check method	Check result	Action	Target
F2.1	Drive recorder - Area writing time-out warning	(1) The Flash-ROM is malfunctioning.	Disconnect the cables except the control circuit power supply, and then check the repeatability.	It is repeatable.	Replace the servo amplifier.	[A] [B] [WB]
F2.2	Drive recorder - Data miswriting warning	(1) Data were not written to the drive recorder area.	Check if the records have all written.	They have all written.	Delete the records in the drive recorder window of MR Configurator2.	

Alarm No.: F3		Name: Oscillation detection warning				
Alarm content		• [AL. 54 Oscillation detection] may occur.				
Display	Detail name	Cause	Check method	Check result	Action	Target
F3.1	Oscillation detection warning	Check it with the check method for [AL. 54.1].				[A] [B] [WB]

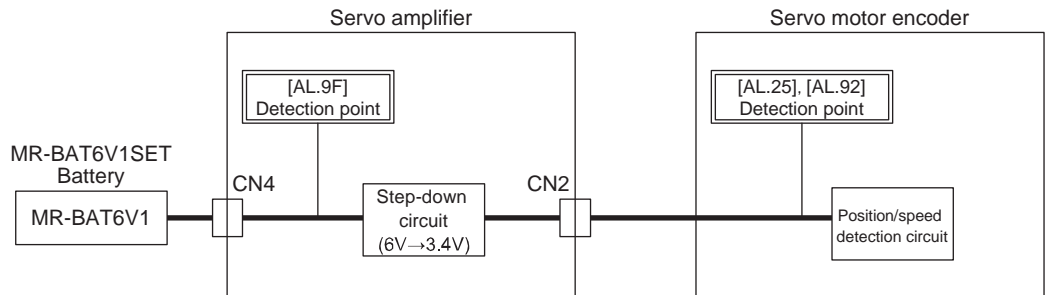


# APPENDIX

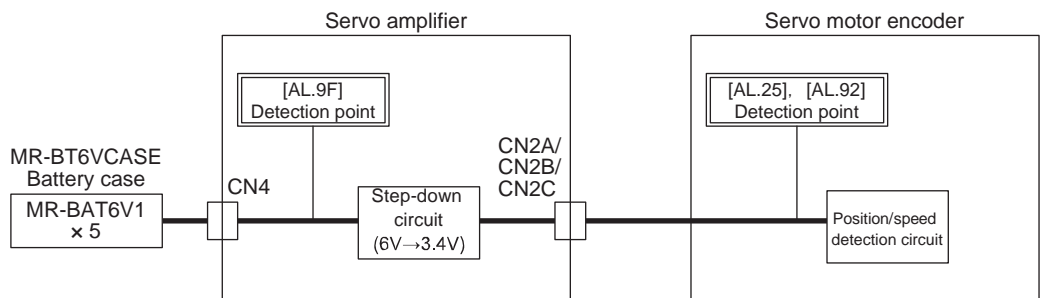
## App. 1 Detection points of [AL. 25], [AL. 92], and [AL. 9F]

The following diagram shows detection points of [AL. 25 Absolute position erased], [AL. 92 Battery cable disconnection warning], and [AL. 9F Battery warning].

### (1) MR-J4-\_A or MR-J4-\_B



### (2) MR-J4W\_-\_B



## REVISIONS

\*The manual number is given on the bottom left of the back cover.

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## Warranty

### 1. Warranty period and coverage

We will repair any failure or defect hereinafter referred to as "failure" in our FA equipment hereinafter referred to as the "Product" arisen during warranty period at no charge due to causes for which we are responsible through the distributor from which you purchased the Product or our service provider. However, we will charge the actual cost of dispatching our engineer for an on-site repair work on request by customer in Japan or overseas countries. We are not responsible for any on-site readjustment and/or trial run that may be required after a defective unit are repaired or replaced.

### [Term]

The term of warranty for Product is twelve (12) months after your purchase or delivery of the Product to a place designated by you or eighteen (18) months from the date of manufacture whichever comes first ("Warranty Period"). Warranty period for repaired Product cannot exceed beyond the original warranty period before any repair work.

### [Limitations]

- (1) You are requested to conduct an initial failure diagnosis by yourself, as a general rule.  
It can also be carried out by us or our service company upon your request and the actual cost will be charged. However, it will not be charged if we are responsible for the cause of the failure.
- (2) This limited warranty applies only when the condition, method, environment, etc. of use are in compliance with the terms and conditions and instructions that are set forth in the instruction manual and user manual for the Product and the caution label affixed to the Product.
- (3) Even during the term of warranty, the repair cost will be charged on you in the following cases;
  - (i) a failure caused by your improper storing or handling, carelessness or negligence, etc., and a failure caused by your hardware or software problem
  - (ii) a failure caused by any alteration, etc. to the Product made on your side without our approval
  - (iii) a failure which may be regarded as avoidable, if your equipment in which the Product is incorporated is equipped with a safety device required by applicable laws and has any function or structure considered to be indispensable according to a common sense in the industry
  - (iv) a failure which may be regarded as avoidable if consumable parts designated in the instruction manual, etc. are duly maintained and replaced
  - (v) any replacement of consumable parts (battery, fan, smoothing capacitor, etc.)
  - (vi) a failure caused by external factors such as inevitable accidents, including without limitation fire and abnormal fluctuation of voltage, and acts of God, including without limitation earthquake, lightning and natural disasters
  - (vii) a failure generated by an unforeseeable cause with a scientific technology that was not available at the time of the shipment of the Product from our company
  - (viii) any other failures which we are not responsible for or which you acknowledge we are not responsible for

### 2. Term of warranty after the stop of production

- (1) We may accept the repair at charge for another seven (7) years after the production of the product is discontinued. The announcement of the stop of production for each model can be seen in our Sales and Service, etc.
- (2) Please note that the Product (including its spare parts) cannot be ordered after its stop of production.

### 3. Service in overseas countries

Our regional FA Center in overseas countries will accept the repair work of the Product. However, the terms and conditions of the repair work may differ depending on each FA Center. Please ask your local FA center for details.

### 4. Exclusion of responsibility for compensation against loss of opportunity, secondary loss, etc.

Whether under or after the term of warranty, we assume no responsibility for any damages arisen from causes for which we are not responsible, any losses of opportunity and/or profit incurred by you due to a failure of the Product, any damages, secondary damages or compensation for accidents arisen under a specific circumstance that are foreseen or unforeseen by our company, any damages to products other than the Product, and also compensation for any replacement work, readjustment, start-up test run of local machines and the Product and any other operations conducted by you.

### 5. Change of Product specifications

Specifications listed in our catalogs, manuals or technical documents may be changed without notice.

### 6. Application and use of the Product

- (1) For the use of our General-Purpose AC Servo, its applications should be those that may not result in a serious damage even if any failure or malfunction occurs in General-Purpose AC Servo, and a backup or fail-safe function should operate on an external system to General-Purpose AC Servo when any failure or malfunction occurs.
- (2) Our General-Purpose AC Servo is designed and manufactured as a general purpose product for use at general industries. Therefore, applications substantially influential on the public interest for such as atomic power plants and other power plants of electric power companies, and also which require a special quality assurance system, including applications for railway companies and government or public offices are not recommended, and we assume no responsibility for any failure caused by these applications when used.  
In addition, applications which may be substantially influential to human lives or properties for such as airlines, medical treatments, railway service, incineration and fuel systems, man-operated material handling equipment, entertainment machines, safety machines, etc. are not recommended, and we assume no responsibility for any failure caused by these applications when used.  
We will review the acceptability of the abovementioned applications, if you agree not to require a specific quality for a specific application. Please contact us for consultation.

<b>MODEL</b>	MR-J4 INSTRUCTIONMANUAL (TROUBLESHOOTING)
<b>MODEL CODE</b>	1CW808

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