CKD

SCARA Robot

KSL3000 Alarm Manual

INSTRUCTION MANUAL

SM-A20052-A

- Read this Instruction Manual before using the product.
- Read the safety notes carefully.
- Keep this Instruction Manual in a safe and convenient place for future reference.

CKD Corporation

KSL Series Robot Controller Instruction Manual Series

The KSL series robot controller instruction manuals are divided by their application and purpose. The title and an overview of each manual are shown below.

[Safety Manual]

This manual contains the important information to use the robot safety and correctly. Be sure to read through and understand this manual before operating the robot. Also, strictly observe the descriptions made there.

[Operator's Manual]

This manual describes the operating procedures of the KSL series robot controller. Read through this manual, and refer to it when necessary.

[Robot Language Manual]

This manual refers to the robot language called "SCOL". When you have to create a program based on this language, read through the manual.

[Interface Manual]

This manual describes the external signals for the robot. Concerning the interface conditions between the robot and peripheral equipment, specifications, timing, etc., refer to the manual when necessary.

[Installation & Transport Manual]

This manual describes the transport, unpacking and installation of the robot and controller. Be sure to read through this manual before unpacking the shipment containing the robot.

[Maintenance Manual]

This manual deals with the daily and regular inspections to be made on the robot and controller. Read through this manual to use the robot safely over long years to come.

[Communication Manual]

This manual describes the serial communication between the robot controller and other equipment. Refer to this manual when connecting the robot controller with a host computer, optical sensor, etc., via a serial cable.

[User Parameter Manual]

This manual describes the setting of the robot controller. Read this manual when performing the setting of communication, I/O, motion condition, etc.

[Alarm Manual]

This manual describes the alarms, their causes, and remedies. Refer to this manual when an alarm occurs.

Cautions on Safety

This manual contains the important information on the robot and controller to prevent injury to the operators and persons nearby, to prevent damages to assets and to assure correct use.
Make sure that you well understand the following details (indications and symbols) before reading this manual. Always observe the information that is noted.

[Explanation of indications]

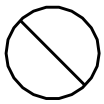
Indication	Meaning of indication
 **DANGER**	This means that "incorrect handling will lead to fatalities or serious injuries."
 **CAUTION**	This means that "incorrect handling may lead to personal injuries *1) or physical damage *2).

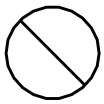
*1) Injuries refer to injuries, burns and electric shocks, etc., which do not require hospitalization or long-term medical treatment.
*2) Physical damage refers to damages due to destruction of assets or resources.

[Explanation of symbols]

Symbol	Meaning of symbol
	This means that the action is prohibited (must not be done). Details of the actions actually prohibited are indicated with pictures or words in or near the symbol.
	This means that the action is mandatory (must be done). Details of the actions that must be done are indicated with pictures or words in or near the symbol.
	This means danger. Details of the actual danger are indicated with pictures or words in or near the symbol.
	This means caution. Details of the actual caution are indicated with pictures or words in or near the symbol.

[Operation]

 **DANGER**	
 Prohibited	• During operation, NEVER enter the dangerous area of the robot. Otherwise, you will be injured seriously. • DO NOT leave in the working range any machinery or materials which will hinder the operation. If the equipment went wrong, a person nearby will be injured or involved in an accident. • Anyone other than the operator MUST NOT approach the equipment. Should he negligently touch the dangerous part of the equipment, he will get injured or involved in a serious accident. • NEVER perform an inappropriate operation which is not described in the instruction manual. Otherwise, the equipment will start by mistake, resulting in personal injury or serious accident.
 Danger	• If you feel even a little that you are exposed to danger or that the equipment works abnormally, press the EMERGENCY stop pushbutton switch to stop the equipment. If the equipment is used as it is, you will be injured or involved in a serious accident. When this happens, ask our after-sale service agent for repair. • During operation, be sure to close the equipment cover. Should the cover be opened during operation, you will be struck by an electric shock or get injured. • Only a well-trained and qualified person is allowed to perform the operation. Should the equipment be operated improperly, it will start by mistake, causing a personal injury or serious accident. • If the equipment has malfunctioned, turn the power off, identify and remove the cause of the abnormality, maintain the peripheral equipment and completely restore the malfunctioned equipment. Then start the equipment at a slow speed. If the equipment starts, leaving the abnormality, you will be involved in a serious accident.

CAUTION	
 Prohibited	• DO NOT change the data of the system structure file. Otherwise, the robot will move abnormally, resulting in damage or an accident.
 Mandatory	• In principle, teaching operation should be performed outside the dangerous area of the robot. If it should be performed inevitably within the dangerous area, strictly observe the following matters. (1) The teaching operation should always be performed by two (2) persons. One person performs the job and the other person watches outside the dangerous area. Also, both persons should try to prevent mis-operation with each other. (2) The operator should do the job in an attitude ready to press the EMERGENCY stop pushbutton switch at any time. Also, he should perform the job at a position from which he can evacuate immediately at the time of an emergency after confirming the robot working range and shields nearby. (3) The supervisor should keep watch on the job at a position where he can see the entire robot system and operate the EMERGENCY stop pushbutton switch at the time of an emergency. Also, he should keep anyone from entering the dangerous area. Unless the operator or other person follows the instructions of the supervisor, an accident will be caused. • If an abnormality has generated or the POWER LED lamp on the control panel remains off after the main power switch of the equipment was turned on, turn off the main power immediately and confirm the wiring. Otherwise, you will be struck by an electric shock or a fire will break out. • Unless the robot operates toward a designated direction at manual guide, turn off the servo power. Otherwise, the robot will be damaged or you will be involved in an accident. When this happens, call us at the after-sale service agent. • Pushbutton operations on the control panel and teach pendant should be confirmed visually. Otherwise, you will be involved in an accident due to mis-operation. • After the power is turned on, be sure to reset a program to start an automatic operation. If the program is executed continuously, the robot will interfere with the peripheral equipment, resulting in damages or accidents.

CAUTION	
 Mandatory	• Before operating the equipment, perform the following inspection. (1) Make sure that visual appearance of the robot, controller, peripheral equipment and cables is in the good condition. (2) Make sure that no obstacle stands in or near the working range of the robot and peripheral equipment. (3) Make sure that the emergency stop and other safety devices operate properly. (4) Make sure that no abnormal noise or vibration is involved in the robot operation. If the above prior inspection is skipped, the equipment will be damaged or you will be involved in an accident.
 Caution	• The speed of test operations is initially set at 25 % of the maximum robot speed. • The speed of automatic operation is initially set at 100 % of the maximum robot speed.

Problems that occur when the power is turned on and their causes are shown below.

POWER lamp does not turn even though the power switch is turned on.

Description	The POWER lamp on the operation panel does not turn on even though the power switch is set to ON.
Cause	① The correct controller input power (200 V AC) is not being supplied. ② The POWER lamp may be faulty. ③ The internal switching power supply may have an output fault. PS1 (5 V DC, 24 V DC switching power supply)
Remedy	① Check the voltage of the controller input power (200 V AC). ② Replace the POWER lamp. ③ Replace the switching power supply.
Remarks	Component parts may need to be replaced, and so contact CKD Customer Service.

Unable to advance beyond "Wait For Machine Ready" in the teach pendant display.

Description	After the power is turned on, the teach pendant display does not advance beyond "Wait For Machine Ready" and does not start normally.
Cause	① The main control printed board may be faulty. ② The servo printed board may be faulty.
Remedy	① Replace the main control printed board. ② Replace the servo printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

Nothing is displayed on the teach pendant.

Description	Nothing is displayed on the teach pendant.
Cause	① The teach pendant is not connected correctly. ② The teach pendant may be faulty. ③ The main control printed board (X8GC) may be faulty. ④ The internal switching power supply (PS1) may be faulty.
Remedy	① Check the teach pendant connection, and connect it correctly. ② Check that the connectors and cables are not damaged, and if nothing appears wrong, replace the teach pendant. ③ Replace the main control printed board. ④ Replace the internal switching power supply.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

Level 8 Alarms

These are alarms where the alarm numbers start with 8.

When this alarm is detected, the robot performs an emergency stop (servo off).

8-001 Undefined int

Description	An abnormal interrupt process occurred in the main control printed board.
Cause	① The parameter file "ROBOT.PAR" is missing from the RAM file. ② The parameter file "ROBOT.PAR" statement format is incorrect. ③ The main control printed board may be faulty. ④ The servo printed board may be faulty. ⑤ The data in the memory may be lost due to a drop in voltage of the memory backup battery of the main control printed board.
Remedy	①② Turn the power off and then on again. Check if the parameter file ROBOT.PAR is corrupted. ③ Replace the main control printed board. ④ Replace the servo printed board. ⑤ If this error occurs together with the "1-145 Main Battery alarm", the lithium battery needs to be replaced. For the replacement procedure, see the procedure in Remarks, item ⑤ below.
Remarks	①② If the alarm occurs with a specific operation or program, there may be a bug in the software. ③④ The printed boards may need to be replaced, and so contact CKD Customer Service. ⑤ Replacing the battery The SRAM installed on the main control printed board uses a lithium battery to provide battery backup for retaining data. The battery should be replaced about once every five years. The lithium battery reaches its lifespan when used regularly, but if it continues to be used past its lifespan, the battery voltage will fall below the data retaining voltage of the SRAM. This can result not only in loss of data, but also damage due to battery fluid leakage. Battery model: BR3V-C, Manufacturer: CKD Battery, Battery lifespan: 5 years *For details, refer to "Replacing the Battery" in the Maintenance Manual. Note: The battery lifespan varies depending on the operating temperature conditions, humidity, and other factors of the external environment, but replacement around every five years is recommended. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-002 Memory Check error

Description	An error was detected by the self-diagnostics (read, write) of the memory when the power was turned on.
Cause	① The main control printed board may be faulty. ② The servo printed board may be faulty.
Remedy	① Replace the main control printed board. ② Replace the servo printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-004 Watchdog error

Description	An error was detected by the CPU regular monitor circuit of the main control printed board.
Cause	The main control printed board may be faulty.
Remedy	Replace the main control printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

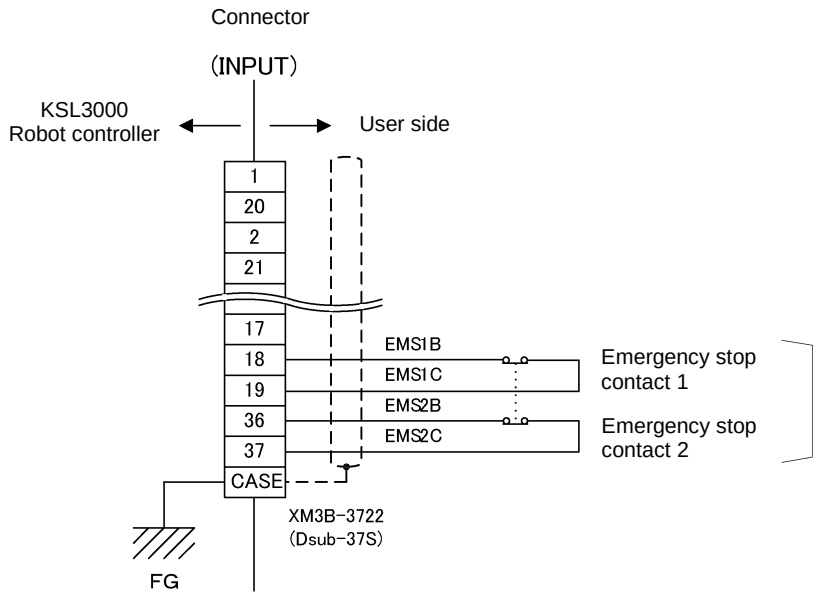
8-007 Servo soft Watchdog error

Description	The main control CPU detected a servo CPU error in the mutual monitoring (monitoring by software) of the main control and servo printed board.
Cause	① The main control printed board (X8GC) may be faulty. ② The servo printed board (X8GL) may be faulty.
Remedy	① Replace the main control printed board. ② Replace the servo printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-013 AC Alarm

Description	A power supply error was detected by the AC power supply monitor circuit.
Cause	The following state was detected by the servo power supply printed board (KSL3000: X8YS). • The input power supply (200 V AC) 200 V to 250 V was cut off for more than 40 msec. • The input power supply has dropped to 190 V or less.
Remedy	Check if the controller input power supply (200 V AC) has had an instantaneous power outage and check its voltage, and turn the power off and then on again. If this is not a problem, the servo power supply printed board may be faulty.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-014 Emergency Stop SW ON

Description	An emergency stop pushbutton was pressed.
Cause	An emergency stop pushbutton was pressed.
Remedy	Emergency stop pushbuttons are located at two places: teach pendant and outside for the KSL3000 controller. If the button was not pressed, check for a faulty switch or wiring. There may also be a bad contact in the internal connector, and so recheck the connection. *Connect a dummy plug if the teach pendant is not used.
Remarks	The external emergency stop is connected to an INPU connector for KSL3000. Connect jumpers if it is not used. 

8-015 Parameter error

Description	A parameter error was detected.
Cause	An error was found in the settings of a parameter file (USER.PAR, MACHINE.PAR, ROBOT.PAR, SERVO.PAR, ETHERNET.PAR).
Remedy	If this error occurs, 8-015 is displayed in the function menu of the error display. Pressing the corresponding function key displays the error details, and so correct the relevant parameter file. If a parameter is changed, turn the power off and then on again.
Remarks	If the cause cannot be found, contact CKD Customer Service.

8-016 Servo Type error

Description	An error was found in the servo amplifier settings.
Cause	The servo amplifier that was set in the parameters is different from the actual servo amplifier.
Remedy	Check if there are any errors in the installed servo printed board and the setting for [S04] SERVO DEFINITION in the servo parameter file (SERVO.PAR).
Remarks	

8-017 Safety SW ON

Description	The safety switch was turned on.
Cause	① The Safety SW on the TP was not gripped in TEACHING mode. ② The safety input contact was opened.
Remedy	① Grip the Safety SW. ② Check the circuits of the safety input contacts 1 and 2 (EMS connector ENA*B ~ ENA*C).
Remarks	

8-018 Servo CPU error

Description	A CPU error was detected in the servo printed board.
Cause	① The main control printed board may be faulty. ② The servo printed board may be faulty.
Remedy	① Replace the main control printed board. ② Replace the servo printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-024 MMI timeout

Description	The MMI internal process was not completed even after the specified time elapsed.
Cause	The main control printed board may be faulty.
Remedy	Replace the main control printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-026 Servo Gate OFF error

Description	The servo turns off unexpectedly.
Cause	① The controller input power supply (200 V AC) does not meet the input power supply specifications value of the controller or is not stable. ② The internal switching power supply (PS1) may be faulty. ③ Chattering may have occurred in the emergency stop line contact. ④ If all of the above causes are eliminated, the servo printed board may be faulty.
Remedy	① Check the controller input power supply (200 V AC). ② The internal switching power supply (PS1) may be faulty. ③ Check the contact connection state of the emergency stop line. ④ Replace the servo printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-027 Slow Charge error

Description	The capacitor charge did not operate properly when the servo was turned on, and as a result, the servo failed to turn on. When the servo is on, this error occurs if the servo power supply voltage does not reach a predetermined voltage after a certain time has elapsed.
Cause	① The controller input power supply (200 V AC) does not meet the controller input power supply specifications value or is not stable. ② The voltage in the controller power supply connector (CN1) has dropped compared to the facility power supply voltage. (A power cable is too narrow or too long (power cable conductor thickness: 3.5 to 5.5 mm^2).) ③ The servo off/on operation was too quick. ④ The servo power supply printed board may be faulty.
Remedy	① Check if the controller input power supply (200 V AC) meets the controller input power supply specifications value and if it is stable. (The specification value of power supply voltage varies depending on the controllers. See the Installation & Transport Manual corresponding to the controllers.) ② Check the power cable diameter and cable length. (Power cable conductor thickness: 3.5 to 5.5 mm^2) ③ Perform the servo off/on operation more slowly. ④ Replace the servo power supply printed board or servo printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-028 IPM error

Description	IPM error
Cause	The motor drive transistor detector mounted on the servo printed board detected an error.
Remedy	The error "8-48* Axis* Servo Amp error" also occurs at the same time. For the remedy, see "8-48* Axis* Servo Amp error."
Remarks	

8-029 DC24 Regulator error

Description	The controller internal 24 V DC power supply voltage has dropped to 21 V or less.
Cause	① A short-circuit in the external wiring caused a drop in the output voltage of the internal switching power supply (PS1). (The 24 V power supply is also used for external I/O.) ② There is an output fault in the internal switching power supply (PS1). ③ The servo power supply printed board is faulty.
Remedy	① Check the wiring to see if the external I/O wiring is short-circuited. ② Replace the internal switching power supply. For the replacement procedure, see "Replacing the Switching Power Supply" in the Maintenance Manual. ③ Replace the servo power supply printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-030 Servo Power Low Volt

Description	The controller internal servo power supply (approx. 300 V DC) has dropped to 130 V or less.
Cause	① The power supply voltage of the controller input power supply (200 V AC) has dropped. ② If checking eliminates the above cause, the servo power supply printed board may be faulty.
Remedy	① Check if the controller input power supply voltage is enough and is stable. ② Replace the servo power supply printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-031 Resistor Overheat

Description	The temperature of the regenerative resistor exceeds 130°C.
Cause	Turn off the power supply, and wait until the regenerative resistor cools down. The following are possible causes of overheating of the resistor. ① The robot is overloaded. ② An appropriate acceleration/deceleration is not set for the load. ③ The robot has collided with an object. ④ There is a problem in the robot drive system (motor, reduction gears, or other parts). ⑤ The servo power supply printed board may be faulty.
Remedy	① Define the PAYLOAD command, and adjust the acceleration/deceleration and gain. ② Use the PAYLOAD, ACCEL, and DECEL commands to adjust to the appropriate acceleration/deceleration. PAYLOAD = {<Weight>, <Offset of center of gravity>} The optimum acceleration/deceleration and servo gain are set based on the load applied to the arm tip and the specified offset amount. <Weight> The weight of the loaded applied to the robot arm tip is specified in kilogram units. <Offset of center of gravity> The distance that the center of gravity of the load applied to the robot arm tip is separated from the tool center of the arm tip is specified in millimeter units. ACCEL = Acceleration (%), DECEL = Deceleration (%) This changes the acceleration and deceleration values. The amount of change is specified as a percentage of the standard acceleration. ③ Remove the cause of the collision. ④ Move the robot by hand, and check that it does not catch on anything, there is no play, and that it moves smoothly. ⑤ Replace the servo printed board and the servo power supply printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-032 Servo Power Over Volt

Description	The controller internal servo power supply (approx. 300 V DC) has reached 420 V or more.
Cause	① The regenerative resistor may be damaged. ② The servo printed board and servo power supply printed board may be faulty.
Remedy	① Replace the regenerative resistor. ② Replace the servo printed board and servo power supply printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

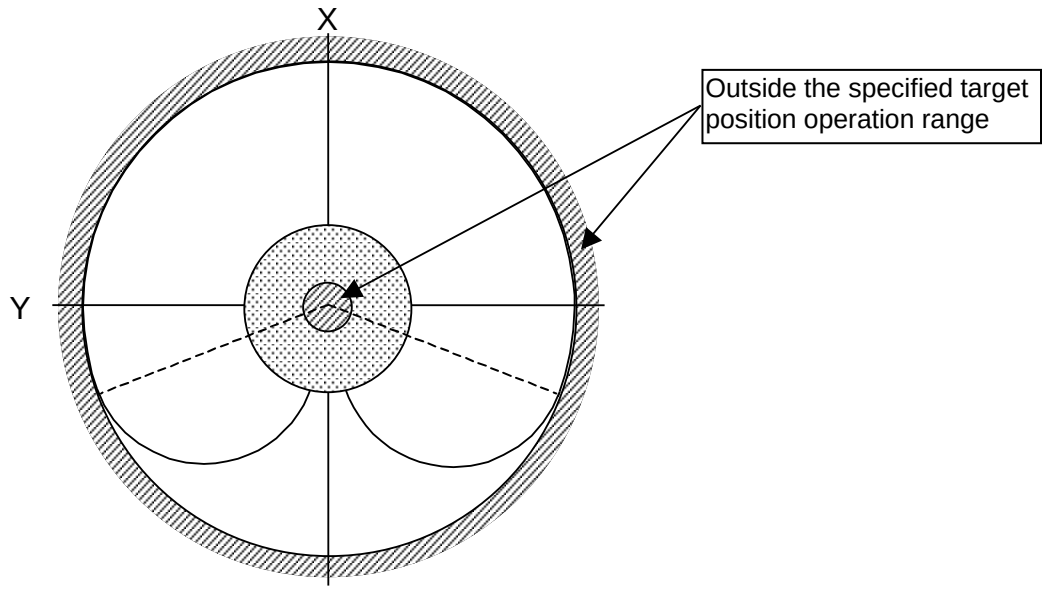
8-033 Distribution error

Description	A distribution process calculation error was detected.
Cause	As a result of a movement command (such as MOVE) calculation, the robot could no longer perform movement. This alarm does not occur for SCOL program errors. A system fault may be the cause.
Remedy	Contact CKD Customer Service, and provide details about the system software version and all files in the controller, including the robot program.
Remarks	

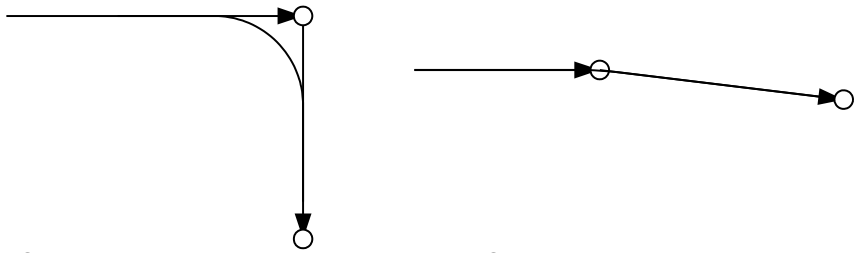
8-034 Unable to Trans

Description	A distribution target position coordinate conversion failure error was detected.
Cause	A conflict occurred in the results of coordinate conversion in the internal calculation, and robot operation cannot be performed. This alarm does not occur for SCOL program errors. A system fault may be the cause.
Remedy	Contact CKD Customer Service, and provide details about the system software version and all files in the controller, including the robot program.
Remarks	

8-035 Point Invalid of Range

Description	A distribution target position operation out-of-range error was detected.
Cause	The robot tried to move to an inoperable position (outside the arm length) by a MOVEC command.
Remedy	Check that the MOVEC path is within the robot operable range.
Remarks	The area outside the distribution target position operation range of the SCARA robot is shown in the figure below. 

8-041 Axis1 Exceed Speed
8-042 Axis2 Exceed Speed
8-043 Axis3 Exceed Speed
8-044 Axis4 Exceed Speed
8-045 Axis5 Exceed Speed
8-046 Axis6 Exceed Speed
8-047 Axis7 Exceed Speed
8-048 Axis8 Exceed Speed

Description	The results of the internal calculation process of the operation command generates a command value that exceeds the limit speed of the corresponding joint axis.
Cause	① When the program operation command makes a PASS connection, the speed is superimposed in the same vector direction.  Operation command in different direction Operation command in same or similar direction Note: For a PASS command in the same rotation direction, the speed command is superimposed, and this results in an excessive speed command. ② There is an error in the method that the TORQUE command is specified. ③ A servo system alarm such as "8-42* Axis* Position error" occurred.
Remedy	① Correct the program so that the PASS rate is reduced. ② Correct the program by referring to "Command Descriptions TORQUE" in the Robot Language Manual. ③ This error may also occur together with an error such as "8-42* Axis* Position error" or "8-40* Axis* Encoder abnormal". Therefore, check if a servo system alarm has occurred.
Remarks	If the error still occurs after performing the above remedies, contact CKD Customer Service.

8-049 Axis1 Psn BackUp Error
8-050 Axis2 Psn BackUp Error
8-051 Axis3 Psn BackUp Error
8-052 Axis4 Psn BackUp Error
8-053 Axis5 Psn BackUp Error
8-054 Axis6 Psn BackUp Error

Description	In comparison with the encoder value effective when the controller was previously turned off, the encoder now indicates a change in the robot posture which is produced by a motor rotation or more.
Cause	① The joint angle may have been changed when the controller was turned off. ② The combination of the robot and the controller may be wrong. ③ The robot origin position information may be lost.
Remedy	① Check the robot origin position. If no problem is found, start normal operation. ② Check the combination with the controller. If it is wrong, change to the correct combination. ③ If this error has occurred together with "8-61* Axis* Enc battery empty," the origin position information may be lost. Change the battery, and set the origin position again.
Remarks	This alarm disappears when you turn off the controller and then turn it back on.

8-055 Vibration Suppression Error

Description	It was detected that the robot oscillated when the vibration suppression function was enabled.
Cause	• A PAYLOAD command parameter may not be set correctly in the robot program.
Remedy	• Set the PAYLOAD command parameter correctly in the robot program.
Remarks	* This alarm does not occur when the vibration suppression function is disabled. * After the alarm occurs, the vibration suppression function remains disabled until the controller is turned on again.

8-086 Servo Internal RAM error

Description	A problem was found in the internal RAM at Axis1 in the self-check when the power was turned on.
Cause	The servo printed board may be faulty.
Remedy	Replace the servo printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-087 Servo Common RAM error

Description	A problem was found in the common RAM at Axis1 in the self-check when the power was turned on.
Cause	The servo printed board may be faulty.
Remedy	Replace the servo printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-088 Servo Hard Watchdog error

Description	The servo CPU detected an error due to regular mutual monitoring (watchdog) by the software with the main control CPU or detected an error signal of the main control printed board.
Cause	① The main control printed board may be faulty. ② The servo printed board may be faulty.
Remedy	Replace the servo printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-089 Servo Bus error

Description	"CPU address error", "General invalid command" or other CPU-related execution error has occurred in the servo printed board.
Cause	The servo printed board may be faulty.
Remedy	Replace the servo printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-090 Servo DC15V Regulator error

Description	The servo 15V power supply is low.
Cause	The servo 15V power supply may be faulty.
Remedy	Replace the base printed board. Replace the servo amplifier.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-093 Servo Background OS error

Description	A servo background process error was detected.
Cause	The servo printed board may be faulty.
Remedy	Replace the servo printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-257 External Watchdog error

Description	A watchdog error has occurred in a CPU other than the main control printed board CPU.
Cause	① The main control printed board (KSL3000: X8YC) may be faulty. ② The servo printed board may be faulty.
Remedy	① Replace the main control printed board. ② Replace the servo printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-258 Backup Memory error

Description	The data in the backup memory was corrupted.
Cause	The data in the backup memory was corrupted.
Remedy	The memory is formatted automatically, and so load the parameters from the system disc to set to the initial shipping state.
Remarks	

8-259 Backup Memory loaded

Description	Data was loaded from the flash memory to the RAM disk.
Cause	Data was loaded from the flash memory to the RAM disk using the RAM disk backup function. The parameters and programs are overwritten by the data that was saved to the flash memory.
Remedy	Turn the power OFF and then ON. After restarting, check that the joint positions, programs, and teach points are normal before starting operation.
Remarks	

8-269 PLC user alarm
8-270 PLC user alarm
8-271 PLC user alarm
8-272 PLC user alarm

Description	A level 8 user alarm has occurred in the internal PLC.
Cause	A level 8 user alarm has occurred in the internal PLC. The message can be defined by the user parameters.
Remedy	The user must remove the alarm conditions that were set in the internal PLC.
Remarks	A level 8 user alarm has occurred in the internal PLC.

8-273 I/O Fuse Broken

Description	An I/O fuse error was detected.
Cause	The I/O fuse has blown.
Remedy	Replace the fuse. The total external output is a maximum of 3 A. Check if the load has exceeded the specification value. Also, check that no short-circuit has occurred in the external I/O wiring.
Remarks	

8-274 Enable SW error

Description	An error occurred due to the enable switch.
Cause	① The two contact states of the teach pendant enable switch do not match. ② The power was turned on while grasping the enable switch. ③ The two states of both the safety input contact and the safety input contacts 1 and 2 do not match.
Remedy	① Turn the power off and then on again. If the error still appears, there may be a problem in the teach pendant switch or wiring. ② Release the enable switch, and turn the power on again. ③ Confirm the circuit through the safety input contacts 1 and 2. (EMS connector ENA*B~ENA*C)
Remarks	Contact CKD Customer Service.

8-275 EMG SW error

Description	An error has occurred in the emergency stop switch.
Cause	The two (2) circuits for the external emergency stop contact do not match.
Remedy	① There may be a problem in the emergency stop wiring or emergency stop switch. Therefore, refer to "8-014 Emergency Stop SW ON", and check that there are no problems with the emergency stop switch. ② When a mismatch condition of the switch is detected, an alarm is kept active. To clear the alarm, turn on the power supply again.
Remarks	

8-276 TP Disconnected SW error

Description	An error has detected in the teach pendant disconnect switch.
Cause	The teach pendant disconnect switch was pressed for more than 30 seconds.
Remedy	Connect or disconnect the teach pendant within 30 seconds when the teach pendant disconnect switch is pressed.
Remarks	

8-277 PLC STOP

Description	The internal PLC sequence remains stopped.
Cause	① The sequence was stopped by TCPRGOS. ② An alarm occurred in the PLC, and the sequence was stopped.
Remedy	① Run the sequence in TCPRGOS. ② Turn the power on again. It is normal for an error to occur when the sequence was intentionally stopped. Either turn on the power again, or send the start command from the PLC programmer to restart the sequence.
Remarks	

8-278 Ext 24 VDC Regulator error

Description	An error occurred in the external 24 V power supply.
Cause	The output of the I/O external power supply provided by the user has dropped.
Remedy	Check the user power supply output.
Remarks	

8-279 Ext Resistor Overheat

Description	The temperature of the regenerative resistor exceeds 130°C.
Cause	Turn off the power supply, and wait until the regenerative resistor cools down. The following are possible causes of overheating of the resistor. ① The robot is overloaded. ② An appropriate acceleration/deceleration is not set for the load. ③ The robot has collided with an object. ④ There is a problem in the robot drive system (motor, reduction gears, or other parts). ⑤ The servo power supply printed board may be faulty.
Remedy	Take corrective action by referring to "8-031 Resistor Overheat".
Remarks	For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-280 Safety SW relay ON

Description	"Safety relay for the safety switch" in the TS3SFB unit (option) was turned on.
Cause	The enable switch on the TP was not gripped or the external safety input contact is opened.
Remedy	Please grip the Enable switch of TP or close the external safety input contact , and then RESET the safety relay of the TS3FSB unit.
Remarks	When the problem is not cleared by the above-mentioned operations, a breakdown of TS3FSB unit or a defective connection is possible.

8-281 Emergency SW relay ON

Description	The safety relay for the emergency stop switch in the TS3SFB unit (option) was turned on.
Cause	The emergency stop push-button (TP, external) is pushed.
Remedy	Please release emergency stop switch (TP, external) ,and then RESET the safety relay of the TS3FSB unit.
Remarks	When the problem is not cleared by the above-mentioned operations, a breakdown of TS3FSB unit or a defective connection is possible.

8-282 MODE KEY Logic error

Description	The disagreement of the mastering mode (key switch) was detected.
Cause	It is defective of main control printed board.
Remedy	Please exchange main control printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see "Appendix 1. Controller Printed Board Names".

8-283 Illegal master mode key operation

Description	When the key switch is used to change the master mode, master mode mismatch occurred.
Cause	When the teach pendant displayed other than the top screen, the key switch was used to change the master mode.
Remedy	① Return the teach pendant to the top screen. ② Return the key switch to the original master mode prior to change.
Remarks	

8-352 Host Port Time Out

Description	Communication data could not be received even after the specified time.
Cause	① A communication cable problem has occurred. ② Communication was terminated without the watchdog released.
Remedy	① Check the communication cable, and turn off the power and then turn it back on. ② See the WD command in the Communication Manual.
Remarks	This alarm occurs if the communication data is not received the specified time after the WD command is issued. For details on the WD command, see the Communication Manual.

8-353 Fieldbus Parameter Error

Description	An error occurred in the Fieldbus parameter, and an emergency stop was applied.
Cause	The setting value of the Fieldbus parameter is invalid.
Remedy	Set the parameter again, and turn the power off and then on again.
Remarks	

8-354 Fieldbus Offline

Description	An error occurred in Fieldbus communication, and the Fieldbus is now offline.
Cause	The Fieldbus parameter (communication speed, node number) settings do not match those at the master side, and so an error occurred in Fieldbus communication, and the Fieldbus is now offline.
Remedy	Try to find the cause in the Fieldbus master equipment.
Remarks	

8-355 Fieldbus Board error

Description	The Fieldbus printed board type is incorrect.
Cause	① A Fieldbus printed board is not installed. ② The Fieldbus printed board type that was set in the parameters is different from the installed Fieldbus printed board type.
Remedy	① Install the Fieldbus printed board type that is set in the parameters. ② Check the parameter and Fieldbus printed board type, and change either the parameter or printed board.
Remarks	

8-361 IP0 status alarm
8-362 IP1 status alarm
8-363 IP2 status alarm
8-364 IP3 status alarm

Description	The Ethernet connection was disconnected during running of the program.
Cause	The Ethernet connection was disconnected.
Remedy	Check the connection status of the customer's devices. Check that no cables are damaged.
Remarks	The Ethernet parameter (ETHERNET. PAR) can be used to turn the generation of this alarm on and off and to set the level.

8-401 Axis1 Encoder abnormal
8-402 Axis2 Encoder abnormal
8-403 Axis3 Encoder abnormal
8-404 Axis4 Encoder abnormal
8-405 Axis5 Encoder abnormal
8-406 Axis6 Encoder abnormal
8-407 Axis7 Encoder abnormal
8-408 Axis8 Encoder abnormal

Description	An error was detected in the servo motor encoder (position detector). The detected errors are generally one of the four types below. ① Overspeed: Motor rotation has exceeded the specified value (maximum rotation speed of each axis). When the power was turned off (encoder is driven by battery), the encoder was rotated (the arms were moved by hand) at a speed exceeding the tracking speed of the internal circuit. (This error may occur together with "008-46* Axis* Motor speed over".) ② Communication error: An invalid value was found in the internal data of the encoder. Encoder communication was cut off. ③ Battery error: The battery voltage has dropped to a specified voltage or less. ④ Thermal error: The temperature inside the position detector has reached 90°C.
Cause	① Overspeed (1) This occurs when the battery cable is disconnected from the encoder due to cable replacement or other work. (2) This occurs when the robot is subjected to strong vibrations or it is moved quickly (approx. 6000 rpm or more) by hand while the power is off and the CN2 connector (motor power connector) is unconnected. ② Communication error (1) The encoder may be faulty. (2) The encoder communication cable may be damaged. (3) The connector for the encoder communication cable may have poor contact. (4) The servo printed board (KSL3000:X8YC) may be faulty. ③ Battery error The encoder internal voltage has dropped to 2.5 V or less when the power is off. ④ Thermal error This occurs when the encoder internal temperature reaches 90°C or higher. (This error is cleared when the internal temperature drops to 75°C or less.)

Remedy	① Overspeed Perform the recovery work by following the recovery procedure in the Appendix "Recovery Procedure for Origin Position Data" in the Maintenance Manual. ② Communication error (1) Replace the encoder of the relevant axis together with the motor. (2) Replace the encoder communication cable. (3) Check if there is poor contact in the encoder communication cable connector, if a wire is broken, or other problem. (4) Replace the servo printed board (KSL3000: X8YC). ③ Battery error Replace the encoder battery. For the battery replacement procedure, see "Replacing the Position Detector Battery" in the Maintenance Manual. If this does not fix the problem, check if any of the cables around the battery are broken. ④ Thermal error Stop the robot, and reduce the robot temperature.
Remarks	* If the problem occurs frequently and does not improve with these remedies, the servo printed board, corresponding axis motor, or surrounding encoder cables may be faulty. If "8-40* Axis* Encoder abnormal" has occurred, the errors "8-57* Axis* Encoder type error", "8-52* Axis* Servo Parameter", or "8-56* Axis* communication error" may have occurred, and so check for these errors. * Prevention of position detector errors. (For details, see "Notes During Transportation" in the Installation & Transport Manual.) • Do not move the arm suddenly when the robot power is off. • Replace the position detector battery regularly. (See "Replacing the Position Detector Battery" in the Maintenance Manual.) • If the robot power line is disconnected from the controller, attach the "short-circuit connector (option)" to the robot power line (CN2 connector of robot main body). • If the robot is suddenly moved or subjected to strong vibrations while the power is off and the short-circuit connector is unconnected, the encoder absolute coordinate counter can no longer perform tracking, and "Position detection error" or other errors can occur, and the origin position data can be lost.

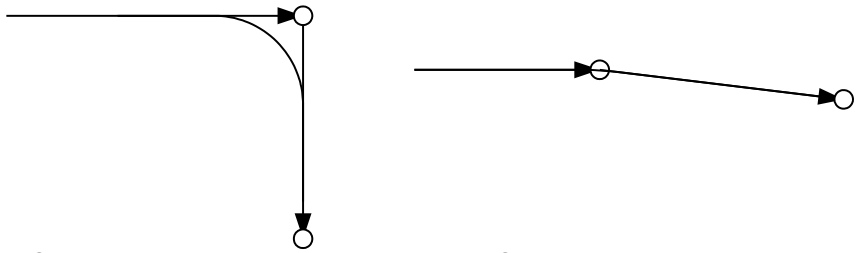
8-421 Axis1 Position error
8-422 Axis2 Position error
8-423 Axis3 Position error
8-424 Axis4 Position error
8-425 Axis5 Position error
8-426 Axis6 Position error
8-427 Axis7 Position error
8-428 Axis8 Position error

Description	The difference between the actual position and command position for the motor of each axis exceeds the specified value.
Cause	① The robot cannot move due to an external cause such as interference (collision). ② The reduction motor or ball screw spline of the corresponding axis may be faulty. (For Axis1, 2, and 4, the respective reduction gear is faulty. For Axis3, the ball screw spline is bent.) ③ The torque value that was set by the TORQUE function is too small. ④ The motor/servo printed board of the corresponding axis is faulty.
Remedy	① Remove the cause of the interference or other external cause. ② Set to servo pulley mode, and move the corresponding axis by hand. If there is any catching or movement that is not smooth, either the reduction gear is damaged, or the ball screw spline is bent. Replace the part of the corresponding location. ③ Set the TORQUE value again to a value that enables full movement by the robot. ④ Replace the corresponding motor and servo printed board. * To determine if the motor is faulty, measure the resistance between phases of the motor line. Normally, the resistances between R-S, S-T, and T-R are all the same. If any of the resistances is different, the motor may be faulty.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service.

8-451 Axis1 Motor Locked
8-452 Axis2 Motor Locked
8-453 Axis3 Motor Locked
8-454 Axis4 Motor Locked
8-455 Axis5 Motor Locked
8-456 Axis6 Motor Locked
8-457 Axis7 Motor Locked
8-458 Axis8 Motor Locked

Description	The motor does not rotate even when the maximum torque is output. This alarm does not occur if the torque is limited by the TORQUE command.
Cause	① The robot cannot move due to an external cause such as interference (collision). ② If this error occurs together with "Amplifier error", either the motor line has a short-circuit or broken wire, or the servo printed board (KSL3000: X8YC) or motor of the corresponding axis may be faulty. ③ The reduction motor or ball screw spline of the corresponding axis may be faulty.
Remedy	① Review the program, check if there is possibility of interference, and remove any external cause of interference. ② Check if there is any looseness in the motor line connector, or if the cable is damaged. If there is nothing wrong with the motor line, replace the motor or servo printed board. * To determine if the motor is faulty, measure the resistance between phases of the motor line. Normally, the resistances between R-S, S-T, and T-R are all the same. If any of the resistances is different, the motor may be faulty. ③ Set to servo pulley mode, and move the corresponding axis by hand. If there is any catching or movement that is not smooth, either the reduction gear is damaged, or the ball screw spline is bent. Replace the corresponding part.
Remarks	If the error still occurs even after performing the above remedies, the printed board may need to be replaced, and so please contact CKD Customer Service.

8-461 Axis1 Motor Speed Over
8-462 Axis2 Motor Speed Over
8-463 Axis3 Motor Speed Over
8-464 Axis4 Motor Speed Over
8-465 Axis5 Motor Speed Over
8-466 Axis6 Motor Speed Over
8-467 Axis7 Motor Speed Over
8-468 Axis8 Motor Speed Over

Description	Motor rotation exceeds the specified speed (maximum rotation speed of each axis).
Cause	① When the program operation command makes a PASS connection, the speed is superimposed in the same vector direction.  Operation command in different direction　　Operation command in same or similar direction ② There is an error in the TORQUE command specifying method. ③ An error may occur when turning on the power if the robot is subjected to strong vibrations or it is moved quickly (approx. 6000 rpm or more) by hand while the power is off and the CN2 connector (motor line connector) is unconnected. (In this case, the "8-40* Axis* Encoder abnormal" error also occurs.) ④ The position detector (encoder) may be faulty. (In this case, the "8-40* Axis* Encoder abnormal" error also occurs.) ⑤ This can occur due to hand interference or mechanical causes such as drive system problems.
Remedy	① Correct the program so that the PASS rate is reduced. ② Correct the program by referring to "Command Descriptions 'TORQUE'" in the Robot Language Manual. ③ Perform the recovery work by following the recovery procedure in the Appendix "Recovery Procedure for Origin Position Data" in the Maintenance Manual. ④ Refer to "8-40* Axis* Encoder abnormal". ⑤ Remove any mechanical causes of the error.
Remarks	

8-481 Axis1 Servo Amp error
8-482 Axis2 Servo Amp error
8-483 Axis3 Servo Amp error
8-484 Axis4 Servo Amp error
8-485 Axis5 Servo Amp error
8-486 Axis6 Servo Amp error
8-487 Axis7 Servo Amp error
8-488 Axis8 Servo Amp error

Description	An error was detected by the motor drive transistor on Axis* servo module (KSL3000: X8YS). Overcurrent: The power line of the corresponding axis motor may have short-circuited. Overheat: The temperature of the transistor on the servo printed board has reached 110°C or higher. Supply voltage drop: The supply voltage to the transistor on the servo printed board is 12 V or less (normal voltage: 15 V).
Cause	① The appropriate acceleration/deceleration is not set for the load. (The load is too large for the robot.) → Overheat ② The motor line for the corresponding axis has a short-circuit. → Overcurrent ③ The motor for the corresponding axis is faulty. ④ The servo printed board for the corresponding axis is faulty.
Remedy	① Turn off the power, and let the motor drive transistor cool down. Then, review the program, and adjust to an appropriate acceleration/deceleration either by using the ACCEL, DECEL, and other acceleration/deceleration setting commands or by using the PAYLOAD command. ② Find the poor contact or broken wire location by referring to "System Connections" in the Installation & Transport Manual. If there is a broken wire, replace the cable for the relevant location. ③ To determine if the motor is faulty, measure the resistance between phases of the motor line. Normally, the resistances between R-S, S-T, and T-R are all the same. If any of the resistances is different, the motor may be faulty. Replace the motor. ④ Replace the servo module of the corresponding axis.
Remarks	* If the problem occurs frequently and does not improve with these remedies, the servo printed board or corresponding axis motor may be faulty, or the surrounding motor lines may have a broken wire. The printed boards may need to be replaced, and so contact CKD Customer Service.

8-491 Axis1 Electric Thermal
8-492 Axis2 Electric Thermal
8-493 Axis3 Electric Thermal
8-494 Axis4 Electric Thermal
8-495 Axis5 Electric Thermal
8-496 Axis6 Electric Thermal
8-497 Axis7 Electric Thermal
8-498 Axis8 Electric Thermal

Description	If the load on the corresponding axis motor is large, and a current exceeding the motor rating flows continuously, an alarm occurs to protect the motor. (The alarm is monitored by the software.)
Cause	① The robot cannot move due to an external cause such as interference (collision). ② The reduction motor or ball screw spline of the corresponding axis may be faulty. (For Axes1, 2, and 4, the respective reduction gear is faulty. For Axes3, the ball screw spline is bent.) ③ The corresponding axis motor may be faulty. ④ The servo printed board (KSL3000: X8YC) may be faulty. ⑤ The servo module (KSL3000: X8YS) may be faulty.
Remedy	① Remove the cause of the interference or other external cause. ② Set to servo pulley mode, and move the corresponding axis by hand. If there is any catching or movement that is not smooth, either the reduction gear is damaged, or the ball screw spline is bent. Replace the part of the corresponding location. ③ Replace the motor and servo printed board of the corresponding axis. * To determine if the motor is faulty, measure the resistance between phases of the motor line. Normally, the resistances between R-S, S-T, and T-R are all the same. If any of the resistances is different, the motor may be faulty.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service.

8-511 Axis1 Current Feedback
8-512 Axis2 Current Feedback
8-513 Axis3 Current Feedback
8-514 Axis4 Current Feedback
8-515 Axis5 Current Feedback
8-516 Axis6 Current Feedback
8-517 Axis7 Current Feedback
8-518 Axis8 Current Feedback

Description	The current feedback value just before the servo was turned on is abnormal.
Cause	The servo printed board (KSL3000: X8YC) may be faulty. The servo module (KSL3000: X8YS) may be faulty.
Remedy	Replace the servo printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service.

8-521 Axis1 Servo Parameter
8-522 Axis2 Servo Parameter
8-523 Axis3 Servo Parameter
8-524 Axis4 Servo Parameter
8-525 Axis5 Servo Parameter
8-526 Axis6 Servo Parameter
8-527 Axis7 Servo Parameter
8-528 Axis8 Servo Parameter

Description	An execution parameter calculation error was detected in Axis*.
Cause	① The encoder cannot be recognized, and so the servo execution parameter could not be calculated. ② A value outside the setting range was set for the servo parameter.
Remedy	① If this error occurs together with "8-40* Axis* Encoder abnormal" or "8-57* Axis* Encoder type error", refer to 8-40* and 8-57*, and clear the encoder-related alarm. ② Contact CKD Customer Service.
Remarks	When "8-52* Axis* Encoder Type error" occurs, the execution parameter could not be calculated due to the encoder type. Therefore, this error also occurs at the same time.

8-531 Axis1 Over current
8-532 Axis2 Over current
8-533 Axis3 Over current
8-534 Axis4 Over current
8-535 Axis5 Over current
8-536 Axis6 Over current
8-537 Axis7 Over current
8-538 Axis8 Over current

Description	Overcurrent was detected in the *-th axis servo amplifier. (It was detected by the software that current greater than the detection value set in the parameter flowed.)
Cause	① Appropriate acceleration/deceleration is not set for the load. (The load on the robot is too high.) ② The motor line of the corresponding axis has a short circuit. → <Overcurrent> ③ The motor of the corresponding axis is faulty. ④ The servo printed board of the corresponding axis is faulty.
Remedy	① Review the program, and adjust to appropriate acceleration/deceleration either by using the ACCEL, DECEL, and other acceleration/deceleration setting commands or by using the PAYLOAD command. ② Find the poor contact or short circuit location, referring to "System Connections" in the Installation & Transport Manual. If there is a broken wire, replace the cable for the relevant location. ③ To determine if the motor is faulty, measure the resistance between phases of the motor line. Normally, the resistances between R-S, S-T, and T-R are all the same. If any of the resistances is different, the motor may be faulty. Replace the motor. ④ Replace the servo motor amplifier of the corresponding axis.
Remarks	* If the problem occurs frequently and does not improve with these remedies, the servo printed board or corresponding axis motor may be faulty, or the surrounding motor lines may have a short circuit. The printed boards may need to be replaced, and so contact CKD Customer Service.

8-541 Axis1 Amp rotary switch error
8-542 Axis2 Amp rotary switch error
8-543 Axis3 Amp rotary switch error
8-544 Axis4 Amp rotary switch error
8-545 Axis5 Amp rotary switch error
8-546 Axis6 Amp rotary switch error
8-547 Axis7 Amp rotary switch error
8-548 Axis8 Amp rotary switch error

Description	Specified axis. The amplifier module switch setting is invalid.
Cause	① The amplifier module set to a specified axis is not installed. ② More than one amplifier module is set to a specified axis.
Remedy	① Check if the amplifier set to the specified axis is in the controller. If the amplifier module of the specified axis is in the controller, the amplifier may be faulty, and so replace it. ② Check the rotary switch of the amplifier again, and correct the setting of the rotary switch.
Remarks	

8-561 Axis1 communication error
8-562 Axis2 communication error
8-563 Axis3 communication error
8-564 Axis4 communication error
8-565 Axis5 communication error
8-566 Axis6 communication error
8-567 Axis7 communication error
8-568 Axis8 communication error

Description	An encoder broken wire error was detected in Axis*.
Cause	① The encoder line has a broken wire. ② The encoder may be faulty. ③ The servo printed board (KSL3000: X8YC) may be faulty.
Remedy	① Replace the encoder line. ② Replace the encoder (motor). ③ Replace the servo printed board.
Remarks	The printed board and encoder may need to be replaced, and so contact CKD Customer Service. When this alarm occurs, "8-40* Axis* Encoder abnormal" also occurs.

8-571 Axis1 Encoder type error
8-572 Axis2 Encoder type error
8-573 Axis3 Encoder type error
8-574 Axis4 Encoder type error
8-575 Axis5 Encoder type error
8-576 Axis6 Encoder type error
8-577 Axis7 Encoder type error
8-578 Axis8 Encoder type error

Description	Encoder communication was cut off at Axis*, and the format cannot be obtained.
Cause	① The encoder line has a broken wire. ② The encoder may be faulty. ③ The servo printed board (KSL3000: X8YC) may be faulty.
Remedy	① Replace the encoder line. ② Replace the servo printed board. ③ Replace the encoder.
Remarks	The printed board and encoder may need to be replaced, and so contact CKD Customer Service. When this alarm occurs, "8-52* Axis* Servo Parameter" and "8-40* Axis* Encoder abnormal" also occur.

8-581 Axis1 Enc over speed
8-582 Axis2 Enc over speed
8-583 Axis3 Enc over speed
8-584 Axis4 Enc over speed
8-585 Axis5 Enc over speed
8-586 Axis6 Enc over speed
8-587 Axis7 Enc over speed
8-588 Axis8 Enc over speed

Description	The motor rotation exceeded the specified value (encoder detection limit).
Cause	① The motor rotations exceeded the specified value (encoder detection limit). ② When the encoder is driven by the battery, the encoder was rotated at higher than the internal circuit tracking speed. (The arm was moved a significant amount by hand while the controller power was OFF.) ③ If this occurs together with 8-61* Axis* Enc battery empty, it is likely that a counter jump occurred due to the low encoder battery voltage. ④ The encoder has failed.
Remedy	① If this occurs together with 8-46* Axis* Motor speed over, it is likely that the motor rotation actually exceeded the specified value due to interference with the workpiece or other causes. After turning the power off and on, check that the origin position is correct. ② The encoder detection limit is low when the power is turned off. Be careful that the arm is not moved a significant amount by hand when the power is OFF. After turning the power off and on, check that the origin position is correct. ③ Replace the encoder battery. After turning the power off and on, check that the origin position is correct. ④ Replace the motor.
Remarks	The encoder reset operation must be performed to clear the alarm. The origin may be misaligned, and so contact CKD Customer Service.

8-591 Axis1 Enc single count err
8-592 Axis2 Enc single count err
8-593 Axis3 Enc single count err
8-594 Axis4 Enc single count err
8-595 Axis5 Enc single count err
8-596 Axis6 Enc single count err
8-597 Axis7 Enc single count err
8-598 Axis8 Enc single count err

Description	A single turn count error occurred in axis *.
Cause	The encoder has failed.
Remedy	Replace the motor.
Remarks	The motor must be replaced. Contact CKD Customer Service. The single counter is a counter that shows the encoder angle.

8-601 Axis1 Enc multi count err
8-602 Axis2 Enc multi count err
8-603 Axis3 Enc multi count err
8-604 Axis4 Enc multi count err
8-605 Axis5 Enc multi count err
8-606 Axis6 Enc multi count err
8-607 Axis7 Enc multi count err
8-608 Axis8 Enc multi count err

Description	An encoder multi-turn counter error occurred in axis*.
Cause	① If this occurs together with 8-61* Axis* Enc battery empty, it is likely that a counter jump occurred due to the low encoder battery voltage. ② The encoder rotated at 6000 rpm or more because external force was applied to the arm when the power was off. ③ The encoder rotated at acceleration of 4000 rad/s^2 or more because external force was applied to the arm when the power was off. ④ The encoder may have failed.
Remedy	① Replace the encoder battery. After turning the power off and on, check that the origin position is correct. ② Replace the motor.
Remarks	The encoder reset operation must be performed to clear the alarm. The origin may be misaligned, and so contact CKD Customer Service.

8-611 Axis1 Enc battery empty
8-612 Axis2 Enc battery empty
8-613 Axis3 Enc battery empty
8-614 Axis4 Enc battery empty
8-615 Axis5 Enc battery empty
8-616 Axis6 Enc battery empty
8-617 Axis7 Enc battery empty
8-618 Axis8 Enc battery empty

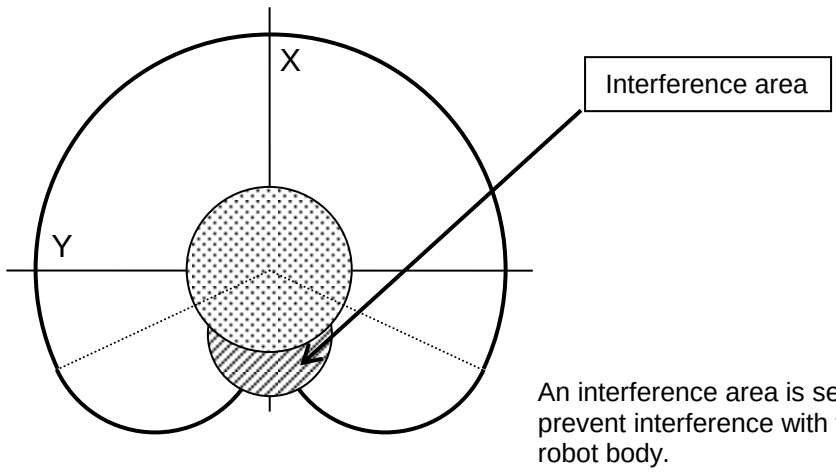
Description	The battery voltage in axis* is less than the specified value.
Cause	The encoder battery level is low.
Remedy	Replace the encoder battery. After turning the power off and on, check that the origin position is correct.
Remarks	The encoder reset operation must be performed to clear the alarm. The origin may be misaligned, and so contact CKD Customer Service.

Level 4 Alarms

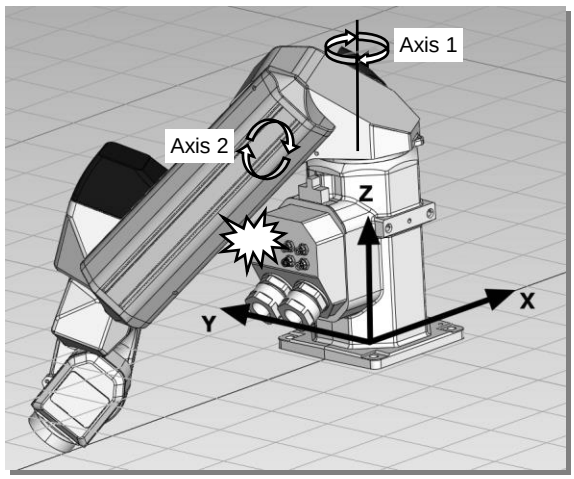
These are alarms where the alarm numbers start with 4.

When this alarm is detected, the robot stops at that position.

4-033 Interfere Error

Description	The robot position entered an interference area.
Cause	① The robot was guided by hand into the interference area. ② In automatic operation, the linear interpolation or circular interpolation paths pass through the interference area.
Remedy	① Select the joint coordinates for manual guidance, and if the relevant axis is at the positive movement limit, guide it in the negative direction. Conversely, if the axis is at the negative movement limit, guide it in the positive direction. ② Correct the program (teach points).
Remarks	The error is automatically reset when the robot enters the operation area. An example of the interference area of a SCARA robot is shown in the figure below.  An interference area is set to prevent interference with the robot body.

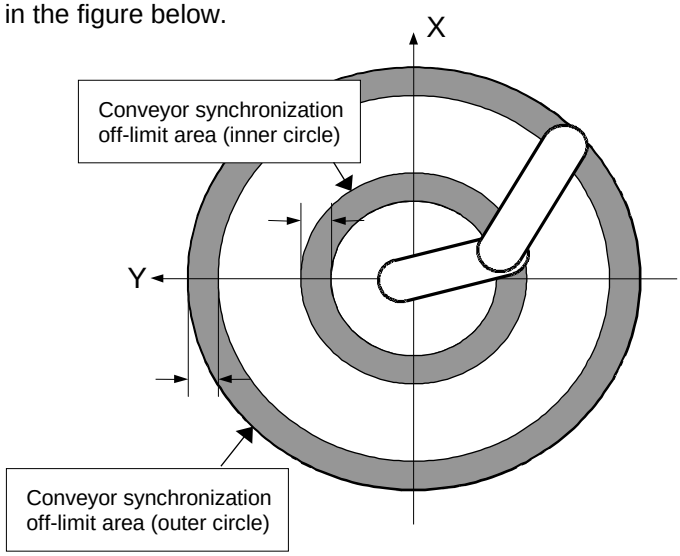
4-034 Movement Limitation Area

Description	The robot went into the area where joint movement is limited.
Cause	The "movement limitation area monitoring function" is provided to prevent interference with the robot (the base, arm, cable, etc.) which may occur, depending on the movement of different joints in combination. More than one movement limitation area is preset for each robot, with respect to the locations where interference may occur depending on the combined movement.  View of arm-body interference caused by the combined movement of the axes 1 and 2 If both axes have their joint positions in the movement limitation area, this error occurs and the robot decelerates to stop.
Remedy	The robot can be moved out of the movement limitation area by operating the manual guide button. In order to reset the error, either move the robot in the direction opposite to the direction in which it was moving immediately before the error occurred, or manually guide the robot in a direction to move out of the movement limitation area. The error is automatically reset when the robot moves out of the area. (It cannot be moved out of the area by simply executing Error Reset.)
Remarks	This error is specific to vertically articulated robots.

4-049 Interpolation limit area

Description	Interference occurred on the interpolation operation path in the interpolation operation off-limit area.
Cause	① The robot was guided manually into the interpolation operation off-limit area. ② In automatic operation, the linear interpolation and circular interpolation paths pass through the interpolation operation off-limit area.
Remedy	Correct the robot program (teach points).
Remarks	

4-051 Conveyor sync limit area

Description	The robot entered the conveyor synchronization off-limit area during conveyor synchronization.
Cause	The robot entered the conveyor synchronization off-limit area during tracking of the workpiece on the conveyor.
Remedy	Remove the robot from the off-limit area. Reset the operation program and error message. If this error occurs again, review the program and conveyor settings.
Remarks	An example of the conveyor synchronization off-limit area error of a SCARA robot is shown in the figure below. 

4-052 VCV Comm port closed

Description	In the vision + conveyor synchronization function, the controller closed the Ethernet port that was being used during receiving of data from the vision sensor.
Cause	① The Ethernet cable has a broken wire. ② The vision sensor may be faulty.
Remedy	① Check the communication status of the external equipment. From Utility → F1:ETHER, go to page 4, and check that the "Status" of the port being used (IP3 or IP2) is "Established". ② Replace the vision sensor.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service.

4-053 VSCALBIN parameter error

Description	An argument setting in the VSCALBIN command (vision sensor coordinate system → world coordinate system conversion command) is wrong.
Cause	① The set value is outside the reference value range (1-20) for the vision calibration table. ② The setting of the mode variable is wrong.
Remedy	① The vision calibration table numbers are 1 to 20. Set the vision calibration table number (1-20) you want to select in VISION.PAR [V00] Coordinate transformation parameter for 2D vision calibration. ② Set the mode variable correctly for the world coordinate position data to be output to VSCALBOUT. [With SCARA robot] Set any of 0 to 2. 0: FREE 1: LEFTY 2: RIGHTY
Remarks	

4-065 IPO status alarm
4-066 IPO status alarm
4-067 IPO status alarm
4-068 IPO status alarm

Description	The Ethernet connection was disconnected during running of the program.
Cause	The Ethernet connection was disconnected.
Remedy	Check the connection status of the customer's devices. Check that no cables are damaged.
Remarks	The Ethernet parameter (ETHERNET. PAR) can be used to turn the generation of this alarm on and off and to set the level.

4-073 Host Port Time Out

Description	Communication data could not be received even after the specified time.
Cause	① A communication cable problem has occurred. ② Communication was terminated without the watchdog released.
Remedy	① Check the communication cable, and turn off the power and then turn it back on. ② See the WD command in the Communication Manual.
Remarks	This alarm occurs if the communication data is not received the specified time after the WD command is issued. For details on the WD command, see the Communication Manual.

4-077 PLC user alarm
4-078 PLC user alarm
4-079 PLC user alarm
4-080 PLC user alarm

Description	A level 4 user alarm has occurred in the internal PLC.
Cause	A level 4 user alarm has occurred in the internal PLC. The message can be defined by the user parameters.
Remedy	The user must remove the alarm conditions that were set in the internal PLC.
Remarks	A level 4 user alarm has occurred in the internal PLC.

4-081 Fieldbus Parameter Error

Description	A fieldbus parameter error occurred, and an emergency stop occurred.
Cause	The fieldbus parameter setting value is incorrect.
Remedy	Set the parameters again, and turn the power off and then on again.
Remarks	

4-082 Fieldbus Offline

Description	An error occurred in fieldbus communication, causing it to become offline.
Cause	Because the fieldbus parameter (communication speed, node number) settings do not match the master side, an error occurred in fieldbus communication, causing it to become offline.
Remedy	Search for the cause in the fieldbus master device.
Remarks	

4-083 Fieldbus Board error

Description	The type of fieldbus printed board is incorrect.
Cause	① The fieldbus printed board is not installed. ② The type of fieldbus that is set in the parameters and the type of fieldbus printed board are different.
Remedy	① Install the fieldbus printed board that is set in the parameters. ② Check the parameters and type of fieldbus printed board, and change the parameters or the printed board.
Remarks	

4-421 Axis1 + Soft Limit
4-422 Axis2 + Soft Limit
4-423 Axis3 + Soft Limit
4-424 Axis4 + Soft Limit
4-425 Axis5 + Soft Limit
4-426 Axis6 + Soft Limit
4-427 Axis7 + Soft Limit
4-428 Axis8 + Soft Limit

4-431 Axis1 - Soft Limit
4-432 Axis2 - Soft Limit
4-433 Axis3 - Soft Limit
4-434 Axis4 - Soft Limit
4-435 Axis5 - Soft Limit
4-436 Axis6 - Soft Limit
4-437 Axis7 - Soft Limit
4-438 Axis8 - Soft Limit

Description	The soft stroke limit was exceeded.
Cause	The soft stroke limit that was set for the joint limit was exceeded.
Remedy	Select the joint coordinates for manual guidance, and if the relevant axis is at the positive movement limit, guide it in the negative direction. Conversely, if the axis is at the negative movement limit, guide it in the positive direction. The error is automatically reset when the robot enters the operation range. If this error occurs during automatic operation, the robot movement path is passing outside the soft limit. Correct the program.
Remarks	For details on the joint limit settings (JLIMIT), see the Operator's Manual.

Level 2 Alarms

These are alarms where the alarm numbers start with 2.

When a level 2 alarm occurs, the robot stops just before the problem location in the SCOL program.

2-018 SVM Error

Description	An invalid process occurred in the internal program during program execution.
Cause	① A latch function command was executed in a system that does not have the latch function option. ② An invalid process occurred in the internal calculation during execution of the SCOL program (ON-DO command).
Remedy	① Check if the latch function option is included in the specifications. ② Contact CKD Customer Service.
Remarks	

2-019 Direct program error

Description	The direct program (program execution by DO****, manual guidance operation) cannot be executed.
Cause	An invalid process occurred in the internal calculation during direct execution or manual guidance execution. Check that there are no errors in operation procedure. (Refer to "Direct Execution" in the Operator's Manual. If there is nothing wrong with the operation procedure, there may be fault in the system.
Remedy	Contact CKD Customer Service, and provide details about the system software version and conditions under which the error occurred.
Remarks	

2-020 Unable to Start

Description	The selected program cannot be executed.
Cause	There may be a fault in the system.
Remedy	Contact CKD Customer Service, and provide details about the system software version and program.
Remarks	

2-021 Unable to Continue

Description	Unable to stop and restart.
Cause	An invalid process occurred in the internal calculation during the stop or restart operations. There may be a fault in the system.
Remedy	Contact CKD Customer Service, and provide details about the system software version, conditions when the error occurred including the line number, program where the error occurred, and all files in the controller.
Remarks	

2-022 Program Counter error

Description	Program execution cannot be continued because an invalid value occurred in the program counter (line number) of the program being executed.
Cause	There may be a fault in the system.
Remedy	Contact CKD Customer Service, and provide details about the system software version, conditions when the error occurred including the line number, program where the error occurred, and all files in the controller.
Remarks	

2-023 Operate Code error

Description	An ON command was issued in the subtask.
Cause	An ON condition command cannot be executed in the subtask.
Remedy	Remove the ON condition command from the subtask program of the SCOL program.
Remarks	

2-024 Operand error

Description	An invalid process occurred in the internal calculation of the program for system variable operation.
Cause	There may be a fault in the system.
Remedy	Contact CKD Customer Service, and provide details about the system software version, conditions when the error occurred including the line number, program where the error occurred, and all files in the controller.
Remarks	

2-025 Invalid command

Description	A currently-invalid command was executed.
Cause	① A conveyor command was executed in a system without a conveyor synchronization option. ② An operation command was executed in a subtask. ③ A task command was executed in the ON-DO statement. ④ If an auto variable is used in the ON-DO statement, this error can occur depending on when the ON condition is met. Example PROGRAM MAIN ~ ON DIN(1) DO LOCAL=1 SUB ~ END PROGRAM SUB ~ When the ON condition is met during subprogram execution, ~ LOCAL is a valid variable only in the MAIN program, ~ and so substitution cannot be performed, and an error occurs. END
Remedy	① Check the robot system specifications to see if it includes the conveyor synchronization option. In systems that do not include the conveyor synchronization option, remove the conveyor commands from the robot program. ② Remove the operation commands in the subtask process of the robot program. ③ Remove the task commands in the ON-DO statement. ④ Change the auto variable in the ON-DO statement command to a global variable.
Remarks	

2-029 Invalid Motion command

Description	The BREAK operation or RESUME command could not be executed.
Cause	An invalid process occurred in the internal calculation during execution of a BREAK operation or RESUME command.
Remedy	There may be a fault in the system. Contact CKD Customer Service, and provide details about the system software version, conditions when the error occurred including the line number, program where the error occurred, and all files in the controller.
Remarks	

2-031 Unable to RESUME

Description	The RESUME command could not be executed.
Cause	An unexpected error occurred during execution of the RESUME command. There may be a fault in the system.
Remedy	Contact CKD Customer Service, and provide details about the system software version, conditions when the error occurred including the line number, program where the error occurred, and all files in the controller.
Remarks	

2-033 Conveyor Parameter Error

Description	An error was found in the argument of the CONV command.
Cause	CONV command In CONV (<number>, <position 1>, <position 2>, <relative 1>, <relative 2>, <pulse>), ① The same point was specified for <position 1> and <position 2>. ② Negative values were specified for <relative 1> and <relative 2>. ③ The distance between <position 1> and <position 2> specifies a point that is smaller than twice the value of <relative 2>.
Remedy	Correct the arguments of the CONV command in the program.
Remarks	

2-034 Ethernet connection error

Description	A PRINT/INPUT command was executed before establishing an Ethernet connection.
Cause	① The Ethernet cable is not connected. ② The parameter settings are incorrect.
Remedy	① Check the Ethernet cable connection, and turn the power off and then on again. ② Check the parameter settings.
Remarks	For details about the Ethernet connection, see the connection for "Ethernet Cable" in the Ethernet Manual.

2-039 PASS command error

Description	An error occurred in the argument of the CONV command.
Cause	CONV command In CONV (<Number>, <Position 1>, <Position 2>, <Relative 1>, <Relative 2>, <Pulse>), ① The same point was specified for <Position 1> and <Position 2>. ② A negative value was specified for <Relative 1> or <Relative 2>. ③ The distance between <Position 1> and <Position 2> specifies a point that is smaller than twice <Relative 2>.
Remedy	Correct the argument of the CONV command in the program.
Remarks	

2-040 SMOOTH command error

Description	An error occurred in the argument of the CONV command.
Cause	CONV command In CONV (<Number>, <Position 1>, <Position 2>, <Relative 1>, <Relative 2>, <Pulse>), ① The same point was specified for <Position 1> and <Position 2>. ② A negative value was specified for <Relative 1> or <Relative 2>. ③ The distance between <Position 1> and <Position 2> specifies a point that is smaller than twice <Relative 2>.
Remedy	Correct the argument of the CONV command in the program.
Remarks	

2-041 Invalid Variable

Description	This indicates that a value specified as an argument cannot be used.
Cause	① TAN: An integer multiple of 90° was set as the argument. ② ASIN, ACOS: A value smaller than -1 or larger than 1 was set as the argument. ③ LN, LOG10, SQRT: A value of less than 0 was set as the argument. ④ DIN, BCDIN, DOUT, BCDOUT, or PULOUT: A nonexistent line number was specified. ⑤ MOVEI or MOVEA: There are four control axes, but a fifth axis was specified. ⑥ DIM: An index exceeding the maximum value of the value defined by the array command was specified. ⑦ A value other than conveyor 1 and 2 was specified in the conveyor command.
Remedy	Change the arguments for the relevant items ① to ⑦.
Remarks	

2-042 Data Type error

Description	There is an error in the variable type.
Cause	① An undefined variable was used in the conditional IF statement. ② An undefined variable was used in the conditional statement in the WAIT command.
Remedy	①② Check if an undefined variable was used in a conditional statement. (IF A==1 THEN A value should be inserted for A here.)
Remarks	

2-043 Invalid ON command

Description	The specified ON condition command was canceled.
Cause	An invalid process occurred in the internal calculation of the ON condition command.
Remedy	Contact CKD Customer Service.
Remarks	

2-045 Write to Const

Description	A program that writes a value to a constant area was executed.
Cause	An attempt was made to change the value of a transferred constant in a subprogram where a constant is used in the argument (LEFTY, P1, 1, 100, etc.). (Example) PROGRAM MAIN → PROGRAM SUB2(X) …… SUB2(1) → X=X+1 X is the constant "1" …… END → END ……Therefore, it cannot be substituted.
Remedy	Correct the program.
Remarks	

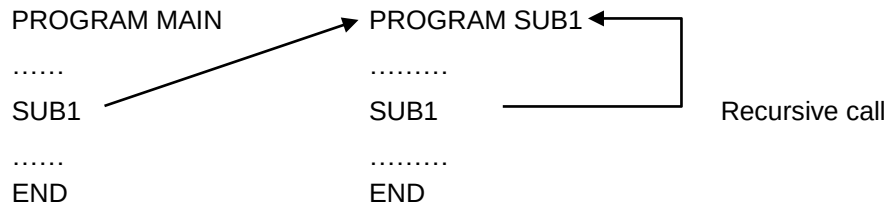
2-046 Invalid Channel

Description	The specified communication channel is not valid.
Cause	① The specified communication port is not available for use. ② There is an error in the communication parameter settings. ③ A buffer overflow occurred in communication. ④ An error occurred in communication due to a broken wire in a cable or poor contact by the connector. ⑤ The main control printed board may be faulty.
Remedy	① Check if the target port is specified by the CHANNEL command. ②③ Check the settings of the communication parameters (USER.PAR [U06] SERIAL PORT SETTING) and parameters of the other communication device. ④ Check if there are any broken wires in the cables. ⑤ Replace the controller.
Remarks	For details on the communication parameters, see the Communication Manual.

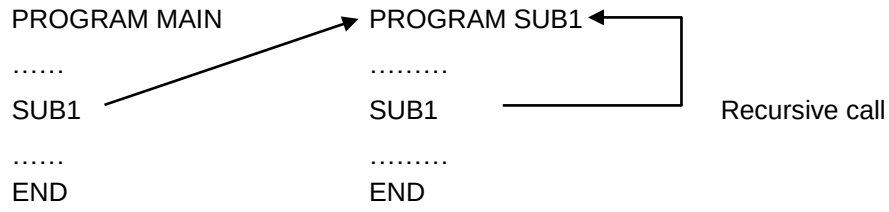
2-047 Task Limits Over

Description	The program tried to generate tasks that exceeded the maximum value that was set by the MAXTASK command.
Cause	① The value set by MAXTASK (number of tasks that can exist at the same time) is too small. ② Too many tasks were generated.
Remedy	① Increase the value for MAXTASK. ② Reduce the number of tasks.
Remarks	For multi-task processes, see the Robot Language Manual.

2-049 Symbol Overflow

Description	The required area for the internal calculation process during execution of the SCOL program was not enough.
Cause	① The area required for the symbol process used in the program was not enough. ② A recursive call is occurring in the SCOL program. (Example) 
Remedy	① Use subprograms to reduce the number of symbols in the program. Obtain area in the main program and subprogram. ② Correct the program that is issuing a recursive call.
Remarks	

2-050 Stack Overflow

Description	The required area for the internal calculation process during execution of the SCOL program was not enough.
Cause	① The stack area used for program execution is not enough. ② A recursive call is occurring in the SCOL program. (Example) 
Remedy	① Use subprograms to reduce the size of one program. ② Correct the program that is issuing a recursive call.
Remarks	

2-051 On-DO Overflow

Description	The maximum number of ON-DO commands (condition monitor commands) that can be registered (executed) has been exceeded.
Cause	A maximum of 10 ON condition commands can be executed simultaneously. An alarm occurs if more than 10 commands were executed.
Remedy	Reduce the number of ON-DO commands.
Remarks	

2-053 RESTORE error

Description	Execution of the RESTORE command failed.
Cause	The variable specified in the RESTORE command variable name is invalid.
Remedy	Check the argument (variable name) in the RESTORE command.
Remarks	

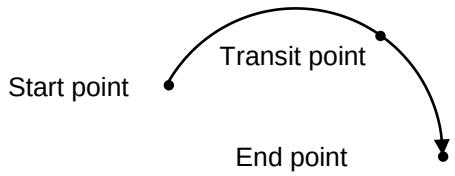
2-065 Motion command error

Description	A path operation could not be calculated in the path generation process.
Cause	There may be a fault in the system.
Remedy	Contact CKD Customer Service, and provide details about the system software version, conditions when the error occurred including the line number, program where the error occurred, and all files in the controller.
Remarks	

2-066 Trans code error

Description	A conflict was found in the coordinate conversion results, and the robot operation cannot be performed.
Cause	There may be a fault in the system.
Remedy	Contact CKD Customer Service, and provide details about the system software version, conditions when the error occurred including the line number, program where the error occurred, and all files in the controller.
Remarks	

2-067 MOVEC error

Description	A point where an arc cannot be generated was specified in the circle (MOVEC) command.
Cause	① Two of the same points were designated for the start point, transit point, or end point coordinates in the circle command. ② The start point, transit point, and end point coordinates in the circle command form a straight line.
Remedy	Designate unique points that do not form a straight line for the start point, transit point, and end point of the circle command. 
Remarks	

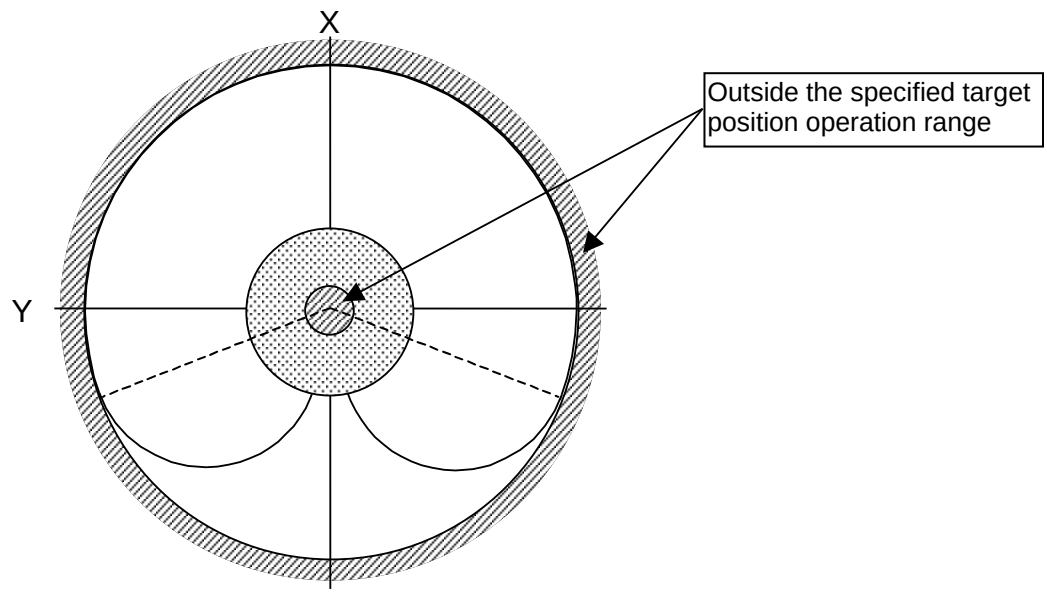
2-068 PAYLOAD error

Description	Execution of the PAYLOAD command failed.
Cause	The argument in the PAYLOAD command is invalid.
Remedy	Check the argument in the PAYLOAD command of the SCOL program.
Remarks	PAYLOAD command format PAYLOAD = {<Weight>, <Offset of center of gravity>}

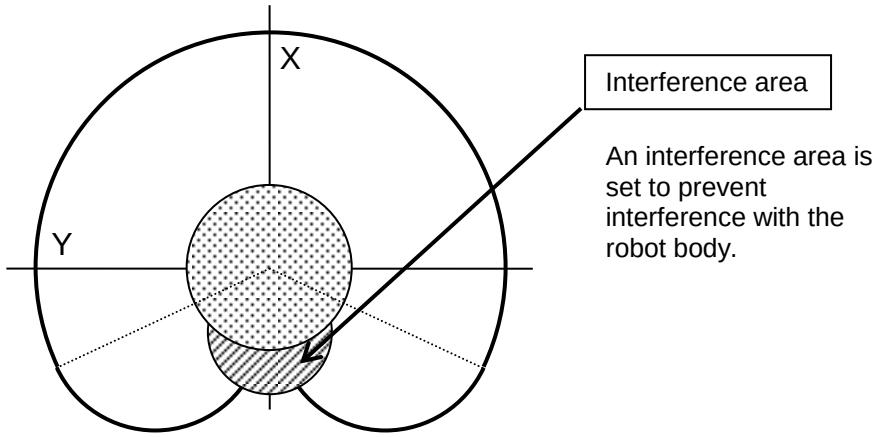
2-069 CONFIG error

Description	An error occurred in the configuration specified in the circular (MOVEC) or linear (MOVES) interpolation commands.
Cause	① The start point and end point in the linear interpolation command (MOVES) have different configurations. ② The start point, transit point, and end point of the circular interpolation command (MOVEC) have different configurations. ③ This error occurs if program execution is stopped during the interpolation operation, the robot configuration is changed by manual guidance or manual operation, and then the program is executed again.
Remedy	Check that the start point, transit point (circle), and end point of the interpolation operation have the same teach configuration (LEFTY, RIGHTY).
Remarks	

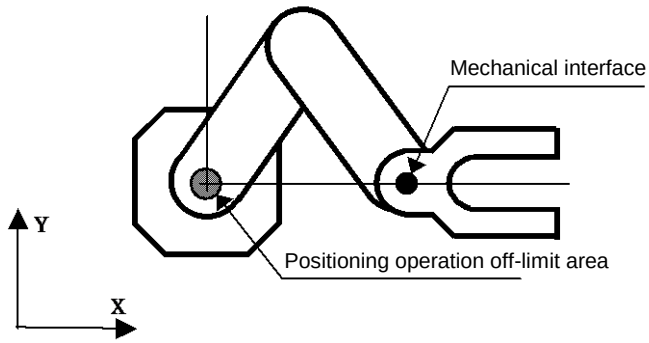
2-079 Point Out limit

Description	Operation cannot be performed because a position where movement is not possible was specified in the program operation command.
Cause	① A position outside the arm length was specified (point that cannot be reached even by extending the arm). ② A position inside the Axis 1 length – Axis 2 length was specified (point that cannot be reached even by folding over the arm).
Remedy	①② Correct the specified position (teach point data).
Remarks	The area outside the target position operation range of the SCARA robot is shown in the figure below. 

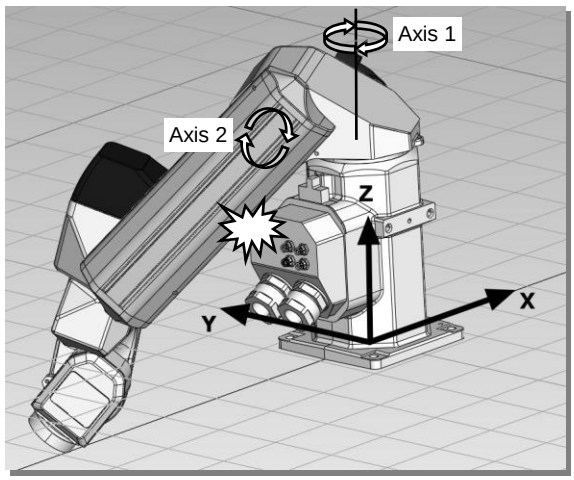
2-081 Dest Interfere

Description	Operation cannot be performed because a position within the interference area was specified in a program operation command.
Cause	A position within the interference area was specified in the program.
Remedy	Correct the specified position (teach point data).
Remarks	An example of the interference area of a SCARA robot is shown in the figure below. 

2-082 Positioning limit area

Description	An invalid position was specified as the target position.
Cause	An invalid position was specified as the target position.
Remedy	Position the robot program (teach points), and correct so that they are not within the off-limit area.
Remarks	

2-083 Movement Limitation Area

Description	A position in the movement limitation area was specified as the target operation position in the program operation command.
Cause	The "movement limitation area monitoring function" is provided to prevent interference with the robot (the base, arm, cable, etc.) which may occur, depending on the movement of different joints in combination. More than one movement limitation area is preset for each robot, with respect to the locations where interference may occur depending on the combined movement.  View of arm-body interference caused by the combined movement of the axes 1 and 2 If the target operation position is within the movement limitation area, the robot decelerates to stop before the operation command is executed.
Remedy	Review the target operation position, and correct it to a position where interference with the arm can be avoided. Using the JOG button, move the robot in the in the direction opposite to the direction in which it was moving immediately before the error occurred. (The error is automatically reset.)
Remarks	This error is specific to vertically articulated robots.

2-089 MOVEJ Parameter error

Description	The argument of MOVEJ in the robot program is invalid.
Cause	The argument of MOVEJ in the robot program is invalid.
Remedy	Correct the argument of the MOVEJ command in the program.
Remarks	MOVEJ format MOVEJ <position> {<retract operation travel distance>, <single-axis operation travel distance 1>, <single-axis operation travel distance 2>}

2-097 C Axis MOVE error

Description	A C-axis MOVE command specifying a large motion was executed during SMOOTH motion.
Cause	SMOOTH motion is impossible because there is a C-axis MOVE command specifying a large motion during SMOOTH motion (ENABLE SMOOTH).
Remedy	Check the target position (teach point) in SMOOTH motion, and correct the C-axis position.
Remarks	

2-098 T Axis Impossible

Description	A T-axis MOVE command was executed during SMOOTH motion.
Cause	The T-axis cannot be moved during SMOOTH motion (ENABLE SMOOTH).
Remedy	Check the target position (teach point) in SMOOTH motion, and correct the T-axis position.
Remarks	

2-129 IP0 status alarm
2-130 IP1 status alarm
2-131 IP2 status alarm
2-132 IP3 status alarm

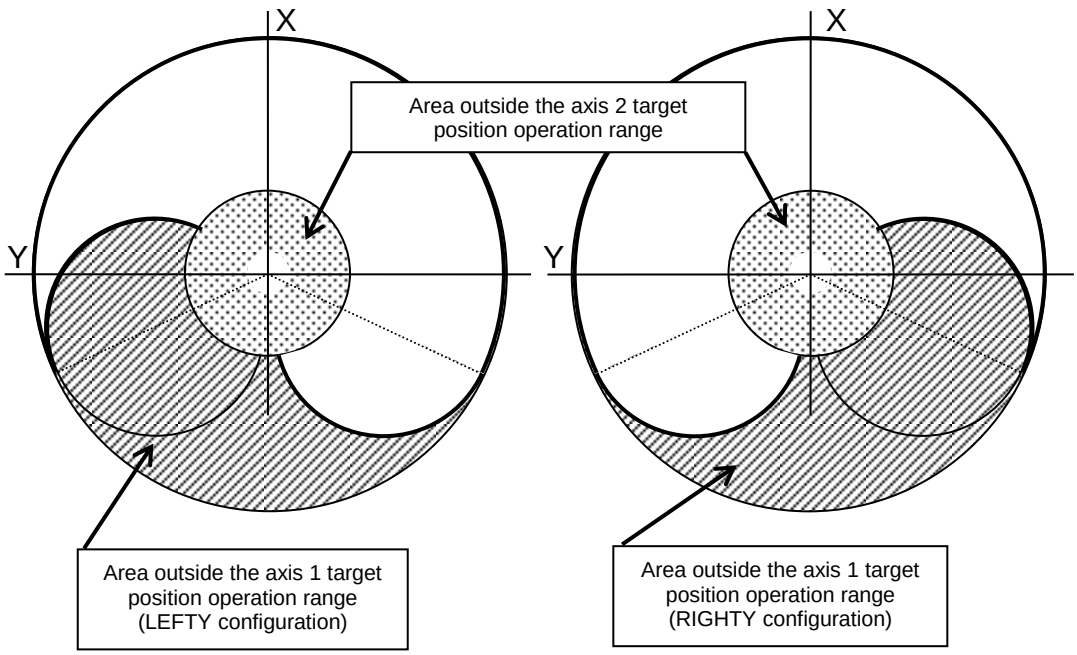
Description	The Ethernet connection was disconnected during running of the program.
Cause	The Ethernet connection was disconnected.
Remedy	Check the connection status of the customer's devices. Check that no cables are damaged.
Remarks	The Ethernet parameter (ETHERNET. PAR) can be used to turn the generation of this alarm on and off and to set the level.

2-137 Host Port Time Out

Description	Communication data could not be received even after the specified time.
Cause	① A communication cable problem has occurred. ② Communication was terminated without the watchdog released.
Remedy	① Check the communication cable, and turn off the power and then turn it back on. ② See the WD command in the Communication Manual.
Remarks	This alarm occurs if the communication data is not received the specified time after the WD command is issued. For details on the WD command, see the Communication Manual.

2-401 Axis1 Out of limit
2-402 Axis2 Out of limit
2-403 Axis3 Out of limit
2-404 Axis4 Out of limit
2-405 Axis5 Out of limit
2-406 Axis6 Out of limit
2-407 Axis7 Out of limit
2-408 Axis8 Out of limit

Description	Operation cannot be performed because a position was specified in the program operation command that exceeds the stroke limit.
Cause	① A position exceeding the stroke limit was specified. ② An invalid setting (JLIMT) was made for the stroke limit.
Remedy	① Correct the specified position (teach point data). ② Correct the setting (JLIMT) for the stroke.
Remarks	The areas outside the axis 1 and axis 2 target position operation range of the SCARA robot are shown in the figure below.



2-411 Axis1 Motor overload (15 m)
2-412 Axis2 Motor overload (15 m)
2-413 Axis3 Motor overload (15 m)
2-414 Axis4 Motor overload (15 m)
2-415 Axis5 Motor overload (15 m)
2-416 Axis6 Motor overload (15 m)
2-417 Axis7 Motor overload (15 m)
2-418 Axis8 Motor overload (15 m)

Description	The 15-minute running average of the motor load exceeded a predetermined value.
Cause	A load exceeding a specified value was applied to the motor.
Remedy	Reduce the load applied to the motor. • Use the PAYLOAD command to set an appropriate load value. • Check that the weight of the workpiece + hand does not exceed the value in the specifications.
Remarks	

2-421 Axis1 Motor overload (1 m)
2-422 Axis2 Motor overload (1 m)
2-423 Axis3 Motor overload (1 m)
2-424 Axis4 Motor overload (1 m)
2-425 Axis5 Motor overload (1 m)
2-426 Axis6 Motor overload (1 m)
2-427 Axis7 Motor overload (1 m)
2-428 Axis8 Motor overload (1 m)

Description	The 1-minute running average of the motor load exceeded a predetermined value.
Cause	A load exceeding a specified value was applied to the motor.
Remedy	Reduce the load applied to the motor. • Use the PAYLOAD command to set an appropriate load value. • Check that the weight of the workpiece + hand does not exceed the value in the specifications.
Remarks	

2-471 Axis1 Motor overload (2 h)
2-472 Axis2 Motor overload (2 h)
2-473 Axis3 Motor overload (2 h)
2-474 Axis4 Motor overload (2 h)
2-475 Axis5 Motor overload (2 h)
2-476 Axis6 Motor overload (2 h)
2-477 Axis7 Motor overload (2 h)
2-478 Axis8 Motor overload (2 h)

Description	The 2-hour running average of the motor load exceeded a predetermined value.
Cause	A load exceeding a specified value was applied to the motor.
Remedy	Reduce the load applied to the motor. • Use the PAYLOAD command to set an appropriate load value. • Check that the weight of the workpiece + hand does not exceed the value in the specifications.
Remarks	

Level 1 Alarms

These are alarm messages where the code numbers start with 1.

When a level 1 alarm occurs, the robot displays a message only.

1-003 M-TO Config Err

Description	A configuration error occurred when a teach point was moved.
Cause	When teach point movement was performed by linear interpolating operation, the configuration at completion of teach point movement and the teach point configuration differed.
Remedy	① Change the teach point movement from linear interpolating operation (MOVES) to MOVE operation. ② The alarm can be disabled according to the setting of [U43] M-TO CONFIG ALARM FUNCTION (function to disable configuration alarm of teach point movement by linear interpolating operation) for USER.PAR.
Remarks	If the targeted teach point configuration contains FREE, no alarm occurs regardless of the configuration after completion of teach point movement.

1-009 Unable to RCYCLE

Description	The cycle reset was invalid.
Cause	An attempt was made to stop operation during execution of the DO statement in a multi-task program or ON-DO command and to use this function.
Remedy	The cycle reset command cannot be used during execution of a DO statement in a multi-task program or ON-DO command. Either change the location where the cycle reset command is used, or correct the SCOL program.
Remarks	

1-017 Invalid PASS command

Description	The ENABLE PASS is invalid.
Cause	An ENABLE PASS command was specified during an ENABLE SMOOTH command.
Remedy	Correct the SCOL program.
Remarks	

1-018 Invalid SMOOTH command

Description	The ENABLE SMOOTH is invalid.
Cause	An ENABLE SMOOTH command was specified during an ENABLE PASS command.
Remedy	Correct the SCOL program.
Remarks	

1-025 Over Deceleration

Description	Deceleration was performed at a rate that exceeds the parameter value in the operation command specified by the DISABLE SMOOTH command.
Cause	The travel distance of the last operation in the SMOOTH connection program is too short, and deceleration was performed at a rate that exceeds the parameter value.
Remedy	Correct the SCOL program (teach points), and increase the travel distance of the DISABLE SMOOTH operation.
Remarks	

1-026 SMOOTH impossible

Description	The SMOOTH command is disabled.
Cause	The travel distance in the SMOOTH connection program is too short, and the internal calculation cannot be performed in time.
Remedy	Correct the SCOL program (teach points), and increase the distance between teach points.
Remarks	

1-027 Enable SW error

Description	The two contact states of the enable switch on the teach pendant do not match.
Cause	The two contact states of the enable switch on the teach pendant do not match.
Remedy	Turn the power off and then on again. If the error still appears, there may be a problem in the teach pendant switch or wiring.
Remarks	

1-028 Already Enable SW ON

Description	The ON status of the enable switch on the teach pendant was detected when the power was turned on.
Cause	① The enable switch on the teach pendant was already pressed when the power was turned on. ② The enable switch on the teach pendant may be faulty.
Remedy	① Set the enable switch to OFF, and then turn the power off and then on again. ② Replace the teach pendant.
Remarks	If the power is turned on when the enable switch was already pressed, the controller assumes that the enable switch remains pressed due to a malfunction.

1-037 PLC user alarm
1-038 PLC user alarm
1-039 PLC user alarm
1-040 PLC user alarm
1-041 PLC user alarm
1-042 PLC user alarm
1-043 PLC user alarm
1-044 PLC user alarm

Description	A level 1 user alarm has occurred in the internal PLC.
Cause	A level 1 user alarm has occurred in the internal PLC. The message can be defined by the user parameters.
Remedy	The user must remove the alarm conditions that were set in the internal PLC.
Remarks	

1-047 Conveyor Line Breakage

Description	A broken wire error has occurred in the conveyor synchronization encoder.
Cause	① The conveyor synchronization encoder has a broken wire. ② The conveyor synchronization encoder may be faulty. ③ The main control printed board may be faulty.
Remedy	① Fix the wiring of the encoder. ② Replace the conveyor synchronization encoder. ③ Replace the conveyor synchronization printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see Appendix 1. Controller Printed Board Names".

1-048 Conveyor Stop

Description	The conveyor stopped during conveyor synchronization. (The counter of the conveyor encoder remained unchanged for a certain period of time.)
Cause	① The conveyor is stopped. ② The conveyor encoder is not mounted properly. ③ The conveyor stop determination time is too short.
Remedy	① Operate the conveyor. ② Mount the conveyor encoder correctly. ③ The determination time is specified in CONSTRUC.SYS or robot language. CONSTRUC.SYS [5.] CH1 Conveyor Parameter =2000 0 3 **3000** 0 0 [6] CH2 Conveyor Parameter =2000 0 3 **3000** 0 0 Language CYNC (<number>, [<stop determination time>])
Remarks	

1-053 Servo Packet trans error

Description	An unexpected command was transferred from the main control to the servo.
Cause	① The servo printed board may be faulty. ② The main control printed board may be faulty.
Remedy	① Replace the servo printed board. ② Replace the main control printed board.
Remarks	The printed boards may need to be replaced, and so contact CKD Customer Service. For the names of the printed boards, see Appendix 1. Controller Printed Board Names".

1-145 MAIN Battery alarm

Description	The battery for storing the program, parameter and other data is low in power.
Cause	The battery for storing the program, parameter and other data is low in power.
Remedy	Replace the battery by referring to "Replacing the Battery" in the Maintenance Manual.
Remarks	When you continue operation after the battery alarm occurs, the program and parameter data can be lost and other severe problems can occur. Replace the battery as soon as possible.

1-147 COM Buffer Over

Description	The receiver buffer area has overflowed in serial communication.
Cause	The amount of input data has exceeded the receiver buffer (256 bytes).
Remedy	DC3 and other flow control is not performed in non-protocol communication (COM*). Read all data received from external equipment by the INPUT command. When this alarm is reset, the receiver buffer is also cleared.
Remarks	This alarm does not occur in HOST communication.

1-148 Brake ON

Description	Operation cannot be performed because the brake is activated.
Cause	An operation command was issued when the brake was ON.
Remedy	Turn the servo off and then on again.
Remarks	

1-149 Extern SELECT error

Description	An error occurred in the external file selection process.
Cause	① There is no specified file. ② There is an error in the file selection signal line setting. • User parameter file (USER.PAR). • External selection file (EXTRNSEL.SYS). • File selection by external signal.
Remedy	① Check if the specified file exists. ② • Check if there is an error in the file selection signal line setting (USER.PAR [U07] SPECIFY SIGNAL FOR EXTSELECT) of the user parameter file. • Check if there is an error in the external selection file setting (EXTRNSEL.SYS). • Is the file selection number by the file selection signal line incorrect?
Remarks	For details, see "STROBE" in the Interface Manual.

1-150 Illegal point data exist

Description	The program file contains data blocks.
Cause	Data blocks are contained in the program file even though a common data file function is being used.
Remedy	Delete the data blocks from the program file.
Remarks	

1-154 Data block format error

Description	A data format error occurred during startup of the data editor.
Cause	A data format error occurred during startup of the data editor.
Remedy	The data line where the error occurred can be deleted after reading. After confirmation, re-enter the correct data.
Remarks	

1-155 HOST port data error
1-156 COM1 port data error

Description	A receive error occurred in the HOST or COM1 port.
Cause	A framing error, parity error, or overrun error occurred in the data received at the HOST or COM1 port.
Remedy	Check that that the communication cable is connected correctly. Check the baud rate, parity, and stop bit settings. Take measures to prevent the intrusion of noise into the communication cable.
Remarks	

1-158 Short of working area

Description	Program editing by the teach pendant was not possible because there is not enough available space on the RAM disk.
Cause	A work area could not be obtained for program editing due to low available space on the RAM disk.
Remedy	Move or delete unnecessary files on the RAM disk.
Remarks	

1-160 Compile error

Description	The program could not be compiled.
Cause	A syntax error occurred in the file selection process.
Remedy	Press the F5 function key in the error display screen to confirm the error details. After confirmation, correct the corresponding location in the program.
Remarks	See "Displaying Compiler Errors" in the Operator's Manual.

1-164 PLC Backup data error

Description	The PLC sequence program was corrupted.
Cause	The main battery voltage has dropped, and the sequence program was corrupted.
Remedy	Use TCPRGOS to reload the sequence program.
Remarks	

1-166 PLC Remote unit error

Description	An error occurred in an extension I/O unit.
Cause	① The connection setting of the extension I/O unit does not match the user parameters. ② The cables are not connected correctly, or they have a broken wire. ③ The connected I/O unit does not operate properly.
Remedy	① If the user parameter settings are incorrect, set the correct user parameters. ② Check the connection cables, and replace if anything is found wrong. ③ If the I/O unit is faulty, contact CKD Customer Service.
Remarks	

1-169 PLC undefined label

Description	The label used in the PLC sequence data is not defined.
Cause	The label used in the PLC sequence data is not defined.
Remedy	Use TCPRGOS to correct the sequence program.
Remarks	

1-170 PLC invalid command

Description	A command used in the PLC sequence program is not defined.
Cause	A command used in the PLC sequence program is not defined.
Remedy	Use TCPRGOS to correct the sequence program.
Remarks	

1-173 PLC Overlap label

Description	The level used in the PLC sequence program is defined twice.
Cause	The level used in the PLC sequence program is defined twice.
Remedy	Use TCPRGOS to correct the sequence program.
Remarks	

1-177 VCV Comm process abnormal

Description	In the vision + conveyor synchronization function, communication data was received two or more times from the vision sensor before the trigger signal turned on.
Cause	There is an error in the vision sensor settings.
Remedy	Check the timing between sending of data from the vision sensor and sending of the trigger signal. For details, see the Vision + Conveyor Synchronization Manual.
Remarks	

1-178 VCV Comm data format error

Description	The format of the data sent from the vision sensor is invalid.
Cause	There is an error in the vision sensor settings. (sending of non-numerical data, numerical data format error, data size error, etc.)
Remedy	Check the format of the data that is sent from the vision sensor. For details, see the Vision + Conveyor Synchronization Manual.
Remarks	

1-179 VCV Too many triggers

Description	The maximum number of tracking data that can be saved has been exceeded.
Cause	The number of pictures taken has exceeded the processing capacity of the robot.
Remedy	Increase the capture width of the vision sensor, and reduce the number of pictures taken. Shorten the distance from the capture origin to the conveyor synchronization limit point.
Remarks	

1-180 VCV Comm Process Timeout

Description	In the vision + conveyor synchronization function, communication data was timeout.
Cause	Conveyor parameter C01 The "1-180: VCV Comm Process Timeout" error occurs when the data receive cannot be completed in Data reception time out (data receive time-out) setting time or less.
Remedy	Conveyor parameter C01 of this function This function becomes disabled for "0.0" { Data reception timeout ms }
Remarks	

1-182 VCV DataRCV Time Out

Description	In the vision + conveyor synchronization function, communication data was timeout.
Cause	Conveyor parameter C01 The "1-182: VCV DataRCV Time Out " error occurs when the data receive cannot be completed in Data reception time out (data receive time-out) setting time or less.
Remedy	Conveyor parameter C01 of this function This function becomes disabled for "0.0" { Data reception timeout ms }
Remarks	

1-193 Ethernet port Error

Description	It is an error of Ethernet connection.
Cause	Internet Protocol address overlaps. It failed in the connection of TCP.
Remedy	Please reconfirm the setting of ETHERNET.PAR and the setting of a cable and connected other party.
Remarks	

1-200 Host Port Time Out

Description	Communication data could not be received even after the specified time.
Cause	① A communication cable problem has occurred. ② Communication was terminated without the watchdog released.
Remedy	① Check the communication cable, and turn off the power and then turn it back on. ② See the WD command in the Communication Manual.
Remarks	This alarm occurs if the communication data is not received the specified time after the WD command is issued. For details on the WD command, see the Communication Manual.

1-201 IP0 status alarm
1-202 IP1 status alarm
1-203 IP2 status alarm
1-204 IP3 status alarm

Description	The Ethernet connection was disconnected during running of the program.
Cause	The Ethernet connection was disconnected.
Remedy	Check the connection status of the customer's devices. Check that no cables are damaged.
Remarks	The Ethernet parameter (ETHERNET. PAR) can be used to turn the generation of this alarm on and off and to set the level.

1-401 Axis1 Enc Battery low (Battery alarm)
1-402 Axis2 Enc Battery low (Battery alarm)
1-403 Axis3 Enc Battery low (Battery alarm)
1-404 Axis4 Enc Battery low (Battery alarm)
1-405 Axis5 Enc Battery low (Battery alarm)
1-406 Axis6 Enc Battery low (Battery alarm)
1-407 Axis7 Enc Battery low (Battery alarm)
1-408 Axis8 Enc Battery low (Battery alarm)

Description	The battery for storing the encoder position is low in power.
Cause	The battery for storing the encoder position is low in power.
Remedy	Replace the battery by referring to "Replacing the Position Detector Battery" in the Maintenance Manual.
Remarks	When you continue operation after the position detector battery alarm occurs, the robot origin can become misaligned and other severe problems can occur. Replace the battery as soon as possible.

Appendix 1. Controller Printed Board Names

	KSL3000
Main control printed board	X8YC
Servo printed board	X8YC
Servo power supply printed board	X8YS
Servo amplifier	X8YS
Base printed board	None