



3. Troubleshooting (MDS-A/B Series)

3.1 Status display

 WARNING
<ol style="list-style-type: none"> 1. Do not touch the switches with wet hands. Failure to observe this could lead to electric shocks. 2. Do not operate the unit with the front cover removed. The high voltage terminals and charged sections will be exposed, and can cause electric shocks. 3. Do not open the front cover while the power is ON or during operation. Failure to observe this could lead to electric shocks.

 CAUTION
<ol style="list-style-type: none"> 1. Always check the parameters before starting. Depending on the machine, unforeseen operation could take place. 2. Do not touch the servo amplifier fins, regenerative resistor or servomotor, etc., while the power is turned ON or immediately after turning the power OFF. Some parts are heated to high temperatures, and touching these could lead to burns.

The state of the drive unit is displayed on the 7-segment display on the drive unit and the NC servo monitor screen.

Confirm one of these displays before troubleshooting.

Caution: The machine's power distribution box door must be opened to confirm the drive unit's 7-segment display. Take special care not to touch the conductive parts at this time.

(1) 7-segment display

The drive unit state is indicated with the 7-segment display on the drive unit.

When an alarm occurs, the alarm No. will be displayed. If several alarms occur simultaneously for one axis, the latest alarm No. will be displayed.

Servo Drive Unit Status Display

Amplifier display	NC display	Details
AA	(No display)	Initializing. Standby for NC power start up (When NC power ON → OFF)
Ab		Initializing. Standby for NC power start up (When NC power has not been turned ON yet)
AC	(No display)	Initializing. Requesting parameter transmission
Ad		Initializing. Requesting parameter conversion
AE		Initializing. Standby for main servo IT start
b#		Ready OFF
C#		Servo OFF
d#		Servo ON
F# → 9*		9*
F# → E*	E*	(* is 0 to F. Note "E6", "E7" and "EA" are status displays).
F# → **	**	Alarm occurring

: Axis No.

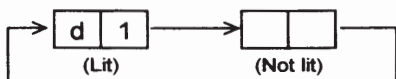
* : Warning No.

** : Alarm No. (Refer to <Servo alarm> <Warning> Tables on following pages.)

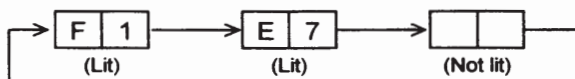
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The status display after initializing will repeat lighting and going out per axis and show the axes in order. An example is shown below.

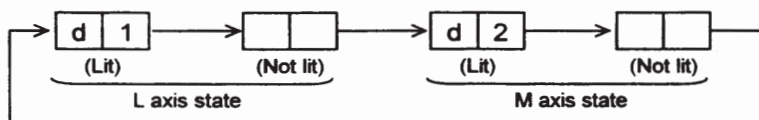
(Example 1) 1st axis in a single-axis drive unit. Display of servo ON state.



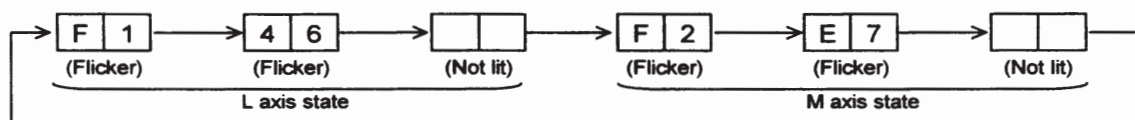
(Example 2) With the above axis. Display of emergency stop signal input from NC.



(Example 3) L axis is 1st axis, M axis is 2nd axis in 2-axes integrated drive unit. Display of servo ON state.



(Example 4) With the above axes. Display of motor overhear alarm (No. 46) in L axis. (Emergency stop is applied on M axis)



(2) Servo monitor screen display (NC screen)

The NC will display the servo alarm No. in the servo alarm column in the servo monitor screen when an alarm occurs in the drive unit. The Nos. are the same as the drive unit's 7-segment display but, may differ depending on the alarm details. (Ex. When there is an obstacle in the communication with the drive unit.)

Nothing will display when operations are normal.

The servo monitor screen is displayed by pressing the NC function selection key **DIAGN**

(diagnosis), and then pressing menu key **SERVO MONITOR**.

The servo alarm Nos. may display on other screens depending on the NC type. Refer to the NC instruction manual for details on this.

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<Servo alarms>

Dis- play	Abbr.	Name	Meaning	Release	Class	Alarm/warning check period			
						f1	f2	f3	f4
11	ASE	Axis selection error	The axis setting rotary switch was set illegal in the 2-axes integrated drive unit.	AR	C	○	—	—	—
12	ME	Memory error	The memory IC (SRAM or FLROM) check sum was illegal.	AR	C	○	—	—	—
13	SWE	Software processing error	The software data processing was not completed within the normal time. Includes peripheral G/A errors.	PR	C	—	○	○	○
16	RD1	Pole position detection error	The differential input of the U, V, or W phase of the pole position detection signal of the OHE type detector were both "H" or "L".	PR	A	—	○	○	—
17	ADE	AD converter error	The AD converter for current detection did not function correctly during initialization.	PR	A	—	○	—	—
18	WAT	Initial communication error	The absolute position or pole position data from the OHA type detector or serial pulse encoder was not correctly sent.	PR	A	—	○	—	—
1A	STE1	Serial detector communication error (SUB)	The initial communication with the serial encoder installed on the ball screw end was not possible.	PR	A	—	○		
1B	Scpu	CPU error (SUB)	An error was detected in the data stored in the EEROM of the serial pulse encoder installed on the ball screw end. (Alarm output by the detector.)	PR	A	—	○	○	○
1C	Sled	LED error (SUB)	Deterioration of the LEDs in the serial pulse encoder installed on the ball screw end was detected. (Alarm output by the detector.)	PR	A	—	○	○	○
1D	Sdat	Data error (SUB)	An error was detected in the per rotation position data of the serial pulse encoder installed on the ball screw end. (Alarm output by the detector.)	PR	A	—	○	○	○
1E	SOHE	Serial detector thermal error (SUB)	The thermal protector built in the detector operated in the serial pulse encoder installed on the ball screw end. (Alarm output by the detector.)	PR	A	—	○	○	○
1F	Stre	Communication error (SUB)	Communication with the detector in the serial pulse encoder installed on the ball screw end was cut off.	PR	A	—	○	○	—
20	NS1	No signal detected 1	The differential input of the A, B or Z phase signal from the motor end installation detector were both "H" or "L". (Software detection in B Series.)	PR	A	—	○	○	—
21	NS2	No signal detected 2	The differential input of the A, B or Z phase signal from the machine end installation detector were both "H" or "L". (Software detection in B Series.)	PR	A	—	○	○	—
25	ABSE	Absolute position lost	The absolute position data in the absolute position detector was lost.	AR	A	—	○	—	—
26	NAE	Not used axis error	A power module error occurred in the axis that is not being controlled set as "F" by the axis setting rotary switch in the 2-axes integrated drive unit.	PR	C	—	○	○	○
27	SCCPU	Absolute position detection scale CPU error	An error was detected in the CPU of the absolute position linear scale. (Alarm output by the detector.)	PR	A	—	○	○	○
28	SOSP	Absolute position overspeed	The scale moved at more than 45mm/sec during initialization with the absolute position linear scale. (Alarm output from the linear scale.)	PR	A	—	○	—	—
29	SABS	Absolute position detection circuit error	A hardware error was detected in the absolute position detection circuit of the absolute position linear scale. (Alarm output by the linear scale.)	PR	A	—	○	○	○
2A	SINC	Relative position detection circuit error	A hardware error was detected in the relative position detection circuit of the absolute position linear scale. (Alarm output by the linear scale.)	PR	A	—	○	○	○
2B	SCPU	Scale CPU error	A CPU error was detected in the serial pulse encoder installed on the motor end. (Alarm output by the detector.)	PR	A	—	○	○	○

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Dis- play	Abbr.	Name	Meaning	Release	Class	Alarm/warning check period			
						f1	f2	f3	f4
2C	SLED	Scale LED error	Deterioration of the LEDs in the serial pulse encoder installed on the motor end was detected. (Alarm output by the detector.)	PR	A	—	○	○	○
2D	SDAT	Scale data error	An error was detected in the per rotation position data of the serial pulse encoder installed on the motor end. (Alarm output by the detector.)	PR	A	—	○	○	○
2F	STRE	Scale communication error	Communication with the OHA type detector or serial pulse encoder installed on the motor end and the detector was cut off.	PR	A	—	○	○	○
31	OS	Overspeed	The motor speed reached 1.2 times the rated speed.	PR	A	—	○	○	—
32	PMOC	Power module overcurrent	An overcurrent was detected in the IPM used in the servo drive's main circuit.	PR	A	—	○	○	○
34	DP	CRC error	A CRC error occurred in the communication data from the NC.	PR	C	—	○	○	○
35	DE	Data error	The movement command data from the NC is abnormally large.	PR	A	—	○	○	—
36	TE	Transmission error	The cyclic data transmission from the NC was terminated.	PR	C	—	○	○	—
37	PE	Parameter error	There is error in the servo parameters transmitted from the NC during servo drive initialization.	PR	A	—	○	—	○
38	TP1	Protocol error 1	There was an error in the communication protocol with the NC. (Frame error)	PR	C	—	○	○	○
39	TP2	Protocol error 2	There was an error in the communication protocol with the NC. (Information error)	PR	A	—	○	○	○
3A	OC	Overcurrent	An excessive current flowed to the motor.	PR	A	—	○	○	○
3B	PMOH	Power module overheat	Overheating of the IPM used in the servo driver's main circuit was detected.	PR	A	—	○	○	○
42	FE1	Feedback error 1	(1) A skip of the detector feedback signal pulse occurred in the OHE type or OHA type detector used in the semi-closed loop system and ball screw end closed loop system. (2) A skip of the detector feedback signal pulse in the low-speed serial type absolute position linear scale.	PR	A	—	○	○	—
43	FE2	Feedback error 2	A deviation occurred in the feedback amount from the motor end detector and machine end detector in the closed loop system.	PR	A	—	○	○	—
46	OHM	Motor overheat	The motor or detector thermal protector operated.	NR	A	—	○	○	—
50	OL1	Overload 1	The motor current operated in the range set with the overload detection level (parameter OLL) and overload time constant (parameter OLT).	NR	A	—	○	○	○
51	OL2	Overload 2	A current command with a maximum output current exceeding 95% continued for 1 second or more.	NR	A	—	—	○	—
52	OD1	Excessive error 1	The actual position to the command exceeded the excessive error width 1 (parameter OD1) when the servo was turned ON.	NR	A	—	—	○	—
53	OD2	Excessive error 2	The actual position to the command exceeded the excessive error width 2 (parameter OD2) when the servo was turned OFF.	NR	A	—	○	—	—
54	OD3	Excessive error 3	The motor current did not flow when the excessive error 1 alarm was detected. (Added with the B Series.)	NR	A	—	—	○	—
58	CLE0	Collision detection 0	A collision detection type 1 error was detected during the G0 modal (rapid traverse).	NR	A	—	—	○	—
59	CLE1	Collision detection 1	A collision detection type 1 error was detected during the G1 modal (cutting feed).	NR	A	—	—	○	—

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Display	Abbr.	Name	Meaning	Release	Class	Alarm/warning check period			
						f1	f2	f3	f4
5A	CLT2	Collision detection 2	A collision detection type 2 error was detected.	NR	A	—	—	○	—
60 ~7F			An error occurred in the power supply unit. (Refer to the power supply section for details.)						
82	NSP	Power supply no signal	A breakage in the cable connected with the power supply or incorrect connection was detected. (Only A Series)	PR	C	—	○	○	○
88	WD	Watch dog	The servo amplifier software process was not executed within the designated time.	AR	C	○	○	○	○

<Servo warnings>

Display	Abbr.	Name	Meaning	Release	Class	Alarm/warning check period			
						f1	f2	f3	f4
90	WST	Low-speed serial initial communication error	Initial communication with the low-speed serial type absolute position linear scale was not possible.	PR	A	—	○	—	—
91	WAS	Detector communication error	The absolute position serial data was not properly sent from the OHA type detector and low-speed serial type absolute position linear scale.	—	A	—	○	○	—
92	WAF	Detector serial format error	The format of the serial data from the OHA type detector was incorrect.	—	A	—	○	○	—
93	WAM	Absolute position fluctuation	The absolute position counter cannot be set as the absolute position data fluctuated when the NC power was turned ON.	PR	A	—	○ Note	○	—
96	MPE	MP scale feedback error	In the MP scale absolute detection system, an excessive deviation in the motor end installation detector and MP scale feedback amount was detected.	—	A	—	○	○	○
97	MPO	MP scale offset error	In the MP scale absolute position detection system, an error was detected in the offset data read when the NC power was turned ON.	PR	A	—	○	—	—
9E	WAN	High-speed serial multi-rotation counter error	An error was detected in the multi-rotation counter in the serial pulse encoder installed on the motor end or ball screw end.	—	A	—	○	○	○
9F	WAB	Battery voltage drop	The voltage of the battery supplied to the absolute position detector dropped.	—	A	—	○	○	○
E1	WOL	Overload warning	An 80% level of the overload 1 alarm was detected. (If operation is continued, the overload 1 alarm may occur.)	—	C	—	○	○	○
E3	WAC	Absolute position counter warning	The absolute position counter value is illegal. The absolute position must be initialized.	—	A	—	○	○	—
E4	WPE	Parameter error warning	A parameter exceeding the setting range was set. The illegal parameter will be ignored and the previously set value will be held.	—	A	—	○	○	—

3. Troubleshooting (MDS-A/B Series)

<Status displays other than alarms and warnings>

Dis-play	Abbr.	Name	Meaning	Release	Class	Alarm/warning check period			
						f1	f2	f3	f4
E6	AXE	Removing control axis	The axis removal command is input from the NC.	—	A	—	○	○	○
E7	NCE	NC emergency stop	The emergency stop command is input from the NC.	—	C	—	○	○	○
E8~ EB			A warning was generated with the power supply unit. (Refer to the power supply unit item for details.)						

[Release]

- AR : The alarm is released by turning the servo drive unit power OFF and ON.
- PR : The alarm is released by turning the NC power OFF and ON.
- NR : The alarm is released by NC reset.
(However, overload alarm "50" cannot be released until the load is lowered passed the reset level (50% of the current value on the monitor screen.))
- : Automatically restored when the warning state is eliminated.

[Class]

- C : Detects both axes even during the 2-axes integrated drive unit.
- A : Detects each axis independently.

[Alarm/warning check period]

- f1 : When servo drive unit power is turned ON.
- f2 : When NC power is turned ON (emergency stop ON)
- f3 : During normal operation (servo ON)
- f4 : During axis removal (ready ON, servo OFF)

(Note : Warning "93" may occur after axis removal while installing the axis again.)

3. Troubleshooting (MDS-A/B Series)

3.2 Troubleshooting per servo alarm

!	CAUTION
When an alarm occurs, remove the cause of the alarm, confirm that an operation signal is not being input, and secure the safety. Then reset the alarm to resume operation.	

When an alarm occurs in the spindle drive, the servo will turn OFF and the motor will coast to a stop. Turn the power OFF with an external sequence.
To release the alarm, remove the cause and then turn the power ON.

(1) Alarm No. 11 Axis selection error (only MDS-A/B-V2)

[Meaning] Illegal setting of the axis setting rotary switch in the drive unit.

Alarm check period			
f1	f2	f3	f4
○	-	-	-

	Investigation item	Investigation results	Remedy
1	Confirm the rotary switch setting.	One setting is 7 ~ E.	Correctly set. (Set a No. that is the axis No. minus 1.)
		The L axis and M axis are set to the same No.	Same as above.
		None of the above.	Replace the drive unit.

(2) Alarm No. 12 Memory error 1

[Meaning] Error in the drive unit memory IC (SRAM or FLROM) and peripheral G/A

Alarm check period			
f1	f2	f3	f4
○	-	-	-

	Investigation item	Investigation results	Remedy
1	Confirm the repeatability.	Always occurs.	Replace the drive unit.
		Returns to normal once, but recurs periodically.	Perform investigation item 2.
2	Check for abnormalities in the unit's peripheral environment. (Ex. ambient temperature, noise, grounding)	No special abnormalities were found.	Replace the drive unit.
		An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced add grounding measures.

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(3) Alarm No. **13** Software processing error

Alarm check period

[Meaning] The drive unit software data processing was not completed within the normal time or an illegal IT process was input.

f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Check whether the servo software version was changed recently.	Changed	Try replacing with the drive unit with the original software version.
		Not changed.	Perform investigation item 2.
2	Confirm the repeatability.	Always occurs.	Replace the drive unit.
		Returns to normal once, but recurs periodically.	Perform investigation item 3.
3	Check for abnormalities in the unit's peripheral environment. (Ex. ambient temperature, noise, grounding)	No special abnormalities were found.	Replace the drive unit.
		An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced add grounding measures.

(4) Alarm No. **16** Pole position detection error 1

Alarm check period

[Meaning] Error in the output of the OHE type detector (motor end installation) U, V, W phases
 1) When the "H" differential inputs from the U, V or W phases are both "L".
 2) When the states of the U, V and W phases are all "H" or "L".

f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Check the servo parameter (SV25) setting value.	"0" or "3" is set in the parameter detector setting position even though the OHE type detector is not connected.	Correctly set.
		The setting is correct.	Perform investigation item 2.
2	Tug the connector by hand to check whether the detector connector (unit side and detector side) is not loose.	Disconnected (loose).	Correctly connect.
		Not disconnected.	Perform investigation item 3.
3	Turn the power OFF and check the detector cable connection with a tester.	A connection defect was found.	Replace the detector cable.
		Connection was normal.	Perform investigation item 4.
4	Try connecting with another normal axis unit and check whether the defect is on the unit side or detector side. (Refer to the cautions in section 2.3.)	The alarm is on the unit.	Replace the drive unit.
		The alarm is on the detector.	Replace the detector (motor).

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(5) Alarm No. 17 AD converter error

[Meaning] AD converter IC error in the drive unit

Alarm check period

f1	f2	f3	f4
-	○	-	-

	Investigation item	Investigation results	Remedy
1		Always occurs.	Replace the drive unit.
		Returns to normal once, but recurs periodically.	Perform investigation item 2.
2	Check for abnormalities in the unit's peripheral environment. (Ex. ambient temperature, noise, grounding)	No special abnormalities were found.	Replace the drive unit.
		An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced add grounding measures.

(6) Alarm No. 18 Initial communication error

[Meaning] Initial communication with the detector was not possible in a system using the OHA type detector (motor end or ball screw end installation) or serial pulse encoder.

Alarm check period

f1	f2	f3	f4
-	○	-	-

	Investigation item	Investigation results	Remedy
1	Check the servo parameter (SV25) setting value.	"1", "5" or "9" is set in the parameter detector setting position even though the OHA type detector is not connected.	Set correctly.
		The setting is correct.	Perform investigation item 2.
2	Tug the connector by hand to check whether the detector connector (unit side and detector side) is not loose.	Disconnected (loose).	Correctly connect.
		Not disconnected.	Perform investigation item 3.
3	Turn the power OFF and check the detector cable connection with a tester.	A connection defect was found.	Replace the detector cable.
		Connection was normal.	Perform investigation item 4.
4	Try connecting with another normal axis unit and check whether the defect is on the unit side or detector side. (Refer to the cautions in section 2.3.)	The alarm is on the unit.	Replace the drive unit.
		The alarm is on the detector.	Replace the motor (detector).

(7) Alarm No. 1A Serial pulse encoder communication error (SUB)

[Meaning] The initial communication with the serial encoder installed on the ball screw end was not possible.

	Investigation item	Investigation results	Remedy
1	Perform the items 2 and following for alarm No. "18".		

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(8) Alarm No. 1B Serial pulse encoder CPU error (SUB)

[Meaning] An error was detected in the data stored in the EEROM of the serial pulse encoder installed on the ball screw end.
(Alarm output by the detector.)

Alarm check period			
f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform the items 2 and following for alarm No. "18".		

(9) Alarm No. 1C Serial pulse encoder LED error (SUB)

[Meaning] Deterioration of the LEDs in the serial pulse encoder installed on the ball screw end was detected.
(Alarm output by the detector.)

Alarm check period			
f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform the items 2 and following for alarm No. "18".		

(10) Alarm No. 1D Serial pulse encoder data error (SUB)

[Meaning] An error was detected in the per rotation position data of the serial pulse encoder installed on the ball screw end.
(Alarm output by the detector.)

Alarm check period			
f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform the items 2 and following for alarm No. "18".		

(11) Alarm No. 1E Serial pulse encoder thermal error

[Meaning] The thermal protector built in the detector operated in the serial pulse encoder installed on the ball screw end.
(Alarm output by the detector.)

Alarm check period			
f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform the items 2 and following for alarm No. "18".		

(12) Alarm No. 1F Serial pulse encoder communication error (SUB)

[Meaning] Communication with the detector in the serial pulse encoder installed on the ball screw end was cut off.

Alarm check period			
f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform the items 2 and following for alarm No. "18".		

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(13) Alarm No. 20 No signal detected 1

[Meaning] Error in the OHE, OHA type detector (motor end installation) A, B or Z phase

Alarm check period

f1	f2	f3	f4
—	○	○	○

	Investigation item	Investigation results	Remedy
1	Check the servo parameter (SV25) setting value.	"0" or "3" is set in the parameter detector setting position even though the OHE or OHA type detector is not installed.	Correctly set.
		The setting is correct.	Perform investigation item 2.
2	Tug the connector by hand to check whether the detector connector (unit side and detector side) is not loose.	Disconnected (loose).	Correctly connect.
		Not disconnected.	Perform investigation item 3.
3	Turn the power OFF and check the detector cable connection with a tester.	A connection defect was found.	Replace the detector cable.
		Connection was normal.	Perform investigation item 4.
4	Try connecting with another normal axis unit and check whether the defect is on the unit side or detector side. (Refer to the cautions in section 2.3.)	The alarm is on the unit.	Replace the drive unit.
		The alarm is on the detector.	Perform investigation item 5.
5	Check for abnormalities in the unit's peripheral environment. (Ex. ambient temperature, noise, grounding)	No special abnormalities were found.	Replace the motor (detector).
		An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced add grounding measures.

(14) Alarm No. 21 No signal detected 2

[Meaning] Error in the OHE-ET, OHA-ET type detector or each scale (machine end installation) A, B or Z phase.

Alarm check period

f1	f2	f3	f4
—	○	○	○

	Investigation item	Investigation results	Remedy
1	Check the servo parameter (SV25) setting.	"4", "5", "8" or "9" is set in the parameter detector setting position even though the OHE-ET or OHA-ET type detector or each scale is not connected.	Correctly set.
		The value is correct.	Perform investigation item 2.
2	Perform the items for alarm "20".		

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(15) Alarm No. 25 Absolute position lost

Alarm check period			
f1	f2	f3	f4
-	○	-	-

[Meaning] When absolute position data is lost.
 • This occurs when the power in the absolute position detector is lost, and will return to normal when the unit's 200VAC is reset and zero point return is performed again.

	Investigation item	Investigation results	Remedy
1	Check whether the absolute position detector cable (including battery connection cable) was left disconnected for a while.	Was disconnected. Guideline: At delivery: 20 hours or more After 5 years: 10 hours or more	Reset the amplifier's 200VAC power and perform zero point return again.
		Was not disconnected.	Perform investigation item 2.
2	Check whether a battery error alarm occurred recently.	Alarm occurred.	Check the battery voltage.
		Did not occur.	Perform investigation item 3.
3	Tug the detector connector (unit and detector side) to see if it has disconnected. Also check the cable between the battery unit and drive unit.	Was disconnected (loose).	Correctly connect.
		Was not disconnected.	Perform investigation item 4.
4	Turn the power OFF and check the detector cable connection with a tester.	A connection defect was found.	Replace the detector cable.
		Connection was normal.	Perform investigation item 5.
5	Check the repeatability. Perform zero point return again.	Does not recur.	Perform investigation item 7, and if there is no error, continue to use.
		Always recurs. Returns to normal once, but recurs periodically.	Perform investigation item 6.
6	Try connecting with another normal axis unit and check whether the defect is on the unit side or detector side. (Refer to the cautions in section 2.3.)	The alarm is on the unit.	Replace the drive unit.
		The alarm is on the detector.	Perform investigation item 7.
7	Check for abnormalities in the unit's peripheral environment. (Ex. ambient temperature, noise, grounding)	No special abnormalities were found.	Replace the motor (detector).
		An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced..... add grounding measures.

3. Troubleshooting (MDS-A/B Series)

(16) Alarm No. 26 Not used axis error

[Meaning] A IPM alarm is occurring in an axis that is set as "F" in the unit axis setting rotary switch and which is not being controlled.
(Alarm only for 2-axes integrated drive unit)

Alarm check period

f1	f2	f3	f4
—	○	○	○

	Investigation item	Investigation results	Remedy
1	Check whether a wire is connected to the motor output terminal block (UVW) for the axis set as "F".	Connected.	Perform the items for alarm No. "32".
		Not connected.	Perform investigation item 2.
2	Check the repeatability.	Always recurs or returns to normal but recurs periodically.	Perform investigation item 3.
		Does not recur.	Perform investigation item 3, and if there is no error, continue to use.
3	Check for abnormalities in the unit's peripheral environment. (Ex. ambient temperature, noise, grounding)	No special abnormalities were found.	Replace the drive unit.
		An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced..... add grounding measures.

(17) Alarm No. 27 Absolute position detection scale CPU error

[Meaning] The CPU in the absolute position linear scale did not operate correctly. (Alarm output by the linear scale.)

Alarm check period

f1	f2	f3	f4
—	○	○	○

	Investigation item	Investigation results	Remedy
1	Tug the detector cable connector (unit side and NC side) to see if it is disconnected.	Is disconnected (or loose).	Correctly connected.
		Not disconnected.	Perform investigation item 2.
2	Turn the power OFF and check the detector cable connection with a tester.	Connection is faulty.	Replace the detector cable.
		Connection is connect.	Perform investigation item 3.
3	Try connecting with another normal axis unit and check whether the defect is on the unit side or detector side. (Refer to the cautions in section 2.3.)	The alarm is on the unit.	Replace the drive unit.
		The alarm is on the detector.	Perform investigation item 4.
4	Check for abnormalities in the unit's peripheral environment. (Ex. ambient temperature, noise, grounding.)	No special abnormalities were found.	Replace the detector (linear scale.)
		An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced..... add grounding measures.

3. Troubleshooting (MDS-A/B Series)

(18) Alarm No. 28 Absolute position overspeed

[Meaning] The scale moved at more than 45mm/sec during initialization when NC power is turned ON with the absolute value linear scale. (Alarm output from the linear scale.)

Alarm check period

f1	f2	f3	f4
-	○	-	-

	Investigation item	Investigation results	Remedy
1	Check the absolute value linear scale specifications.	The specifications are not for the absolute value linear scale.	Set the SV025: MTYP parameter correctly.
		The specifications are for the absolute value linear scale.	Perform investigation item 2.
2	Is the machine moving during the alarm?	Is moving.	Check the motor mechanical brakes and machine system.
		Is not moving.	Perform investigation item 3.
3	Tug the detector connector (unit and detector side) to see if it has disconnected.	Was disconnected (loose).	Correctly connect.
		Was not disconnected.	Perform investigation item 4.
4	Turn the power OFF and check the detector cable connection with a tester.	A connection defect was found.	Replace the detector cable.
		Connection was normal.	Perform investigation item 5.
5	Try connecting with another normal axis unit and check whether the defect is on the unit side or detector side. (Refer to the cautions in section 2.3.)	The alarm is on the unit.	Replace the drive unit.
		The alarm is on the detector.	Perform investigation item 6.
6	Check for abnormalities in the unit's peripheral environment. (Ex. ambient temperature, noise, grounding)	No special abnormalities were found.	Replace the detector (linear scale).
		An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced..... add grounding measures.

(19) Alarm No. 29 Absolute position detection circuit error

[Meaning] An error occurred in the absolute position detection side circuit of the absolute position linear scale. (Output from the linear scale)

Alarm check period

f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform the items for alarm No. "28".		

3. Troubleshooting (MDS-A/B Series)

(20) Alarm No. 2A Relative position detection circuit error

Alarm check period

[Meaning] An error was detected in the linear scale side absolute position detection circuit. (Output from the linear scale)

f1	f2	f3	f4
—	○	○	○

	Investigation item	Investigation results	Remedy
1	Is the machine moving during the alarm?	Is not moving	Perform investigation item 3.
		Is moving	Perform investigation item 2.
2	Check whether movement is normal at low speeds.	Is moving	Perform investigation item 3.
		Is not moving	Check the cautionary items before turning the power ON. • Check the wiring • Check the parameters
3	Tug the detector cable (unit and detector side) to see if it has disconnected.	Was disconnected (loose).	Correctly connect.
		Was not disconnected.	Perform investigation item 4.
4	Turn the power OFF and check the detector cable connection with a tester.	A connection defect was found.	Replace the detector cable.
		Connection was normal.	Perform investigation item 5.
5	Try connecting with another normal axis unit and check whether the defect is on the unit side or detector side. (Refer to the cautions in section 2.3.)	The alarm is on the unit.	Replace the drive unit.
		The alarm is on the detector.	Perform investigation item 6.
6	Check for abnormalities in the unit's peripheral environment. (Ex. ambient temperature, noise, grounding)	No special abnormalities were found.	Replace the motor (detector).
		An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced..... add grounding measures.

(21) Alarm No. 2B Serial pulse encoder CPU error

Alarm check period

[Meaning] An error was detected in the data stored in the EEROM of the serial pulse encoder connected to the motor end. (Alarm output from the detector or the linear scale.)

f1	f2	f3	f4
—	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform item 3 and following of alarm No. "2A".		

(22) Alarm No. 2C Serial pulse encoder LED error

Alarm check period

[Meaning] Deterioration of the LEDs in the serial pulse encoder connected to the motor end was detected. (Alarm output from the detector or the linear scale.)

f1	f2	f3	f4
—	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform item 3 and following of alarm No. "2A".		

3. Troubleshooting (MDS-A/B Series)

(23) Alarm No. 2D Serial pulse encoder data error

[Meaning] An error was detected in the per rotation position data of the serial pulse encoder connected to the motor end.
(Alarm output from the detector)

Alarm check period			
f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform item 3 and following of alarm No. "2A".		

(24) Alarm No. 2F Detector communication error

[Meaning] Communication with the OHA type detector or serial pulse encoder connected to the motor end and the detector was cut off.

Alarm check period			
f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform item 3 and following of alarm No. "2A".		

(25) Alarm No. 31 Overspeed

[Meaning] The motor speed is exceeding the tolerable speed.

Alarm check period			
f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Is the machine moving during the alarm?	Is not moving	Perform investigation item 5.
		Is moving	Perform investigation item 2.
2	Check whether movement is normal at low speeds.	Is moving	Perform investigation item 3.
		Is not moving	Check the cautionary items before turning the power ON. • Check the wiring • Check the parameters
3	Check the servo parameter (MTYP) setting value.	The motor has 3000rpm specifications, but is set for 2000rpm.	Correctly set.
		The setting is correct.	Perform investigation item 4.
4	Is the rapid traverse rate too high? Motor speed = $\frac{\text{Rapid traverse rate(mm/min)}}{\text{Ball screw lead (mm)}} \times \frac{\text{PC2}}{\text{PC1}}$	Is too high.	Correct to below the rated speed.
		Is set to below the rated speed.	Perform investigation item 5.
5	Check whether the time constant is too low. • Check the current value displayed on the servo monitor screen.	80% or more of the maximum value is displayed.	Lower the rapid traverse time constant so that the current value during rapid traverse acceleration/deceleration is less than 80% of the maximum value.
		The setting is less than 80% of the maximum value.	Perform investigation item 6.
6	Perform items 2 and following in alarm No. "28".		

3. Troubleshooting (MDS-A/B Series)

(26) Alarm No. 32 Power module overcurrent

Alarm check period

[Meaning] An overcurrent was detected in the IPM used by the servo drive.

f1	f2	f3	f4
—	○	○	○

	Investigation item	Investigation results	Remedy
1	Are the UVW phases on the unit output short circuited. • Disconnect the UVW wires from the terminal block and the motor cannon plug and check between UVW with a tester.	There is a short circuit or conductivity.	Replace the UVW wires.
		No conductivity.	Perform investigation item 2.
2	Check the UVW wires for a ground fault. • Check between the UVW wires and grounding with a tester in the item 1 state.	There is a short circuit or conductivity.	Replace the UVW wires.
		No conductivity.	Perform investigation item 3.
3	Check for a motor ground fault. • Check between the UVW wires and grounding with a megger tester in the item 1 state.	There is a short circuit or conductivity.	Replace the motor.
		No conductivity. (Same level as other axes)	Perform investigation item 4.
4	Check the servo parameter setting values. • Refer to the adjustment procedures.	The settings are incorrect.	Correctly set.
		The settings are correct.	Perform investigation item 5.
5	Tug the detector connector (unit and detector side) to see if it has disconnected.	Was disconnected (loose).	Correctly connect.
		Was not disconnected.	Perform investigation item 6.
6	Turn the power OFF and check the detector cable connection with a tester.	A connection defect was found.	Replace the detector cable.
		Connection was normal.	Perform investigation item 7.
7	Check the repeatability.	Does not recur.	Perform investigation item 9.
		Recurrs periodically.	Perform investigation item 9.
		Always recurs.	Perform investigation item 8.
8	Try connecting with another normal axis unit and check whether the defect is on the unit side or detector side. (Refer to the cautions in section 2.3.)	The alarm is on the unit.	Replace the drive unit.
		The alarm is on the detector.	Replace the motor (detector).
9	Check for abnormalities in the unit's peripheral environment. (Ex. ambient temperature, noise, grounding)	No special abnormalities were found.	Wait.
		An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced..... add grounding measures.

3. Troubleshooting (MDS-A/B Series)

(27) Alarm No. 34 CRC error

[Meaning] A CRC error occurred in the communication data from the NC.

Alarm check period

f1	f2	f3	f4
-	○	○	○

Investigation item	Investigation results	Remedy
1	The connectors are disconnected (loose).	Correctly connect.
	Not disconnected.	Perform investigation item 2.
2	A connection defect was found.	Replace the communication cable.
	Connection is normal.	Perform investigation item 3.
3	Was changed.	Try returning to the original software version. ↓ If the problem is not solved, perform investigation item 4.
	Not changed.	Perform investigation item 4.
4	The alarm is on the unit side.	Replace the drive unit.
	The amplifier is not the cause.	Perform investigation item 5.
5	No special abnormalities were found.	Replace the MCP card on the NC side.
	An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced..... add grounding measures.

(28) Alarm No. 35 Data error

[Meaning] The movement command data from the NC is abnormally large.

Alarm check period

f1	f2	f3	f4
-	○	○	-

Investigation item	Investigation results	Remedy
1	Perform the items for alarm No. "34".	

(29) Alarm No. 36 Transmission error

[Meaning] The cyclic data transmission from the NC was terminated.

Alarm check period

f1	f2	f3	f4
-	○	○	-

Investigation item	Investigation results	Remedy
1	Perform the items for alarm No. "34".	

3. Troubleshooting (MDS-A/B Series)

(30) Alarm No. 37 Parameter error

[Meaning] There is error in the servo parameters transmitted from the NC during initialization.

Alarm check period

f1	f2	f3	f4
-	○	-	○

	Investigation item	Investigation results	Remedy
1	The illegal parameter No. is displayed on the NC diagnosis screen, so adjust the servo parameter with the parameter adjustment procedures.	The setting is incorrect.	Set the correct parameter.
		The setting is correct.	Perform investigation item 3.
		The parameter No. is other than 1 to 64.	Perform investigation item 2 when parameter No. is 101.
2	The servo parameter (PIT) (RNG) (PC1) (PC2) combination is illegal or the setting range is exceeded.	Illegal or setting range is exceeded.	Refer to the parameter settings and supplementary explanations in the specifications, and reset to the correct value.
		The setting is correct.	Perform investigation item 3.
3	Perform the items for alarm No. "34".		

* Note that if an alarm 37 occurs in a system using the MDS-AVx Series servo software version B and above and provided with an OHE 25 encoder, there may be no signal (V, W phase).

(31) Alarm No. 38 Protocol error 1

[Meaning] There was a protocol error in the communication with the NC. (Frame error)

Alarm check period

f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform the items for alarm No. "34".		

(32) Alarm No. 39 Protocol error 2

[Meaning] There was a protocol error in the communication with the NC. (Information error)

Alarm check period

f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform the items for alarm No. "34".		

(33) Alarm No. 3A Overcurrent

[Meaning] The motor drive current is excessive.

Alarm check period

f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform the items for alarm No. "32".		

3. Troubleshooting (MDS-A/B Series)

(34) Alarm No. 3B Power module overheat

[Meaning] Overheating of the IPM used in the servo drive was detected.

Alarm check period

f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy	
1	Investigate the heat radiating environment			
	1) Rotation of fan on rear of unit	The fan is not rotating correctly.	Replace the fan	Take measures to prevent cutting oil or dust from contacting the fins.
	2) Contamination of radiating fins on rear of unit	Remarkable amounts of cutting oil or dust are adhered on the radiating fins.	Clean the fins	
	3) Measurement of unit ambient temperature	55°C is exceeded.	Consider ventilating or cooling measures for the panel.	
None of the above apply.		Perform investigation item 2.		
2	Investigate the installation environment.	The grounding is incomplete.	Correctly ground.	
	Is the grounding correct?	Alarms occur easily when a certain device operates.	Take noise measures for the device on the left.	
	Are there any noise generating devices in the periphery?	No particular problem.	Replace the unit.	

(35) Alarm No. 42 Feedback error 1

- [Meaning]**
- 1) A skip of the detector feedback signal pulse occurred in the OHE type or OHA type detector used in the semi-closed loop system and ball screw end closed loop system.
 - 2) A skip of the detector feedback signal pulse in the low-speed serial type absolute position linear scale.

Alarm check period

f1	f2	f3	f4
-	○	○	-

	Investigation item	Investigation results	Remedy
1	Perform the item 3 and following for alarm No. "20".		

(36) Alarm No. 43 Feedback error 2

- [Meaning]**
- 1) A deviation occurred in the feedback amount from the motor end detector and machine end detector in the closed loop
 - 2) The serial pulse encoder is detected in the semi-closed loop.

Alarm check period

f1	f2	f3	f4
-	○	○	-

	Investigation item	Investigation results	Remedy
1	Perform the items 3 and following for alarm No. "2A".		


3. Troubleshooting (MDS-A/B Series)

(37) Alarm No. 46 Motor overheat

[Meaning] The thermal protector built in the motor (detector) operated.
 * In the MDS-B Series, this is connected by the serial communication with the detector.

Alarm check period

f1	f2	f3	f4
-	○	○	-

No.	Investigation item	Investigation results	Remedy
1	Check the repeatability.	Rekurs within one minute of start up.	Perform investigation item 3.
		Rekurs periodically after operating for some time.	Perform investigation item 2.
2	Check the motor temperature when the alarm occurs.	The motor is hot.	Lessen the operation pattern. ↓ If the problem is not solved, perform investigation item 3.
		The motor is not hot.	Perform investigation item 3.
3	Tug the detector cable connectors (unit side and motor side cannons) to see if they are loose.	The connectors are disconnected (loose).	Correctly connect.
		Not disconnected.	Perform investigation item 4.
4	Turn the power OFF and check the detector cable connection with a tester.	A connection defect was found.	Replace the detector cable.
		Connection is normal.	Perform investigation item 5.
5	Check the thermal relay terminal conductivity in the detector's cannon connector with a tester. (Excluding MDS-B Series) • Between pin Nos. "T" and "V"	No conductivity or resistance is high.	Perform investigation item 6.
		Normal (short circuit)	Perform investigation item 7.
6	If the thermal connection is as shown below for OHE25K-6, OHA25K-4, OSE104/105 and OSA104/105, so cut the wire between the motor and detector with a joint amplifier, and check the thermal conductivity for each. <div style="text-align: center;">  </div> <p>For OHE25K-85, OHA25K-85, OHE25K-108 and OHA25K-108, the thermal is only on the detector side, so the detector is defective if there is no conductivity.</p>	No conductivity or large resistance in the motor and detector thermal.	Replace the motor or detector.
		Normal	Perform investigation item 7.
7	Replace with another normal axis unit, and check if the defect is on the unit.	The alarm is on the unit side.	Replace the unit.
		Occurs even if unit is replaced.	Perform investigation item 7.
8	Check for abnormalities in the unit's peripheral environment. (Ex. Ambient temperature, noise, grounding)	No special abnormalities were found.	Replace the motor.
		An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced..... add grounding measures.

3. Troubleshooting (MDS-A/B Series)

(38) Alarm No. 50 Overload 1

[Meaning] The time that the motor drive current exceeded the overload detection level (parameter OLL) converted with stall conversion exceeded the overload time constant (parameter OLT).

Alarm check period			
f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Check the servo parameter (OLL) (OLT) setting values. Standard setting values OLL: 60 (unit: sec.) OLT: 150	The setting is not the standard setting value.	Correct to the standard setting value if special specifications are not being used.
		The value is the standard setting value.	Perform investigation item 2.
2	Check the motor temperature when the alarm occurs.	The motor is hot.	Ease the operation pattern. ↓ If the problem is not solved, perform investigation item 3.
		The motor is not hot.	Perform investigation item 3.
3	Check whether the motor is hunting.	Hunting is occurring.	Refer to the adjustment procedures and readjust. • Check the cable wiring and connector connections. • Check for mistaken parameter settings. • Adjust the gain. ↓ If the problem is not solved, perform investigation item 4.
		Hunting is not occurring.	Perform investigation item 4.
4	Replace with another normal axis unit and check whether the defect is on the unit. (Refer to the cautions in section 2.3.)	The alarm is on the unit.	Replace the unit.
		Problem still occurs even after unit is replaced.	Perform investigation item 5.
5	Check if the current value on the NC servo monitor screen is abnormally high when stopped and operating.	The value is abnormal.	Check the machine system.
		The value is correct.	Perform investigation item 6.
6	Check for abnormalities in the unit's peripheral environment. (Ex. ambient temperature, noise, grounding)	No special abnormalities were found.	Replace the motor (detector).
		An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced..... add grounding measures.

3. Troubleshooting (MDS-A/B Series)

Supplementary explanation

1) MDS-B Series

The unit was run in the region of the thermal characteristics shown with slanted lines below.

With the MDS-B Series, continuous protection characteristics were realized by changing the overload alarm detection process.

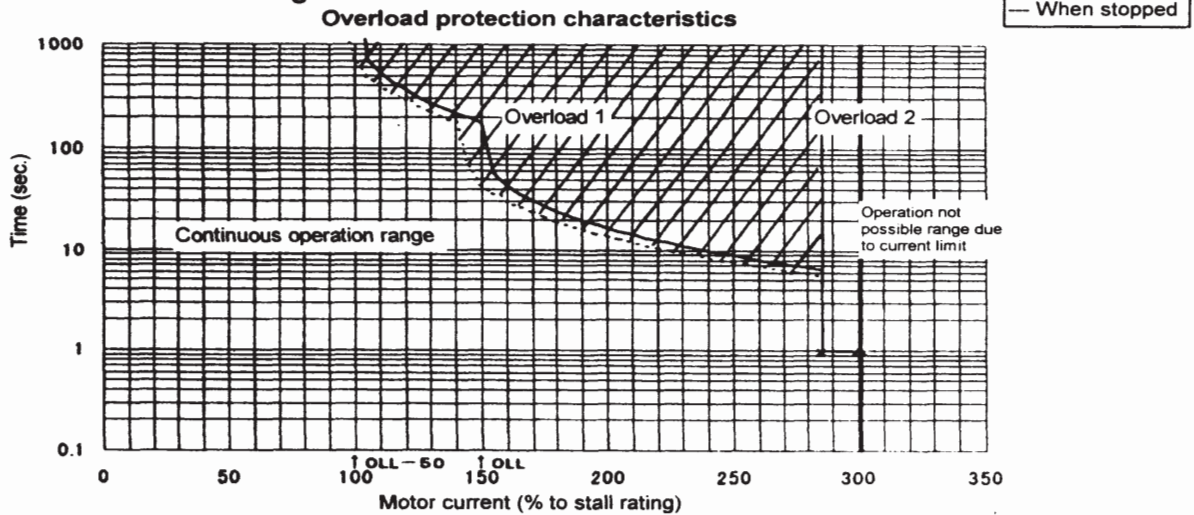
Note 1) The overload 1 detection region can be changed with the parameters (SV021:)LT, SV022: OLL) in the same manner as MDS-A. However, as long as there is no particular reason, use the standard parameters.

Note 2) With this alarm, as the overload detection method has been changed, the alarm occurrence time and the value displayed at "Overload (%)" on the servo monitor screen may differ from the MDS-A Series even when using the same operation pattern.

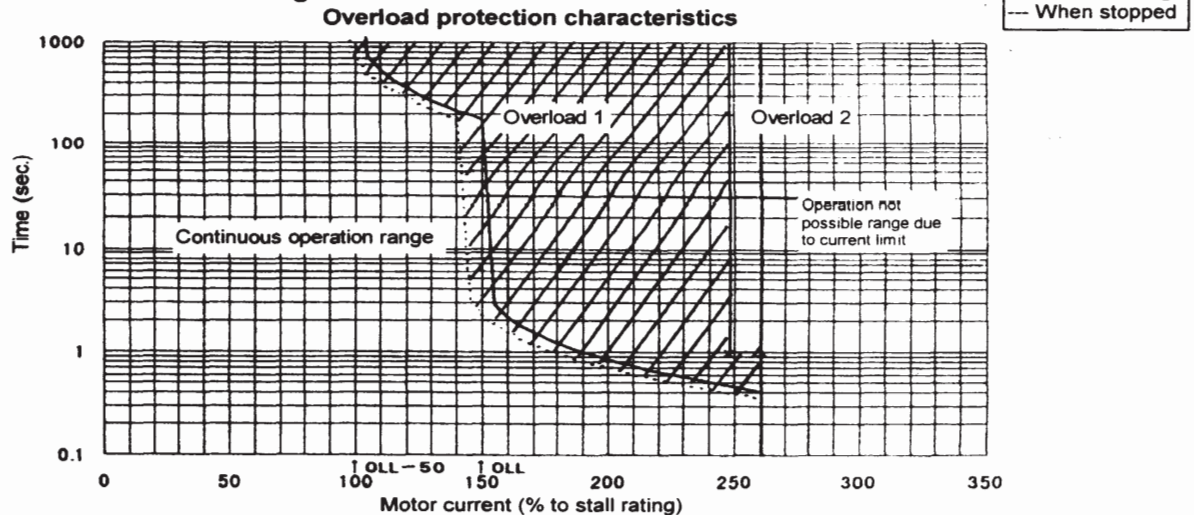
Note 3) To prevent operation from being resumed immediately from the overload state, this alarm cannot be reset until the control power (L11, L12) continuity state is not continued for several minutes after the alarm occurs. The condition for resetting the alarm is that the "Overload (%)" display value must drop to 50% or less. The time to wait for this alarm to reset will differ according to the servo parameters (OLT and OLL), but is approximately five minutes with the standard parameters.

If the control power is turned ON again immediately after the alarm has occurred, the alarm will not be reset due to the above operation. Wait at least 5 minutes in the continuity state, and then carry out NC reset or turn the power ON again.

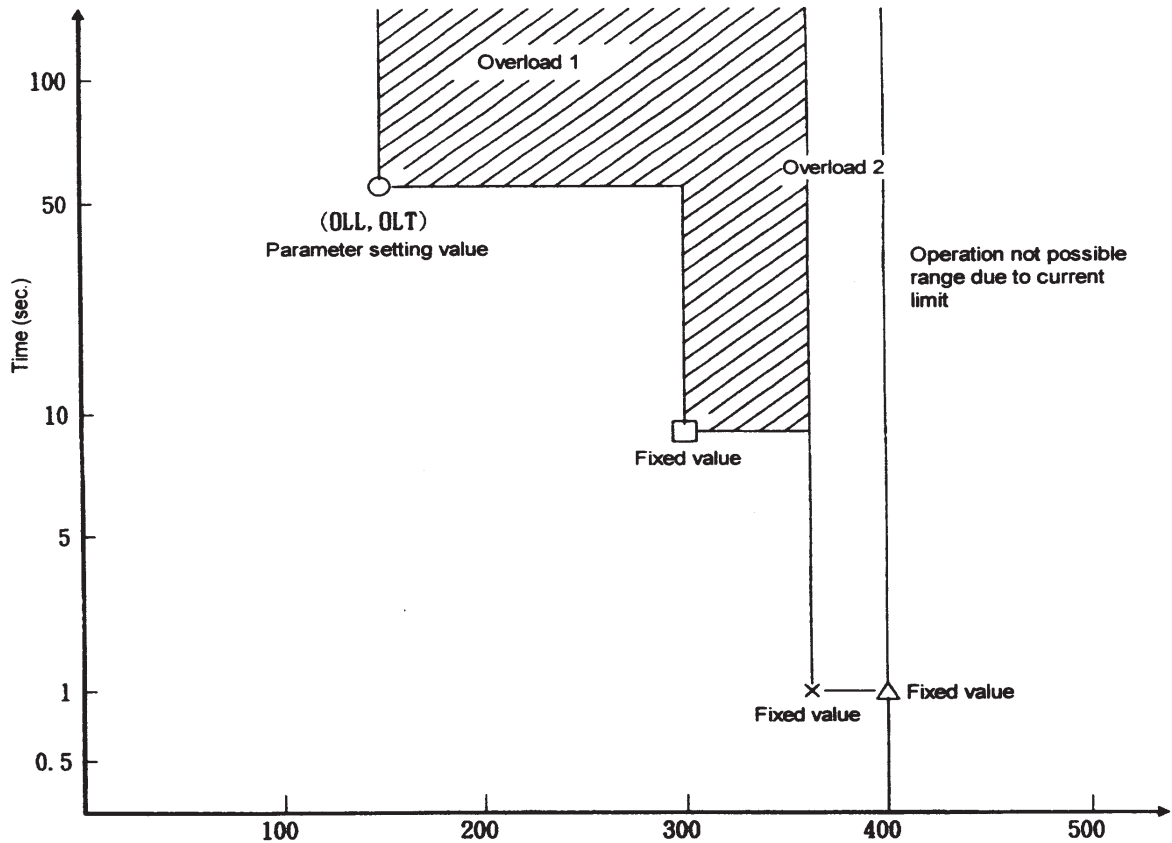
① Overload 1 detection range for other than HA-LH15K2-S1



② Overload 1 detection range for HA-LH5K2-S1



2) MDS-A series



Note 1) Parameter standard setting value OLL = 150%
 OLT = 60 sec.

Note 2) The \triangle level is for parameter SVO13: ILMT1 = 500.
 The \triangle level will change proportionally when the parameter is changed.

Note 3) The motor's rated current ratio and time shown with \circ , \square , \times and \triangle symbols in the diagram will differ according to the motor.

3. Troubleshooting (MDS-A/B Series)

(39) Alarm No. 51 Overload 2

Alarm check period

[Meaning] A current command that is 95% or more of the amplifier's maximum output current value continued for 1 second or more.

f1	f2	f3	f4
—	—	○	—

	Investigation item	Investigation results	Remedy
1	Check if the PN voltage is being supplied to the amplifier. • Check the axis where the alarm occurred, and the axis farthest from the power supply.	The voltage is supplied.	Perform investigation item 3.
		The voltage is not supplied.	Perform investigation item 2.
2	Confirm that the power supply unit CHARGE lamp is lit and check the PN terminal voltage.	There is no voltage at the PN terminal. (The lamp is not lit.)	Check the power supply unit.
		There is a voltage at the PN terminal.	Check the PN wiring between the units.
3	Is an abnormally large current value displayed on the NC servo monitor screen during acceleration/deceleration?	The maximum value exceeds the level indicated with an x in the table on the previous page.	Lengthen the acceleration/deceleration time constant, and lower to 80% of the limit value.
		A correct value is displayed.	Perform investigation item 4.
4	Perform the items 3 and following for alarm No. "50".		

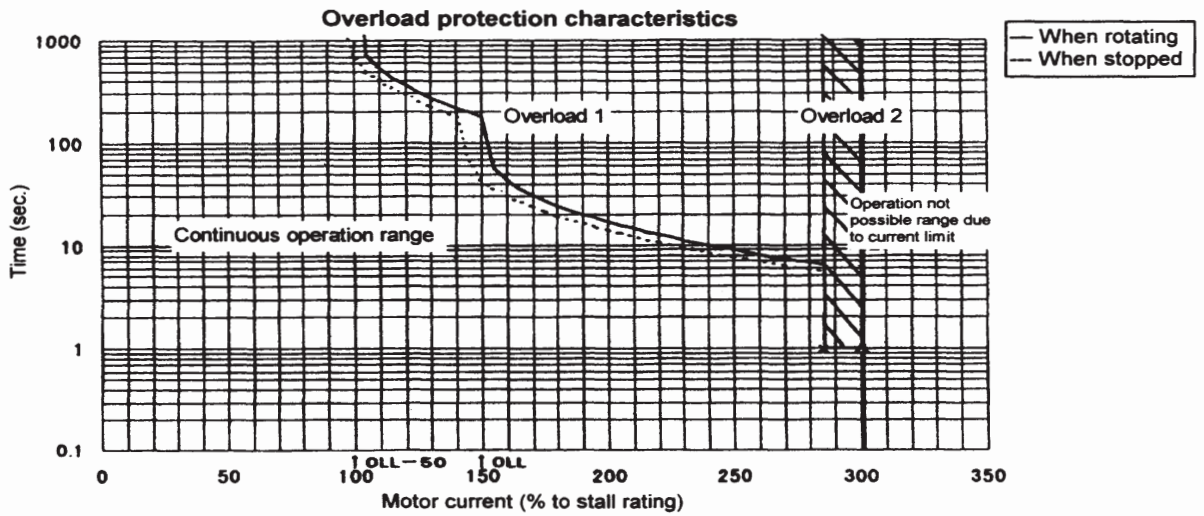
3. Troubleshooting (MDS-A/B Series)

Supplementary explanation

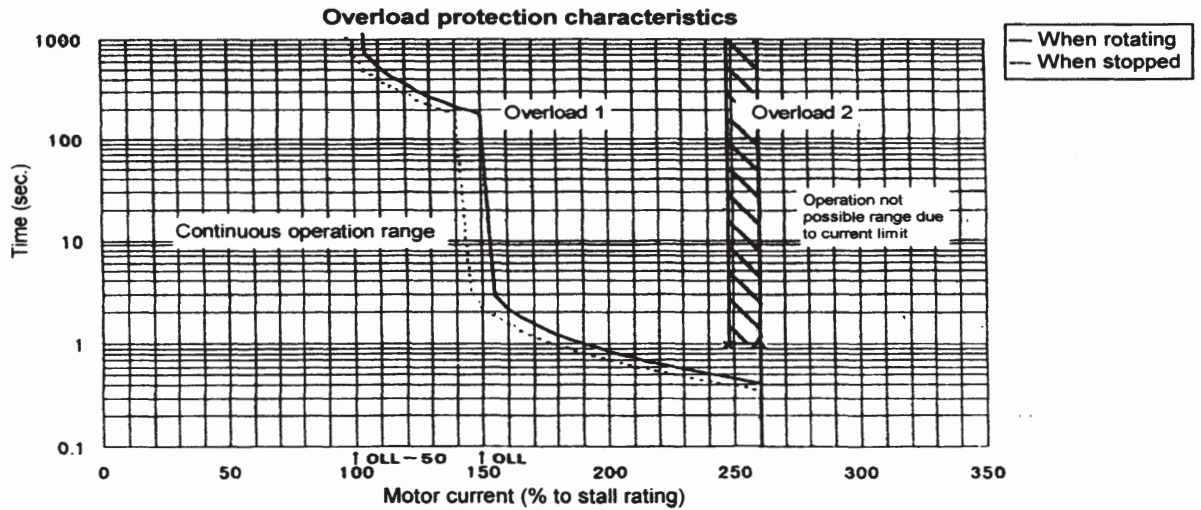
1) MDS-B Series

The unit was run in the region of the thermal characteristics shown with slanted lines below.

① Overload 2 detection range for other than HA-LH15K2-S1

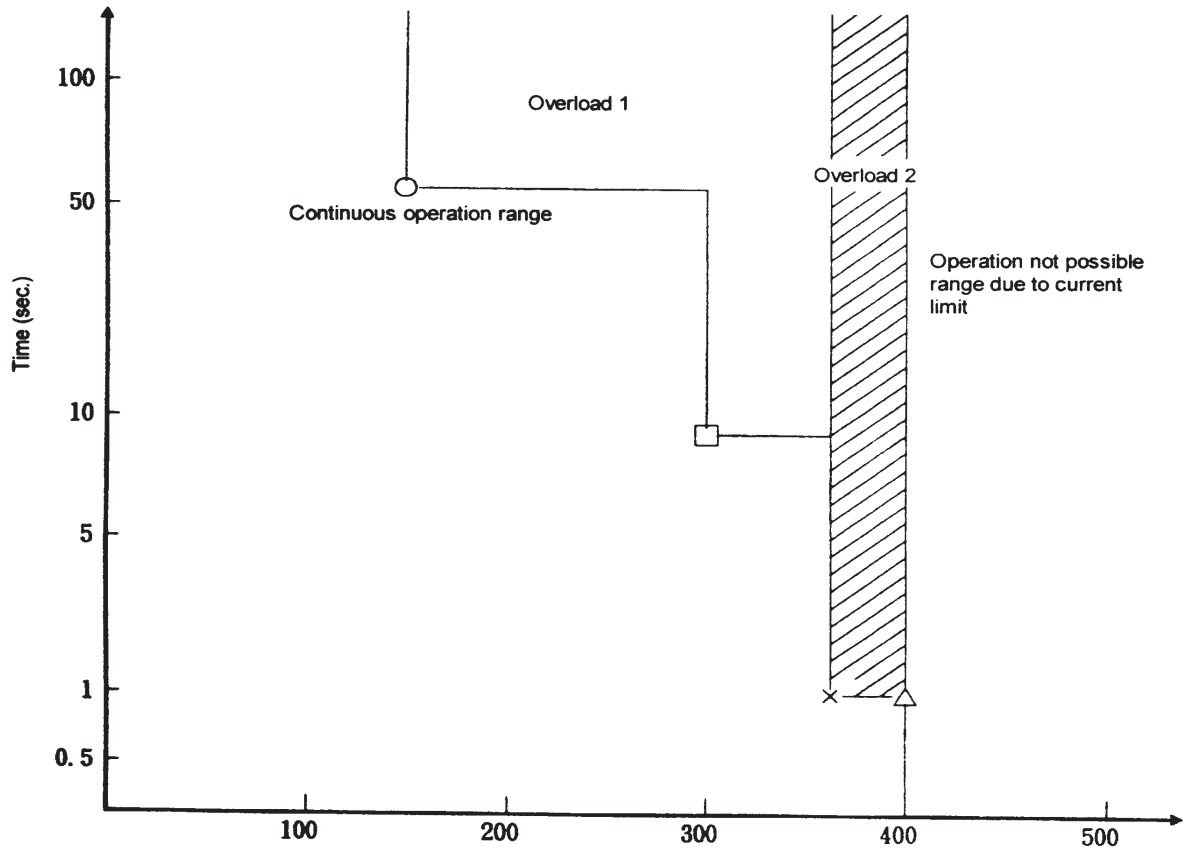


② Overload 2 detection range for HA-LH5K2-S1



3. Troubleshooting (MDS-A/B Series)

2) MDS-A series



Note 1) Parameter standard setting value OLL = 150%
OLT = 60 sec.

Note 2) The Δ level is for parameter SVO13: ILMT1 = 500.
The Δ level will change proportionally when the parameter is changed.

Note 3) The motor's rated current ratio and time shown with \circ , \square , \times and Δ symbols in the diagram will differ according to the motor.

3. Troubleshooting (MDS-A/B Series)

Motor	○		□		x		△
	Level	Time	Level	Time	Level	Time	Level
HA 40N	OLL	OLT	250	10	450%	1 sec.	472%
80N	OLL	OLT	250	10	400	1	424
100N	OLL	OLT	250	10	285	1	300
200N	OLL	OLT	200	5	250	1	260
300N	OLL	OLT	180	5	220	1	230
700N	OLL	OLT	180	5	220	1	231
900N	OLL	OLT	180	5	240	1	252
053	OLL	OLT	250	10	265	1	279
13	OLL	OLT	250	10	265	1	279
23N	OLL	OLT	250	10	255	1	270
33N	OLL	OLT	250	10	255	1	270
43N	OLL	OLT	250	10	320	1	340
83N	OLL	OLT	250	10	300	1	318
103N	OLL	OLT	220	5	275	1	291
203N	OLL	OLT	190	5	235	1	246
303N	OLL	OLT	180	5	195	1	205
703N	OLL	OLT	180	5	195	1	207
50NL	OLL	OLT	250	10	400	1	425
100NL	OLL	OLT	250	10	330	1	350
150NL	OLL	OLT	250	10	345	1	365
200NL	OLL	OLT	200	10	220	1	231
300NL	OLL	OLT	200	5	215	1	228
500NL	OLL	OLT	180	5	180	1	193
LH11K2-S1	—	—	—	—	193	1	204
LH15K2-S1	—	—	—	—	247	1	260

3. Troubleshooting (MDS-A/B Series)

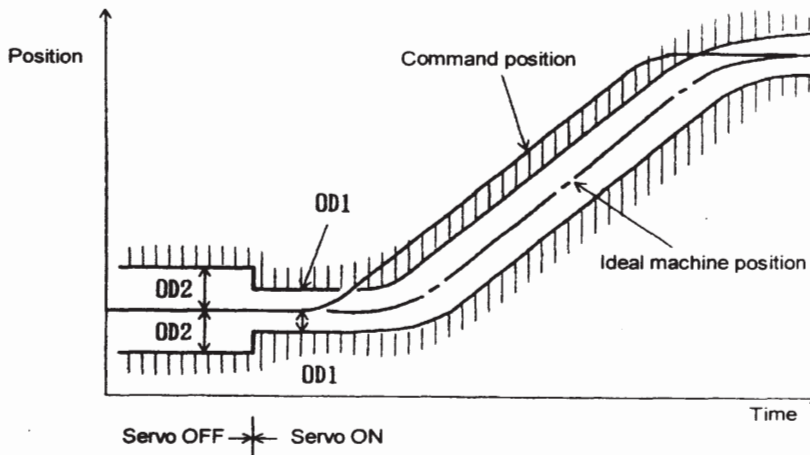
(40) Alarm No. 52 Excessive error 1

Alarm check period

[Meaning] The actual position to the command exceeded the value set in parameter setting value OD1 (excessive error width during servo ON) when the servo was turned ON.

f1	f2	f3	f4
-	-	○	-

The actual machine position deviated an amount exceeding the value set in OD1 from the ideal machine position for the command position. This will occur if the actual machine position enters the shaded area shown below.



	Investigation item	Investigation results	Remedy
1	Check if the PN voltage is being supplied to the amplifier. • Check the axis where the alarm occurred, and the axis farthest from the power supply.	The voltage is supplied.	Perform investigation item 3.
		The voltage is not supplied.	Perform investigation item 2.
2	Confirm that the power supply unit CHARGE lamp is lit and check the PN terminal voltage.	There is no voltage at the PN terminal. (The lamp is not lit.)	Check the power supply unit.
		There is a voltage at the PN terminal.	Check the PN wiring between the units.
3	Check the servo parameter (OD1) setting value. • OD1 = OD2 = Rapid traverse rate (mm/min.) × 0.5 (mm) 60 × PGN1	The setting is not the standard setting value.	Correct to the standard setting value if special specifications are not being used.
		The setting is the standard setting value.	Perform investigation item 4.
4	Perform the items 3 and following for alarm No. "50".		

3. Troubleshooting (MDS-A/B Series)

(41) Alarm No. **53** Excessive error 2

Alarm check period

[Meaning] The actual position to the command exceeded the value set in parameter setting value OD2 (excessive error width during servo OFF) during servo OFF.

f1	f2	f3	f4
-	○	-	-

	Investigation item	Investigation results	Remedy
1	Check the servo parameter (OD2) setting value. • OD1 = OD2 = $\frac{\text{Rapid traverse rate (mm/min.)}}{60 \times \text{PGN1}} \times 0.5 \text{ (mm)}$	The setting is not the standard setting value.	Correct to the standard setting value if special specifications are not being used.
		The setting is the standard setting value.	Perform investigation item 2.
2	Check if the machine is moving during servo OFF.	Is moving.	Check the machine and mechanical brakes.
		Is not moving.	Perform investigation item 3.
3	Tug the communication cable connector from the NC to the terminator (unit side and NC side) to see if it is disconnected.	Is disconnected (loose).	Correctly connect.
		Normal.	Perform investigation item 4.
4	Turn the power OFF, and check the communication cable connection with a tester. Try changing with a normal cable.	A connection defect was found.	Replace the communication cable.
		Normal.	Perform investigation item 5.
5	Replace with another normal axis unit and check whether the defect is on the unit. (Refer to the cautions in section 2.3.)	The alarm is on the unit.	Replace the unit.
		Problem still occurs even after unit is replaced.	Replace the NC side MCP card. ↓ If the problem is not solved, perform investigation item 6.
6	Tug the detector cable connector (unit side and motor side cannon) to check if it is disconnected.	Is disconnected (loose).	Correctly connect.
		Normal.	Perform investigation item 7.
7	Turn the power OFF, and check the detector cable connection with a tester.	A connection defect was found.	Replace the detector cable.
		Normal.	Perform investigation item 8.
8	Check for abnormalities in the unit's peripheral environment. (Ex. ambient temperature, noise, grounding)	No special abnormalities were found.	Replace the motor.
		An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced..... add grounding measures.

3. Troubleshooting (MDS-A/B Series)

(42) Alarm No. 54 Excessive error 3

Alarm check period

[Meaning] The motor current did not flow when the excessive error 1 alarm was detected.

f1	f2	f3	f4
—	○	○	—

	Investigation item	Investigation results	Remedy
1	Check if the PN voltage is being supplied to the drive unit.	The voltage is supplied.	Perform investigation item 3.
		The voltage is not supplied.	Perform investigation item 2.
2	Confirm that the power supply unit CHARGE lamp is lit and check the PN terminal voltage.	There is no voltage at the PN terminal. (The lamp is not lit.)	Check the power supply unit.
		There is a voltage at the PN terminal.	Check the PN wiring between the units.
3	Check whether the motor power wire is connected to the motor. • Disconnect the power wire from the terminal block, and check between the UVW wires with a tester.	The power wire is not connected or the power wire is broken.	Correctly connect the power wire.
		The power wire is correctly connected.	Perform investigation item 4.
4	Try connecting with another normal axis unit and check whether the defect is on the unit side or detector side. (Refer to the cautions in section 2.3.)	The alarm is on the unit.	Replace the drive unit.
		The alarm is on the motor.	Replace the motor.

(43) Alarm No. 58 Collision detection 0 (CLE0)

Alarm check period

[Meaning] A collision detection type 1 error was detected during the G0 modal (rapid traverse).
A disturbance torque that exceeds the external disturbance torque was detected.

f1	f2	f3	f4
—	—	○	—

[Detecting] During servo ON

	Investigation item	Investigation results	Remedy
1	Is the collision detection function being used? Check whether the machine has collided.	The collision detection function is not used.	Perform investigation item 2.
		The machine has collided.	Modify so that the machine does not collide.
		The collision detection function is used, but the machine has not collided.	Perform investigation item 3.
2	Check the parameters. Is sv060 (TLMT) set to "0"?	The setting is incorrect.	Change sv060 (TLMT) to "0".
3	Check whether the current has reached the current limit value or 90% of the limit value during normal rapid traverse acceleration/deceleration.	The current is 90% or more of the current limit value.	Increase the time constant, and perform investigation item 4.
		The current is less than 90% of the current limit value.	Perform investigation item 4.
4	Adjust the collision detection function again, and try operation. (Refer to the separate collision detection function specifications.)	The alarm does not occur.	—
		The alarm occurs.	Perform investigation item 5.
5	Does the machine or current vibrate?	Is vibrating.	Eliminate the vibration by adjusting the gain, etc., and then perform investigation item 4.
		Is not vibrating.	Perform investigation item 6.
6	Try increasing the detection level.	The alarm does not occur.	If the problem is not solved by replacing the unit, try increasing the level.
		The alarm occurs.	Replace the unit.

3. Troubleshooting (MDS-A/B Series)

(44) Alarm No. 59 Collision detection 1 (CLE1)

[Meaning] A collision detection type 1 error was detected during the G1 modal (cutting feed).
A disturbance torque that exceeds the external disturbance torque was detected.

[Detecting] During servo ON

Alarm check period

f1	f2	f3	f4
-	-	○	-

	Investigation item	Investigation results	Remedy
1	Is the collision detection function being used? Check whether the machine has collided.	The collision detection function is not used.	Perform investigation item 2.
		The machine has collided.	Modify so that the machine does not collide.
		The collision detection function is used, but the machine has not collided.	Perform investigation item 3.
2	Check the parameters. Is sv060 (TLMT) set to "0"?	The setting is incorrect.	Change sv060 (TLMT) to "0".
3	Check whether the current has reached the current limit value or 90% of the limit value during normal cutting feed acceleration/deceleration.	The current is 90% or more of the current limit value.	Increase the time constant, and perform investigation item 4.
		The current is less than 90% of the current limit value.	Perform investigation item 4.
4	Adjust the collision detection function again, and try operation. (Refer to the separate collision detection function specifications.)	The alarm does not occur.	—
		The alarm occurs.	Perform investigation item 5.
5	Does the machine or current vibrate?	Is vibrating.	Eliminate the vibration by adjusting the gain, etc., and then perform investigation item 4.
		Is not vibrating.	Perform investigation item 6.
6	Try increasing the detection level.	The alarm does not occur.	If the problem is not solved by replacing the unit, try increasing the level.
		The alarm occurs.	Replace the unit.

(45) Alarm No. 5A Collision detection 2

[Meaning] A collision detection type 2 error was detected.
A current command at the maximum performance of the drive unit was detected.

[Detecting] During servo ON

Alarm check period

f1	f2	f3	f4
-	-	○	-

	Investigation item	Investigation results	Remedy
1	Perform the investigation items for alarm 58.		

(46) Alarm No. 60 to 7F

[Meaning] An error occurred in the power supply unit.

Alarm check period

f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Refer to II. MDS-A/B-CV power supply section.		

3. Troubleshooting (MDS-A/B Series)

(47) Alarm No. 82 Power supply no signal

[Meaning] The cable connected to the power supply is broken or the connection is mistaken.

Alarm check period

f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Check if the connector for the communication cable with the power supply is disconnected.	Is disconnected (loose).	Correctly connect.
		Is not disconnected.	Perform investigation item 2.
2	Turn the power OFF and check the cable connection with a tester. Try changing the cable with a normal cable.	A broken wire or incorrect connection was found.	Replace the communication cable.
		The connection is normal.	Perform investigation item 3.
3	Connect with another normal axis unit, and check if the defect is on the drive unit side or power supply side.	The alarm is on the drive unit side.	Replace the drive unit.
		The alarm is on the power supply side.	Replace the power supply unit.

(48) Alarm No. 88 Watch dog

[Meaning] The servo drive software process was not executed within the designated time.

Alarm check period

f1	f2	f3	f4
○	○	○	○

	Investigation item	Investigation results	Remedy
1	Check whether the servo software version was changed recently.	It was changed.	Try returning to the original software version.
		Not changed.	Perform investigation item 2.
2	Check for abnormalities in the unit's peripheral environment. (Ex. ambient temperature, noise, grounding)	No special abnormalities were found.	Replace the drive unit.
		An abnormality was found in the ambient peripheral environment.	Take measures according to the cause. Ex. High temperature confirm cooling fan Grounding not enforced..... add grounding measures.

(49) Alarm No. 90 Low speed serial initial communication error

[Meaning] The initial communication with the low speed serial type absolute position linear scale was not possible.

Alarm check period

f1	f2	f3	f4
-	-	○	-

	Investigation item	Investigation results	Remedy
1	Perform investigation items of alarm No.58.		

Alarm check period

f1	f2	f3	f4
-	○	○	-

(50) Warning No. 91 Communication error

[Meaning] The absolute position serial data was not properly sent during normal operation.

	Investigation item	Investigation results	Remedy
1	Perform the items 3 and following for alarm No. "25"		

3. Troubleshooting (MDS-A/B Series)

(51) Warning No. 92 Serial format error

[Meaning] The format of the serial data from the absolute position detector was incorrect.

Alarm check period			
f1	f2	f3	f4
-	○	○	-

	Investigation item	Investigation results	Remedy
1	Perform the items 3 and following for alarm No. "25"		

(52) Warning No. 93 Absolute position fluctuation

[Meaning] The absolute position counter cannot be set as the absolute position data fluctuated when the NC power was turned ON.

Alarm check period			
f1	f2	f3	f4
-	○	-	-

	Investigation item	Investigation results	Remedy
1	Perform the items 3 and following for alarm No. "25"		

(53) Alarm No. 96 MP scale feedback error

[Meaning] In the MP scale absolute detection system, an excessive deviation in the motor end installation detector and MP scale feedback amount was detected.

Alarm check period			
f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform the items 3 and following for alarm No. "25"		

(54) Alarm No. 97 MP scale offset error

[Meaning] In the MP scale absolute position detection system, an error was detected in the offset data read when the NC power was turned ON.

Alarm check period			
f1	f2	f3	f4
-	○	-	-

	Investigation item	Investigation results	Remedy
1	Perform the items 3 and following for alarm No. "25"		

(55) Alarm No. 9E High-speed serial multi-rotation counter error

[Meaning] An error was detected in the multi-rotation counter in the serial pulse encoder connected to the motor end or ball screw end.

Alarm check period			
f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Perform the items 3 and following for alarm No. "25"		

3. Troubleshooting (MDS-A/B Series)

(56) Warning No. 9F Battery voltage drop

[Meaning] The voltage of the battery supplied to the absolute position detector dropped.

Alarm check period

f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Check the battery unit voltage.	The battery voltage has dropped.	Replace the battery.
		There is no error in the battery voltage.	Perform investigation item 2.
2	Perform the items 3 and following for alarm No. "25"		

(57) Warning No. E1 Overload warning

[Meaning] An 80% level of the overload 1 alarm was detected. As this is not an alarm, continued use is possible, but the overload 1 alarm may occur.

Alarm check period

f1	f2	f3	f4
-	○	○	○

	Investigation item	Investigation results	Remedy
1	Check whether the motor is hot.	The motor is not hot.	Perform the items for alarm No. "50".
		The motor is hot.	Perform investigation item 2.
2	Check if there is an error when acceleration/ deceleration is performed.	Operation is possible without error.	1. If the operation pattern can be eased, ease it. 2. If operation is possible without an alarm occurring, continue use.
		Operation is abnormal.	Perform the items 3 and following for alarm No. "50".

(58) Warning No. E3 Absolute position counter warning

[Meaning] The absolute position counter value is illegal.
 • If the power is being turned ON for the first time, perform zero point return, turn the power OFF and ON once to restore the value.

Alarm check period

f1	f2	f3	f4
-	○	○	-

	Investigation item	Investigation results	Remedy
1	Investigate the state where the warning occurred.	Occurs when NC power is turned ON.	Check the battery voltage, perform zero point return, and then turn power OFF and ON.
		Occurs during operation.	Perform the items for alarm "25".
2	Check whether a battery error alarm occurred recently.	An alarm occurred.	Check the battery voltage.
		Did not occur.	Check the detector and cable.

3. Troubleshooting (MDS-A/B Series)

(59) Warning No. E4 Parameter error warning

[Meaning] A parameter exceeding the setting range was set.
The illegal parameter will be ignored and the previously set value will be held.

Alarm check period			
f1	f2	f3	f4
—	○	○	—

	Investigation item	Investigation results	Remedy
1	Set the correct value according to the parameter adjustment procedure.		

(60) Warning No. E7 NC emergency stop

[Meaning] An emergency stop signal is being sent from the NC or an alarm occurred in another axis.

Alarm check period			
f1	f2	f3	f4
—	○	○	○

	Investigation item	Investigation results	Remedy
1	Check if the NC side emergency stop switch is activated.	Emergency stop is activated.	Perform investigation item 2.
		Emergency stop is released.	Perform investigation item 3.
2	Release the emergency stop.	The machine starts up normally.	Normal
		"E7" is still displayed.	Perform investigation item 3.
3	Check if a terminator or battery unit is connected or if disconnected.	Abnormal place found	Correct the abnormality.
		Normal	Perform the items for alarm "34".

3.3 Precautions

- When changing the motor and amplifier combination due to troubleshooting, avoid running the motor with an amplifier that has a capacity larger than the designated amplifier. The motor may be demagnetized.
However, checking in the emergency stop state is no problem.
Running the motor with an amplifier having a capacity smaller than that designated is no problem.