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株式会社 安川電機

SR100 Standard Error Code List

(Controller Type : ERMR-AS Series)

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SER

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Revision Records

Drawing No.	Item		Revised by	Approved by
HE1400563	SR100 Standard Error Code List			
Date	Rev.	Revised contents		
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[1] Introduction

This manual describes the error codes of the Yaskawa Transfer Manipulator.
Use this manual with the following.

・Teaching Pendant Instruction
・Communication Specification

[2] Basic Specifications

1) Each error is categorized into 5 levels (Shown below). When an error occurred, the error code is displayed in 7-SEG LED (hereafter referred to as LED) and the process predetermined for each error level is executed.

2) When multiple errors occurred, the error that has the highest error level is displayed on LED display. When the errors have the same error level, follow the rule described below. In case the error level is higher than “serious error” defined in the table bellow, the older error is displayed. In case the error level is “warning”, the newer error code is displayed.

3) Up to 128 errors are saved in error history which can read by the teaching pendant. The history can be viewed using the teaching pendant's “Error history reference command”. If the controller power is turned off, the error history is cleared.

4) Up to 128 errors are saved in error history that can read by the host command. The history can be viewed using the host command “RERR command”. If the controller power is turned off, the error history is cleared.

5) Servo control (motor driver) and hardware error information are monitored and detected in real time.

6) The error levels and the controller behavior of each error level are shown in the following table.

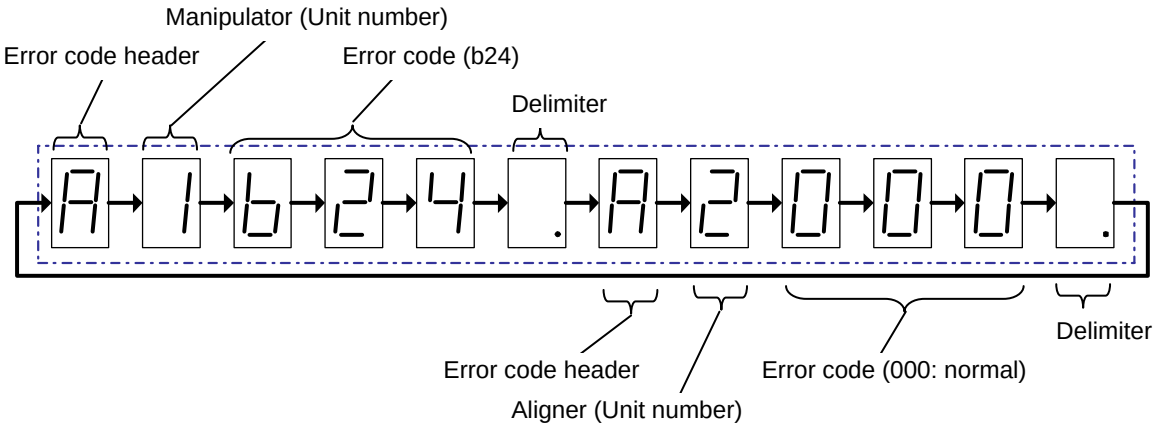
Error Level	Severity code	Behavior at error occurrence			Error Clear	LED Indication	Remarks
		Servo power	ALARM	WARN Signal			
F： Fatal Error	5	Servo OFF	ON	-	Not available	Yes	Robot system is totally disabled.
A2： Serious Error 2	4	Servo OFF	ON	-	Not available	Yes	Manipulator is totally disabled.
A1： Serious Error 1	3	Servo OFF	ON	-	Available	Yes	Manipulator is temporarily disabled
W2： Warning 2	2	-	-	ON	Available	Yes	Manipulator is able to run, however, commands cannot be
W1： Warning 1	1	-	-	-	-	No	Except the above (Communication related error)

Note) Depending of the root cause, error may be redetected after clearing it.

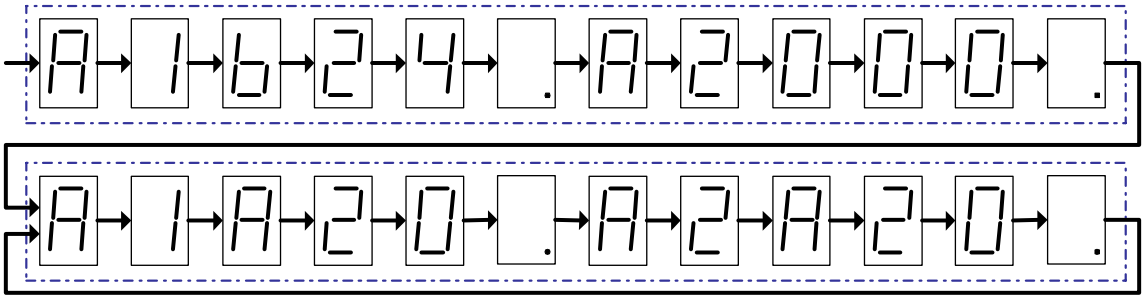
[3] 7-segment LED Indicators

Error codes that are displayed will begin with “A” displayed, then the unit number, followed by the error code. Finally, a “.” is appended at the end. Each digit is displayed for 1 second.

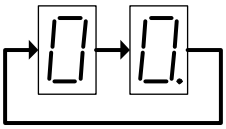
Example 1) If Z-axis (Robot) + Direction software limit error (b24) occurs, the below information is repeatedly displayed.



Example 2) If an emergency stop error (A20) occurs while example 1 is displayed, after displaying the contents of example 1 to the end, the contents of A20 will be repeatedly displayed.



Example 3) No error state
Display [0.](The dot blink every 1 second).



[4] Axis Number and Supported Axes for Servo Error Codes (100's to 500's)

The following table shows the axis number and supported axes for the servo error codes:

Unit No.	Unit	* Symbol for Servo Error Code (100’s to 500’s)				
		1st axis	2nd axis	3rd axis	4th axis	5th axis
1	Manipulator	Rotation	Extension	Hand 1	Hand 2	Z
2	pre-aligner	Rotation	-	-	-	-

Example) Momentary overload of extension axis: 271 Error

[5] Error Codes

Error code	Level	Error Name	Description
000	**-**	Normal	
020	**W2**	Secondary power off	Motion command failed due to servo power off.
021	**W2**	Secondary power on	Setting command failed due to servo power on.
040	**W2**	In TEACH Mode	Command was rejected because host command was sent when the controller was in TEACH mode.
050	**W2**	Unit is in motion	Command was rejected because a unit is executing a motion command when host sent another motion command to the same unit.
051	**W2**	Unable to set pitch between slots	Host attempted to set pitch between slot when pitch generation method was set to “automatic calculation mode”.
052	**W2**	Unable to restart motion	RESTART command was rejected because immediately after power on or the error occur.
053	**W2**	Ready position move incomplete	Get/Put (or exchange) command was rejected because “move to ready position” command had not been executed before that.
055	**W2**	Improper station type	Inaccessible station type is specified.
058	**W2**	Command not supported 1-1	Command was rejected because the command sent is not supported by specified unit.
059	**W2**	Invalid transfer point	“Motion between Transfer Points” command was rejected because an invalid point was specified.
05A	**W2**	Linear motion failed	Cannot move since manipulator arm is in the range (or the posture) where linear motion cannot be executed.
05C	**W2**	Unable to reference wafer alignment result	Wafer alignment had not been executed.
05d	**W2**	Unable to perform arm calibration	Arm calibration was rejected because the pre-aligner stage has not been recorded.
05E	**W2**	Unable to read mapping data	The mapping data reference command was rejected because the mapping has not been executed ever.
05F	**W2**	Data Upload/Download in progress	Command is rejected because data upload/download command was in progress.
061	**W2**	Unable to motion	Unable to home safely from current manipulator posture.
070	**W2**	Bottom slot position record incomplete	Command was rejected because the bottom slot position had not been recorded.
071	**W2**	Top slot position record incomplete	Command was rejected because the top slot position had not been recorded when pitch generation method was set to “automatic calculation mode”.
088	**W2**	Position generating error 1	The transfer position (posture) calculated by the teaching position exceeded the motion limitation.
089	**W2**	Position generating error 2	The transfer position (posture) calculated by the teaching position exceeded the motion limitation.
08A	**W2**	Position generating error 3	The transfer position (posture) calculated by the teaching position exceeded the motion limitation.
08b	**W2**	Position generating error 4	The transfer position (posture) calculated by the teaching position exceeded the motion limitation.
08C	**W2**	Position generating error 5	The transfer position (posture) calculated by the teaching position exceeded the motion limitation.
08d	**W2**	Position generating error 6	The transfer position (posture) calculated by the teaching position exceeded the motion limitation.
090	**W2**	Host parameter out of range	The parameter setting of the communication command from host is out of range.
0A0	**W2**	Alignment motion error	Alignment motion was not executed because ple-aligner is not ready to run in put motion command with alignment angle.
0E0	**W2**	Teach position adjustment offset amount limit error	The adjustment offset amount exceeded the limitation.
0F0	**W1**	Voltage drop warning	Input voltage became too low.

[Error Code of Servo Axis]

Error code	Level	Error Name	Description
***06**	**A1**	Amplifier Type Mismatch	Amplifier type does not match.
***07**	**A1**	Encoder Type Mismatch	Encoder type does not match.
***10**	**A1**	Overflow Current	Overflow current has run.
***30**	**A1**	Regeneration Error Detected	The regenerative circuit error is detected.
***40**	**A1**	Excess Voltage (converter)	Converter voltage is abnormally high.
***41**	**A1**	Insufficient Voltage	Converter voltage is low.
***45**	**A1**	Brake circuit error 1	The brake is locked.
***46**	**A1**	Converter ready signal error	Error occurs in converter.
***47**	**A1**	Input power error	Error occurs in input power.
***48**	**A1**	Converter main circuit charge error	Error occurs in converter main circuit.
***49**	**A1**	Amplifier ready signal error	Error occurs in amplifier.
***51**	**A1**	Excessive Speed	Motor speed is excessively high.
***71**	**A1**	Momentary Overload (Motor)	A torque that exceeds largely the rated value is applied for several or several tens of seconds.
***72**	**A1**	Continuous Overload (Motor)	A torque that largely exceeds the rated value is applied continuously.
***78**	**A1**	Overload (Converter)	Converter has overloaded.
***7b**	**A1**	Amplifier overheat	Amplifier Overheat occurred.
***7C**	**A1**	Continuous Overload (Amplifier)	A torque that exceeds largely the rated value is applied for several or several tens of seconds.
***7d**	**A1**	Momentary Overload	A torque that largely exceeds the rated value is applied continuously.
***81**	**A1**	Absolute Encoder Back-up Error	All power for the absolute encoder is down, and position data was cleared.
***83**	**A1**	Absolute Encoder Battery	The absolute value encoder's backup battery's voltage is low.
***84**	**A1**	Encoder Data Error 2-1	Internal data error of the encoder.
***85**	**A1**	Encoder Excessive Speed	Encoder was rotating at high speed during powering-up.
***86**	**A1**	Encoder Overheat	Over-heat of any type of encoder.
***88**	**A1**	Encoder error 1	Encoder error occurs.
***89**	**A1**	Encoder Command failed	Error occurs in response of encoder
***8A**	**A1**	Encoder multi-turn range	Encoder multi-turn range error occurred.
***8C**	**A1**	Encoder Reset not completed	Encoder Reset is not completed.
***98**	**A1**	Servo parameter error 1	Servo parameter is abnormal.
***9A**	**A1**	Feedback Over Flow	Feedback overflow occurs.
***b4**	**A1**	Servo Control Board Failure	Microprogram transfer error occurs.
***bC**	**A1**	Encoder error 2	Encoder error occurs.
***C1**	**A1**	Motor runaway detection	Servo motor ran out of control.
***C9**	**A1**	Encoder Communication	Communication error between encoder and servo control board.
***CE**	**A1**	Encoder error 3	Encoder error occurs.
***CF**	**A1**	Encoder error 4	Encoder error occurs.
***d0**	**A1**	Position deviation error	The position deviation pulse has exceeded the set value.
***d1**	**A1**	Position deviation saturation	The position deviation saturated.
***d2**	**A1**	Motor directive position error	Motor directive position error occur.
***d4**	**A1**	Servo Tracking Error	Servo Tracking Error.
***F1**	**A1**	Phase loss	Phase loss (converter)
E*1	**A1**	Positioning Timeout	After command is transmitted, the axis positioning cannot be completed.
E*d	**A1**	Command not supported 1-2	Not ready for sending command to servo control board.
E*E	**A1**	Communication Error (internal controller) 1-1	Communication error between the main control board and the servo control board happened
E*F	**A1**	Servo control board response timeout 1.	No response from servo control board.

[Servo Error Code]

Error code	Level	Error Name	Description
701	**A2**	ROM Error	Servo control board or ROM is defective.
703	**A2**	Communication Error (internal controller) 2-1	Communication error between the main control board and the servo control board happened.
704	**A2**	Communication Error (internal controller) 2-2	Communication error between the main control board and the servo control board happened.
705	**A2**	Communication Error (internal controller) 2-3	Communication error between the main control board and the converter happened.
706	**A2**	Servo system error 1	System error occurred in servo control board.
707	**A2**	Servo system error 2	System error occurred in servo control board.
709	**A2**	Current feedback error	The current is abnormal.
70A	**A2**	Power Lost	Power lost is detected.
70b	**A2**	Rush Current Prevention Relay Abnormal	The rush current prevention relay is abnormal.
70C	**A2**	Converter mismatch	The converter type is mismatched.
70F	**A2**	Servo control board response timeout 2.	No response from servo control board.
713	**A2**	DB error	DB is abnormal.
714	**A2**	Converter charge Error	Converter charge error occurs.
715	**A2**	Servo OFF Status Error 1	Hard wire base block error occurs.
716	**A2**	Servo ON Status Error 1	Hard wire base enable error occurs.
717	**A2**	Servo OFF Status Error 2	Base block error occurs.
718	**A2**	Servo ON Status Error 2	Base enable error occurs.
719	**A2**	Servo On Abnormal	Request hard wire base block release, but does not release.
71A	**A2**	Brake circuit error 2	Brake lock error occurs.
71b	**A2**	Brake circuit error 3	Brake unlock error occurs.
71C	**A2**	Power relay error	Power relay is abnormal.
721	**A2**	Servo parameter error 2	Servo parameter is abnormal.
722	**A2**	Servo parameter error 3	Servo parameter is abnormal.
725	**A2**	Converter Overheat	Detected the converter overheat.
726	**A2**	Communication Error (internal controller) 2-4	Detected the undefined command.
727	**A2**	Command not supported 1-2	Detected the unsupported command.
728	**A2**	Communication Error (internal controller) 2-5	Detected the data abnormal of the command.
729	**A2**	Servo system error 3	System error occurred in servo control board.
72A	**A2**	Servo system error 4	System error occurred in servo control board.
72b	**A2**	Servo parameter error 4	Servo parameter value is abnormal.
730	**A2**	Amp module disconnected.	Amp module is not installed.
732	**A2**	Servo parameter error 5	Servo parameter is abnormal.
733	**A2**	Servo parameter error 6	Servo parameter is abnormal.
734	**A2**	Servo parameter error 7	Servo parameter is abnormal.
735	**A2**	Servo parameter error 8	Servo parameter is abnormal.
73F	**A2**	Undefined Error	Receive the undefined error from the servo control board.
740	**A2**	Encoder Status Error	PG ON Error occurs.
741	**A2**	Servo system error 5	Requested the multiple servo on.
742	**A2**	Servo system error 6	System error occurred in servo control board.
743	**A2**	Servo system error 7	System error occurred in servo control board.
744	**A2**	Servo system error 8	System error occurred in servo control board.
745	**A2**	Servo system error 9	System error occurred in servo control board.
746	**A2**	Servo system error 10	System error occurred in servo control board.
74A	**A2**	Servo system error 11	System error occurred in servo control board.
74b	**A2**	Servo system error 12	System error occurred in servo control board.
74C	**A2**	Servo system error 13	System error occurred in servo control board.
74d	**A2**	Servo system error 14	System error occurred in servo control board.

[PAIF Board Error]

Error code	Level	Error Name	Description
7A0	**W2**	Communication Error	PAIF board received an undefined command.
7A1	**W2**	Communication Error (internal controller) 3-2	PAIF board detected that the command's parameter value is out of range.
7A2	**W2**	Command not supported 3-1	Detected the unsupported command.
7A3	**W2**	Data buffer full	The data buffer is full.
7A4	**W2**	Command not supported 3-2	Detected the unsupported command.
7A5	**W2**	Encoder data error 3-1	The encoder data is abnormal.
7A6	**W2**	Command not supported 3-3	Detected the unsupported command.
7AE	**W2**	Communication Error (internal controller) 3-3	The PA board has not become ready.
7AF	**W2**	Communication Error (internal controller) 3-4	The PA board is not responding.
7b0	**W2**	CCD sensor abnormal 1	The CCD sensor head power supply voltage is low.
7b4	**W2**	CCD sensor abnormal 2	CCD light source LED is off.
7b5	**W2**	CCD sensor abnormal 3	CCD light source LED light intensity dropped.
7C0	**A1**	PAIF board Failure 1	Watch dog of PAIF board was detected.
7C1	**A1**	PAIF board Failure 2	Low Voltage was detected.
7C2	**A1**	PAIF board Failure 3	Exception interrupt occurs.
7C3	**A1**	CCD sensor abnormal 4	LED turn on but the light intensity is zero.
7d0	**W2**	PAIF board disconnected	PAIF board is not installed.
7E0	**W2**	PAIF board Failure 4	Over voltage was detected.
7E1	**W2**	PAIF board Failure 5	The data acquisition failed.

Error code	Level	Error Name	Description
900	**W1**	Character Interval Timeout	Host command message was interrupted.
910	**W1**	Received Data Checksum Error	The sum value of data received from the host is invalid.
920	**W1**	Unit Number Error	The command for an undefined unit was received from the host.
930	**W1**	Undefined Command Received	Received command from the host is undefined.
940	**W1**	Message Parameter Error	The parameter attached to the command received from the host is
950	**W1**	Receiving Time-out Error for Confirmation of Execution Completion	The confirmation report of execution completion is not received from the host.
960	**W1**	Incorrect sequence number	Incorrect sequence number in received command message from host.
961	**W1**	Duplicated message	Sequence number was the same as the one on previous received command message from host.
970	**W1**	Delimiter error	There is no delimiter.
9A1	**W2**	Message buffer overflow	Message buffer was full when the controller received the command from host.
9C0	**W2**	LAN device setting error	LAN device setting is invalid.
9C1	**W2**	IP address error	Set IP address is invalid.
9C2	**W2**	Subnet mask error	Set subnet mask is invalid.
9C3	**W2**	Default gateway error	Set default gate way is invalid.
9d0	**W2**	Ethernet receive error	Host message reception failure (Ethernet).
9E0	**W2**	During operation the maintenance tool	The request from the host is not acceptable because during operate the maintenance tool.
9E1	**W2**	The data abnormal	Because internal data was damaged when data is acquired with the maintenance tool, it could not be acquired.

Error code	Level	Error Name	Description
A01	**A2**	Re-detection of a power Supply voltage fall	The fall of power supply voltage was re-detected.
A10	**A1**	External emergency stop	External emergency stop (EXESP) enabled by I/O.
A20	**A1**	T.P emergency stop	T.P emergency stop button was pressed.
A21	**A1**	Interlock board failure 0	Detected the interlock board failure.
A30	**A1**	Emergency stop	Emergency stop is commanded from the host.
A40	**W2**	Controller Fan 1 Error	Error occurred in controller cooling fan 1.
A41	**W2**	Controller Fan 2 Error	Error occurred in controller cooling fan 2.
A42	**W2**	Controller Fan 3 Error	Error occurred in controller cooling fan 3.
A45	**W2**	Unit fan 1 error	Unit fan 1 is defective.
A46	**W2**	Unit fan 2 error	Unit fan 2 is defective.
A4F	**W2**	Controller Battery Alarm	Controller's memory backup battery is low.
AC0	**A1**	Safety fence signal detection	An safety fence (SAFF) signal is input from the I/O.
AC9	**A1**	Protection stop signal	Protection stop (ONEN) signal is input from the I/O.
AE0	**W2**	HOST Mode Switching error	The mode is switched to “HOST” while being controlled from the teaching pendant.
AE1	**W2**	TEACH Mode Switching Error	The mode is switched to “TEACH” while being controlled from the host.
AE8	**W2**	Deadman switch error	Deadman switch was released during teach pendant operation.
AF0	**A2**	Interlock board failure 1	Detected the interlock board failure.
AF1	**A2**	Interlock board failure 2	Detected the interlock board failure.
AF2	**A2**	Interlock board failure 3	Detected the interlock board failure.
AF3	**A2**	Interlock board failure 4	Detected the interlock board failure.
AF4	**A2**	Interlock board failure 5	Detected the interlock board failure.
AF5	**A2**	Interlock board failure 6	Detected the interlock board failure.
AF6	**A2**	Interlock board failure 7	Detected the interlock board failure.
AF8	**A2**	Input compare error 1	Cross-check compare error for the teach pendant emergency stop
AF9	**A2**	Input compare error 2	Cross-check compare error for the interlock input signal 1.
AFA	**A2**	Input compare error 3	Cross-check compare error for the external emergency stop signal
AFb	**A2**	Input compare error 4	Cross-check compare error for the deadman switch signal.
AFC	**A2**	Input compare error 5	Cross-check compare error for the safety fence signal (SAFF).
AFd	**A2**	Input compare error 6	Cross-check compare error for the Protection stop signal (ONEN).
AFE	**A2**	Input compare error 7	Cross-check compare error for the interlock input signal 2.
AFF	**A2**	Input compare error 8	Cross-check compare error for the interlock input signal 3.

Error code	Level	Error Name	Description
b10	**A1**	Axis-1 Speed Limit Detection	Axis 1 exceeds the allowable speed.
b11	**A1**	Axis-2 Speed Limit Detection	Axis 2 exceeds the allowable speed.
b12	**A1**	Axis-3 Speed Limit Detection	Axis 3 exceeds the allowable speed.
b13	**A1**	Axis-4 Speed Limit Detection	Axis 4 exceeds the allowable speed.
b14	**A1**	Axis-5 Speed Limit Detection	Axis 5 exceeds the allowable speed.
b20	**W2**	Axis-1 Positive (+) Direction Software-limit Detection 1	Exceeds Axis-1 motion range in the positive direction.
b21	**W2**	Axis-2 Positive (+) Direction Software-limit Detection 1	Exceeds Axis-2 motion range in the positive direction.
b22	**W2**	Axis-3 Positive (+) Direction Software-limit Detection 1	Exceeds Axis-3 motion range in the positive direction.
b23	**W2**	Axis-4 Positive (+) Direction Software-limit Detection 1	Exceeds Axis-4 motion range in the positive direction.
b24	**W2**	Axis-5 Positive (+) Direction Software-limit Detection 1	Exceeds Axis-5 motion range in the positive direction.
b28	**W2**	Axis-1 Positive (+) Direction Software-limit Detection 2	Exceeds Axis-1 motion range in the positive direction when the mapping motion start.
b29	**W2**	Axis-2 Positive (+) Direction Software-limit Detection 2	Exceeds Axis-2 motion range in the positive direction when the mapping motion start.
b2A	**W2**	Axis-3 Positive (+) Direction Software-limit Detection 2	Exceeds Axis-3 motion range in the positive direction when the mapping motion start.
b2b	**W2**	Axis-4 Positive (+) Direction Software-limit Detection 2	Exceeds Axis-4 motion range in the positive direction when the mapping motion start.
b2C	**W2**	Axis-5 Positive (+) Direction Software-limit Detection 2	Exceeds Axis-5 motion range in the positive direction when the mapping motion start.
b30	**W2**	Axis-1 Negative (-) Direction Software-limit Detection 1	Exceeds Axis-1 motion range in the negative direction.
b31	**W2**	Axis-2 Negative (-) Direction Software-limit Detection 1	Exceeds Axis-2 motion range in the negative direction.
b32	**W2**	Axis-3 Negative (-) Direction Software-limit Detection 1	Exceeds Axis-3 motion range in the negative direction.
b33	**W2**	Axis-4 Negative (-) Direction Software-limit Detection 1	Exceeds Axis-4 motion range in the negative direction.
b34	**W2**	Axis-5 Negative (-) Direction Software-limit Detection 1	Exceeds Axis-5 motion range in the negative direction.
b38	**W2**	Axis-1 Negative (-) Direction Software-limit Detection 2	Exceeds Axis-1 motion range in the negative direction when the mapping motion start.
b39	**W2**	Axis-2 Negative (-) Direction Software-limit Detection 2	Exceeds Axis-2 motion range in the negative direction when the mapping motion start.
b3A	**W2**	Axis-3 Negative (-) Direction Software-limit Detection 2	Exceeds Axis-3 motion range in the negative direction when the mapping motion start.
b3b	**W2**	Axis-4 Negative (-) Direction Software-limit Detection 2	Exceeds Axis-4 motion range in the negative direction when the mapping motion start.
b3C	**W2**	Axis-5 Negative (-) Direction Software-limit Detection 2	Exceeds Axis-5 motion range in the negative direction when the mapping motion start.
b40	**W2**	Access Permission Signal 1 Time-out Error	Time-out of access permission signal 1 occurred.
b41	**W2**	Access Permission Signal 2 Time-out Error	Time-out of access permission signal 2 occurred.
b42	**W2**	Access Permission Signal 3 Time-out Error	Time-out of access permission signal 3 occurred.
b43	**W2**	Access Permission Signal 4 Time-out Error	Time-out of access permission signal 4 occurred.
b44	**W2**	Access Permission Signal 5 Time-out Error	Time-out of access permission signal 5 occurred.
b45	**W2**	Access Permission Signal 6 Time-out Error	Time-out of access permission signal 6 occurred.
b46	**W2**	Access Permission Signal 7 Time-out Error	Time-out of access permission signal 7 occurred.

Error code	Level	Error Name	Description
b47	**W2**	Access Permission Signal 8 Time-out Error	Time-out of access permission signal 8 occurred.
b48	**W2**	Access Permission Signal 9 Time-out Error	Time-out of access permission signal 9 occurred.
b49	**W2**	Access Permission Signal 10 Time-out Error	Time-out of access permission signal 10 occurred.
b4A	**W2**	Access Permission Signal 11 Time-out Error	Time-out of access permission signal 11 occurred.
b4b	**W2**	Access Permission Signal 12 Time-out Error	Time-out of access permission signal 12 occurred.
b4C	**W2**	Access Permission Signal 13 Time-out Error	Time-out of access permission signal 13 occurred.
b4d	**W2**	Access Permission Signal 14 Time-out Error	Time-out of access permission signal 14 occurred.
b4E	**W2**	Access Permission Signal 15 Time-out Error	Time-out of access permission signal 15 occurred.
b4F	**W2**	Access Permission Signal 16 Time-out Error	Time-out of access permission signal 16 occurred.
b70	**W2**	SS signal detection	SS (software stop) signal was detected during operation.

Error code	Level	Error Name	Description
b80	**W2**	Fork 1/Pre-aligner: Wafer Presence Confirmation Time-out Error 1	The vacuum/grip sensor does not turn on within the specified time.
b81	**W2**	Fork 1/Pre-aligner: Wafer Absence Confirmation Time-out Error 1	The vacuum/grip sensor does not turn off within the specified time.
b82	**W2**	Fork 1/Pre-aligner: Wafer Presence Confirmation Time-out Error 2	The wafer presence/absence sensor does not turn on within the specified time.
b83	**W2**	Fork 1/Pre-aligner: Wafer Absence Confirmation Time-out Error 2	The wafer presence/absence sensor does not turn off within the specified time.
b8F	**W2**	Fork 1: Plunger non-operation error	The plunger of Fork 1 did not move in the observed time.
b90	**W2**	Fork 2: Wafer Presence Confirmation Time-out Error 1	The vacuum/grip sensor does not turn on within the specified time.
b91	**W2**	Fork 2: Wafer Absence Confirmation Time-out Error 1	The vacuum/grip sensor does not turn off within the specified time.
b92	**W2**	Fork 2: Wafer Presence Confirmation Time-out Error 2	The wafer presence/absence sensor does not turn on within the specified time.
b93	**W2**	Fork 2: Wafer Absence Confirmation Time-out Error 2	The wafer presence/absence sensor does not turn off within the specified time.
b9F	**W2**	Fork 2: Plunger non-operation error	The plunger of Fork 2 did not move in the observed time.
bA0	**W2**	Fork 1/Pre-aligner: Wafer Absence Error	The vacuum/grip sensor or wafer presence/absence sensor turns off while the manipulator(Fork1)/Pre-aligner is transferring a wafer.
bA1	**W2**	Fork 1: Sensor Status Mismatch	The vacuum/grip sensor of Fork 1 is on while the wafer presence/absence sensor is off.
bb0	**W2**	Fork 2: Wafer Absence Error	The suction/grip sensor or wafer presence/absence sensor turns off while Fork 2 is holding and transferring a wafer.
bb1	**W2**	Fork 2: Sensor Status Mismatch	The suction/grip sensor of Fork 2 is on while the wafer presence/absence sensor is off.
bF0	**W2**	Stopped by HOLD signal	Motion request is transmitted while the manipulator is being stopped by HOLD signal.
C80	**W2**	The alignment data error	Insufficient effective data for wafer alignment.
C90	**W2**	Notch/Orientation flat position analysis error 1	The notch/orientation flat position was not able to be distinguished.
CA0	**W2**	Center position detection	An accurate wafer center position could not be detected.
Cb0	**W2**	Excessive wafer eccentric amount	The wafer eccentric amount is excessive.
CC0	**W2**	Notch/Orientation flat position analysis error 2	An accurate notch/orientation flat position could not be detected.
Cd0	**W2**	Excessive arm correction amount	The amount corrected by alignment exceeds the allowable range.
CE0	**W2**	Robot pre-aligner distance calculation error	Could not execute arm calibration correctly.
d00	**W2**	Mapping sensor error	Mapping sensor beam was already blocked at the mapping start
d10	**W2**	Mapping calibration error	Could not execute mapping calibration properly.
d20	**W2**	Mapping calibration	Never executed mapping calibration.
d30	**W2**	Mapping sampling data error	Sampling data for mapping or mapping calibration are abnormal.
d40	**W2**	Protruded wafer detection	Detected wafer protrusion when mapping or mapping calibration.
d50	**W2**	Mapping data chattering detected	Detected chattering when mapping or mapping calibration.
d60	**W2**	Mapping motion failed	The mapping or the mapping calibration was not enforceable for “Top side GET / PUT station”.

Error code	Level	Error Name	Description
E90	**A2**	Parameter set value abnormal 1-0	System configuration error.
E91	**A2**	Parameter set value abnormal 1-1	Manipulator configuration error.
EA0	**W2**	Parameter set value abnormal 2-0	Real-type common parameter setting warning.
EA1	**W2**	Parameter set value abnormal 2-1	Integer-type common parameter setting warning.
EA4	**W2**	Parameter set value abnormal 2-4	Real-type unit parameter setting warning.
EA5	**W2**	Parameter set value abnormal 2-5	Integer-type unit parameter setting warning.
Eb0	**A2**	Parameter set value abnormal 3-0	Real-type common parameter setting is invalid.
Eb1	**A2**	Parameter set value abnormal 3-1	Integer-type common parameter setting is invalid.
Eb4	**A2**	Parameter set value abnormal 3-04	Real-type unit parameter setting is invalid.
Eb5	**A2**	Parameter set value abnormal 3-5	Integer-type unit parameter setting is invalid.
EC0	**A2**	Parameter set value abnormal 4-0	Software and setting parameter do not match.
Ed0	**A2**	Memory operation error 0	Memory operation error occur.
Ed1	**A2**	Memory operation error 1	Memory operation error occur.
EE0	**A2**	File operation error 0	Failed to open file.
EE1	**A2**	File operation error 1	Failed to close file.
EE2	**A2**	File operation error 2	Failed to read file.
EE3	**A2**	File operation error 3	Failed to write file.
EE4	**A2**	File operation error 4	Failed to delete file.
EE5	**A2**	File operation error 5	Size of parameter initialization file is invalid.
EE8	**A2**	File operation error 8	Failed to create folder.
EF0	**W2**	Invalid data in file 0	Invalid data in “Format request file”.
EF1	**W2**	Invalid data in file 1	Invalid data in “Auto update request file”.
EF2	**W2**	Invalid data in file 2	Invalid data in “Servo parameter file”.
EF3	**W2**	Invalid data in file 3	Invalid data in “Common parameter file”.
EF4	**W2**	Invalid data in file 4	Invalid data in “Unit parameter file”.
EF5	**W2**	Invalid data in file 5	Invalid data in “Position data file”.
EF8	**W2**	Invalid data in file 8	Invalid data in “Servo parameter automatic update file”.
EF9	**W2**	Invalid data in file 9	Invalid data in “Common parameter auto update file”.
EFA	**W2**	Invalid data in file 10	Invalid data in “Unit parameter auto update file”.
EFE	**W2**	Invalid data in file 14	File data abnormality 1 in the controller.
EFF	**W2**	Invalid data in file 15	File data abnormality 2 in the controller.

Error code	Level	Error Name	Description
F10	**A2**	System error 1-0	System error 1-0.
F11	**A2**	System error 1-1	System error 1-1.
F12	**A2**	System error 1-2	System error 1-2.
F14	**A2**	System error 1-4	System error 1-4.
F20	**A2**	System error 2-0	System error 2-0.
F21	**A2**	System error 2-1	System error 2-1.
F22	**A2**	System error 2-2	System error 2-2.
F50	**F**	System error 5-0	System error 5-0.
F51	**F**	System error 5-1	System error 5-1.
F61	**F**	System Error 6-1	System Error 6-1.
F62	**F**	System Error 6-2	System Error 6-2.
F70	**F**	System Error 7-0	System Error 7-0.
F82	**F**	System error 8-2	System error 8-2.
F83	**F**	System error 8-3	System error 8-3.
F84	**F**	System error 8-4	System error 8-4.
F86	**F**	System error 8-6	System error 8-6.
F88	**F**	System error 8-8	System error 8-8.
F90	**F**	System error 9-0	System trap 9-0.
F91	**F**	System error 9-1	System trap 9-1.
F92	**F**	System error 9-2	System trap 9-2.
F93	**F**	System error 9-3	System trap 9-3.
F94	**F**	System error 9-4	System trap 9-4.
F95	**F**	System error 9-5	System trap 9-5.
F98	**F**	System error 9-8	System trap 9-8.
F99	**F**	System error 9-9	System trap 9-9.
F9A	**F**	System error 9-10	System trap 9-10.
F9b	**F**	System error 9-11	System trap 9-11.
F9C	**F**	System error 9-12	System trap 9-12.
F9d	**F**	System error 9-13	System trap 9-13.
FA0	**F**	System error A-0	System trap A-0.
FA1	**F**	System error A-1	System trap A-1.
FA2	**F**	System error A-2	System trap A-2.
FA3	**F**	System error A-3	System trap A-3.
FA4	**F**	System error A-4	System trap A-4.
FA8	**F**	System error A-8	System trap A-8.
FA9	**F**	System error A-9	System trap A-9.
FAA	**F**	System error A-10	System trap A-10.
FAb	**F**	System error A-11	System trap A-11.
Fb0	**F**	System error b-0	System trap b-0.
Fb1	**F**	System error b-1	System trap b-1.
Fb8	**F**	System error b-8	System trap b-8.
Fb9	**F**	System error b-9	System trap b-9.

Error code	Level	Error Name	Description
FC0	**F**	System error C-0	System trap C-0.
FC4	**F**	System error C-4	System trap C-4.
FC5	**F**	System error C-5	System trap C-5.
FC8	**F**	System error C-8	System trap C-8.
FCC	**F**	System error C-12	System trap C-12.
Fd0	**F**	System error d-0	System trap d-0.
Fd1	**F**	System error d-1	System trap d-1.
Fd2	**F**	System error d-2	System trap d-2.
Fd3	**F**	System error d-3	System trap d-3.
Fd4	**F**	System error d-4	System trap d-4.
Fd5	**F**	System error d-5	System trap d-5.
Fd6	**F**	System error d-6	System trap d-6.
Fd7	**F**	System error d-7	System trap d-7.
Fd8	**F**	System error d-8	System trap d-8.
Fd9	**F**	System error d-9	System trap d-9.
FdA	**F**	System error d-10	System trap d-10.
Fdb	**F**	System error d-11	System trap d-11.
FdC	**F**	System error d-12	System trap d-12.
Fdd	**F**	System error d-13	System trap d-13.
FdE	**F**	System error d-14	System trap d-14.
FdF	**F**	System error d-15	System trap d-15.
FE0	**F**	System error E-0	System trap E-0.
FE2	**F**	System error E-2	System trap E-2.
FE4	**F**	System error E-4	System trap E-4.
FE6	**F**	System error E-6	System trap E-6.
FE8	**F**	System error E-8	System trap E-8.
FEA	**F**	System error E-10	System trap E-10.
FEC	**F**	System error E-12	System trap E-12.